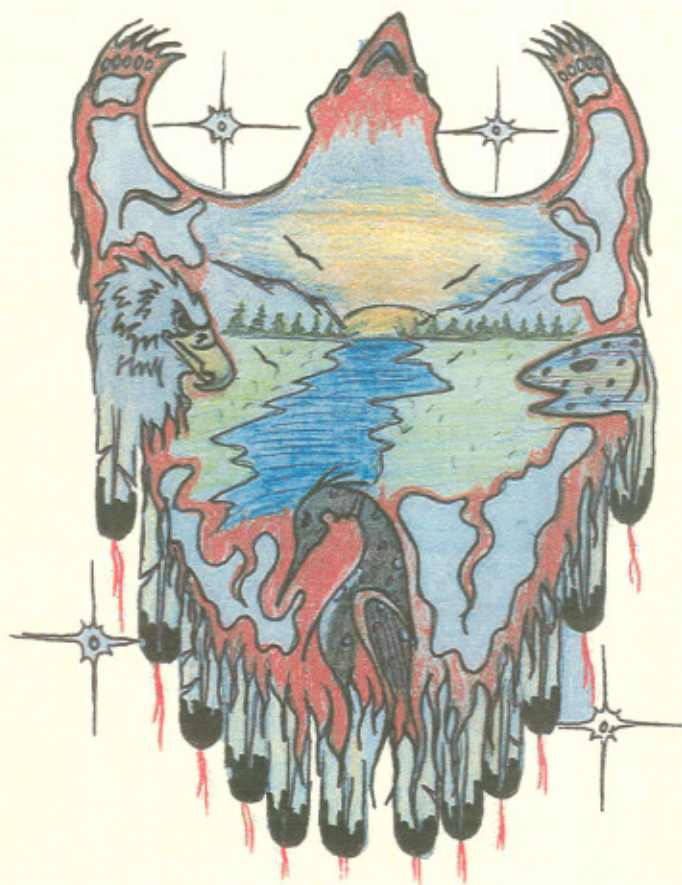


RED CLIFF BAND OF LAKE SUPERIOR CHIPPEWA



**INTEGRATED RESOURCE
MANAGEMENT PLAN
2006 – 2016**



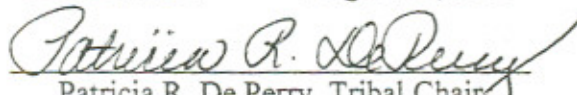
ARTWORK BY →

COVER >>>> DARRYL BOYD
 TOP >>>>> LARRY BUTTERFIELD
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 RIGHT >>>>> TAMMY DUFFY

Red Cliff Band of Lake Superior Chippewa Integrated Resource Management Plan

2006 – 2016

APPROVED: August 21, 2006

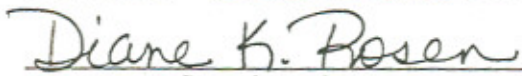

Patricia R. De Perry, Tribal Chair

Red Cliff Band of Lake Superior Chippewa

APPROVED: 9-29-06, 2006


Midwest Regional Director,
Bureau of Indian Affairs (BIA)

CONCUR: 9-28-06, 2006


Superintendent,
BIA- Great Lakes Agency

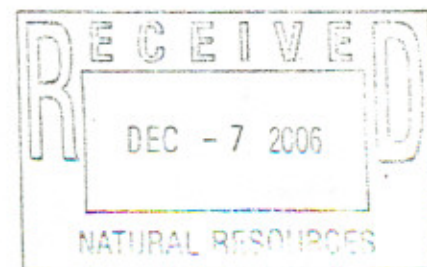


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RESOLUTION NO. 04-03-00-J

**RESOLUTION PERTAINING TO THE DEVELOPMENT OF AN INTEGRATED
RESOURCE MANAGEMENT PLAN (IRMP) FOR TRIBAL NATURAL RESOURCES**

WHEREAS: The Red Cliff Tribal Council is the governing body of the Red Cliff Band of Lake Superior Chippewa, a federally recognized Indian Tribe; and,

WHEREAS: The U.S. Bureau of Indian Affairs, Integrated Resource Management Planning process can provide for assistance to help develop a plan and improve the role of tribal members in reservation resource management decisions; and,

WHEREAS: The IRMP can enhance tribal self-governance, tribal resource management and protection of tribally important areas and resources; and,

WHEREAS: The Red Cliff Treaty Natural Resource Division and other tribal agencies can benefit from implementing such a program.

NOW THEREFORE BE IT RESOLVED: That the Tribal Chairperson and the Treaty Natural Resource Division develop a Memorandum of Understanding for BIA IRMP assistance; and, apply for financial assistance, negotiate, amend and execute any necessary contracts to develop an Integrated Resource Management Plan for subsequent Tribal Council approval.

CERTIFICATION

I, the undersigned Secretary of the Tribal Council of the Red Cliff Band of Lake Superior Chippewas, a federally recognized Indian Tribe, hereby certify that the Tribal Council is composed of 9 members, of whom 9, constituting a quorum, were present at a meeting thereof duly called, noticed, and convened, held on the 3rd day of April, 2000, and foregoing resolution was adopted at said meeting by an affirmative vote of 8 members and that said resolution has not been rescinded or amended in any way.

Secretary, Red Cliff Tribal Council



RESOLUTION NO. 04-01-02-C

**RESOLUTION PERTAINING TO THE INTEGRATED RESOURCE
MANAGEMENT PLAN (IRMP) DEVELOPMENT PROJECT**

WHEREAS: The Red Cliff Band of Lake Superior Chippewa is a federally recognized Indian Tribe, organized under a Constitution adopted August 25, 1938, and approved on November 9, 1938 pursuant to Section 16 of the Indian Reorganization Act; and,

WHEREAS: The U.S. Bureau of Indian Affairs, Integrated Resource Management Planning process can provide for assistance to help develop a plan and improve the role of Tribal members in reservation resource management decisions; and,

WHEREAS: The IRMP will provide needed community input to guide Tribal resource management, and protection of Tribally important areas and resources; and,

WHEREAS: The Red Cliff Tribe will benefit from the continued development and implementation of an IRMP; and,

THEREFORE BE IT RESOLVED; that the Red Cliff Band of Lake Superior Chippewa authorizes the submittal of the funding proposal to continue the Integrated Resource Management Plan Development Project; and,

BE IT FURTHER RESOLVED; that the Tribal Chairperson or their designee apply for financial assistance, negotiate, amend, and execute any necessary contracts to continue the development of an Integrated Resource Management Plan for subsequent Tribal Council review, consideration, and approval.

CERTIFICATION

I, the undersigned Secretary of the Tribal Council of the Red Cliff Band of Lake Superior Chippewa, a federally recognized Indian Tribe, hereby certify that the Tribal Council is composed of 9 Members, of whom 9, constituting a quorum were present at a meeting there of duly called, noticed, and convened, held on the 12th day of April 2002; and that the foregoing resolution was adopted at said meeting by and affirmative vote of 8 Members and that said resolution has not been rescinded or amended in any way.



Dennis J. Souther, Tribal Secretary
Red Cliff Tribal Council

Red Cliff Band Of Lake Superior Chippewa
"The Hub Of The Chippewa Nation"
RED CLIFF TRIBAL COUNCIL

RESOLUTION NO. 07-07-03-B

RESOLUTION SUPPORTING CONTINUATION OF THE INTEGRATED RESOURCE MANAGEMENT PLAN (IRMP) AND AUTHORIZATION TO SUBMIT APPLICATION FOR BIA IRMP FUNDING

WHEREAS: The Red Cliff Tribal Council is the governing body of the Red Cliff Band of Lake Superior Chippewa, a federally recognized Indian Tribe; and,

WHEREAS: The U.S. Bureau of Indian Affairs, Integrated Resource Management Plan (IRMP) process can provide assistance to continue development of the IRMP & further participation of tribal members in reservation resource management decisions; and,

WHEREAS: The IRMP enhances tribal self-governance, tribal resource management and protection of tribally important areas and resources; and,


WHEREAS: The Red Cliff Treaty Natural Resource Division and other Tribal, Federal, & State and non-governmental agencies, do benefit from working on further development and implementation of our IRMP; and

NOW THEREFORE BE IT RESOLVED: The Tribal Council of the Red Cliff Band of Lake Superior Chippewa supports the continued development and implementation of our IRMP; and

BE IT FURTHER RESOLVED: The Tribal Chairperson or their designee apply for financial assistance, negotiate, amend and execute any necessary contracts to further develop and continue work on our Integrated Resource Management Plan.

CERTIFICATION

I, the undersigned Secretary of the Tribal Council of the Red Cliff Band of Lake Superior Chippewa, a federally recognized Indian Tribe, hereby certify that the Tribal Council is composed of 9 members, of whom 9, constituting a quorum, were present at a meeting thereof duly called, noticed, and convened, held on the 7th day of July, 2003, and foregoing resolution was adopted at said meeting by an affirmative vote of 8 members and that said resolution has not been rescinded or amended in any way.


Dennis Souther, Secretary
Red Cliff Tribal Council



RESOLUTION NO. 11-7-05 A

**RESOLUTION SUPPORTING THE APPROVAL OF THE INTEGRATED
RESOURCE MANAGEMENT PLAN (IRMP) FOR THE 2005 TO 2015 PERIOD**

WHEREAS: The Red Cliff Tribal Council is the governing body of the Red Cliff Band of Lake Superior Chippewa, a federally recognized Indian Tribe; and,

WHEREAS: The IRMP enhances Tribal self-governance, Tribal resource management and protection of Tribally important areas and resources; and,

WHEREAS: The Red Cliff Tribe and other Tribal, Federal, State, and non-governmental agencies do benefit from working together on local and regional environmental and resource management activities; and,

WHEREAS: The Red Cliff Tribe has developed alternatives to the IRMP and also held a public comment period of thirty days to comply with the National Environmental Policy Act (NEPA); and,

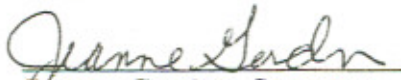
WHEREAS: The IRMP will fulfill the requirement for a Forestry Management Plan as required under the Code of Federal Regulations (CFR, Title 25, Part 163.11)

NOW THEREFORE BE IT RESOLVED: The Tribal Council of the Red Cliff Band of Lake Superior Chippewa approve the IRMP with the selected alternative being full implementation of the document (Alternative 4); and,

BE IT FURTHER RESOLVED: The Red Cliff Tribe is submitting this document to the Bureau of Indian Affairs for concurrent approval as required by 30 BIAM Supplement 10.

CERTIFICATION

I, the undersigned Secretary of the Tribal Council of the Red Cliff Band of Lake Superior Chippewa, a federally recognized Indian Tribe, hereby certify that the Tribal Council is composed of nine members, of whom 9 constituting a quorum, were present at a meeting thereof duly called, noticed, and convened, held on the November 7, 05, and foregoing resolution was adopted at said meeting by an affirmative vote of 8 members and that said resolution has not been rescinded or amended in any way.


Jeanne Gordon, Secretary
Red Cliff Tribal Council

ACKNOWLEDGEMENTS

Red Cliff Tribal Council	Red Cliff Tribal Administration
IRMP Committee Members	Isle Vista Casino
Land Use Planning Board	Red Cliff Zoning Department
Red Cliff Legal Department	Red Cliff Housing Authority
Red Cliff Fish Hatchery	Red Cliff Environmental Department
Red Cliff Natural Resources Department	University of Wisconsin – Extensions
Red Cliff Emergency Services Center	Red Cliff First American Prevention Center
Red Cliff Tribal Elders	Apostle Islands National Lakeshore
Natural Resources Conservation Service	Bureau of Indian Affairs Great Lakes Agency
Environmental Protection Agency (EPA Region V)	
All Red Cliff Tribal/Community members who assisted with mailing the IRMP Survey	
All Red Cliff Tribal/Community members who responded to the IRMP Survey	
All Red Cliff Tribal/Community members who recommended an alternative	

IRMP VISION STATEMENT

The Red Cliff Band of Lake Superior Chippewa Indians Tribal Council vision for the Red Cliff Tribe is "to promote, plan and provide for the health, welfare, education, environmental protection, cultural preservation, and economic well being of tribal members and to protect treaty rights now and in the future".
(Adopted on December 5, 1994)

The Red Cliff Integrated Resource Management Planning Board established a vision to guide the process of planning for managing the natural resources of our Reservation. This vision is in concert with the vision for the Tribe. The IRMP Board's vision for the future of our Reservation is one where:

- All living things are in a natural balance.
- There are few negative impacts to the natural systems.
- The reservation provides sustainable environmental and economic goals.
- All alienated lands within the Reservation boundary are subject to Tribal control and the original Tribal land base and lands adjacent to the Reservation are being sought for reclamation.
- Environmentally sustainable natural resource management, development, housing, and infrastructure needs are addressed for all Tribal members.
- Traditional, historical, and cultural areas are set aside, preserved, and restored for the education of our youth and the preservation of our life ways.
- High priority is placed on a healthy environment in accordance with a strong natural resources base for future subsistence of all Tribal members.

Executive Summary

The purpose of the Red Cliff Band's Integrated Resource Management Plan (IRMP) for the years 2006 to 2016 is to manage the Tribe's resources effectively for future generations. The IRMP will be used to address current and future management options of the Tribe. The IRMP has been developed by a group of people dedicated to the preservation, protection, enhancement, and management of the Tribe's resources.

This IRMP contains information about the Tribe's past and current management activities and identifies resources which need additional management. The IRMP contains alternatives to pursuing resource management activities in accordance with the National Environmental Policy Act (NEPA). The Tribe has developed these alternatives based on a percent of implementation required to complete the objectives identified. These alternatives ranged from a No Action alternative to full implementation of the document by 25% increments. The objectives to be completed under these objectives were categorized and inserted into an alternative table located at the end of the narrative section of the document.

The Tribe held public hearing sessions to acquire comments on the proposed draft and the available alternatives. Several comments were obtained and incorporated into the final approved document. This process provided the Tribe with public input as to which alternative should be implemented. The Tribe officially selected Alternative 4, by resolution #11-7-05-A, as the preferred alternative which would allow the Tribe to implement the document in full.

Maps are included at the end of the document as a visual aid and resource management tool. The narrative section of each resource has been developed with the following basic format specific to each resource:

- Description of the resource
- Vision statement
- Issues, concerns, and opportunities
- Goals and Objectives

This document is to be used as a guide for resource managers. The objectives are a principal guideline to effectively address each resource and must be reviewed and updated as necessary. The IRMP will be reviewed after a period of ten (10) years for updating purposes and to provide a historical perspective of the Tribe's management efforts. The Red Cliff Tribe is committed to the expansion and development of programs to successfully manage the Reservation's resources. Chi - Miigwech to everyone who helped this document become what it is today!

William R. Cadotte
Red Cliff IRMP Coordinator
Maiingan Consulting Services

INTRODUCTION

This document is the Integrated Resource Management Plan (IRMP) for the Red Cliff Band of Lake Superior Chippewas and their Reservation. The Code of Federal Regulations requires the development of management plans wherever there is forest land. (CFR, Title 25, Indians, Part 163.11) The Red Cliff Integrated Resource Management Plan (IRMP) goes further and plans for management activities of additional Tribal resources as well. Many resources have been identified as needing program development and initiation at the Tribal level. These resources will receive their proper attention as identified in the selected alternative. Cooperation between the Tribe and the Bureau of Indian Affairs (BIA), as well as other vital agencies, is necessary to fulfill the intention of the IRMP. The Bureau of Indian Affairs (BIA) authorizes and encourages the development of IRMPs, and it requires that both the Tribal Council and the BIA Midwest Regional Director approve the Final IRMP. (30 BIAM Supplement 10)

In the development of the IRMP, consideration has been given to the National Environmental Policy Act (NEPA). This document will serve as both the IRMP and Environmental Assessment for the Red Cliff Reservation (authorized by CFR 40 parts 1500.4 (o), 1500.5(I), and Council on Environmental Quality (CEQ) Regulation Section 1506.4). However, specific projects or activities that are addressed within this document must still follow NEPA compliance procedures and regulations whenever Federal dollars are used. This document will make environmental and legal compliance at the Tribal and Federal level more expedient.

The purpose of the IRMP is to provide a comprehensive natural resource management plan for the Red Cliff Reservation. An IRMP is a management tool used to give the community a voice in determining how the Reservation develops for the future of the Red Cliff Band. Pride will be instilled in the community by preserving and protecting sensitive and unique areas of the Reservation. The IRMP will help locate extraordinary land features, critical habitat, traditional, cultural, sacred, environmental, and social gathering areas for Tribal Members to use and to help direct Tribal development to more suitable locations. The IRMP will lay out needs, goals, objectives, and plans of action that will need to be taken in order to more effectively manage the natural resources of the Reservation. The IRMP will be essential in the management of the natural resources within the boundary of the Reservation for future Tribal Members.

The IRMP is a living resource management guide that will be used by the Tribal Council, resource managers of the Red Cliff Reservation, and other agencies. The IRMP will assist resource managers in planning of specific projects by helping them to recognize when to involve other resource managers, Tribal Council, or other agencies. The IRMP will ensure that Tribal officials and resource managers will be informed of environmental effects of proposed activities and projects before the impacts occur. The intention of this plan is to minimize conflicts of resource management and to coordinate the planning process by taking an integrated approach to resource management. In this way, resource managers will be able to identify opportunities for cooperation in working toward common natural resource management goals and providing direction to priority areas. The cooperation and coordination necessary in the creation of this IRMP is evident in the formation of the IRMP Board.

The Red Cliff Band of Lake Superior Chippewa Indians began developing an Integrated Resource Management Plan Board in the year 2000. The Red Cliff Tribal Council identified the Board members in December of 2000. The Board has met regularly over the past few years to develop this plan. The ID team consists of Tribal Members, Tribal Employees, Tribal Elders, Apostle Islands National Lakeshore, Bureau of Indian Affairs, Natural Resources Conservation Service, and other knowledgeable and concerned citizens of the Red Cliff Band of Lake Superior Chippewa Indians.

After developing the board, major focus was placed on soliciting community input. The Board and other technical advisors developed an IRMP Survey. The survey was designed to gain as much community insight as possible on natural resource management goals. There was a variety of questions that were asked including, but not limited to, cultural/traditional resources, fish and wildlife, forestry and forest gathering, water resources, land acquisition, housing resources, and economic development opportunities.

The survey was mailed to 2,970 Tribal Members over the age of 18 at the time of the mailing. 267 surveys were completed with a return rate of 9.24%. The formula used to calculate this percentage equals the amount of surveys returned divided by the number of surveys mailed minus undeliverables received. A large number of surveys were undeliverable by the US Postal Service due to outdated or incorrect mailing addresses for a number of different reasons. In working closely with the Bayfield Post Office, 81 surveys were declared undeliverable and returned to the Tribal Office as a courtesy service. The results of the Survey were compiled and presented to the Tribal Council and distributed throughout the community. The Survey Results were used as a guide throughout the development of this IRMP.

A major theme in survey responses indicated that the Tribal membership has strong feelings for the protection and well being of the natural environment and its constituents. The Tribal membership recognizes that the Red Cliff Reservation is very unique and special, not only in the region, but for the entire world. Many concerns were expressed about the need for protection and preservation of the reservation's natural resources for the next seven generations. In order to honor the Tribal membership, the IRMP Board incorporated these concerns as outlined in the IRMP Survey Results.

ORIGINS AND HISTORY

The people of the Red Cliff Reservation belong to a larger group of people who refer to themselves as Anishinabe, but may be called Chippewa or Ojibwe as well as other similar names. The Red Cliff Band is one of 154 Bands of Anishinabe that reside around the Lake Superior region in the United States of America and Canada. This larger group of people approximately extends as far east as the Atlantic Ocean, as far south as Iowa, as far west as Montana, and as far north as Hudson Bay.

The Red Cliff Band of Lake Superior Chippewa Reservation is located on the northern tip of the Bayfield Peninsula on the mainland adjacent to Madeline Island and the Apostle Islands and is known as the "Hub of the Ojibwe". The Anishinabe people know Madeline Island as the final stopping place of their migration from the Eastern Sea. Moningwanikoning, Madeline Island, is the name that was given to this island by the people who saw this place as a spiritual center. Moningwanikoning means "Home of the Yellow Breasted Woodpecker".

Before there was a Red Cliff Reservation there was a vibrant village life on Madeline Island. For many generations this island was recognized as the headquarters of the political group known as the Lake Superior Chippewa. The La Pointe Band, led by Chief Buffalo, was part of the larger group; others resided inland which we today know as the other Chippewa reservations. The Lake Superior Band, consisting of villages in three states, was just one of many Bands which make up the Anishinabe nation.

Red Cliff emerges out of a series of treaties between the United States and the Lake Superior Chippewa. The most relevant treaties include the 1835 Treaty at Prairie du Chien, the 1837 Treaty at St. Peters, and the 1842 Miners Treaty and 1854 La Pointe Treaty on Madeline Island. The latter treaty established the current reservations.

This 1854 La Pointe Treaty was a negotiated agreement by Chief Buffalo after the U.S. had previously threatened to remove the Lake Superior villages to Sandy Lake, Minnesota. When it was clear that there was widespread resistance to the Presidential Removal Order which was likely to end in open warfare, Buffalo traveled to Washington and got the order rescinded; Wisconsin citizens had also signed petitions opposing the removal of the Chippewa.

Red Cliff, however, is unique in that it was not created specifically from the 1854 Treaty. Buffalo, then living on Madeline Island, was awarded land at Red Cliff for his role in the treaty negotiations (the Buffalo Subdivision). This award of four sections was the beginning of what became the Red Cliff Reservation. Except for Buffalo and his family, all other La Pointe Band members were slated to go to the Bad River Reservation at Odanah. However, many resisted that and settled on the Buffalo Estate; there is historic evidence that many families previously had camps at Red Cliff.

When it became clear that the Buffalo Estate would not support the population and the families refused to go to Bad River, Red Cliff became attached to the 1854 Treaty. The boundaries of the Buffalo Estate are expanded to accommodate those now on the mainland at Red Cliff. In 1863, the United States Senate amended the provisions of the treaty and set aside approximately 14,000

acres for the Red Cliff Reservation. Following surveys about 205 allotments were issued for these lands.

The final allotment role was published in 1896, listing all those who eventually became members of the new Red Cliff Chippewa Reservation (Walter Bresette's "Red Cliff Tribal Government: Origins and History"). These members, who were given allotments, were issued trust patents. According to the terms of the patents, Washington restricted sale of the land for twenty-five years – unless there was good reason for early termination of the trust period, such as the acknowledged "competency" of the owner. By the late 1920's, about four-fifths of the allottees at Red Cliff had received patents in fee simple through certificates of competency. This led to the "checkerboard" ownership of the land evident today. By 1937, 5,236 of the Reservation's heavily timbered acres had been alienated and the remainder clear-cut and burned. (Draft Development of a Tribal Land Acquisition Program for Watershed Protection and Enhanced Tribal Access, Flintsteel Restoration Association, Inc.)

The Red Cliff Band adopted a Constitution and By-Laws in June of 1936. By doing so, the Red Cliff Band met the United States Government's main criteria for becoming a federally recognized Tribe under the Indian Reorganization Act of 1934. Acquiring this status allowed the Tribes' to maintain sovereign control over their own territories as they saw fit. A nine-member elected Tribal Council governs the Reservation and generally are responsible for all Tribal land use decisions. Officers include a Chairperson, Vice-Chairperson, Secretary, and Treasurer. Each Council member serves a two-year term. The government oversees the business of thirty different departments, including but not limited to: social services, education, community development, housing, health care, treaty/natural resource protection and law enforcement. (Red Cliff Constitution, Walter Bresette's "Red Cliff Tribal Government: Origins and History")

The Red Cliff Treaty/Natural Resource Protection division has been involved with the management of natural resources of the Reservation. The Treaty/Natural Resource Protection division is responsible for the oversight and management of the natural resources within the boundary of, and in the ceded territory of the Red Cliff Band. The Tribe operates a solid waste transfer station, waste water treatment facility, fish hatchery, conservation enforcement program, water resources program and other natural resource management efforts are on-going. The Red Cliff Tribal Council has also re-enacted a Land Use Planning Board and has appointed a Zoning Administrator to help facilitate land use decisions and enforcement actions.

DESCRIPTION OF AFFECTED ENVIRONMENT

The Red Cliff Band of Lake Superior Chippewa Indian Reservation is located on the southern shores of Gitchi Gami, Lake Superior, in extreme northwest Wisconsin, on the coastal northern tip of the Bayfield Peninsula, which projects from the south shore into the waters of Lake Superior. The Apostle Islands extend from the tip of the peninsula and form a twenty-two island archipelago. The Apostle Islands National Lakeshore lies within and adjacent to the Reservation, and is managed by the U.S. Dept. of Interior - National Park Service. Other adjacent landholders include the State of Wisconsin, Bayfield County, and private land owners.

The Tribe has approximately 60 square miles of watershed/shoreline area and there are 22.32 miles of Lake Superior shoreline. The near-shore portion of Lake Superior is characterized by scenic sandstone cliffs and large protected wetland sloughs at the sandy mouths of historically pristine rivers. Above the sandstone lies the highly erodible red clay soils that are typical of the southern region of the Lake Superior Basin.

The Reservation holds 1.5% of its land as wetlands (67.6 acres of wetlands greater than 2 acres and 143 wetlands under 2 acres in size). Two wetland complexes are especially unique in that they contain unique coastal fen, coastal bog, northern sedge meadow, lagoon, and dry pine forest. Additionally, sites such as these contain significant populations of rare plants, insects, and birds. The Reservation and its waters are home to a wide diversity of animal and plant life. Approximately 10% of Tribal lands are part of the Apostle Islands National Lakeshore. The Red Cliff Reservation includes 46.11 miles of streams/rivers within its boundaries, which are connected to 156.78 miles of rivers outside Reservation boundaries. There are two rivers and six creeks whose sources are primarily springs and seeps. The largest source of potable water used within the Reservation boundaries comes from groundwater in the form of Tribal utilities, private wells, or artesian wells. Many of the natural resources, including the water itself, are important to the Tribe for biological, cultural, sustenance, medicinal, spiritual, and economic reasons.

Today, the exterior boundary of the Red Cliff Reservation spans approximately 14,093 acres along the southern shore of Lake Superior. The Red Cliff Band maintains property rights in approximately 56% of these acres. This figure represents 6,180.617 acres (43.8%) that are tribally owned, 1,767.081 acres (12.5%) are owned by the heirs of the original allottee in trust or restricted status. The remaining 6130.652 acres are alienated lands in fee simple or taxable status. There is a mixture of tribal and non-tribal ownership, including lands held by the U.S. Department of the Interior through the National Park Service for the Apostle Island National Lakeshore, which was created by Congress in 1970 (Public Law 91-424). (Draft Development of a Tribal Land Acquisition Program for Watershed Protection and Enhanced Tribal Access, Flintsteel Restoration Association, Inc.)

Demand driven land use decisions are also not being projected on the severely limited land base of the reservation. It is highly probable, that, without reform, land use impacts will increase to a point where critical habitat and natural resource availability will be dramatically and irreversibly reduced and/or completely eliminated. These areas are located in the Tribe's "Preserved" areas and future sites are being considered. With zero population growth assumed, current demand projections within 10 years will result in 2-8 parcels of land left or approximately 450 acres to

fulfill the demand of 4,200 tribal members for all government services, hunting, fishing, gathering, cultural or spiritual use, etc.

The Reservation is situated in the Northern Highlands Geographical Province. The physical conditions in this area are the most extreme in the State. The mean annual temperature is between 40 and 41 degrees Fahrenheit, and receives an annual average of 27 inches of precipitation. The Reservation is mostly forested, with these areas consisting of conifers (pine, spruce, and fir) and several types of hardwoods (maples, birch, and oak). Birch, cedar, aspen and various types of shrubs (hazel, dogwood, alder, blackberry and other currants) also occur. Wildlife typical of the area are whitetail deer, black bear, coyote, wolf, red fox, beaver, otter, muskrat, weasel, squirrel, porcupine, rabbit and other rodents, bald eagle, osprey, goshawk, owls and other raptors, woodcock, ruffed grouse and various types of waterfowl and migratory bird species.

The topography in the area is mostly rolling, with steep slopes along drainage areas. The predominant soils are the Odanah silt loam complex on 6-15% slopes and the Sanborg-Badriver complex on 0-6% slopes. They are formed in clayey till and heavy red clays that have a slow percolation rate and a high water-holding capacity. Parent materials for these soils are lacustrine deposits formed from glacial lakes during a number of glacial advances over the past several hundred thousand years. The Red Cliff Band has aspired to maintain the biological integrity, diversity, and environmental health of this culturally significant area, which is referred to as the "Hub of the Chippewa Nation".

CULTURAL / TRADITIONAL

Description of Resource

Cultural resources are defined as prehistoric and historic archaeological or anthropological sites, historic standing structures, sacred and burial sites, and areas where traditional practices are used or gathered. These resources are extremely important to the Red Cliff Community as evident in the IRMP survey results.

The values of cultural resources at Red Cliff are in the stories they tell about former ways of life, human adaptation to the environment, and the history of the Anishinabe people. The value placed upon the resource may be aesthetic, historical, scientific, traditional, interpretive, utilitarian, or any combination of the above, and often depends upon the integrity (i.e. availability and lack of disturbance or modification) of the resource or its surroundings.

It is very likely that numerous significant cultural resources exist at Red Cliff. Due to its strategic geographic location, the area has been a focal point for human activity for thousands of years. The Red Cliff Reservation is considered the "Hub of the Ojibwe" as it is near, and considered, the final stopping place of many years of migration. Red Cliff and the nearby islands are known as the spiritual center of the Anishinabe people. Many archaeological sites have already been recorded at Red Cliff, and the Tribal Historic Preservation Office is actively researching potential sites. Unfortunately, comprehensive surveys to identify all significant resources on the reservation have not been completed to date. Without good comprehensive site data, it is difficult to make general assessments about the distribution of cultural resources and the probability of locating them.

The identification and protection of cultural resources on Federal or Tribal lands is governed primarily by the National Historic Preservation Act (NHPA) of 1966, as amended, and the Archaeological Resources Protection Act of 1979 and their implementing regulations. These laws apply to any activity or undertaking that involves Federal funding, a Federal license or permit, or involves Federal or Tribal lands. Responsibility for insuring compliance with the appropriate laws and regulations on Tribal lands lies with the Federal agency issuing the permit for any such activity.

In regard to the present planning document, compliance with the legal requirements of the National Historic Preservation Act would need to be completed prior to the implementation of any resource management alternative that included ground disturbing activities. This involves an archaeological survey of the project area to locate any subsurface indication of past human activity. In addition, coordination would need to be undertaken with Tribal elders to determine if any known sacred or burial sites exist in the area or if the area contains any traditional plants or cultural harvesting or gathering areas. If any of these resources are present in a project area, decisions to proceed with the activity would depend upon the results of consultation with the Tribal Council, the Bureau of Indian Affairs, the Tribal Historic Preservation Office, or the State Historic Preservation Office as appropriate.

Traditionally, Red Cliff Tribal members have used native plants for food, flavoring, pharmaceuticals, dyes, tools, construction, and basketry. As time passed, many substitutes were

developed to replace these traditional native plants. However, many Red Cliff Tribal members continue to harvest and use the native plants in a traditional manner.

There are currently numerous archaeological and sacred or burial sites known at the Red Cliff Reservation. Due to the need to protect these sites against disturbance and vandalism, however, the locations of these sites are kept confidential and will not be listed here. This is particularly important for the protection of sacred and/or burial sites.

As stated above, the majority of sites known within the Reservation have been located through surveys undertaken in response to compliance under the National Historic Preservation Act. As time goes by, more and more sites are being located and recorded this way. However, as the Tribal Government undertakes more and more development, particularly for housing, the opportunity for locating additional sites is great, but so is the opportunity for the loss of important cultural resources from development activities.

Vision

To allow Tribal Members to witness and participate first hand in the history, culture, and traditions which identify the Red Cliff Reservation.

Goals

Identify and protect all prehistoric and historic sites, burial and sacred sites, and the areas used for cultural gatherings and educate the community on the history and life ways of the Red Cliff Tribe.

Issues, Concerns, and Opportunities

- Location and protection of cultural sites
- Designate and set aside all culturally sensitive sites.
- Compliance with cultural resource laws.
- Jurisdiction and enforcement of laws.
- Decline of Wild Rice.
- Decline of Birch bark harvesting areas.
- Protection of Sugar Bush areas and Sugar Maples.
- Location and protection of prehistoric and historic sites, and burial and sacred sites.
- Surveys needed to locate and assess conditions of cultural resources and traditional use areas.
- Improve the Rice and berry crops by managing competitive plants and other management enhancement objectives.

Goals and Objectives

- Acquire prehistoric and historic sites.
- Enhance sugar bushes, berry picking, wild rice, medicinal plants, white birch and basswood bark gathering areas as well as other gathered plants.
- Regulate archeological activity.
- Educate general public about Tribal cultural history.
- Require environmental assessment for all development activities such as: house, business, road, utility construction; and forest development or harvest projects.

- Identify and protect prehistoric and historic sites, burial and sacred sites, the pow-wow grounds, and other sites used for cultural/traditional purposes.
- Purchase or acquire cultural sites located on non-band land within the reservation.

Forest Resources

Description of Resource

Tribal members have consistently held the forests in high regard because subsistence gathering activities and food sources come from these forests. These forests have provided everything necessary to sustain life including, but not limited to, food, medicines, shelter, clothing, trade materials, breathable air, and drinkable water. This makes it evident that Tribal forests are vital and necessary to the livelihood, and life of many Tribal Members. Care must be taken when planning for commercial harvests of these forests to ensure that subsistence gathering and cultural and traditional lifestyles can continue as they have for many, many generations of people.

Forest History

Early Bureau of Indian Affairs (BIA) records illustrate the amount of exploitation that occurred on the newly designated reservation lands. The "Pre-European Settlement Vegetation Cover Type Map" (Tab F) shows that early on, Indian owned lands were primarily covered by a forest composed of Hemlock, Maple, White pine, and Red pine. This is common of the pre-European settlement forest type and these species were targeted for harvest. The wood was highly sought after for its value towards a burgeoning local economy, which was based upon utilization of timber products for the construction boom of homes, businesses, boats, and other miscellaneous items being built at the time. Wood was naturally the preferred building material of choice since it was durable, inexpensive, and readily available locally.

In addition, it was a time period when individual Indians were being encouraged to receive title to their land to remove them from trust restrictions by both legal and illegal methods. Many owners pursued the incentive to get the lands alienated (certificates of competency issued, etc) in order to have the timber harvested from these lands to generate income. Frequently, this was followed by the sale of the land itself by the Indian owners, not fully understanding the impacts of what their decisions were bringing. These decisions were made out of sheer desperation to live with the new society and oftentimes the amount received from these sales was negligible according to fair market values of the time.

In the end, the pine cutover was a boom that was short lived. By 1906, it was quite clear that most of the White and Red Pine was gone, and the hardwood logging being completed by the railroads was on the decline. It had dropped to the point that when the sawmill that was operating on the reservation was destroyed by fire, it was never replaced. (Gilbert Lumber Company of Duluth)

A more detailed description of what has happened in the past to Red Cliff's forest resources, can be found in A Forestry History of Ten Wisconsin Indian Reservations Under the Great Lakes Agency, Pre-contact to the Present, written by Anthony Godfrey, Ph.D., 1996.

Forest Today

The tribal forest is still recovering from the early cutover days at the turn of the century, and is now composed of a wide array of tree species. As the initial pioneer species that regenerated after the cut-over diminish, we can see a gradual progression of the tribal forest towards that of older-successional tree species. The "Pre-European Settlement Vegetation Cover Type Map" has a graph of the "Red Cliff Timber Harvest History" (Tab F inset) which is the annual timber harvest volumes recorded since 1951. This shows that the species composition of harvested timber changed from the primary cover type species to secondary cover type species after the early cutover days. The primary species harvested were mostly composed of aspen/balsam fir and the secondary species contained more mixed hardwoods (maple, birch, basswood,) and oak.

Red Cliff has also seen vast fluctuations in annual harvest volumes, with no-volume harvested in some years, compared to harvests that totaled over 800,000 board feet per year. Modern harvest volumes that average 200,000 board feet per year are pale in comparison to the "Pine Era" harvests, which were frequently over 8 million board feet per year. To put today's average harvest volume into context, 200,000 board feet is equal to 400 cords of wood (a cord of wood is a pile of 8 foot logs, with the dimensions 4 feet wide, by 4 feet tall) and would be a pile of 8 foot logs, 4 feet tall, and about 1,600 feet long.

Forest Cover Types

The tribally owned forest is spread out over almost 8,000 acres of land, of which 7,100 acres is considered to be covered by commercial forest land (89%). Ownership of the land can be broken down further into two categories. The first is Tribal Trust ownership, which is approximately 6,200 acres, and the second being allotted to individuals (trust allotments). The remaining 11% of the reservation land base is considered to be non-forest, and is composed of a mixture of developed lands, with commercial buildings and residential homes, and non-forested wetlands. The "Forest Cover Type Map" (Tab G) displays the percentages of each forest cover type found on the reservation today. Table 1 is a list of all the forest types found on the reservation today, along with their respective acreages, and percent coverage of the overall reservation land base.

Table 1

Red Cliff Forest Acres Summary

Tribal Lands			Allotted Lands		
Cover Type	Acres	% Cover	Acres	% Cover	TOTAL
N. Hardwoods	1348.1	17	371.4	5	1719.5
Aspen/NH	1031.4	3	508.1	6	1539.5
Aspen	846.4	11	217.8	3	1064.2
NH/Aspen	858.5	11	122.6	2	981.1
Non-Forest	623.3	8	132.5	2	755.8
Paper Birch	452.2	6	225.6	3	677.8
Hemlock	331.5	4	80.4	1	411.9
Red Oak	175.9	2	41.1	1	217
N.W. Cedar	124.0	2	54.0	1	178
Swamp Hwds	49.3	1	42.7	1	92
Red Pine (Norway)	73.0	1	6.3	0.0	79.3
White Pine	36.3	0.0	23.2	0.0	59.5
Fir/Spruce	40.5	1	0	0.0	40.5
Swamp Conifers	2.1	0.0	0	0.0	2.1
Jack Pine	4.8	0.0	0	0.0	4.8
Totals	5997.3	67	1825.7	25	7823

Note: This acreage is taken from the SCT974 GIS data layer. Short 159.1 acres as shown in 2003 Land Status Report. EJO.

Forest Age Classes

Since most of the Red Cliff Reservation has been managed for timber products in the past, most of the Tribe's stands are composed of relatively younger trees. The "Forest Year of Origin Map" (Tab H) shows that most of the stands of timber have originated around the period of 1932-1951, making most stands 70 years old, or younger. In addition, the pie-chart inset of this map (Tab H) is created from the total acres of each age class. We can see that almost 51% of the lands fall into the 50-70 year old category. Almost 6% of the lands are greater than 90 years old.

When this graph is compared to the species composition graph, (Figure 5 and Figure 6) some similarities can be seen. The oldest stands are the Hemlock and Cedar stands, whereas the Northern hardwoods are the second oldest category. The largest forest cover-type category, (aspen-birch stands) are also the same stands that make up most of the largest age-class (50-70 yrs).

Forest Condition

The Red Cliff Reservation forest stands have also been evaluated for the condition or "state" of the forest during the "Stand Exam". Each stand was classified as being in one of the following categories:

Table 2. *OPINV Database Stand Condition Codes and Descriptions*

Code.	Name	Description
1	High-Risk	Over-mature and beginning to break-up.
2	Overstocked	In excess of fully stocked standards, growth is slowed or limited.
3	Mature	At or near full maturity age, growth rate is declining.
4	Sparse	Stand has merchantable volume, but low.
5	Low Quality	Timber volume adequate, low quality.
6	Good	Good condition (healthy) and stocking.
7	In process of regenerating	Recently cut, regeneration is young.

The "Forest Stand Condition Map" (Tab I) is produced from the stand exam database of the Red Cliff Reservation. It is important to note, that stand condition is related ONLY to the "Primary" forest cover type identified for that particular stand. It does not reflect the condition of the "secondary" or "understory" forest cover types although these are inventoried.

From the map, we can see that a lot of the reservation forest appears to be in a mature condition. A number of parcels are also noted as being in the "High Risk" category. These stands are approximately 50-70 year old Aspen stands, with other Mixed Hardwood stands that have originated around 1912 or earlier. Some of these stands are located in culturally sensitive or preserved areas, and are areas that have great potential for old growth conditions. An area of aspen/birch being managed for hardwood will result in the labeling of this stand as "High Risk" as these species (aspen/birch) will be harvested and management operations will begin the conversion to hardwood species.

When assessing stand condition the code is effective when used correctly and combines factors associated not only with stand age, but with that of the cover type. Forestry is always concerned about the rotation age of a stand of timber. The rotation age is the age at which certain species of timber are considered to be mature and at risk of decline. In addition, when certain tree species with shorter rotational ages (such as aspen and birch which live 50-80 years) are carried over into longer than normal rotational ages, they are at an increased "risk" for loss due to mortality, insect and disease outbreaks, storm damage, and decay. Longer lived species, such as the maples, oaks, hemlocks, usually do not have many threats to survival at maturity since they do not begin to actually stop growing until much later in their life-spans. For example, hemlock may be suppressed in a shady understory for 100 years, before being released to full sunlight, and start putting on significant amounts of stem growth. In addition, the tree may continue to grow, albeit very little, for up to 400 to 800 years of age. This shows that forest stands may be mature according to the rotation age but can continue living and supporting life for many years. Table 2

is a listing by species, of some “typical” life spans of the more common trees found within the Red Cliff community, along with accepted “rotational” ages.

Table 2

Tree Species	Life Expectancy	Rotation Age
Aspen	70-90	50
Paper Birch	70-90	50
Balsam Fir	70-120	50
Spruce	250-300	100
Basswood	200	*
Sugar Maple	250-400	*
Hemlock	800	*
Yellow Birch	350	*
N. White Cedar	400	100
White Pine	200-450	130
Red Pine	150-300	120

* Indicates that tree species age is not a critical element in its management, and will respond to release at almost any age.

Sustained Yield of Reservation Forest

One basic question everyone wants to know is, “Are we over-cutting our forest?” Over-cutting of the forest can negatively impact the quality of the Reservation’s water resources and alter the habitats of many species of animals, birds, fish, and other living beings. Care must be taken during the planning phase of every cut to ensure that over-cutting does not take place. Over-cutting by non-Tribal landowners on or adjacent to the Reservation can have a serious detrimental impact to the Reservation’s water quality and streams through extensive erosion and sedimentation.

When speaking of sustained yield, we are talking only about limiting annual harvest levels to the equal amount of annual “growth” volume of the forest, which in theory, can be done every year, into perpetuity. Trees are a renewable resource and continue to grow unless the forest quality is stymied by disease or pest outbreaks. Once the forest is identified for specific management activities, many calculations must be taken into consideration including acreages of the forest cover types involved today, and the objective cover types that are trying to be promoted. The “Sustained Yield” of a forest is typically calculated in one of two methods, Area Regulation, and Volume Regulation.

Area Regulation

The BIA-Branch of Forestry completed a revised “Red Cliff Area Regulation Calculation” in March 2004, which outlined the annual number of acres that could be harvested over the next ten years. This was calculated for each “Primary Forest Covertypes” found at Red Cliff, and is broken out by both even-aged and uneven-aged timber management methods. Some caveats to take into consideration when looking at Table 3, are the following:

- Covertypes acreages used in the calculations are less than those shown in Table 1, since there have been acreage reductions due to land zoning, and riparian buffer zone delineations.

- Rotation ages and harvest systems are derived from standard silvicultural prescriptions developed by the US Forest Service, by tree species/covertime (i.e. "Manager's Handbook for Aspen in the North Central States", GTR NC-36, NCFES, USDA, FS.)
- The basic formula used to calculate the annual harvest area is as follows:

$$(\text{Total CT Acres} / \text{Rotation Age}) = \text{Annual harvest area (acres)}$$

For example, the stand exam data shows we have 904 acres of aspen lands within the reservation. If we wish to manage our aspen resource at no more than 50 years old (rotation age = 50) to avoid problems with decline and mortality, we would plug the following numbers into the formula:

$$(904 \text{ acres} / 50 \text{ years}) = 18.08 \text{ acres/year}$$

Since we typically set up management plans for 10 year increments, this number would be multiplied times ten (x10) in order to get an objective number of acres to harvest over the planning period, to bring the aspen resource under a sustained yield management system. With that in mind, the 2004 analysis for all lands is summarized in Table 3:

Table 3

*Red Cliff Annual Allowable Cut Calculation
Area Regulation*

Cover Type	With Management Objective of:	ACRES	R O T A T I O N A G E S	# T E R M I N A L S Y S	H A R V E S T S	* FINAL CUT ACRES	* SELECT CUT ACRES	* SHELTER 1ST ENTRY	* WOOD 2ND ENTRY	* 3RD ENTRY	TOTALS
ASPEN		904	50	1	EVEN	180.8					180.8
W. Birch		424	60	1	EVEN	70.7					70.7
AN/NA/NX	NH/OR/HH/PW	484	15		ALL		322.7				322.7
NA/NX	All others(NA)	2776	50	1	EVEN	555.2					555.2
N. Hwd		336	15		ALL		224.0				224.0
S. Hwd		5	100	1	EVEN	0.5					0.5
Oak		211	90	2	EVEN	23.4		23.4			46.9
Jack Pine		0	50	1	EVEN	0.0					0.0
Red Pine		40	120	4	EVEN	3.3		3.3	3.3	3.3	13.3
W. Pine		33	130	4	EVEN	2.5		2.5	2.5	2.5	10.2
Hemlock		345	15		ALL		230.0				230.0
S. Conifer		2	100	1	EVEN	0.2					0.2
Cedar		116	100	1	EVEN	11.6					11.6
B. Spruce		0	100	1	EVEN	0.0					0.0
Fir/Sprce		35	50	1	EVEN	7.0					7.0
TOTAL COM. ACRES		5711									
ACRES PER/10 YEARS		->	->	->	->	855.3	776.7	29.3	5.9	5.9	1673.0
ACRES PER/YEAR		->	->	->	->	85.5	77.7	2.9	0.6	0.6	167.3
25% TOTAL CUT		->	->	->	->	21.4	19.4	7.3	0.14	0.14	41.9

Thus, to conduct an "Area Regulated" timber harvest on the Red Cliff reservation beginning in 2004, 167.3 acres should be harvested annually using the various cutting methods listed. In addition, the calculation shows that of the total acreage, approximately 51% (85.5 of 167.3 acres) of the annual harvest area would consist of clear-cutting, and the remaining 49% would be made up mostly of selection harvests, and un-even aged management.

According to the IRMP Survey Results, Tribal Member Respondents indicated that they would like to see approximately 25% of forestry operations occur. The IRMP Committee then used this information to base its decision to have forestry operations occur at a 25% Annual Allowable Cut rate, with emergency operations to occur at no more than 50% of the Annual Allowable Cut. This would mean that forestry operations can harvest within a range of 25% of the annual growth volume that is not to exceed 50% of the annual growth volume for all forestry operations. The revenue created through these operations shall be directed to a land purchase fund according to Tribal Resolution 4-7-97-C.

Volume Regulation

Volume regulation is similar, in that it would identify an annual amount of timber that could be harvested from reservation lands based upon an "average growth volume". The average growth volume is calculated per acre and expressed in cords and board feet per year. You can then do the comparisons to see if your harvest volumes are over, or under, the annual net growth put on by the forest.

In the latest statewide forest analysis completed in 1996, growth was reported to exceed removals in pulpwood by 158 million cubic feet (1.2 million cords), and 695 million board feet of saw-timber between 1983 and 1995 in the state of Wisconsin. Since this is a large area with many different climates and topographies, a more specific, regional analysis is necessary to determine local growth rates.

The Bad River Reservation forest shares quite a few characteristics with Red Cliff's forest, such as timber types, soils, climate, and logging history. For that reason, it would be within reason to look at inventory data on file with the BIA related to Bad River, and apply it to calculations to be utilized at Red Cliff. More specifically, the 1993 Continuous Forest Inventory (CFI) would be very useful. In 1993, the BIA completed the latest CFI re-measurement, the fourth over the last 45 years, at Bad River. CFI is an inventory system where permanent plots are established throughout the forest, and the same trees are re-measured every 10-15 years. Foresters can then use the data to calculate various forest related statistics, such as annual growth rates and volumes, stand stocking, harvest volumes, mortality volumes, and regeneration. More importantly, changes in the forest can be tracked, and future trends can be projected to help us understand what impact today's treatments or lack thereof, are having on the forest. Currently, there is no CFI located within Red Cliff lands.

Table 4 has been developed from the Bad River data, to calculate an Annual Allowable Cut (AAC) level that reflects the potential harvest from Red Cliff lands. This AAC is based upon "net" growth; more clearly defined as the amount of growth the forest encounters, after subtracting current timber harvest levels, and natural mortality. In addition, the numbers reflect only those acres zoned as "Forest" by the Red Cliff Land Use Committee, and not otherwise reserved through other management actions (riparian or lakeshore reserved, etc). For this calculation, 5,711 was the number of "commercial" timberland acres used to generate the values to the right. A detailed spreadsheet showing the calculations is attached to the end of the Forest Resources section.

Table 4 shows the upper limits of what can be harvested from Red Cliff lands each year to be approximately 2,285 cords of pulpwood products, and 532.8 MBF of saw timber. Combined, they total approximately 3,351 cords of wood. (~ 260 truckloads or a 4' high pile that was 2.5 miles long)

Current Forest Management

Since 1948, forest management activities have been handled by the BIA, Great Lakes Agency for the Tribe. In the past, there has been a limited amount of communication between the Tribal membership and the BIA concerning forest management decisions. Even recently, the BIA has limited tribal input to that of the Tribal Council on projects affecting Tribal interests. The Tribe has various committees that give recommendations to the Tribal Council regarding these management decisions and are sometimes overlooked when quick decisions need to be made. It has been BIA policy to conduct business with the Tribal Council in this manner since we have a unique "government-to-government" relationship to maintain. There have been breakdowns in communication between the Tribal government, membership, committees, departments, and the BIA concerning management decisions. Therefore, the Tribe has decided to pursue the Integrated Resource Management Planning (IRMP) process to help improve coordination and communication between all parties.

Forest policy within the BIA is based upon a wide array of federal regulations, court decisions, and Tribal government actions. The basic statutory requirements BIA must follow are outlined in the **Code of Federal Regulations, 25 CFR, INDIANS, Part 163-General Forestry Regulations**. From this, the BIA Central Office section has developed "National Policy", covered under the 53-IAM. Additional local/regional policies are also included in the 53-IAM, under extra "Supplements" within each section.

Field work is completed by the BIA Forester. It is important to note that this position is shared between the Red Cliff, Bad River, and St. Croix Chippewa tribes. In addition, the agency has staff that work with timber sales, forest development, inventory and planning, and fire

TABLE 4

Species	cds/yr	mbf/yr
B. Fir	54.2	8.00
Tamarack	23.1	3.43
W. Spruce	43.4	15.42
B. Spruce	3.6	0.00
R. Pine	136.6	49.11
W. Pine	577.6	254.71
Hemlock	2.9	0.57
R. Maple	547.2	31.98
S. Maple	31.8	0.00
Y. Birch	11.6	0.57
P. Birch	97.6	2.28
W. Ash	29.6	0.00
B. Ash	47.7	1.14
BT. Aspen	22.4	5.14
Q. Aspen	564.6	146.20
W. Oak	1.4	0.00
Scrub Oak	0.0	0.00
Red Oak	46.3	9.14
Basswood	41.2	5.14
Elm	2.2	0.00
	2285.1	532.84
All Softwood	840.7	331.87
All Hardwood	1445.8	201.60
All-Total	2286.6	533.41

management. These positions share responsibilities with all non-contracted tribes throughout the state.

The BIA maintains a current stand exam database in which all of the Reservation lands are inventoried and categorized according to such site characteristics as forest cover type, size class, and density (stocking). In addition, other site-specific information has been collected and is recorded in the database. The data has been entered into the Bureau of Indian Affairs, Midwest Region, Operations Inventory System (OPINV) for ease of use, access, and for analytical purposes. The stand exam inventory database provides an incredibly valuable tool from which to manage the reservation forest. For each individually identified and numbered forest stand on the reservation, detailed records can be pulled up from the database to provide a complete listing of all cover-types, acreages, stand locations, and timber volume totals. A detailed "Stand Record Sheet" from the OPINV database can be found at the end of the "Forest Resources" section.

Stand exam data was collected for the Red Cliff forest during the 1993-1994 time period, with periodic updates to individual stands that have received silvicultural treatments. Data was collected through on-the-ground point sampling that included several sample plots per stand. Each point measured such things as tree-diameter, tree height, ground cover (seedlings), tree age, site index, habitat type, stand condition, insect/disease problems, accessibility, and operability.

The stand exam database is also now linked to the Great Lakes Agency's Geographic Information System (GIS) which is a very powerful land management tool. The BIA maintains the following "base theme" spatial data sets for the Red Cliff Reservation Trust Lands:

Table 5

<i>Code</i>	<i>Description</i>	<i>Code</i>	<i>Description</i>	<i>Code</i>	<i>Description</i>
SCT4	Surface Cover Types	RDS2	Roads	STR2	Streams
LAK4	Lakes	STR4	Rivers	LST4	Ownership
PLS4	Public Land Surveys	RRS2	Railroads	RBD4	Reservation Boundary

From this data, land managers are able to illustrate various site-specific and larger landscape level factors that all play important roles when making land management decisions.

Forest Development

The Forest Development portion of the BIA's forest management program, involves reforestation, forestation, and commercial forest stand improvement (CFSI) activities. It also consists of all silvicultural treatments applied to establish, promote, enhance, and maintain optimum growth of selected trees to produce "perpetual" yields of desired forest products under the principles of "sustained yield" forest management.

On the Red Cliff Reservation, the Forest Development program has been applied to ensure all forested stands that are harvested are regenerated using the most sound and economical methods available. Some examples that have been used on reservation lands in the past are clear-cutting (to naturally regenerate aspen and birch), selection thinning (to improve and regenerate northern hardwoods), shelter wood cutting (to improve and regenerate red oak), and tree planting (primarily red pine, white pine, and spruce) on non-forested areas to bring them back into commercial timber production.

Another program that is combined within the Forest Development Program is Forest Pest Management. This involves an active Insect and Disease detection and prevention program. If any outbreaks ever occur, this section of the program is responsible for submitting project proposals for funding to assess, mitigate, and develop treatments to alleviate the problem and protect the Tribe's timber resources.

Some treatments, especially ones against severe damaging agents and/or non-native species, may require the commercial application of pesticides. This has not been used in recent history, and any plans to utilize this method would require the full approval of the Red Cliff Tribal Council prior to implementation. The use of pesticides and herbicides for the treatment of various damaging agents is not well liked by the Tribal community. However, certain damaging agents can only be controlled through the use of these substances and would require educated decision making and controlled applications.

Timber Sales

This portion of the forest management program is closely related to the Forest Development program. Timber harvesting on the reservation has focused on capturing the value of mature timber before it is lost through mortality or degradation, while providing avenues for adequate natural tree regeneration. In addition, it is the basis for maintaining good forest health since the best insurance policy is to have a healthy vigorous stand of trees to fend off insects or disease.

The value of various timber products at any given time is variable. Wood markets fluctuate almost daily as the demands of various species, products, and volumes are needed. This in turn affects the price structure of amount paid for delivered wood products. It is for this reason that stumpage prices be current and up-to-date to ensure that any wood harvested is reflective of the current market situations locally, and regionally.

Since there have been no sales of timber on the Red Cliff Reservation recently, we can look at prices received at the Bad River Reservation for the 3rd Quarter of 2003. They should be similar since Red Cliff and Bad River share the same wood markets. This summary is for "Base Rates" for stumpage (standing value of timber):

Red Pine Sawtimber	\$136.00/MBF
White Pine Sawtimber.....	\$133.00/MBF
Red Maple Sawtimber.....	\$105.00/MBF
White Birch Sawtimber.....	\$115.00/MBF
White Spruce Sawtimber.....	\$70.00/MBF
Balsam Fir Sawtimber.....	\$54.00/MBF
Mixed Aspen Pulpwood.....	\$24.00/Cord
Mixed Hardwood Pulpwood.....	\$19.00/Cord
Mixed Softwood Pulpwood	\$17.00/Cord

Historically, the short-term monetary gain achieved by capturing the value of the timber at the time of harvest has over-ridden the overall ecological gain to be had by excluding certain areas from timber harvest (i.e. harvests in riparian zones). Today, timber harvest areas are carefully

analyzed and laid out not only for their timber volumes and values, but for the additional roles the forest plays within the entire ecosystem.

When it is determined that a forest area is ready for harvest, the following procedures are completed prior to any timber cutting:

Table 6

Timber Harvest Preparation

1. Authorization of Timber Sale – Tribal Council/Heirs	5. Consultation with FWS on T&E Species in Area	9. Finding of No Significant Impact issued (FONSI)
2. Property Lines Established	6. Consultation with SHPO/THPO on Cultural Sites on/near project	10. Forest Officer Report (FOR) developed, with silvicultural Rx identified.
3. Completion of timber cruise of stands within project	7. Archeological Surveys completed by Archeologist	11. Advertise, and take bids for harvest volume.
4. Riparian Zones Identified and marked for protection.	8. NEPA compliance, NOA of Environmental Assessment, Public Comment Period	12. Secure and approve cutting contract between logger/BIA/Tribe.

Forest Officer's Report (FOR)

The FOR is the main guiding document that is developed by the BIA Forestry Office for each timber stand being managed. In summary, it is a detailed description of the project area, an assessment of the current stand of timber on the site, and the planned goals and objectives of what the timber harvest will achieve. A sample FOR can be acquired by contacting the BIA Forestry Office. The following is a list of items that are typically addressed within the FOR on a BIA timber sale:

Table 7

Forest Officer's Report Contents

Introduction	Forest Stands Description	Consent of Owners
Description of Area	Objectives of the Sale	Form of Contract Used
History of Area	Silvicultural Method	Form of Advertisement
Topography (slopes/streams/buffers)	Forest Development	Consideration Given to Environmental Impact
Soils Description	Management Plan and Sustained Yield Objective	Map of Area and Appraisal of Timber Harvested
Forest Habitat Type	Timber Cruise Summary	BIA Approval

Timber Sale Administration

Once all of the above steps have been completed, the sale can proceed. The BIA monitors the logging activity while it is occurring. During this period, Foresters are busy with sale inspections, enforcing cutting contract compliance, scaling timber, and collecting stumpage monies.

It is important to note that all commercial timber cutting contracts and permits require the logger to deposit a "Performance Bond" with the BIA, before cutting can begin. This is typically 10% of the total estimated value of the contract. Any deficiencies in contract compliance, or damage to residual timber or the site, will result in retention of the bond by the BIA, to pay for remedial actions and/or for payment to the beneficial owners.

When the logging has been completed, all stumpage receipts collected by the Bureau are returned to the Tribe (tribal lands) or heirs (allotted lands). Currently, the Tribe has a resolution in place which directs stumpage receipts to be placed in an account for land acquisition. It is important to note that the BIA is required to withhold 10% of all timber sale proceeds as per 25 CFR 163.25 Forest Management Deductions, for deposit into the Tribe's "Forest Management Deduction Account". This account is dedicated for Tribal forest management activities only.

Fire Management

Currently, fire management on the reservation is limited to full suppression of all wildland fires. No areas have been identified as "Let burn" areas, since the tribal ownership is in a "checkerboard" fashion, and there are no large contiguous blocks of tribal ownership that could burn safely before they impact other resources, like residential homes and other private lands. Burning permits are issued by the Red Cliff Conservation Wardens, and are issued to a limited number of purposes and materials, such as brush, and woody debris.

Historically, fire has played an important ecological role in the reservation forest. It is a goal of the Tribe, to pursue the increased use of fire as a land management tool, especially in relation to the management of its tribal forest and forest products. A Red Cliff Fire Management plan has been completed to address some of these concerns and additional discussion is ongoing.

Timber Trespass

Federal guidelines related to the illegal cutting of Indian owned timber, can be found in 25 CFR §163.29, *Trespass*. In summary, it states that any individual who un-lawfully removes timber from Indian owned lands held in trust with the Federal government, will be liable for civil penalties and damages to the enforcement agency and the beneficial Indian owners, and will be subject to prosecution for acts of trespass. Damages are calculated at treble (triple) value of the highest valued products that could be obtained from the material removed.

All reports of illegal cutting are investigated by the BIA-Branch of Forestry. If it is determined there has been a case of timber trespass, foresters determine how much material was removed, by whom, when, and what the fair market value of the timber is. Demand for payment is then made by the BIA, to the responsible parties, for payment in full.

Every case investigated, is turned over to the Bureau of Indian Affairs, Midwest Regional Office for USDI-Solicitors Office review and possible prosecution by the U.S. District Attorney's Office.

Issues, Concerns and Opportunities

Forestry has garnered a lot of interest by the Tribal community and BIA. Impacts to the Tribal forest resource are impacts felt by each and every individual within the Tribe. For that reason, a lot of issues have been identified. Since there is such a long list, it has been easier to begin to "categorize" the concerns around the different facets of the forest management program.

Vision

To protect, preserve, and manage forest resources at a rate which allows for the best possible uses of the Reservation forests.

Goals

It is the goal of the Red Cliff Tribe to ensure that its forest resources are managed for the best possible use, through the use of sound ecological, silvicultural, and scientific forest management methods, and the input of the Tribal leaders, members, workers, and community.

Objectives

- Preserve tribal water quality through the use of Best Management Practices (BMPs) on all managed forest lands
- Protection of riparian buffer zones.
- Identify and preserve cultural, sensitive, and unique forest land areas on the reservation, for future generations.
- Increase the amounts of Pine, Oak, and Northern Hardwood forest cover types, while reducing the total amounts of Aspen/Birch forest cover type acreages. (AN, NA conversions to NH/Pine on proper sites)
- Develop silvicultural prescriptions and a cutting plan including soil/site/habitat type indicators to regenerate desired tree species.
- Develop timber sale "Green Sheet" or "checklist", to ensure project developments incorporate tribal input, in addition to scientific management requirements.
- Develop harvest permitting system, to include other non-timber commercial forest product harvesting (such as balsam boughs, bark, maple sap, etc.)
- Allow limited areas of even-aged management to ensure pioneer species such as aspen, pine, and paper birch are regenerated and not lost from the reservation forest composition.
- Incorporate and control the use of fire as a land management tool by developing a "Fire Management Plan" to be utilized by the Tribe.
- Identify and develop a Forest Development "Herbicide Use" section for the Tribal Pesticide Code.
- Develop timber sale offer system, allowing RC Tribal members preference on timber cutting contracts when offered, at fair market prices for stumpage.
- Develop "Visual Best Management Practices" to be utilized when near areas of special concern such as lakeshores, home-sites, and parks.
- Focus any commercial harvesting to be utilized, to employ, utilize, and benefit tribal members and the tribal economy.
- Develop a three year harvest plan with BIA and Tribal resource managers to be approved by the Tribal Council and updated annually.
- Improve wildlife habitat
- Improve aspen age class distribution
- General forest landscape principles will be incorporated into timber sale designs.

Land Resources

Description of Resource

The Red Cliff Tribe, like many other Tribes located in the United States, has a unique land history. Historically, the actual ownership of land to Native Americans was not a clearly understood concept. Native Americans regard the Earth as their Mother, who takes care of them and supplies life to all beings of the Earth. When the new people arrived on this continent, they began claiming lands for foreign countries and for themselves. As the continent became more and more populated, land grabbing and the push Westward became evident. Not realizing that there already existed groups of people with unique governmental and environmental philosophies, the new people began taking land for their own personal uses. The people who lived on this continent for many, many centuries were ostracized and forced onto reservations. Many treaties were developed to formally and legally place the Native Americans within the confines of the reservation boundaries as well as to secure hunting and gathering rights for these people.

Through these treaties and other acts of Congress, including the Dawes Act of 1887, the Red Cliff Reservation included 14,166.01 acres in 205 allotments. The Indian allottees each received a trust patent. The terms of the patents "restricted sale of the land for twenty-five years – unless there was good reason for early termination of the trust period, such as the acknowledged competency of the owner". Many allottees did not fully understand the language being used at the time to conduct their competency and many lands were taken illegally or very cheaply. "By 1937, 5,236 of the Reservation's heavily timbered acres had been alienated and the remainder clear-cut and burned". (from Draft Development of a Tribal Land Acquisition Program for Watershed Protection and Enhanced Tribal Access, March 2001, Flintsteel Restoration Association, Inc.)

The past shows us that land recovery at Red Cliff is a vital and necessary component to reclaiming the Tribe's original land base. While chairmen and councils in the past have been aware of the need for such an effort, no organized course has ever been charted to consistently address the need for recovering the original land base until recently. A group of Tribal members began gathering to discuss issues of the land and the future of the community and formed the Red Cliff Land Recovery Project.

The Red Cliff Land Recovery Project (RCLRP) was established in 1999 and is staffed by fifteen Tribal members. A director oversees all administrative and fundraising responsibilities. Monthly meetings are held to discuss land issues as they pertain to the RCLRP goal. The mission is to successfully reclaim and manage all the original Tribal lands within the boundaries of the reservation. With 14,000 acres of land as the original land base, this goal is clearly obtainable. The RCLRP sees the need for land recovery to be at the heart of moving toward a more powerful, self-sufficient sovereign nation.

Land education is an important factor to land recovery efforts for the good of the community. It is a priority for the RCLRP to play a pivotal role in community land education. This group has undertaken a series of workshops for the Tribal Council and other administrative employees on Indian Land tenure issues. It is vital that those in decision-making seats know the history of land at Red Cliff as well as real estate terminology. This will lead to community wide opportunities for heightened Indian land issues. This form of education needs to continue each and every year as the Tribal Council can potentially have new members each year.

At early RCLRP meetings, a series of priority parcels were identified. These tracts of land were deemed the most crucial to the land recovery efforts. Furthermore, the goal is to place these parcels into trust for the Tribe and future generations. Most of this land is shoreline property and totals approximately 460 acres, either privately held by non-Tribal land-owners, or land that is in allotted status. A recent recovery of 40 acres of land returned to trust lands was made possible with the help of the county. The RCLRP feels confident that the working relationship with various private owners and government agencies will continue.

In the past several years, the Tribe has made strides toward reclaiming parcels of land including the Tribal purchase of 80 acres from a timber company. This land will be used for much needed housing sites. A 58-acre parcel along Highway 13, which is a fruit and berry farm, is also one that the Tribe has recently purchased. This steady progression of land purchase is due to the heightened awareness and need identified by the RCLRP, the Tribal Council, and concerned citizens. According to the Bureau of Indian Affairs (BIA) annual realty report of 2002, the Red Cliff Tribe's total combined land holdings equal 7,982.35 acres. This number includes both Tribal lands, allotted lands, and other government holdings.

The Red Cliff Tribe has also re-enacted the Land Use Planning Board. This board has been given the task of reviewing land use patterns within the Reservation boundary and to develop an official Tribal Zoning Map. "The Planning Board is identified as the custodian of the map and has the powers to approve petitions for special permits and to hear and decide appeals from the denial of land use permits". Additionally, a Zoning Administrator has been identified to: "consult and cooperate with the Planning Board, investigate violations and give notices thereof and recommend prosecution in cases where violation remains uncorrected, to issue land use permits, and make recommendations to the Planning Board or Tribal Council concerning appeals arising from denials or concerns of application for special permits". (From Draft Development of a Tribal Land Acquisition Program for Watershed Protection and Enhanced Tribal Access, March 2001, Flintsteel Restoration Association, Inc.)

The Tribe contributes a portion of "shared revenue" funds towards the land recovery efforts. Also, the Tribe has passed a resolution which states that all money received through the sale of timber will go to land recovery. The Bureau of Indian Affairs retains 10% of these funds for continued forest management activities. The funds being identified for land shows the support for land recovery both morally and financially.

Various Federal and State agencies have funding programs to buy land. The Bureau of Indian Affairs has a pilot project titled the "Indian Land Consolidation Pilot Project". The purpose of this project is to identify allotments which are owned by many people through the passing of land from one family member to another. The Bureau is attempting to purchase these multiple interests from the allottees and then turn the land over to the Tribe for management purposes.

Another great source of support comes from the North American Wetlands Conservation Act (NAWCA). Through this act, the Tribe has become a partner in the Superior Coastal Wetlands Initiative. This is a partnership of nine agencies, organizations, and Tribal governments that is funded through the NAWCA grant program. The purpose is to protect and restore coastal wetlands and other ecologically important wetlands within the Lake Superior Basin of Northern WI. Additionally, land acquisition and the purchase of conservation easements are a major

component of the program. The program provides funding for land acquisition (permanent conservation status) in coastal areas, wetlands, and riparian areas. Increased land acquisition in these areas will greatly enhance the Tribe's watershed management capabilities.

The zoning development and land management the Tribe is currently undertaking will provide an integrated approach to the management of Reservation resources for future Tribal Members. A more unified approach to the management of the land will ensure that Tribal Members in the future will be able to engage in activities involving the natural resources of the Reservation as well as to afford housing and other social needs. Land acquired by the Tribe that is in "Fee Simple" status must then be placed into "Trust" through a Fee-to-Trust process. Once this occurs, the Tribe will have management jurisdiction over these parcels of land.

The Fee-to-Trust process begins with an analysis of the property through the use of the National Environmental Policy Act (NEPA). This act brings together various laws and acts created through the Federal Government to ensure that all acts are followed (examples: National Historic Preservation Act, Endangered Species Act, as well as informing nearby Tribes and Tribal Historic Preservation Officers and other environmental acts). NEPA involves community input as a requirement and has three levels of analysis which are: categorical exclusion, environmental assessment, and environmental impact statement. A categorical exclusion is for minor or administrative actions whereas the environmental impact statement is used for major actions. The environmental assessment is the most common analysis and incorporates a 30 day public comment period.

Once the analysis is complete a determination of whether or not hazardous substances are located on the property is completed and incorporated into the total cost of the property. If there are hazardous substances located on the property, clean-up activities should begin. Once this is complete the property can be placed into Trust. As the Red Cliff Tribe's land base currently has a "checkerboard" ownership pattern, future acquisition of land within or near the Reservation border will need to follow this process to place the land into Trust for the Tribe.

Vision

To reclaim all lands within the original reservation boundaries to fully accommodate the needs of the growing, thriving Tribal community and to manage these lands for the protection of environmentally sensitive areas, rare, threatened, and endangered species, and to educate on proper harvests of the forest and eco-sensitive development.

Goals

The Red Cliff Tribe will exercise stewardship over all lands within and next to the original reservation boundaries. The lands deemed most culturally sensitive, environmentally significant, and most plentiful for subsistence lifestyles will be carefully managed so as to insure a good way of life for all.

Issues, Concerns, and Opportunities

- Checkerboard ownership of the Reservation inhibits comprehensive management
- Preservation, protection, and restoration of Lake Superior Coast and unique landforms
- Protection of wetlands from development and degradation

- Preservation of forest land for subsistence lifestyles
- Development areas for future housing and economic needs to be identified
- Lack of an official Tribal Probate code

Objectives

- Continue seeking funding for land acquisition activities to develop system for locating and acquiring alienated lands within or near the boundary
- Develop a Tribal Realty program to manage and acquire Tribal lands
- Develop curriculum of land history and land tenure issues for K-12 students
- Reclaim and successfully manage original land base of the Reservation
- Seek funding sources and cooperative management approaches for land acquirement
- Assess current land base needs and uses
- Develop a Tribal Probate code.
- Develop working relationship with Non-Tribal members who own land within the boundary of the Reservation
- Identify areas for future housing and development

Wildlife/ Habitat Resources

Description of the Resource

Throughout history, the ancestors of the Red Cliff Tribe and the Anishinabe people have relied upon wildlife for survival, protection, and spiritual health. Each village or community was historically organized through the use of clans. Each clan had a representative in the natural world and duties of the community were divided according to the clans. Each clan would identify a speaker and the clan leaders would speak together and discuss the future of the entire village. Each clan had a voice and decisions had to be agreed upon by all clan leaders. This organization of society provided the people of the entire village security that their issues and concerns had been heard before any decisions could be made.

Each clan within the village had certain roles and responsibilities to perform to ensure that all of the village's chores were complete. These chores were identified through the symbolism of the clan animal to which the people were members. Originally there were seven clans of the people; the crane and loon clans were both leaders of the people, the fish clan or turtle clan were great thinkers and philosophers, the bear clan were the healers and protectors, the martin clan were the warriors, the deer clan were gentle people and were poets and artists, and the eagle clan were the spiritual leaders of the village. As the population grew, additional clans were needed to perform the many tasks of a growing community. Today, there are over 25 clans each with their own roles and responsibilities.

Each individual who is born to the Tribe becomes a member of the clan to which their father belonged. Great respect was given to the animals that represented these clans. The spiritual significance of these clans has not diminished. The animals that are representative of the clans are highly respected and worshipped, and it is a belief that what happens to these animals will also happen to the human beings. Through time and the Indian Re-organization Act, Red Cliff's government structure has changed from the clan system to the current form of government.

The Tribe defines wildlife as birds, animals, amphibians, insects and plant life that are important to the overall ecological health of the Reservation's forested community. There are many species of wildlife that live on, or visit, the Red Cliff Reservation. Some wildlife species can be found seasonally and several species reside here throughout the year. Many varieties of wildlife have a significant cultural, traditional, or spiritual importance to the people of Red Cliff. It is important to be able to provide wildlife areas on the reservation for all species and varieties of wildlife.

The Red Cliff Reservation is primarily composed of the Northern Forest ecotype and has similar wildlife species that occur in these areas. White-tailed deer, black bear, ruffed grouse, woodcock, snowshoe hare, cottontail rabbit, gray squirrel, and various waterfowl compose much of the game species on the reservation. Beaver, coyote, raccoon, fox, mink, otter, muskrat, bobcat, fisher, and weasel make up the majority of furbearers on the reservation.

Reservation wetlands, ponds, and estuaries maintain annual populations of breeding waterfowl. Waterfowl including Canadian geese, wood duck, black duck, teal, and mallard return annually to the reservation to raise their broods.

Non-game species of birds residing on the reservation include songbirds, predatory birds, and wading birds. Some songbirds likely to be observed are sparrows, robins, warblers, and finches. Bald eagles, red-tailed hawks, American kestrels, and barred owls comprise some of the predatory birds living in reservation forests. Wading birds such as the great blue heron, green heron, bittern, and killdeer are frequently observed along the waters edge of reservation wetlands, ponds, and streams.

Rare and threatened plants thrive in many areas of the reservation. Fir club moss, downy oat grass, hearheaf twayblade, white mandarin, mountain cranberry, arctic primrose, Chilean sweet cicely, dragonmouth orchid, michaux's sedge, livid sedge, sooty beak rush, bog arrow grass, and common hairgrass are examples of rare plants found on the reservation. Wild rice (*manoomin*) stands have also been established in many reservation ponds and estuaries. Some stands now produce enough rice that members are able to harvest for home use in limited quantities.

The Red Cliff reservation has many vertebrates, invertebrates, and plants that are not listed in the above paragraphs, but are important to maintain a rich biological diversity and to promote ecological health of the reservation. Some of these species are rare and threatened species and others are culturally important species, each possibly requiring the use of unique management methods and additional protection.

Invasive species are a major concern of the Tribe and require an inexhaustible amount of vigilance to control. Invasive species concerns of the Reservation include: populations of purple loosestrife, Canadian thistle, spotted knapweed, emerald ash borer, and gypsy moths. Many of these invasive species provide excess competition to native species many times out competing them for resources necessary to thrive. The Tribe is devoted to protect native species and to control the influx of invaders to the reservation.

The Red Cliff Tribal Reservation is a diverse landscape that provides habitat for a wide variety of species. The reservation residing on the northernmost point of the Bayfield Peninsula contains boreal forest, northern forest, wetlands, and riparian habitat types. Even though the sections of these habitat types are at times small and disjointed each is important for fostering the diversity of wildlife on the reservation.

The northern forest and boreal habitat types are composed of a mix of conifer and deciduous forests where aspen plays a significant role. Hardwoods are also plentiful in these areas providing habitat to a diverse amount of game and non-game species.

Wetland habitat types provide uniqueness to the reservation by providing habitat to many reptiles, amphibians, birds, and mammals. Wetlands on the Red Cliff Reservation are composed of upland wetland areas, beaver meadows, and coastal wetlands. Each of these sub-wetland types provides unique habitat and increased diversity of species. Vernal wetland areas are located primarily in the uplands and are mostly present in spring as the snowmelt occurs and melt water accumulates in various pockets. This provides habitat for many amphibious species and waterfowl. Beaver meadows and pond complexes provide excellent habitat for game and non-game species, amphibians, birds, and waterfowl. These complexes provide increased forage

for wildlife, large openings in the dense forest cover to ease migration, abundant nutrients for vegetative wildlife to grow, and niches for invertebrate species to flourish.

Another unique wetland type is the coastal wetland found at the mouths of a majority of the watersheds on the reservation as they drain into Lake Superior. These areas provide habitat for a wide variety of vegetative species to flourish. Many of these species are culturally important to members for medicine and for use in ceremonies. Amphibians are abundant in these areas as well as many invertebrate species. Coastal areas are important for waterfowl breeding. Many mammals use these areas for forage and for easing passage through the difficult terrain of Red Cliff.

Riparian areas of the reservation provide forage, thoroughfares, and breeding habitat for a variety of wildlife including unique flora and fauna. Game species, as mentioned above, use these corridors to travel back and forth between the above listed habitat types. Snowshoe hare and other small mammal species are also found in these areas. Furbearers such as beaver, muskrat, mink, and otter use the riparian areas in much of the same way as game by traveling along the system and either hunting, browsing, or grazing. Many non-game birds also thrive in the riparian cover and waterfowl use these areas to breed and raise their broods.

Habitat is provided for many species of mammals and other wildlife species throughout the reservation. The need for identifying and monitoring the extent that wildlife uses and visits areas of the reservation is evident. Invertebrates, vegetation, and threatened and endangered species have not been specifically listed for the reservation, but are consistent with those areas of Bayfield County and the local region. It is important to be able to provide habitat for these species of wildlife and other threatened and endangered species.

In conclusion, the Red Cliff Tribal Reservation, located in the extreme northern reaches of Bayfield County Wisconsin contains some diverse habitat and species. Habitat types consisting of northern forest, boreal forest, wetland, and riparian types interwoven through the reservation provide this diversity. Even while some types are disjointed and small they add to the uniqueness of the Red Cliff Tribal Reservation.

Vision

To manage, preserve, protect, and enhance wildlife populations and areas identified as containing habitat important to the sustainability of these populations.

Goals

Manage Tribal wildlife and habitat resources to maintain species diversity on reservation lands and to provide various habitats for plant and animal species that are significant to the spirituality, identity, survival, and uniqueness of the Red Cliff Tribe and Tribal Members.

Issues, concerns, and opportunities

- Habitat loss and destruction
- Wildlife corridors for migration
- Lack of population estimates for game species and other wildlife
- Harvest levels of species is mostly unknown

- Wildlife populations need monitoring and management
- Preservation and protection of culturally important species
- Critical habitat for threatened and endangered species
- Populations of invasive and nuisance species need to be managed and monitored
- Tribal community requires education about wildlife functions and cultural importance
- Human development encroaching critical habitat of wildlife
- Harvest of furbearers, big game, and waterfowl species by tribal members
- Unlawful harvest and poaching of wildlife can have a detrimental affect on populations

Objectives

- Acquire land for habitat protection, preservation, or enhancement.
- Educate Tribal Community about wildlife species, functions, and cultural importance.
- Monitor game and non-game animal species.
- Monitor migratory species and provide adequate habitat
- Provide habitat for culturally important species
- Work cooperatively with other agencies for management strategies
- Survey biological community of Reservation, inventory species, and develop baseline information on populations
- Incorporate the use of GIS for management purposes
- Preservation of critical habitat for rare, threatened, endangered culturally significant plants and wildlife
- Wetland and wetland species preservation
- Identify additional areas suitable for wildlife protection and habitat
- Invasive species control and management
- Education of respectful harvesting techniques
- Enforcement of proper harvest methods and harvest numbers

Fish Resources

Description of Resource

The Red Cliff Band of Lake Superior Chippewas has historically relied heavily upon its fishery resources on reservation, in the ceded territory, and in Lake Superior for subsistence. The value of the fisheries today not only includes the importance of a subsistence fishery, but also supports economic, recreational, cultural, and traditional values. The Red Cliff fishery resources are composed of the ponds and streams lying within the boundaries of the reservation, lakes and streams within the ceded territories, and the vast expanse of Lake Superior. Currently, Red Cliff protects and develops its fishery resources by monitoring and managing populations, restoring depleted populations of native species, and enhancing fish habitat.

On-Reservation Fishery Resources

The Red Cliff Tribal Reservation contains 8 different watersheds composed of streams that are geographically unique to the state of Wisconsin. These streams allow Tribal members to catch a variety of pan fish and game fish recreationally and for subsistence purposes. Reservation streams have historically provided spawning and nursery habitat for many of the native and non-native anadromous species found in Lake Superior. The habitat of the reservation streams have changed over time due to poor land use management which has resulted in degradation of water quality for fish. Today, Red Cliff is protecting, managing, and enhancing fish habitat on reservation streams. To perform these measures Red Cliff has worked with a variety of agencies to attain funding and technical assistance. Partnerships are also important for building a watershed management approach to restoration.

Anecdotal evidence and historical newspaper reports indicate that most streams located on the reservation contained populations of large brook trout that demonstrated anadromous characteristics. These brook trout were named "coaster" brook trout. Many tribal members recall catching these large fish in the 1930's through 1950's.

Species Common in Reservation Streams

Chicago Creek (T51N, R3W, Sec. 31)

Species of fish commonly found in Chicago Creek include: brook trout, brook stickleback, mottled sculpin and longnose dace. Brook trout are the most commonly captured fish species.

Clayton Creek (T51N, R3W, Sec. 31)

Fish species present in Clayton Creek include brook trout, rainbow trout, and mottled sculpin with brook trout being the most abundant species captured.

Frog Creek (T51N, R3W, Sec 17)

Brook trout are the most abundant species in Frog Creek. Mottled sculpin, rainbow trout, burbot, and brook stickleback are also present. This stream is virtually unaltered and due to its remote location it seems to be doing quite well with no management occurring.

"Grandma Pete's Creek" (T51N, R3W Sec. 31)

Brook trout are the most abundant fish sampled averaging 100% of all survey results. Grandma Pete's Creek has habitat suitable for brook trout, but the potential for coaster brook trout is

limited because of the steep gradient barrier and perched culvert immediately upstream of the creek mouth.

Raspberry River (T51N, R4W, Sec. 2)

Species diversity is greatest near the mouth of the river where the estuary acts as a nursery area for many species of fish. The St. Louis River strain walleye are known to migrate eastward along the south shore of Wisconsin and use the estuary of Raspberry River as nursery and feeding areas (Schram et al. 1992, Hoff 1996). Creek chubs and common shiners are the most abundant species found in the river, followed by white sucker, Johnny darter, and bluntnose minnow. Brook trout, coho salmon, rainbow trout, and brown trout have also been captured in Raspberry River at different times of the year. During assessments walleye, northern pike, yellow perch, smallmouth bass, rock bass, and bluegills have also been captured. The invasive Eurasian ruffe has been documented in the estuary of the Raspberry River.

Red Cliff Creek (T51N, R3W, Sec. 19)

Surveys have determined that Red Cliff Creek is the only stream on the reservation known to have a consistent spawning run of sea lamprey. Yearly trapping and removal of adult lamprey and periodic treatment using chemicals TFM and Bayluscide attempt to control the population in Red Cliff Creek. Similar to Raspberry River, Red Cliff Creek has an established population of Eurasian ruffe that are apparently limited to the estuary areas. Creek chubs were the most numerous species found, followed by white sucker, johnny darter, blacknose dace, logperch, brook sticklebacks, and sea lamprey ammocete. Brook and brown trout have been reported residing in Red Cliff Creek and have occasionally been sampled during spring and fall assessments.

Sand River (T51N, R5W, Sec. 14)

Mottled sculpin, longnose dace, and creek chubs are the most abundant fish present in the Sand River. Rainbow trout, brook trout, northern pike, yellow perch and Eurasian ruffe have also been captured during various sampling events. The mouth of the Sand River has a vegetated estuary, which may serve as a breeding/juvenile area for various species of fish such as northern pike.

Sucker Creek (T51N, R4W, Sec. 6)

Rainbow trout were the most abundant species sampled in the lower and upper sections. The lower section also had creek chub, brook stickleback, white sucker, black bullhead, mottled sculpin, bluegill and unidentified chubs present. Coho salmon and mottled sculpin comprised the remainder of the catch in the upper section. Low fall flows, combined with sand occluding the stream mouth present potential obstacles to spawning brook trout in Sucker Creek.

Of the 8 watersheds listed above, Red Cliff Creek and Raspberry River receive the most attention to rehabilitate brook trout populations and improve in-stream fish habitat.

Table 1: Species List of fish residing in Red Cliff Reservation Streams.

Brook Trout	Brown Trout	Eurasian Ruffe
Rainbow Trout	Mottled Sculpin	Central Mudminnow
Johnny Darter	Log Perch	
Sea Lamprey	Longnose Dace	

Small Mouth Bass	Carp	
Fine Scale Dace	Madtom	
Bluntnose Minnow	Northern Pike	
Horned Chub	Rock Bass	
Creek Chub	White Sucker	
Burbot	Lake Shiner	
Sunfish bluegill	Lake Chub	
Brook Stickleback	Common Shiner	

Lake Superior Fishery and Ceded Territory Waters

The fishery resource of the Red Cliff Band of Lake Superior Chippewa is composed not only of the creeks, streams, and ponds within the Reservation boundaries, but it also reaches out into the vast waters of Lake Superior and inland throughout the ceded territory. Lake Superior is important to Tribal Members by providing commercial and subsistence fishing opportunities while the inland waters of the ceded territory also provide recreational fishing, spear fishing, and other subsistence fishing opportunities.

The Red Cliff Tribe's commercial fishing rights are tribal rights and are reserved in treaties with the federal government (Red Cliff Tribal Code chapter 07 pamphlet). In 1972 the State of Wisconsin challenged these rights in federal courts. The federal courts upheld the fishing rights by ruling that the Tribes have the right to manage their resources and the State has only the right to assure that the resource is not being depleted (Gurnoe v. Wisconsin 1972) (Red Cliff Tribal Code chapter 07 pamphlet). In order to manage its fishery resource the Tribe maintains its own conservation wardens and fisheries department with a biologist and staff to assure protection of both the resource and tribal rights.

The commercial fishery in Lake Superior for the Red Cliff Tribe is an important resource for many tribal members. It provides employment to commercial fishing licensees and the people they employ. The fishery also creates business opportunities and provides sustenance to tribal members unique to only a few tribal reservations in the nation. With 40 commercial fishing license holders, Red Cliff has the largest number of active fishermen in the Apostle Island Region of Lake Superior. The principal fish targeted in the commercial fishery are lake trout, lake whitefish, herring, and chub. Historically, lake trout were the most sought after of the listed fish. Since the decline of lake trout due to sea lamprey predation and over fishing in the 1950's, Red Cliff's commercial fishery evolved from targeting lake trout to primarily a lake whitefish fishery.

Today's commercial fishery is governed by both an effort restriction system and a quota system. Tribal and State fisheries staff have developed a Statistical Catch at Age Model that provides a "snap shot" of the lake trout population at a given time in the Apostle Island Region of Lake Superior. This population estimate is used in a sub model that develops a "Total Allowable Catch" (TAC) for the region. This TAC is divided between the Bad River Band of Lake Superior Chippewas, the Red Cliff Band of Lake Superior Chippewas, and the State of Wisconsin. Each agency receives a "quota". This quota is the number of lake trout that may be harvested by an agency in a given year. Once the lake trout quota is reached the fishing season is closed. In addition to this quota system an effort restriction system is also used to manage the

commercial fishery. Historical catch per unit effort (CPE) by season is used in a rolling average to predict the number of lake trout caught per 1000 feet of net fished. By using the CPE data the agency fishery managers can estimate the total amount of net footage that needs to be fished to reach the lake trout quota. Since this system's inception, Red Cliff has never completely fished its quota.

The Red Cliff Natural Resources and Conservation Departments monitor the commercial fishery to ensure that fishermen are abiding by the negotiated agreements. The Natural Resources Department conducts routine stock assessments of lake trout populations in the Apostle Island Region, monitors commercial catches, and samples biological data of commercial fishery. Conservation wardens conduct routine statistical grid patrols to ensure nets are set properly, record effort information of nets set, and enforce compliance with the Lake Superior Agreement.

In 1983, through the Voight Decision, the Tribes re-affirmed their rights to hunt, fish, and gather in the ceded lands of Wisconsin, Michigan, and Minnesota. This decision allowed members to fish inland waters of the ceded territory using traditional gear such as gill nets and spears for walleye, northern pike, muskellunge and other species. The Great Lakes Indian Fish and Wildlife Commission manages the inland waters of the ceded territory. Red Cliff is a member tribe of the Great Lakes Indian Fish and Wildlife Commission and works cooperatively with their management efforts. In order to bolster populations and to replace fish traditionally harvested from the inland waters the Red Cliff Tribal Fish Hatchery raises and stocks fish into the lakes. Red Cliff also works with the Voight Task Force, landowners, and sportsman clubs to ensure that partnerships are built and concerns regarding the fishery are addressed.

Invasive Species

Invasive species continue to invade the waters of the Great Lakes threatening the balance of native and naturalized fish species. Currently, the Red Cliff reservation has a population of sea lamprey that inhabits a reservation stream, Eurasian ruffe thrive in some of the reservation bays and estuaries, and other invasive species are threatening the waters of the reservation. There is a need to continuously monitor for new species and develop management plans to control invasive species.

Currently, the Red Cliff Natural Resources Department manages its population of sea lamprey through integrated management techniques. These techniques include the use of intensive trapping of spawning adults, routine assessment of the population by U.S. Fish and Wildlife Service, and application of the lampricide (TFM). Management of other listed invasive species has not been undertaken to date.

Fish Hatchery

The mission of the Red Cliff Fish Hatchery is to provide a comprehensive fish hatchery program capable of providing eggs, fry, or fish for both on and off reservation stocking for rehabilitation, restoration, and supplementation of native fish stocks in Wisconsin inland waters and Lake Superior (Fischer 2001 Annual Report). The Red Cliff Tribe is dedicated to restoration and protection of species native to the Lake Superior Basin and is against the continued stocking of "Naturalized" species.

Recognizing the need for sustainable fisheries, the Tribe initiated and has improved on an annual basis its Fish Hatchery Program. The hatchery has reared and stocked over one million fry, fingerlings, and extended growth walleye into Lake Superior and inland Wisconsin lakes. One of the hatcheries greatest achievements was to rear a Lake Superior Basin strain of brook trout to mature broodstock age and size. The hatchery has three year classes of brook trout broodstock (Nipigon Lake Strain) that are producing eggs, fry, fingerlings, and yearlings for use by various agencies around Lake Superior. The Tribe is actively involved with experimentally marking, stocking, and assessment of coaster brook trout around the reservation waters of Lake Superior. The hatchery experimentally rears Lake Sturgeon in cooperative efforts with various agencies. The tribal hatchery is actively involved with educating children and the general public about tribal natural resources programs. The hatchery offers hands-on tours with schools, universities, churches, and other interested groups. There are internships offered to students from the local high school and colleges. Students are encouraged to work on fisheries related research at the fish hatchery and are allowed to utilize hatchery fish, equipment, and staff to accomplish these projects. The hatchery strives to be a productive fish rearing station while offering an educational component to many different groups. (Fischer Annual Report 2001)

Cooperative Efforts

Currently the Red Cliff Natural Resources Department is working in cooperation with many Federal, State, and Local agencies in the management of the Red Cliff's fishery resource. Management objectives are to enhance, preserve, protect, and restore Red Cliff's fisheries for continued use well into the future. The Red Cliff Natural Resources Department and Hatchery work in cooperation with a wide variety of agencies as shown below:

Wisconsin Department of Natural Resources	U.S. Fish and Wildlife Service
Great Lakes Indian Fish and Wildlife Commission	Trout Unlimited
Great Lakes Fisheries Commission	Chippewa Ottawa Resource Authority
Minnesota Department of Natural Resources	Michigan Department of Natural Resources
USDA Natural Resources Conservation Service	Bad River Band of Lake Superior Chippewa

Vision

The Red Cliff Band of Lake Superior Chippewa has abundant fishing opportunities for all members now and in the years to come.

Goals

The goal of the Red Cliff Band of Lake Superior Chippewa is to manage its native fish communities in waters of the Red Cliff Reservation, Lake Superior, and waters of the 1842 Ceded Territory, in such a manner as to provide continued use for tribal members and for future generations.

Issues, Concerns, and Opportunities

- Treaty Rights

- Reservation streams have unstable banks and erosion occurs in many reservation streams.
- A variety of physical, biological, chemical, and human related factors affect Red Cliff fisheries and their habitat.
- Threats of unsuitable flow, elevated sediment input and stream temperatures, and degradation of suitable reproductive habitat for fish.
- Restoration of Coaster Brook Trout in reservation shorelines and streams.
- Stocking of naturalized species by outside agencies should be discontinued and efforts should focus on restoration of native species.
- Commercial Fishery of Lake Superior is a mainstay for many of the members of the Red Cliff Band of Lake Superior Chippewa.
- Mercury contamination of fish.
- Increases in newly introduced exotic species, which threaten the health and well being of the Red Cliff fishery resource.
- Air pollution can have negative effects on the fishery resource. Acid rain can change chemistries of the streams. Even dust is involved with the increases in sedimentation of reservation streams.
- Increase research and assessment of the fishery resource.

Objectives

- Continue monitoring and management of Lake Superior fishery including completing assessments, increasing and diversifying research, monitoring use of fishery, and assessment of exotic species.
- Continue stocking walleyes in the waters of the 1842 Ceded Territory.
- Continue stocking of Coaster Brook Trout into the waters of Lake Superior and reservation streams
- Conduct routine habitat and fish population assessments of reservation streams
- Research and develop strains of native fish to stock in 1842 ceded territory including Lake Superior.
- Research and monitor other species in the Lake Superior Fish Community and develop baseline information for future needs i.e. Lake Herring, Sturgeon, etc....
- Creation of a Red Cliff Fisheries Management Plan
- Continue and develop exotic species management i.e. sea lamprey
- Create an exotic species management plan
- Increased opportunity for tribal members to catch quality fish both recreationally and for subsistence.
- Restore degraded streams to support optimum population levels of Coaster Brook Trout
- Continue work with Red Cliff Tribal Fishermen to keep the Commercial Fishing opportunity in Lake Superior

WATER RESOURCES

Surface Water

Description of the Resource

Long ago, the Ojibwe migrated to the Lake Superior region from the East and settled around the beautiful shores of Lake Superior or Gitchi Gami. The Ojibwe Tribes have an eternal spiritual connection to the area and many consider Madeline Island or Moningwanakauning as the spiritual center of the Ojibwe Nation. The abundance of fresh water and associated aquatic and wildlife were undoubtedly also important factors in the Chequamegon area becoming one of the most important cultural and transportation centers in North America. Throughout the centuries, the Red Cliff Tribe has been and continues to remain intimately linked to the Lake Superior Basin and its tributaries via many cultural, subsistence, and commercial uses. The Reservation and its waters are home to a wide diversity of animal and plant life. The Tribe considers Lake Superior and the water resources of the reservation and ceded territory to be a critical and primary component of Ojibwe life.

The Red Cliff Reservation is located on the beautiful shores of Lake Superior and includes 22.32 miles of shoreline. The near-shore portion of Lake Superior is characterized by scenic sandstone cliffs and large protected wetland sloughs at the sandy mouths of relatively healthy rivers. Above the sandstone lays the erosion-prone red clay soils that are typical of the southern region of the Lake Superior Basin. Lake Superior is the largest of the Great Lakes in surface area (31,700 sq. miles) and volume (2,900 cubic miles). Lake Superior could contain all the other Great Lakes plus three more lakes the size of Lake Erie. The lake's level is controlled by gates on the St. Mary's River at Sault Ste. Marie and may not exceed 602 ft. above sea level. It takes almost two centuries for the water to be completely replaced (retention time). Lake Superior is 350 miles long and 160 mile wide with an average depth of 483 feet, however, the deepest spot is 1,332 feet. The entire drainage basin is 49,300 sq. miles and the total length of shoreline, including islands is 2,726 miles.

Lake Superior becomes 40 - 94% covered by ice during most winters. Sometimes it freezes completely, but open water often persists in the center of the lake because the ice that forms there is blown or broken by strong winds. On average, Lake Superior's annual maximum ice cover is between 46 and 89 percent. Highest annual maximum ice covers were in 1963, 1979, 1994, and 1996. The lowest were in 1983, 1987, 1998 and 1999. The average annual maximum ice cover (27 percent) for the four winters 1998, 1999, 2000 and 2001 is the lowest four-year average on record.

Lake Superior experiences a variety of challenges including chemical pollution and several major pollution hotspots from a variety of sources such as electric utilities, mines, and other major industries. Mercury pollution is extensive and there are strict "recommended" fish consumption advisories throughout the basin. There is also dioxin contamination from waste disposal practices and continuing PCB pollution. Poor land-use practices threaten both water and land based habitat around Lake Superior. Exotic species are increasing and threaten both aquatic and terrestrial plants and animals. These are just some of the main threats to Lake Superior that need urgent attention. The Red Cliff Tribal Water Resources Program participates in national and international efforts to address these issues.

The Tribe has always placed a great importance on the Lake for biological, cultural, sustenance, medicinal, spiritual, and economic reasons. The Red Cliff Band derives its very identity from Lake Superior. The IRMP Survey indicated that over 81% of Tribal member respondents feel that Lake Superior is sacred. Additionally, 69% of Tribal Member respondents indicated that shoreline areas should be preserved. Tribal Water Resources including Lake Superior are extremely important to the Red Cliff Tribe.

The Red Cliff Reservation includes about 12 acres of inland lakes/reservoirs/ponds and 2,888 acres of wetlands. There are two rivers and six creeks whose sources are springs and seeps. The Red Cliff Reservation includes approximately 50 miles of streams/rivers within its boundaries which are connected to approximately 170 miles of rivers outside Reservation boundaries. Total miles of rivers and streams are 221.503 with an additional 85 miles of intermittent streams. There are many unnamed intermittent streams that play important seasonal roles in conveyance of water and in providing habitat for amphibians, wildlife, and many types of plants. These figures need to be reviewed and updated with time.

Chicago Creek (T51N, R3W, Sec. 31) is a small to medium sized coldwater stream originating from springs and seeps in the eastern edge of the Bayfield Peninsula, and flowing to Lake Superior. A small spring located a few hundred feet east of State Hwy 13 in Section 25 provides a permanent water source for the stream (Johannes et al. 1970). Additional water arises from the Red Cliff Tribal Fish Hatchery through the action of beaver in the hatchery outflow wetland where dams have diverted part of the outflow to a Chicago Creek headwater tributary. Identified potential effects on the historic natural condition of Chicago Creek include augmentation of water from the hatchery outflow, road crossings at State Highway 13 and Blueberry Road, riparian timber harvest, an ATV/snowmobile crossing near Blueberry Road, and historic discharge of sewage from the old Red Cliff community sewage treatment facility. The flow observed in Chicago Creek is approximately 1.77 cubic feet per second (cfs).

Clayton Creek (T51N, R3W, Sec. 31) is a very small spring fed creek that travels about ½ mile before entering Lake Superior. Water flow is estimated at 0.5 cfs. Bottom substrate is composed mostly of rock and gravel. Identified potential effects on the historic natural condition of Clayton Creek include a road crossing at State Highway 13 that is a barrier to fish migration and excessive littering of trash.

Frog Creek (T51N, R3W, Sec 17) is a small spring-fed stream that flows into Frog Bay at Lake Superior. Water temperatures favor cool and cold water species and dissolved oxygen levels are around 10 ppm. The bottom substrate is composed of rock, gravel, and sand. Stream flow is low and calculated around 0.35 cfs during sampling events in August.

Grandma Pete's Creek (T51N, R3W Sec. 31) is a small, spring fed creek is not shown on topographic maps and was named simply for point of reference. Habitat parameters have not been described for this creek, but general observations indicate a substrate of rock, gravel and sand. Sampling indicates that water temperatures hover around 10 °C. Identified potential effects on the historic natural condition of Grandma Pete's Creek include: a perched culvert at the State Highway 13 road crossing that poses a barrier to upstream fish migration, a second road

crossing 100m upstream from Highway 13, excessive runoff and potential pollution from a large impervious surface nearby and excessive littering of trash in the lower reaches.

The Raspberry River (T51N, R4W, Sec. 2) is a medium sized stream that originates primarily from an unnamed spring feeder stream that joins the river in T51N, R4W, Section 2 (Johannes et al. 1970, Figure 1). The many headwater tributaries drain an area of sandy red clay soils that erode severely during high runoff events (Johannes et al. 1970). The Raspberry River is known to periodically change course during flash floods caused by spring runoff or heavy rainfall. The main river stem is approximately seven (7) miles long draining a watershed area of approximately 7,700 acres utilizing over a hundred small finger drainages. The Raspberry River enters Lake Superior at Raspberry Bay where there is an extensive and ecological unique wetland system. Identified potential effects on the historic natural condition of Raspberry River include several road crossings: the Rowley Road crossing frequently washing out, excessive watershed and riparian timber harvest, excessive beaver removal in headwater tributaries, and extreme sediment loads caused in part by historic and present-day land use practices. Beaver are common throughout the river and play a major part in altering the hydrology of the watershed. The exotic Eurasian Ruffe has been found in the Raspberry River estuary, but evidently do not move upstream past the estuary areas. Hourly temperature readings indicate numerous temperature spikes from 20° C to 23.5° C during July and August.

The Raspberry River is one of the largest river systems within the Red Cliff Reservation and is of great importance to Tribal members for a variety of reasons. This area has been identified as one of the most culturally significant areas of the Reservation in the IRMP Survey Results. In addition, Tribal Members were asked if there are any special or culturally important areas that they would like to see preserved and protected at Red Cliff. The top response to this inquiry was for preserving and protecting the Raspberry River and estuary area.

Red Cliff Creek (T51N, R3W, Sec. 19) is a small, warm water drainage system (Johannes et al. 1970). Above the Red Cliff Tribal Fish Hatchery, base level flow is negligible through extensive beaver ponds. Red Cliff Creek is the only stream on the reservation known to have a consistent spawning run of sea lamprey and harbors a population of juvenile lampreys. It is monitored yearly for adult lamprey, and has been treated periodically by the USFWS with the chemicals TFM and Bayluscide. TFM and Bayluscide are both lampricides used to kill juvenile lamprey in streams and estuary areas. Similar to Raspberry River, Red Cliff Creek has an established population of Eurasian Ruffe that is apparently limited to the estuary areas. Identified potential effects on the historic natural condition of Red Cliff Creek include augmentation of water from the hatchery outflow, road crossings at State Highway 13 and Blueberry Road, and beaver impoundments throughout several areas of the stream. Effects of an auto salvage yard and an old closed dump adjacent to Red Cliff Creek are unknown at present. The Tribe has been involved in stream bank restoration and vegetation work on the upper reaches of Red Cliff Creek at the HWY 13 road crossing.

Sand River (T51N, R5W, Sec. 14) is a medium stream with spring water sources near the lower section. Sand River is periodically subjected to massively destructive flashfloods (Johannes et al. 1970). These floods like those occurring in the Raspberry River, have scoured out much of the in-stream cover. Beaver are common to the stream with several dams located along upstream

areas. Hourly temperature readings from several years indicate maximum stream temperatures above 20 °C in the summer. Stream flow was calculated to be 4.94 cfs. Identified potential effects on the historic natural condition of Sand River includes, road crossing at Hwy.13, riparian timber harvest, and erosion. The mouth of the Sand River contains a beautiful large wetland complex that is home to many unique species and rare wetland vegetation.

Sucker Creek (T51N, R4W, Sec. 6) is a small coldwater stream originating from springs and seeps in the northern part of the Bayfield Peninsula, flowing a little over 1 mile before emptying into Sand Bay of Lake Superior. Water temperature profiles of this stream seldom exceed 18 °C, even in the summer. Measurements taken in June estimated flow to be 1.41 cfs. Identified potential effects on the historic natural condition of Sucker Creek include a road crossing at County Highway K at the extreme headwaters, and riparian timber harvest.

The Tribe has a Water Resources Program designed to protect water quality in a variety of ways. Past program activities have been numerous and varied and included research and initiation of a Raspberry River Watershed Management project, adoption of a Tribal Wellhead Protection Plan, and community education.

In 2003, the Tribe began a monthly Surface Water Quality Chemistry Monitoring Program supported through an Environmental Protection Agencies – Clean Water Act 106 (EPA-CWA 106) grant. Eighteen different locations on Reservation streams and five in the near shore areas of Lake Superior are tested monthly for chemicals listed in the following table. Continued monitoring of baseline water resource conditions on the reservation is needed to make a scientifically defensible evaluation suitable for development of the Red Cliff Water Quality Standards. Problem areas, such as the auto salvage yard and the closed dump adjacent to Red Cliff Creek need site specific monitoring to assess possible impacts. Some streams are also impaired by heavy sedimentation and erosion problems resulting in loss of substrate and important habitat.

Chemistry Parameters tested in Surface Waters of the Red Cliff Reservation

Temperature (F)	Chromium ug/L	Nitrogen (N) mg/L	Metals digestion ICP
Dissolved Oxygen %	E.coli MPN/100mls	N (NO ₂ + NO ₃) mg/L	Metals digestion GF
DO mg/L	Hardness mg/L	N, Kjeldahl mg/L	BTEX ug/L
pH	Iron mg/L	Phosphorus mg/L	Benzene
Turbidity	Lead ug/L	Solids (TDS) mg/L	Toluene
Alkalinity mg/L	Lithium mg/L	Solids (TSS) mg/L	Ethyl benzene
Arsenic ug/L	Mercury ug/L	Sulfate mg/L	M/P-xylene
BOD mg/L	Molybdenum ug/L	TOC mg/L	O-xylene
Cadmium ug/L	Nickel ug/L	Lab filtration for TDS	1,2,3-Trichlorobenzene

For more information please contact the Red Cliff Water Resources Program

In 2004, the Water Resources Program began a three year project to document hydrological data on all Reservation streams. Data collected and research activities include flow rate, stream and lake stage data, meteorological data, and development of stage discharge curves for all rivers and streams. Channel morphology data will be collected including segment maps, active channel width, bank full width, soil-sediment types, large woody debris, riparian vegetation types,

aquatic vegetation types, sinuosity, biological survey, and erosion survey. This important project will help guide efforts for protection, enhancement, and restoration.

The program is also involved in Lake Superior protection, water quality standards development, watershed management planning through this IRMP, GIS/GPS development, community education, and in a variety of projects and programs with many agencies and environmental groups. The Tribe also participates in the Superior Coastal Wetland Initiative of the North American Wetland Conservation Act Program (NAWCA). This program is designed to enhance wetland and river protection efforts through restoration and land acquisition for permanent conservation status. The program receives assistance from a variety of agencies including the US Environmental Protection Agency, Bureau of Indian Affairs, WI Department of Natural Resources, the Natural Resources Conservation Service, and many others. The program continues to strive towards further protection of water resources and Lake Superior through data collection, cooperative projects, and program expansion. In this way, the Water Resources Program plays a critical role in the protection and restoration of water resources for Tribal members now and into the future.

Goal

The long-term goal of the Tribe is to protect and improve all Tribal waters to the extent that water quality and associated habitat fully support all aquatic life at levels that allow for continued reproduction and biological functions, safe commercial and subsistence utilization, and protection of aquatic cultural resources and public health.

Vision

To have water quality that is in excellent condition where all water resources including Lake Superior are free of chemicals, pollutants, and erosion problems and are able to support healthy habitats and a large diversity of native aquatic life. Water resources are of a standard that Tribal members are able to safely subsist on water resources and associated aquatic life without worries about fish contamination and other health threats.

Issues, Concerns, and Opportunities

- Severe erosion problems on river systems
- Ownership is inconsistent and complicates and inhibits comprehensive water resources management.
- Past and current forest management practices have degraded surface water quality.
- Littering and illegal dumping in rivers and ravines and old and improperly closed landfills could be affecting water quality.
- Education is needed regarding the importance of water quality.
- Wetland program is needed to collect critical wetland data and determine Tribal wetland acreage and locations.
- Groundwater Program is needed to collect critical groundwater data and to determine groundwater quantity and quality of the reservation.
- Invasive species and noxious weeds are affecting Tribal Water Resources especially Lake Superior.
- Possible contaminant sources are unknown and undocumented.
- Chemical contamination of Lake Superior is a major issue.

- Water quantity of Lake Superior and water exportation.
- Lack of funding to implement water resources protection and restoration

Objectives

- Continue to expand the Water Resources Program to include a Groundwater/Source Water Protection Program and a Wetlands Program.
- Development of Water Quality Standards for the reservation.
- Continue to support land acquisition efforts and participate in water quality program with land acquisition components.
- Require BMP's on development including, construction, road-building, forestry and other activities.
- Establish an Environmental Education Program and conduct community
- Events including education on water quality.
- Work with area schools and community colleges to offer education opportunities for Tribal members to obtain training or degrees needed to enter the career field of natural resources management.
- Institute a Tribal process for all development projects to ensure environmental regulation are followed such as NPDES, NEPA, and Tribal regulations and to increase communication on the Tribal and federal levels.
- Increase size of riparian buffer zones on Reservation rivers and streams and Lake Superior to reduce sedimentation of rivers and streams and to protect the lakeshore from bank and bluff erosion.
- Continue to participate in regional and international efforts for Lake Superior Protection.
- Reestablish the position of Lake Superior Protection Coordinator within the Water Resources Program.

Groundwater Resources

Description of the Resource

Groundwater is water held within the interconnected openings of saturated rock beneath the land surface. It occurs as part of the hydrologic cycle which involves the continual movement of water between the earth and the atmosphere. The hydrologic cycle shows that when rain falls to the ground, some water flows along the land surface to streams or lakes, some water evaporates into the atmosphere, some is taken up by plants, and some seeps into the ground. As water begins to seep into the ground, it moves through a zone that contains both water and air, referred to as the unsaturated zone. Water moves through the unsaturated zone into the saturated zone, where all the interconnected openings between rock particles are filled with water. The top of the saturated zone is called the water table. The water in the saturated zone is called groundwater.

Groundwater is often thought of as an underground river or lake but groundwater rarely occurs this way. Instead, groundwater is usually held in porous soil or rock materials, in a similar fashion as water that is held in a sponge. An aquifer is the term given to a rock unit that will yield water in usable quantities to wells or springs. An aquifer can be visualized as a giant underground sponge which holds water and which, under certain conditions, will allow water to move through it. The water-bearing rocks that compose aquifers consist either of unconsolidated (soil-like) deposits or consolidated rocks. Most consolidated rocks (otherwise known as bedrock) consist of rock and mineral particles of different sizes and shapes that have been welded together

by heat and pressure or chemical reaction into a rock mass. Aquifers of this type are commonly composed of one or more of the following rocks: sandstone, limestone, granite, or lava. Water flows through these rocks through fractures, gas pores, and other openings in the rock.

Ground water is subject to gravity and is almost always in motion, flowing from areas of higher elevation to areas of lower elevation. In the case of ground water in confined aquifers, it is pressure rather than gravity that makes water move. In this case, water flows from areas of high pressure to areas of low pressure. It is important to note that the rate of ground water flow, especially in confined systems, is very slow compared to the flow of water on the surface. Ground water is withdrawn from wells to provide water for everything from drinking water, water to irrigate crops, to industrial uses. When water is pumped from the ground, the dynamics of ground water flow change in response to this withdrawal. Excessive pumping of groundwater resources as well as drought conditions may deplete groundwater resources.

Recharge is the process by which aquifers are replenished with water from the surface. This process occurs naturally as part of the hydrologic cycle when rainfall infiltrates the land surface and through the percolation of water into underlying aquifers. A number of factors influence the rate of recharge including physical characteristics of the soil, plant cover, slope, water content of surface materials, rainfall intensity, and the presence and depth of confining layers and aquifers. Pressure, rather than gravity, is the driving force in moving ground water to the surface in an artesian well. When the intersection between the aquifer and the land's surface is natural a spring forms.

Groundwater contamination can occur in the capillary zone above the water table and below the water table. Contamination of groundwater can occur from impaired/non-functioning septic tanks and other onsite wastewater treatment systems, outhouses, agricultural activities, landfills/junkyards, auto salvage yards, abandoned wells, accidents, illegal dumping, leaking underground storage tanks, and highway de-icing (salting). The use of groundwater as a main drinking water source requires a high level of protection of groundwater from contamination

The largest source of potable water used within the Red Cliff Reservation boundaries comes from groundwater in the form of Tribal utilities, private wells, or artesian wells. This drinking water source is a sandstone aquifer of unknown dimensions. Springs and seeps from groundwater feed all of the reservation streams. The wetlands of the reservation and the surrounding area are crucial components of groundwater recharge. A Wellhead Protection Plan was completed for the Reservation in 1995. This Wellhead Protection Plan needs updating. A great deal of information regarding groundwater at Red Cliff remains to be determined but the Tribe continues to strive towards further understanding of this critical resource and remains committed to groundwater quality and quantity protection.

Issues, Concerns, and Opportunities

- Unsure of quality and quantity of aquifers.
- Possible contaminant sources are undocumented.
- Dumpsites, junkyards, and improperly/un-closed landfills could be affecting groundwater quality.
- Total aquifer draw downs are undocumented and recharge rates are unknown.

- Drinking water tests are conducted on Tribal building and Tribal Housing Units and can also be requested from the Water and Sewer Department.
- Annex 2001 and possibilities of exporting water out of Lake Superior Basin.
- Additional well closures are needed at abandoned wells.
- Auto-salvage yards are not up to Tribal Codes and could be affecting groundwater quality.
- Education is needed on how to maintain private wells and onsite decentralized wastewater treatment systems (mounds, septic tanks)
- Need to inventory private wells and onsite decentralized wastewater treatment systems, including non-functioning systems.
- Education is needed on water conservation and efficiency.
- Hydraulic conductivity, specific yield, storability, effective porosity, seepage velocities, and travel times are all unknown values.
- Red Cliff does not have its own household hazardous wastes collection but can participate with Bayfield County each year.

Objectives

- Acquire funding to hire a Groundwater Specialist and develop a comprehensive Groundwater Program under the Water Resources Program.
- Incorporate groundwater monitoring wells in the Water Resources Water Quality Monitoring Program to determine groundwater quality.
- Implement a project to determine aquifer levels and groundwater quality.
- Determine and preserve recharge rates and critical recharge areas.
- Document dumpsites, improperly or unclosed landfills, and all other possible contaminant sources that could be affecting groundwater quality.
- Participate in regional efforts to protect water quantity in the Lake Superior Basin.
- Conduct an educational campaign in the community regarding groundwater issues, including water conservation and efficiency, how to properly maintain wells and onsite wastewater treatment systems, and responsible lawn and garden maintenance.
- Conduct an inventory and determine approximate total aquifer draw downs.
- Locate and close all abandoned wells.
- Ensure Tribal Code compliance for auto salvage yards.
- Update the Red Cliff Tribal Wellhead Protection Plan (1995) and develop into a comprehensive Source Water Protection Plan. This includes mapping the source water assessment area, inventorying potential contamination sources, determining susceptibility of water supply to contamination sources, and communicating with the public.
- Work towards obtaining funding, training, and equipment to enable the Tribe to conduct a yearly Tribal household hazardous waste collection.

Wetland Resources

Description of the Resource

Wetlands are among the most productive ecosystems in the world, comparable to rain forests and coral reefs. An immense variety of microbes, plants, insects, fish, birds, and mammals can be part of a wetland ecosystem. Wetlands play an integral role in the ecology of the watershed. The combination of shallow water, high levels of nutrients, and primary productivity is ideal for the

development of organisms that form the base of the food web and feed many species of fish, amphibians, shellfish, and insects. Many species of birds and mammals, including half of the nation's threatened and endangered species, rely on wetlands for food, water, and shelter, especially during migration and breeding. Many fish breed and raise their young in coastal wetlands.

Wetlands provide values that no other ecosystem can including natural water quality improvement through the filtering of sediments, nutrients, and some pollutants. Wetlands' microbes, plants, and wildlife are part of global cycles for water, nitrogen, and sulfur. Furthermore, scientists are beginning to realize that atmospheric maintenance may be an additional wetlands function. Wetlands store carbon within their plant communities and soil instead of releasing it to the atmosphere as carbon dioxide. Thus wetlands help to moderate global climate conditions. They also can replenish groundwater, provide flood protection, shoreline erosion control, recreation, and natural products. Tribal Members use a wealth of natural products from wetlands, including fish, blueberries, cranberries, wild rice, as well as medicines that are derived from wetland soils and plants. Many traditional medicines are located in wetlands and riparian areas. Protecting wetlands in turn can protect our safety and welfare. Wetlands are the vital link between our land and water resources.

The Red Cliff Reservation holds 1.5% of its land as wetlands with 67.6 acres of wetlands greater than 2 acres and 143 wetlands under 2 acres in size. There are a total of 2,888 acres of wetlands associated with the watersheds of the Red Cliff Reservation. There are several large wetland complexes located at the mouths of Sand River, Frog Creek, Raspberry River and another located at Eagle Bay. The Sand River and Raspberry River wetland complexes are especially unique in that they contain unique coastal fen, coastal bog, northern sedge meadow, lagoon, and dry pine forest. Additionally, sites such as these contain significant populations of rare plants, insects, and birds, some of which occur only at Red Cliff and on the Apostle Islands.

The mouth of the Sand River is situated in a complex of wetlands separated from Lake Superior by a forested sand spit. The lower portions of the Sand River are bordered by northern sedge meadow and alder thicket. West of the lagoon at the stream's outlet are several spring runs. East of the lagoon is peat land with coastal fen, coastal bog, and tamarack swamp. Rocky headlands with significant outcroppings of sandstone cliffs occur on either side of Sand Bay. Most of the watershed is forested and undeveloped. The National Park Service owns most of the land in this site, though the Tribe holds title to the forested spit west of the river mouth. Overall the site supports a diverse assemblage of plants, animals and communities including many rare species. The Sand River, which enters Lake Superior at Sand Bay, supports regionally significant diversity among its aquatic macro invertebrates. This site features one of the least disturbed of the coastal estuaries and many rare species occur here.

Another outstanding feature of Red Cliff is the wetland complex located at the mouth of the Raspberry River containing coastal fen, coastal bog, northern sedge meadow, lagoon, and dry pine forest. Each of these communities harbors a diverse flora and some support significant populations of rare plants. There are records of rare birds, butterflies, and plants at these sites. Small but undisturbed stands of sedge meadow, alder thicket, and marsh occur along the lower stretches of the Raspberry River, which enters Lake Superior at Raspberry Bay. The site

contains an exceptional wetland complex with excellent examples of communities restricted to estuarine environments and is flanked by rocky headlands that also have very high ecological values. Some of the most extensive and ecologically significant outcroppings occur within the Reservation. The cliffs support rare plants uniquely suited to local conditions that do not occur in other habitats. (WDNR, WI Coastal Wetlands Assessment, 1997)

A source of support for the protection and restoration of wetlands comes from the North American Wetlands Conservation Act (NAWCA). Through this act, the Tribe has become a partner in the Superior Coastal Wetlands Initiative. This is a partnership of nine agencies, organizations, and Tribal governments that is funded through the NAWCA grant program. The purpose is to protect and restore coastal wetlands and other ecologically important wetlands within the Lake Superior Basin of Northern WI. Additionally, land acquisition and the purchase of conservation easements are a major component of the program. The program provides funding for land acquisition (permanent conservation status) in coastal areas, wetlands, and riparian areas. Increased land acquisition in these areas will greatly enhance the Tribe's watershed management capabilities.

The wetlands of the Red Cliff Reservation are incredibly unique and beautiful places that are crucial to the ecosystem of the reservation and the region. The restoration, management, and protection of wetlands are crucial components in maintaining a healthy environment for Red Cliff.

Issues, Concerns, and Opportunities

- The Tribe does not have a Wetlands program.
- Baseline physical, biological, and chemical data for wetlands of the reservation do not exist
- Wetlands have been located but data needs ground-truthing and needs to cover the entire Reservation
- Inventory of wetlands plants and animals is needed
- Unsure of the numbers of rare, threatened, endangered wetland plants and wetland dependent animals and birds
- Cultural uses of wetlands such as cranberry picking, medicine gathering, fishing, wild ricing, and other traditional activities should be available and protected for the community
- Wild rice re-seeding should continue to provide for subsistence of Tribal members and wildlife
- Purple loosestrife control is effective and should continue
- Invasive species documentation and control
- Recovery and restoration of Eagle Bay Wetlands should continue and be expanded if needed
- Community education on the function and importance of wetlands is needed
- New walking bridge is needed at Raspberry Bay
- Documentation of all beaver lodges and dams is needed and beaver management options need to be explored and discussed with the community
- Road maintenance issues have impacted wetlands

Objectives

- Actively educate and inform the community about the function, condition, extent, and importance of wetland protection at Red Cliff and conduct public outreach on the benefits of and opportunities for restoration on private land
- Develop and work towards a comprehensive Tribal Wetlands Program which encourages and directly supports wetland data collection, restoration, and enhancement
- Collect physical data on wetlands through a comprehensive wetland inventory and adopt and apply a wetland classification system based on landscape position, hydrology, and vegetation
- Establish a program to monitor and assess biological, physical, and chemical conditions of wetlands and integrate wetlands into existing surface water quality monitoring program.
- Undertake a comprehensive Tribal Wetland Conservation Plan
- Continue to conduct and monitor annual wild-rice reseeding projects
- Make regulatory decisions based on the watershed approach and continue implementation of watershed level planning
- Select upland rather than wetlands sites for development projects and avoid wetland alteration or degradation
- Maintain wetlands and adjacent buffer strips zones
- Delineate wetlands to know the location of wetland losses and gains. At a minimum, the system should include information on the location of impacts to a wetland(s), the size of the impact, a map of the site, and a description of the impact. The system will also track wetland restoration, enhancement, and creation activities.
- Conduct active research regarding effective wetland restoration techniques and methods to measure the success of restoration activities.
- Assess and when feasible initiate and maintain an active, funded wetland acquisition program that significantly increases the amount of wetland acreage protected each year
- The wetland program should develop and adopt EPA approved wetland water quality standards. Water Quality Standards are tools for protecting water quality that define the use of the water body and establish limits on pollutants that will protect the designated use
- Assess and when feasible assume a reservation-wide wetland permitting program to implement an enforcement mechanism that allows for compliance oversight and allows the Tribe to assess both civil and criminal penalties
- Participate in active review of federal and state wetland permits
- Assess and when feasible initiate and maintain a program that protects private wetlands through conservation easements, the purchase of development rights, or similar programs

SOILS

Description of Resource

The Soil Conservation Service (now the Natural Resources Conservation Service, NRCS) completed a detailed soil survey of all Tribal, allotted, and most alienated lands within the Red Cliff Reservation boundaries in March 1990. This soil survey identifies soil properties for land use suitability and limitations. Examples of these soil properties include: physical properties, such as soil texture, percent organic matter, and permeability; chemical properties, such as pH and shrink-swell potential; and engineering properties, such as stability and shear strength. The NRCS report highlights limitations and hazards inherent in the soil, suggests improvements to overcome the limitations, and discusses the impact of selected land uses on the environment. Details on soil properties and interpretations are available at the NRCS office.

Soil properties, at a regional landscape scale and local landform scale, provide many clues to understanding relationships among plant communities, hydrology, soil stability, and timber productivity. By examining these soil properties, it is possible to determine how different land uses may degrade the soil over time. The NRCS soil survey includes detailed information on suitable land uses for each soil type. For example, NRCS soil survey information on a soil type that is suitable for woodlands includes silvicultural limitations (e.g., planting restrictions, seedling mortality, wind throw hazard, response to fertilizer), operability limitations (e.g., equipment limitations, soil depth and depth to bedrock, type of water table), erosion hazards and soil compaction potential. The information contained within the NRCS soil survey on landforms and soils of the Red Cliff Reservation has been used in the drafting of this IRMP. Individual sites, however, must be evaluated in greater detail for specific development and resource use.

For this IRMP, the ID team worked with the NRCS to group soil types into natural land type groups, which serve as the basis for defining resource management actions. Land types provide coarse information on the properties, capabilities and limitations of different areas for broad-based land use planning. Seven major land-types occur on the Red Cliff Reservation: Upland Clay Plain, Steep Clayey Ravines, Sloping Transition and Sandy Soils, Near-Shore Bedrock Controlled and Loamy Till Soils, Coastal Wetlands, and Floodplains. These land types were formed by different geologic processes, derived from different materials, and have distinct landforms. They are distinguished from one another by different soil materials, vegetation, and hydrology. These land types are briefly described below.

Description of Land types on the Red Cliff Reservation

1) UPLAND CLAY PLAIN

Clayey Till – Bergland, Pickford, Hibbing, Buhl Soils. A portion of the Reservation lies within a landscape that is typically known as the clay plain. The clay plain is defined as a broad, flat landscape where soils are typically red clay 5 feet thick or more. This landscape usually contains gently sloping convex landforms (2-6% slopes), lying between steep ravines. However, the clay plain around the tip of the Bayfield peninsula tends to have more relief than the typical clay plain. A large portion of the upland clay plain within the Reservation is a combination of rolling topography with moderately well drained clay with somewhat poorly drained pockets (2-6% slopes) and strongly sloping well drained clay (6-15% slopes). A small portion of this landscape is more or less flat (<2% slopes), resulting in a mosaic of moderately dry and saturated soil conditions, with ponding of water in any minor depression.

Soils are typically clayey (35-60% clay) with a thin (3-10 inch) silty or loamy cap, with little or no surface organic matter. Since the clay soils have a very slow permeability rate, rainwater either ponds on the surface, evaporates, or moves into stream systems as surface runoff. Very little groundwater recharge occurs here. Most of the clay plain is currently covered in forests comprised of: aspen, Balsam Fir, Red Maple and scattered White Pine and White Cedar.

2) STEEP CLAYEY RAVINES

Clayey Ravines – Udorthents (“young” soils lacking development). Soils in these areas formed where streams have cut deep, narrow incisions in the clay. The slopes are very steep, typically ranging from 25-60%, and are relatively unstable, with slope caving and slumping common. These clayey soils are commonly underlain by stratified sandy and loamy materials within 40 to 60 inches of the surface. Slumping is particularly active in these areas due to undercutting of the looser sandy soils, which causes the overlying clay to collapse into the ravine. Sandy layers in this area may be conduits for groundwater recharge, further increasing susceptibility for slumping. These clayey ravines have a greater conifer component than other land types. Tree species diversity and age structure is also greater than in other areas due to less frequent historical fire events, difficulty in harvesting trees and unsuitability for clearing or development. Heavier concentrations of White Pine, Balsam Fir, aspen, and scattered White Cedar grow in these steeper soil areas.

3) SLOPING TRANSITION AND SANDY SOILS

Moderate to steep sloping landscapes lying adjacent to the clayey basin rim define these transition and sandy soils.

Transition Soils (loamy sand till, fine sands and stratified soils) – *Menominee, Bohemian, Brimley, Richter, Alcona, Rousseau Soils*. These materials were reworked by wave action when the lake was at a higher elevation than at present. This area has numerous seeps and springs, where subsurface water flow from upslope landscapes comes to the surface, forming the headwaters of many tributaries running into larger Raspberry and Sand Rivers that run through the Reservation.

Sandy Outwash, Deltaic and Beach Deposits – Vilas, Karlin, Rubicon, Au Gres, Kinross, Croswell Soils - Upland sandy areas were formed along former shorelines of Lake Superior, when the basin was filled with glacial meltwaters. The slopes in these sandy deposit areas are gently sloping to steep. Glacial processes typically left deeper sand as beaches or deltas on upslope positions, resulting in recharge areas which supply cold groundwater to the headwaters of many streams on the Reservation. Rain water percolates into deeper soil layers until reaching finer-textured materials below the sands. It then moves laterally and comes to the surface as seeps in places where the sands thin out above the finer materials. Upland sandy areas currently support primarily Red Oak, aspen, Sugar Maple, Red Maple, Basswood, and Paper Birch forests.

4) NEAR SHORE BEDROCK CONTROLLED AND LOAMY TILL SOILS

The sandstone bedrock at the tip of the Bayfield Peninsula controls the topography adjacent to Lake Superior. In some areas, particularly close to the shoreline, shallow soils formed in the decaying rock. These soils range from sandy to sandy skeletal soils overlying the bedrock. In

other places within the landscape glacial till has been deposited over the rock. These soils have varying depths of the till over the bedrock from shallow (10-40 inches of soil) to deep (>60 inches of soil). The slope of this land type ranges from gently sloping to moderately steep. The two different soil types that occur within this landscape are described below. Forest cover on these soils consists of Sugar Maple, Eastern Hemlock, Balsam Fir, and White Pine.

Bedrock Controlled Soils – Peshekee, Kolberg, Onota, Deerton, Abbaye, Zeba Soils.

These soils have varying depths of soil (0 to 40 inches) over the bedrock. The soil texture ranges from sand to loam over the bedrock. In addition, the drainage class ranges from excessively drained to somewhat poorly drained in the lower landscape positions. Both the sandy and loamy soils support productive tree growth including Sugar Maple and Hemlock due to the excellent organic duff layer and additional moisture availability which occur from the proximity of these soils to Lake Superior.

Loamy Till Soils – Gogebic, Sarona, Wakefield, Tula Soils

The loamy glacial till adjacent to the bedrock controlled area generally has a stony surface. The drainage class of these soils ranges from moderately well to somewhat poor and the surface texture ranges from sandy loam to loam. The vegetation varies according to the drainage and surface textures, with the loam surface texture providing the most nutrients and moisture holding capacity for optimal tree growth.

5) COASTAL WETLANDS

Organics, Wetlands – Cathro, Seeleyville, Markey, Rifle Soils. Primarily found in Sand, Little Sand, Frog and Raspberry Bays, these wetland areas consist of thick organic material, generally underlain by fine sands, with thin layers of silts and clays. This layering occurs because of the landscape position at the mouths of streams and the continually saturated conditions that prevent decomposition of dead plant matter. The vegetation of the coastal wetlands is typical of a peat land/ marsh complex, with alder, sedges, and stunted Tamarack in the peat lands, and cattail and other emergent wetland plants in the marshes. These wetland areas provide excellent habitat for many forms of wildlife.

6) FLOODPLAINS

Alluvial Soils (floodplains) – Arnheim, Moquah Soils. This soil type occurs in the floodplains of the Sand River, Raspberry River and Red Cliff Creek, where level landscapes are subject to flooding and high water tables. Soils are variable in drainage and texture, typically consisting of silty and loamy deposits, but may occasionally be stratified sands, gravelly or clayey. The drainage class is predominately poorly drained with moderately well and somewhat poorly drained pockets. These areas are generally rich in organic matter, and support lowland hardwood forests consisting of: Black Ash, Balsam Fir, and occasional White Cedar.

Issues

- Extensive logging and subsequent fires around the turn of the century have significantly altered the landscape. The 2-6 inch duff layer on top of the soil was burned off. The altered hydrologic characteristics of the landscape may have accelerated the erosion process of Reservation soils.

- Construction activities and some present-day forestry practices near rivers and streams may exacerbate soil erosion on the Reservation and increase sedimentation to the watershed.
- Soil conditions have direct impacts on site suitability and costs associated with housing developments. The Band must consider such issues as soil suitability for roads, foundations, septic, erosion potential, and off-site effects of runoff prior to development projects. Comprehensive planning, including evaluating site potential, is necessary if soil related problems are to be avoided.

Goal

Realizing that different soil types have properties that make them better or less suited for different land uses, minimize soil loss and promote proper land use activities by basing decisions on soil survey information.

Objectives

- Use the soil survey information for basic land use planning, resource management, and decision-making on the Reservation.
- Conduct field visits to determine site-specific soil properties prior to development of management actions.
- Protect unique coverytype areas based on soil/site/habitat type to preserve a high level of ecological diversity on the Reservation.

Air Quality

Description of Resource

The air quality of the Red Cliff Reservation has always been higher than urban locations due to a smaller population and fewer automobiles. Historically the air has been described as "sweet and fragrant". The current quality of the air is unknown and can be difficult to visualize, measure, and regulate. However, the protection of air quality should be an important priority in the management of the Tribe's natural resources.

The quality of Red Cliff's air is affected in two main ways: from sources within or near the Reservation boundaries and from sources hundreds or thousands of miles away. It is known that air quality at Red Cliff is affected by emissions from power plants, industry, automobiles and other vehicles, landfills, wood-burning stoves, dirt roads, and trash burning. Currently, illegal dump sites of trash and animal carcasses, and the burning of waste and recyclables creates offensive odors and air toxins.

Air quality can have a large impact on human health. One way that this can occur is from particulate matter. These are tiny particles of materials like road dust or wood smoke that are inhaled but can not be exhaled from the body. Exposure to particulate matter can increase the occurrence and severity of sinus infections, respiratory disease, allergies, and asthma. Some sources of particulate matter at Red Cliff are wood-burning, trash and recyclable burning, and dirt roads.

Other effects on human health from the air include cigarette smoking and indoor air quality. The Tribe currently has various programs for smoking cessation and prevention for all age groups and all levels of addiction. The Tribal Health Clinic has programs available to monitor the extent of lead and asbestos in older buildings. Mold, in buildings and homes, is another large problem which occurs naturally that harms the health of humans and results in costly clean up activities. Tribal buildings and businesses need to assess the extent of air filtration in public areas. Intake vents and smoking areas may or may not be adequately filtering all particulate matter before entering into the public realm. Facilities where smoking is allowed that do not have adequate filtration systems are harming the health of Tribal Members and the general public.

Air quality is also affected by the presence of air toxins. Air toxins are generated within the Reservation and from air deposition. Air toxins can accumulate in humans and animals and cause many health effects. Some toxins also accumulate and get more concentrated as they pass up the food chain. When humans, predatory fish, mink, otter, eagles, turtles, etc., eat contaminated fish species, the toxin is magnified as it cannot leave the body. Some sources of air toxins are from air deposition of pollutants generated from hundreds or thousands of miles away. Some nearby sources include a coal-burning power plant, other industries, automobiles, and burn barrels in the regional area.

The Treaty/Natural Resources Division has been taking steps to improve the Reservation's air quality. Ongoing burn barrel collection has been taking place and ex-burners sign a pledge to end the practice of household burning. Many burn barrels have been collected and there are few Tribal Members who still use them. Some Tribal households, and main businesses of the

Reservation, burn waste or recyclable materials and degrade the quality of the air in terms of health effects and general aesthetics to the community. As this is a health protection issue, as well as environmentally degrading, it should be a banned practice for membership and constituents of the Red Cliff Reservation that is both legally binding and enforceable.

Air quality is classified following the national Ambient Air Quality Standards (NAAQS) that are determined by the U.S. Environmental Protection Agency. Air quality regions are currently described by class designations. These regions can then be re-designated to a higher class of protection if it meets certain standards. Air quality that meets these standards can then be further designated depending on how much the air quality would be allowed to be degraded. Class I allows a moderate amount of degradation and Class III allows the most degradation. Currently, Red Cliff's air is designated as Class II. Tribes have the right to re-designate their air quality designation from Class II to Class I for further protection of the quality of the air. Having Class I air quality and designation would allow the Tribe to have a say on future developments near the Reservation which may degrade the quality of the air. Certain variances and exemptions can be made for reasons of resource management (such as prescribed burning for vegetation management) by the Tribal Council.

Issues, Concerns, and Opportunities

- The Tribe does not have an Air Quality Program
- Codes and ordinances for the protection of air quality need to be defined.
- Burning of waste negatively impacts air quality
- Increased asthma, allergies, and respiratory illness cases in the community
- Old dump sites need assessment and cleanup
- Road dust should be controlled without using hazardous materials
- Work with local, State, and Federal agencies to further protect air quality
- Educate the community on air quality and health effects
- General air deposition of toxic pollutants harming human health
- Non-point sources of air pollution (fires started with oil, gas, kerosene, tires, etc.)
- Education of indoor air quality issues (building ventilation, mold problems, secondhand smoke, etc.)

Vision

Improve and protect the air quality of the Red Cliff Reservation.

Goals

Establish an air quality program that includes air monitoring from local, regional, and national sources and provides education to Tribal Members and the Tribal Community which allows for the Members of the Red Cliff Tribe and surrounding community to breathe freely.

Objectives

- Establish Air Quality Program within the Treaty/Natural Resources Division
- Establish air quality monitoring program on the Reservation
- Obtain available air monitoring data for the region in cooperation with other Tribes and agencies
- Establish a monitoring system for mercury and total suspended particulate matter

- Investigate feasibility of establishing Air Quality Codes in the Red Cliff Code of Laws
- Work with local, regional, and national agencies to seek attainment of Class I Air Designation.
- Examine and implement method of improving air quality through controlling and reducing local sources of pollution
- Participate in national and international efforts to reduce air emissions and air deposition
- Educate the community on indoor, and outdoor air quality, air toxics, and ways to reduce negative effects on air quality
- Advocate for and implement alternative energy for cleaner air
- Install HEPA filters in Tribal places of employment, community centers, and residences
- Increase smoke ventilation systems in smoking allowable facilities
- Assess extent of mold in housing and other buildings and repair
- Removal of asbestos in Tribal Buildings and training on cleanup

Agriculture

Description of Resource

Red Cliff's main agricultural crop can be considered the vast resources of Lake Superior. Subsistence fishermen have been harvesting fish from these waters for survival for many years and continue to do so today. Fishing Lake Superior can be described as agriculture as there are many fish hatcheries around the Lake Superior basin which release fish species into the lake. Usually these fish have tags on them identifying which agency released these fish and where. Valuable information can be obtained from reporting any tags found including the migration patterns and habits of fish species, lake current activity, and spawning areas.

The Red Cliff Tribe currently operates a large fish hatchery and specializes in native fish species regeneration. Extra care is taken to harvest the eggs from native fish and then to raise them to a releasable size. There are many cooperative efforts in stocking fish into various lakes including Lake Superior. The Tribal Fish Hatchery has developed an excellent reputation for raising and stocking native fish species including Coaster Brook Trout. The Tribe and other agencies are currently developing an Aquaculture Demonstration Facility that would demonstrate and educate on fish hatchery operations.

There are areas of the Reservation that contain soils that are uniquely suited to agricultural uses when viewed in the context of the microclimate effects of Lake Superior. These soil areas are identified as Agricultural Reserve Areas (see Red Cliff Land Use Plan Map). Soils in these areas are uniquely suited for the production of vegetables and fruits including: raspberries, blueberries, strawberries, apples, plums, and pears. It is essential that these areas be protected from housing development in order to preserve sections of the Reservation that are suitable for food production.

Traditional agriculture to most would mean farms and gardens. Red Cliff currently operates a community garden and has recently purchased a former dairy farm that contains an old fruit orchard. Plans are currently being developed that would establish a Community Farm that will eventually provide vegetables, fruits, poultry, and pork to community members. Garden plots will be available for families to grow their own vegetables. Many people tend their gardens in their own backyards and send these contributions to the dinner table. Although the soil may not be the most suitable for growing larger crops, there are techniques available that have been proven to be successful for smaller crops. The Tribe offered several classes on how to build hoop houses which is one technique to use when attempting to garden in poor soil. A group of people even went throughout the community building these hoop houses for elders or whoever wanted them. These hoop houses act as a raised bed garden with a clear cover that acts like a mini-greenhouse.

There are many apple orchards and berry farms in the area. These farms have become very successful and are renowned as "Bayfield orchards". The close proximity to Lake Superior may have a large effect on these crops as there may be increased moisture in the air and somewhat longer growing seasons than inland farms. The Tribe has never developed an agricultural plan or orchard, but with the recent purchase of an old dairy farm that contains an old fruit orchard, many possibilities are available.

Maple trees also provide the resources necessary to provide a form of agriculture. These Tribally important trees have supplied the people with Maple syrup, sugar, candy, and taffy. Historically, the production of Maple syrup was used by families for sustenance and over the years became big business. Education on proper harvest of this resource should be available to all Tribal Members so as not to negatively impact the species. Additionally, forest management should provide for Traditional harvests of maple sap in areas suitable for a Maple stand using available soils information.

Manoomin, or wild rice, is another vital component to Reservation life and has sustained Tribal Members for centuries. In fact, the main reason Tribal people came into this territory was the search for the "food that grew on water". This spiritual journey led the Anishinabeg people to this area many, many years ago. The wild rice population has since dwindled down over the years and an active effort to restore the native population is ongoing. Wild rice is not only a source of food for Tribal Members, but also a significant cultural resource that should be protected and restored. Currently, genetic modification of this resource is being researched and may potentially invade native stands. If this occurs, the native population of wild rice may become extinct and replaced with the genetically modified organism. The Red Cliff Tribe currently has a resolution in place which asks for the abandonment of the research to genetically modify this cultural and traditionally important resource.

Vision

Develop a sustainable agricultural plan which provides Tribal and Community members a chance to grow or harvest their own produce through the use of gardens and to provide adequate opportunity for Tribal Members to harvest plants which occur naturally with little impact to the natural resources.

Goals

Establish sustainable agricultural production within the boundaries of the Reservation including gardening and natural harvest methods (i.e. berry picking, ricing, etc.) and provide Tribal and Community members with the opportunity to grow their own food in a community garden and to educate on the benefits of eating "locally-grown" produce and how to harvest naturally occurring plants and berries with little impact to the natural resources.

Issues, Concerns, and Opportunities

- Improved awareness of community gardens
- Improved awareness of diet and health
- Improve composting activities to provide good fertilizer
- Positive health effects from eating locally grown food
- Enhance wild rice population within the boundary of the Reservation
- Areas for future Maple stands to be identified for cultural purposes
- Soils information is available to locate adequate agriculture needs

Objectives

- Establish agricultural committee
- Establish sustainable agricultural farm
- Continue and enlarge community garden activities

- Education of proper health and diet to all
- Develop agricultural farm plan for recently purchased old dairy farm property
- Provide Tribal members and Elders with gardening activities
- Identify area for increased composting activities
- Identify areas for Maple Sugar bush activities
- Increase population and density of Wild Rice.
- Education of proper harvesting techniques for cultural resources

Housing

Description of Resource

The Red Cliff Tribe was initially called the Buffalo Subdivision after many attempts by Chief Buffalo to secure the land for his families use. Chief Buffalo always knew Red Cliff to be his home and led a delegation to Washington D.C. to secure the land for his people. There is a very unique story of how the Buffalo Subdivision was set aside for Chief Buffalo and his family and how it came to be known what is present day Red Cliff. The housing situation at this time included multi-generational dwellings in a closer village setting. This allowed for closer families and community through shared experiences and dependency on one another for survival. Over time, the gradual shift from traditional homes and ways of living to more modern forms of housing and living became evident. Tribal members began to live in tar paper shacks provided by the Federal government during the Depression era. It has been said that many Native people were not aware of the Depression as they were transforming from their previous ways of living. Since these times the housing situation at Red Cliff has changed dramatically and today many modern homes and trailers can be seen on the Reservation with fully functioning electricity, heat, and water supply.

The Red Cliff Tribe has recently re-created a Land Use Planning Board to oversee the development of a zoning plan and ordinance. This will help to preserve wild areas of the reservation for hunting, gathering, and cultural/traditional uses as well as to assist in the development of a consolidated infrastructure. In the past, Tribal Members were given leases in a location of their choosing. The development of this property is the responsibility of the Tribal Member who was given the lease. These responsibilities include receiving a fire number, installing electricity, water and sewer, phone lines, and any additional home needs including construction or placement. The Land Use Planning Board is making an effort to reduce the amount of time and money spent by Tribal Members developing new homes. This can be done by localizing all new leases into an identified location with existing infrastructure such as water and sewer, roads, and electrical hookups.

In areas controlled by the Red Cliff Housing Authority, the Housing Office and Board are the decision makers of when to build new homes or update existing ones. The housing demands in Red Cliff are great as there is large population expansion and many Tribal Members not living on the reservation wish to move back home. Currently there is insufficient housing available for all Tribal Members to live comfortably and multi-generational living is still common. The Housing Office and Board develop as many new home sites and structures while maintaining and repairing them when possible and affordable. The planned development would be located in areas connecting to existing utilities and services in the most economical way. The overarching goal is to preserve the land base for subsistence and cultural/traditional uses as well as to provide adequate housing.

Tribal Members hold leases in various places of the reservation where they can place a trailer home or build a home. The current plans of the Tribe are to consolidate these leases to a better location suitable for providing key services to new home owners. Currently, Tribal Members need to install their own wells and septic systems in remote locations as well as establish electrical and phone connections and driveways. With the locations of leases being centrally located most of these costs will be less as the well and septic system would already be

established. Electrical and phone connections would be easier to maintain and may be cheaper depending on the length from the road to the building. Costs will still be incurred in developing a new home but the timeframe from start to move in should decrease dramatically.

Additional savings to the home owner may come through new designs in home construction when correctly maintained. Super insulation methods of construction include a six inch wall to reduce heating and cooling costs. Straw-bale constructed homes are also very comfortable and provide sufficient insulation. The key to saving money through home construction is to ensure that there are minimal drafts and sufficient insulation in the home. Energy conservation in the home also decreases costs of the home-owner. Limited financial assistance to improve the home for energy efficiency is available in the area.

With future population expansion in mind, the Tribe is developing plans to provide affordable housing to Tribal Members and still provide areas for subsistence living and cultural/traditional purposes. These areas are necessary for survival for many Tribal Members physically, mentally, emotionally, and spiritually. The proper planning and placement of Tribal leases and homes will assure that there are still areas of the Reservation to hunt, fish, camp, make sugar, collect forest products, meditate, and pray without disturbances or being too close to homes.

Vision

To provide all Tribal Members with homes and decent living accommodations to ensure a high quality of life for future generations.

Goals

Identify and place future housing in centrally located areas which can hook into existing utilities and services. Apply energy conservation practices with new home designs when feasible to provide a model home or community.

Issues, Concerns, and Opportunities

- New home construction designs available to reduce consumer costs
- Centrally located homes to hook into existing utilities and services
- Preserve areas of the Reservation for parks, hunting, ceremonial uses, etc.
- Tribal Members wish to return to the Reservation and live
- Population expansion requires more housing units
- Land acquisition for housing development is necessary

Objectives

- Develop a guidebook for new home owners with pros and con's of various building styles and financial assistance available.
- Consolidate housing ventures in areas suitable for development and near existing infrastructure.
- Educate general public in basic energy conservation activities
- Provide incentives to using energy conservation practices in the home.
- Develop housing communities designed for all ages and/or elders and new families.

RECREATIONAL RESOURCES

Description of Resource

The location of the Tribe on Lake Superior offers a vast number of recreational opportunities. Many of the opportunities in this community are of the nature in which both young and old alike can participate. There are numerous old logging roads and connections to the Bayfield County Snowmobile and ATV trail. There is a ball diamond located near the Youth Center which is used by all ages. Tribal members also have the opportunity to recreate in the wooded acres of the Reservation. Although these opportunities exist, the Tribal Membership (via IRMP Survey Results) has stated that more recreational facilities are needed or wanted.

Many Tribal Members are interested in the creation of a facility for health and wellness of all ages, especially elderly or disabled people. This facility could be established in a central location and provide a wide range of uses. The Youth Center is being used as a recreational and learning facility for the younger generations. There appears to be limited facilities like this for elders and adults to exercise and recreate. The IRMP Survey Results show that there is a lot of interest for many different types of recreational facilities and activities to be located on the Reservation. These facilities and certain recreational activities need to have an area and specific location identified to consolidate uses for related activities. This would minimize conflicts between recreational seekers of the motorized and non-motorized kind.

Currently, many ATV's use the Highway, Town, or Tribal roadside for travel and also cut across various yards and the pow-wow grounds. This is detrimental to the environment (specifically the tread marks left causing erosion and sedimentation to the rivers, creeks, and streams) and there are strong feelings generated about the proper use of ATV's. Currently, ATV traffic control is occurring in areas of parks, playgrounds, wetlands, housing, and the pow-wow grounds under the jurisdiction of the Red Cliff Housing Authority and the Red Cliff Code of Laws Chapter 13. It is not the intent to ban the use of these vehicles altogether, but rather to develop and site trails in locations suitable for this type of activity and limit the potential for erosion. In order to maintain a balance of harmony for both the motorized and non-motorized recreational users, trails need to be developed for both types of recreational activities.

The Tribe has camping areas designated for both Tribal Members and Non-Tribal Members. The Tribe's marina also offers recreational opportunities to Tribal members and the general public through use of its slips and boat ramp. Kayaking is a growing trend in the community and the Tribal Membership can partake in this opportunity. Most recreational activities on the Reservation occur in the wilderness or outdoors. Outdoor recreation is probably the most utilized recreational activity as it includes but is not limited to: hunting, trapping, fishing, gathering, hiking, bird-watching, beach combing, boating, swimming, snow-mobiling, ATV'ing, bicycle riding, and all outdoor sports. Additional recreational opportunities are available with the location of the Apostle Islands National Lakeshore adjacent to the Reservation. The indoor recreational facilities and outdoor recreational opportunities must co-exist so that all recreational activities may be enjoyed by the Tribal Membership and community with little or no impact on the natural resources.

Issues, Concerns, and Opportunities

- Motorized vs. non-motorized trail development

- Elderly and Adult exercise facilities
- Community gathering facilities needed
- Lake Superior opportunities expanded
- Improvement of Youth Center Facility
- Education of Traditional Arts and Crafts
- Encourage Traditional and Non-traditional sporting activities
- Indoor and outdoor opportunities identified and expanded
- Safety issues during hunting season for all outdoor recreationists
- Boat maintenance and cleaning to prevent spread of invasive species

Vision

Ensure the health and well being of the environment, Tribal, and Community members through the planning, placement, and education of recreational activities for all ages with very little negative impacts to the natural resources.

Goal

To provide indoor and outdoor recreational opportunities, education on Traditional arts and crafts, and the proper harvest and the use of natural resources for Tribal Members and the general public. Both outdoor recreational activities and indoor activities are utilized by Tribal and community members so that a higher quality of life is obtained with minor impacts on the natural resources.

Objectives

- Establish recreational committee
- Review trail and non-trail usage of motorized vehicles
- Update and establish motorized and non-motorized trails
- Assess and repair damage caused by past motorized recreational use
- Establish facility or facilities for recreational use
- Provide information and recreational tools to Tribal Members
- Identify and implement restoration activities for damaged areas
- Areas identified and preserved for all types of outdoor activities
- Identify outdoor recreation areas for public gathering and/or hunting.
- Identify areas for "Tribal Member's only" and "Public" use.
- Establish adequate boat cleaning facilities to prevent spread of invasive species
- Establish reasonable signage for parks and camping areas regarding waste disposal

Energy Resources

Description of Resource

Currently the Tribe's energy comes from two main sources: Bayfield Electric and Excel Energy. These sources use energy produced by a coal burning power plant located on Lake Superior in Ashland, Wisconsin. An alternative energy source located within the area will affect the amount of pollution that is deposited into the air through the production of this energy. Carbon dioxide, sulfur dioxide, nitrous oxides, mercury, and other toxic and hazardous pollutants are produced whenever coal is burned to generate electricity. Coal fired power plants are one of the largest causes of environmental degradation throughout the world.

Alternative energy production and energy conservation practices would reduce the need for these types of power plants. Red Cliff has decided in the past that nuclear energy is not a viable alternative and has therefore declared the Reservation as a "Nuclear Free Zone". Hydroelectric energy requires the construction of a dam and withholding of water in a basin. This creates a man-made barrier which inhibits fish passage, harms the ecosystem, and alters the habitat and landscape. Another type of hydroelectric energy requires the natural flow of a river to be diverted through a power producing device and then returned to the river. Red Cliff does not have a river or stream with enough flow to produce this type of electricity as it does require a constant natural flow. Hydroelectric power is not currently suitable to meet the needs and wishes of the Tribe. However, if the technology to redevelop hydroelectric power generation to provide the least amount of impact to the land and water is available in the future, this may very well become an option for the Tribe.

Wind energy can be harnessed in a variety of ways and there are many models to choose from. The main difference comes through either small home-based systems or larger commercial producing wind machines. The smaller systems can provide enough power for a few homes. The larger systems may be able to provide enough electricity for the entire Reservation. Deciding which system to use is not necessarily an easy decision. Both systems require the wind to be flowing at a speed great enough to activate the machine. The larger system would need to be placed at a height (over 150 feet) that would definitely be able to be seen from a long distance. This system also creates a humming noise as the blades of the machine turn and the deaths of migratory bird species and bats have been reported as a result of these machines. The smaller systems produce less energy than the larger machines and still require periodic maintenance. However, the tower supporting the energy producing machine would not need to be as tall as the larger ones and would not create the same amount of noise. This in turn reduces the amount of bird and bat-kill by the machines.

Approximately one acre is needed for proper safety to put up the tower the energy producing device would need to sit on. The lowest point of the rotor blade needs to be placed 30 feet above any obstacle within 300 feet of the tower (about 80 - 120 feet in the air). Average costs of these systems range from \$1000 to \$3000 per kilowatt for the smaller systems and total installation costs could range from \$10,000 to \$50,000 plus. Taller towers would produce more energy from each machine but initial costs would also be increased. A small wind system on average costs up to \$35,000 or more and can produce about 30 kWh up to 700 kWh at an average wind speed of 10 mph. The first step in developing wind power would require the monitoring of the average

wind speed over the course of a year to determine how well it would work in different seasons and locations.

Solar energy requires the sun to be shining on Photovoltaic (PV) panels to produce energy. This is highly effective during the summer months when the sun travels across the sky for the longest period of time. The winter months have less sunlight during the day and snow may become a problem by building up on the PV panels. There is a wide range of uses for solar energy including solar space heating (both passive and active systems), solar domestic hot water heating, solar cooking ovens, and general energy production. This type of alternative energy is the most expensive, but is probably the most reliable and basic to use. The cost of developing a system to completely offset an average home ranges from \$30,000 to \$40,000 and from \$16,000 and \$20,000 for the most energy efficient home. As with wind energy, the first step to develop solar producing energy would be to monitor the amount of sunshine a PV panel would receive over the course of a year. This information will be able to help determine if enough energy can be produced by solar power for the Red Cliff Tribe.

These alternative energy systems should help lower energy costs for the Tribe over time and reduce the need to rely on the burning of fossil fuels for energy. However, without exercising proper energy efficiency and conservation practices the overall gain in power may be lost. For example, the power used to heat your home can be lost through a drafty window or open door. Looking over these areas and repairing any major gaps can immediately increase the efficiency of energy use. Energy efficiency and consumption are usually the first places to look when deciding to develop alternative energy systems. There are numerous technologies available today with power saving appliances, light bulbs, and new ideas in home construction. Through the measurement of energy efficiency and use, the Tribe and individual home owners can reduce the amount of energy used and therefore save money on utility bills. Excel Energy provides energy assessment assistance and also has small loans available to increase energy efficiency in the home. Also, the Home Improvement Project (HIP) is another source for increasing energy efficiency and providing general improvements to Tribal homes.

Wisconsin has many programs and incentives available for someone wishing to develop an alternative energy source or to increase energy efficiency. The Focus on Energy and Midwest Renewable Energy Association also has many programs and incentives as well. Funding is available in many different Federal and State programs. Additionally, there are many non-profit organizations and knowledgeable people willing to make a difference in the area of alternative energy. A combination of a few alternative energy systems, energy conservation practices, and resources available may save the Tribe and individual home owners money as well as reducing the demand for fossil fuels and coal – burning power plants. There are many unknowns at this point in time regarding alternative energy and background research and monitoring is necessary in the future for possible development of this technology.

Issues, Concerns, and Opportunities

- Sufficient information concerning alternative energy development unknown
- Coal burning power plants increase the amount of greenhouse gases into the atmosphere and greatly contribute to Global warming.
- Actual costs of developing alternative energy unknown

Goals

Develop utility policies and cooperative agreements with local energy distributors to produce solar and wind generated power to be available to all within the Reservation boundary and surrounding community.

Vision

Produce and provide energy to the Tribe and surrounding region through alternative energy sources, increasing Tribal self-sufficiency and reducing the amount of pollution released into the environment through coal-burning power plants.

Objectives

- Acquire and assess wind monitoring equipment and data
- Assess extent of Tribal Energy usage
- Assess amount of energy conserved by using low energy consumption equipment
- Educate public about energy conservation practices in new home construction
- Develop Tribal Utility policy
- Develop partnerships and agreements with local power distributors
- Provide incentives to lowering energy usage
- Reduce costs of energy through alternative energy in the long run

Waste Management

Description of Resource

Currently, the Red Cliff Tribe operates a Recycling and Transfer Station and a newly developed Waste Water Treatment Facility. These vital services are offered to Tribal Members of the Red Cliff Reservation who can haul their garbage and recyclables to the Transfer Station or are connected to the Tribal Water and Sewer infrastructure. The Red Cliff Housing Authority also provides garbage hauling services for all Housing residents for a monthly fee and Tribal Elders can also sign up. Tribal Members who are not hooked into the Tribal infrastructure typically have a septic or mound system for sewage disposal.

The Red Cliff Transfer Station and Recycling Center was opened in 1997. During the following seven years, Reservation demographics have changed as well as the contents of the waste stream from the service area. Upkeep and maintenance of the Transfer Station is essential to the prevention of pollution within the Red Cliff community.

Illegal dumping continues to be a problem on the reservation at the Transfer Station and other locations despite the services available to both Tribal and non-Tribal members within the area. No running water is available at the Transfer Station. All operations currently take place outside, which brings a special challenge with the northern winters. Bears as well as other animals roam freely through the Transfer Station. Critical updates are needed before more development on the Reservation continues. Staffing needs are also in dire need of assessment as the Transfer Station usually operates with one attendant on duty.

Every year the community gets together to participate in a community clean-up. This is usually held in the spring after the snow melts. The Transfer station receives a grant to assist Tribal Members to get rid of their unwanted garbage that is sitting around their house or in their garage and to do roadside clean-ups. Whatever the case is, a lot of garbage is hauled away during this time which is typically a week or so. Without this activity, roadside garbage would become unsightly and attract unwanted scavenger animals to residential areas. For volunteers who help with this community beautification, refreshments are provided by local businesses and gas and lunch tickets are also provided. The cost of disposing a bag of trash at the Transfer station has been two dollars (\$2) a bag and recycling is free to Tribal members.

With these services, waste can still be found in areas of the reservation in illegal dumping areas. These areas are usually filled with garbage that may take some effort to dispose of in the right way. It is important to the community to try to get rid of these items during the community clean-up so that they are not disposed of in illegal dumps. Some materials can be hazardous to the environment by leaking toxic chemicals into groundwater and then into the streams causing contamination and fish kill. Some items which have been found and properly disposed of contain mercury holding elements. When mercury is released into the environment this way it is changed into a form called methyl-mercury which is absorbed through the food chain and can cause birth defects and other types of cancers.

Junk cars are also a visual and environmental problem. Many of these vehicles are used for spare parts when active cars break down. This can be a great service to Tribal members who need their vehicle to get to and from work or to pick up their children from school. However,

these junk cars contain fluids which can leak into the ground and inevitably enter the groundwater and streams of the reservation. Also, there are many mercury containing elements in these cars which can release mercury into the environment. In order to continue providing automotive services to Tribal Members, specific areas need to be identified for placing these junk cars. This area then needs to have adequate liners to stop any toxic chemicals from reaching the ground water or surface water. There are many examples of how to do this through various agencies and existing junkyards who must comply with federal, state, or local standards. Another form of waste usually found in illegal dumping areas is animal carcasses. These materials usually decay over time, but still provide a tell-tale smell as to their whereabouts. These areas can also be identified quite easily by a group of large scavenger birds including eagles, turkey vultures, ravens, and crows eating the remains of the carcasses. In order to curb this illegal dumping activity, the Tribe should develop a large composting pile where Tribal members can dump this type of waste. A compost pile would help to break down this material so that it would decay faster and provide nutrients to the composted material. Additional information about how to do this can be found by contacting various agencies and people who have been composting their own material for some time.

Another way that waste has been disposed of in the past is by burning it. Although the Tribe has attempted to rid the Reservation of active burn barrels, there are still some people to convince that this activity causes asthma, bronchitis, and other breathing problems. Chronic exposure to these fumes can cause birth defects and cancer. In the past, burning garbage was an accepted practice by many people. However, with the scientific evidence available today after many tests and reports have been issued, burning garbage is not cost effective, safe, nor healthy. Many materials being burned today are paper products and cardboard. These materials are recyclable and are accepted at the Red Cliff Transfer Station. The amount of time and energy it would take to dispose of these materials properly can save future Tribal Members their health, the risk of getting cancer, and a healthy atmosphere.

Waste management and disposal has developed to the point of having industrial incinerators burn the garbage in a controlled environment and at extreme temperatures. This extremely high heat and controlled environment allows the garbage to be disposed of while releasing the least amount of pollution into the air, land, and water through advanced filtering techniques. In addition, recycling efforts have expanded greatly to reduce the amount of garbage necessary to be incinerated. A burn barrel in someone's backyard can not nearly reach these extreme temperatures necessary to prevent chemicals and carcinogens from entering the local environment and do not have any type of filtering device. With this in mind, many Tribal members have signed a pledge to end the practice of burning household garbage and recyclables. Also, many departments of the Tribe assisted Tribal members in getting rid of these used burn barrels as many were filled with ash and too heavy to lift. Still to this day, there are garbage burners within the boundary of the Reservation and when the garbage is burning, it can be easily detected by the foul smell. The only way to stop this illegal disposal of garbage is by enacting ordinances to curb this practice and legal enforcement.

There is much advancement in waste disposal of both the solid waste and wastewater variety. Recycling is reaching new heights and many businesses are attempting to invent new uses for recycled material. It is in the best interest of the human race to attempt to reduce the amount of

waste generated in this day. One, of many, good reasons for this is that the oceans and lakes are becoming full of unwanted garbage. The garbage that is dumped into these water bodies is blocking sunlight from reaching vital oxygen producing organisms. Without these organisms, the human race will have to invent a way to produce oxygen so that we can all breathe peacefully.

Vision

To successfully manage all waste materials in the most efficient way possible for both solid waste and wastewater so as not to negatively effect the environment.

Goal

To develop a system of waste management that will allow for expansion of current waste disposal efforts; clean up of illegal dumps; and bringing an end to burning garbage in burn barrels for the future generations health and well being and protection of the environment.

Issues, concerns, and opportunities

- Compost bin at Transfer Station not used very much
- Illegal dumping sites need to be identified and cleaned up
- Locating new lease sites in areas that can hook into existing infrastructure for wastewater management
- Continue providing incentives and educational materials to curb backyard burning and burn barrels
- Develop ordinances and enforcement to discontinue backyard burning within the boundaries of the Reservation to protect air quality and human health.
- Identify and develop an area for holding junk cars with an adequate lining system to prevent toxic chemicals from entering the groundwater and local environment.
- Increase amount of composting activity to decrease amount of garbage thrown away.
- Continue education about recycling to increase recycling efforts
- Provide an avenue for people to get rid of good but unwanted objects to others who may want to use them or fix them up.
- Continue providing Tribal Members with educational materials on what can be recycled or thrown away and participate in hazardous and community clean-ups.

Objectives

- Identify illegal and old, unclosed dumping sites and clean up
- Provide incentives and education to bring an end to backyard burning
- Develop ordinances and enforcement to discontinue backyard burning
- Increase awareness and education of composting activities and benefits
- Locate new lease sites in areas that hook into existing infrastructure
- Identify areas for holding junk cars and assist in developing an adequate lining system.
- Require auto salvage yards to follow Tribal Codes.
- Expand recycling efforts to include all recyclable materials.
- Provide further education of recycling program and benefits.
- Acquire a large building at the Transfer Station to store exchangeable goods and used materials unwanted by previous owners or for other uses.

- Establish annual Red Cliff hazardous waste clean sweeps.
- Establish oil drum for free recycling of used motor oil for Tribal Members.
- Yearly tire collection project for Tribal Members
- Continue education and participation in hazardous materials disposal and area community clean ups.
- Inventory small waste water treatment systems on the Reservation (septic and mounds)

Resource Emergency Response

Description of Resource

Red Cliff is a small community where pretty much everyone knows everyone else. This is a good thing to have when building a strong and independent community. The local fire, police, and game warden departments ensure Red Cliff's safety and sense of security. The Tribal Court also ensures that when accidents or infringements of Tribal laws occur, the defendants get a fair trial and sentence. However, there are threats to the land and people of Red Cliff that there may be little control over. Such examples would be threats to the resources from outside sources in a chemical or biological form. Invasive species threaten native fish populations and other wildlife. Chemical contaminants that spill or are atmospherically deposited into the Lake can affect human health through contaminated fish. Although an incident may occur which would affect the Red Cliff Tribe, there are actions that can be taken to receive retribution from the damage that may be done.

Naturally occurring disasters occur very rarely, but, damage to homes, vehicles, agricultural products, wildlife, and other properties can occur during these events. These events are usually related to large storms or the lack of rain and can cause flooding, wind damage, ice damage, hail, wildfires, and severe property damage. Currently, the Red Cliff Tribe works closely with federal, state, and local agencies when any natural resource disasters occur. This relationship is beneficial to the land and all people who reside around the Lake Superior basin. Threats to the environment are occurring more and more frequently and new threats are commonly found. These threats are usually the result of accidents created by humans. For instance, most chemical contaminants found throughout the world are contaminants formed by man. These chemicals may be naturally occurring, but, once released from a natural state can become deadly over time. A common and public example of this is mercury contamination. Through a complex chemical cycle, elemental mercury is changed into methyl-mercury which can be absorbed by fish. Once the methyl-mercury moves up the food chain, the amount of mercury found increases and doesn't leave the body for a long time and effects human health. There are many forms of chemical threats to the environment today and it would be beneficial to the human race to reduce these threats for future generations.

Biological threats to the environment are increasing in number and composition throughout the world. Many invasive species are entering into the local environment and can spread rapidly. Purple loosestrife, zebra mussels, sea lamprey, Asian beetles, and gypsy moths are commonly known invasive species threats. Natural vegetation and wildlife populations are being attacked by these invasive species and there is little help to offer. Many agencies are doing their best to control the spread of these invasive species, but new threats still occur. Today, avian flu and West Nile Virus are commonly seen in the news. Biological warfare is another growing issue. The Tribe needs to be prepared for an emergency in case any threats to natural resources or the Tribal Community occur. These threats can come from any direction or source, either from within the Reservation boundary, the surrounding area, or many miles away.

Vision

To be responsible for the overall management of an incident that may occur within the boundaries of the Red Cliff Reservation and the surrounding area that can potentially impact the Reservation.

Goals

To be aware and prepared for all impacts natural, chemical and/or biological that may occur and affect Tribal Members and the community.

Issues Concerns and Opportunities

- Increase education on emergency response actions and contacts in the Red Cliff Community
- Work with other agencies to develop an Incident Command System
- Prevent or control spread of invasive species
- Monitor livestock entering Reservation for possible contamination
- Develop response system for natural disasters, oil spills, etc.
- Provide training for responding to resource emergencies
- Assessment of Tribal Resources
- Conservation planning

Objectives

- Develop management strategies for responding to natural resource emergencies.
- Determine incident objectives and strategies
- Utilize an Incident Command System
- Monitor livestock for possible contamination and provide education on their care and health
- Prevent disease from entering the reservation through contaminated sources
- Increase knowledge of invasive species and chemical and biological threats
- Develop strategy for monitoring and controlling invasive species
- Work with other agencies to minimize impacts to natural resources when a natural resource disaster occurs
- Educate community on how to respond to potential natural resource emergencies
- Provide hazardous waste training to Tribal Members and Employees.

ALTERNATIVES

No Action Alternative (Status Quo) – No Impact

Under this alternative, the IRMP document would fall short of its intended long term management efforts for the Reservation. Currently, the Tribe does not have programs in place for all of the resources identified through this document. In order to successfully manage the resources of the Reservation in an integrated manner, programs would need to be developed in order to handle the work load that successful management of the Reservation would require.

Impacts from the No Action Alternative

The associated impacts from selecting the No Action Alternative can prove to be detrimental to the Tribe for future resource management. Current actions of the Tribe provide an avenue for expanding the management of its resources. Selecting the No Action Alternative would provide a barrier to future resource management. Natural resource management decisions could be made without ensuring that it be a priority for the Tribe and its constituents. Current management efforts would continue and resources which receive little or no management efforts would remain as is. By selecting this alternative, shortfalls in natural resource management would become evident and there would be little course of action to correct this.

Work to be completed through the No Action Alternative

The No Action Alternative would consist of managing for resources that currently have programs in place. Expansion of these current activities is allowed for management activities necessary for these resources based upon the content of the IRMP. As with all alternatives, Tribal staff would be allowed to update the IRMP once new issues or technologies for management are identified. The IRMP will be updated by Tribal Staff and need approval from the Tribal Council after a specified period of time.

Approximate costs to implement the No Action Alternative

As the No Action Alternative allows for current management activities to continue and expand, the cost to implement the No Action Alternative would remain nearly the same as it is now with the addition of currently planned expansions. The Tribe currently has finances to support these operations through grants developed to agencies supporting this type of work. As additional funding is made available through these agencies, resource managers can apply for funding to continue and expand the programs that are currently in place and planned through current efforts.

Alternative 1 – 25% Implementation

Under this alternative, the Tribe would be able to successfully identify which resources need additional management efforts and prioritize the resources to be addressed. Each resource identified in the document would be considered and programs can be developed at a 25% implementation rate. Once programs are developed and staff is hired, the shortfalls in management efforts can be addressed and this document can be modified in the future. Many resources of the Reservation are currently being managed the best they can with little staff and funding. Although this would only account for 25% of the intended actions set forth in this document, the resources can be managed with the intent to expand operations.

Impacts from Alternative 1

The associated impacts from selecting Alternative 1 would include the development of new programs and the continuation of current management efforts. Programs can be developed for resources which receive little to no management and successfully identify the shortfalls for these resources. Initial efforts to develop programs where there is no current management can occur. Although this would not provide for intensive management of these resources, it would allow the development of programs to identify the extent to which management should occur based upon the IRMP. Once identified, the IRMP document can be modified to include these findings.

Work to be completed through Alternative 1

Current management activities can continue and expand through this alternative as identified by resource managers. All activities identified through the No Action Alternative will be incorporated as well as those objectives found in the Alternative Table. For more detailed information about the objectives, please see the related section.

Approximate costs to implement Alternative 1

The cost to implement Alternative 1 would include all costs associated with the No Action Alternative plus the following additional staff. Approximate costs do not incorporate fringe benefits, supplies, travel, equipment, or other costs associated. The approximate costs will be determined by the number of employees needed to implement the objectives. These costs will be supported through grant writing activities to various agencies supporting this type of work.

Resource	Number of Employees	Resource	Number of Employees
Land	1	Agriculture	1
Wildlife/Habitat	1	Energy	1
Fisheries	1	Waste	1
Water	1	Resource Emergency Response	1
Air	1		

Total number of Employees to implement Alternative 1 = 9 Employees

Alternative 2 – 50% Implementation

Under this alternative, resources identified needing additional management efforts will receive a higher level of attention than in Alternative 1. Current management would continue and expand. Programs will be developed to identify the management activities necessary and initial implementation can begin at a 50% implementation rate identified in this document. Each resource would receive a higher level of management activities than in Alternative 1. This alternative would allow programs to be developed for resources currently with little management at a level necessary for initial activities to begin. Additionally, it would provide resource managers with the ability to manage the resources to a greater extent. This alternative would provide implementation actions addressed in this document at a 50% rate. Initial programs can be developed and further work can begin to move towards the Tribe's intended vision for the Reservation.

Impacts from Alternative 2

The associated impacts from selecting Alternative 2 would be greater than that of Alternative 1. Current programs and management activities would continue and expand and new programs would be developed. These new programs would be allowed to identify in which direction management efforts should be focused and implementation can begin based upon the IRMP. This alternative would allow the Tribe to better manage the resources of the Reservation which currently receive little management actions at a 50% implementation rate identified in this document. Although this would only be half of what the IRMP proposes at full implementation, it would still allow the Tribe to provide management activities for resources currently not addressed at a higher rate than that of Alternative 1.

Work to be completed through Alternative 2

Current management activities can continue and expand through this alternative as identified by resource managers. All activities identified through the No Action Alternative and Alternative 1 will be incorporated as well as those objectives found in the Alternative Table under Alternative 2. For more detailed information about the objectives, please see the related section.

Approximate costs to implement Alternative 2

The cost to implement Alternative 2 would include all costs associated with the No Action Alternative plus the following additional staff. Approximate costs do not incorporate fringe benefits, supplies, travel, equipment, or other costs associated. The approximate costs will be determined by the number of employees needed to implement the objectives. These costs will be supported through grant writing activities to various agencies supporting this type of work.

Resource	Number of Employees	Resource	Number of Employees
Cultural/Traditional	1	Air	1
Forestry	1	Agriculture	1
Land	1	Recreational	1
Wildlife/Habitat	2	Energy	1
Fisheries	1	Waste	1
Water	2	Resource Emergency Response	1

Total number of Employees to implement Alternative 2 = 14 Employees

Alternative 3 – 75% Implementation

Under this alternative, resources identified needing additional management efforts will receive a higher level of attention than in Alternative 2. Current management would continue and expand. Programs would be developed to identify the management activities necessary to successfully manage the resources of the Reservation. Once these activities are identified, the developed programs can begin the process to reach this level of management. Implementation of the document would occur at a 75% rate identified by this plan. This would allow more management activities to occur than the previous alternative. Although this represents only 75% of what the IRMP initially intended to accomplish, it would still allow the Tribe to expand management efforts of its resources.

Impacts from Alternative 3

The associated impacts from selecting Alternative 3 would be greater than that of Alternative 2. Current programs and management activities would continue and expand and new programs would be developed based upon the IRMP. The new programs would identify in which direction management efforts should be focused and implementation can begin. These programs would receive a longer range implementation plan than the previous alternatives and more objectives will be identified for completion. Resource managers would be allowed to identify where there are shortfalls in the long range plan and update the issues and objectives as necessary. This would account for most of the objectives set forth within the document to be completed and additional objectives to be identified by resource managers. The selection of Alternative 3 would allow management efforts to expand and continue at a 75% level of implementation identified through this document.

Work to be completed through Alternative 3

Current management activities can continue and expand through this alternative as identified by resource managers. All activities identified through the No Action Alternative, Alternative 1, and Alternative 2 will be incorporated as well as those objectives found in the Alternative Table under Alternative 3. For more detailed information about the objectives, please see the related section.

Approximate costs to implement Alternative 3

The cost to implement Alternative 3 would include all costs associated with the No Action Alternative plus the following additional staff. Approximate costs do not incorporate fringe benefits, supplies, travel, equipment, or other costs associated. The approximate costs will be determined by the number of employees needed to implement the objectives. These costs will be supported through grant writing activities to various agencies supporting this type of work.

Resource	Number of Employees	Resource	Number of Employees
Cultural/Traditional	1	Air	2
Forestry	1	Agriculture	1
Land	2	Recreational	1
Wildlife/Habitat	2	Energy	1
Fisheries	1	Waste	1
Water	3	Resource Emergency Response	1

Total number of Employees to implement Alternative 3 = 17 Employees

Alternative 4 – 100% Implementation

Under this alternative, the IRMP document would be implemented in whole. Current management activities will continue and expand and new programs would be developed based upon the IRMP. These new programs would be allowed to implement the activities necessary to reach the goals and objectives identified through this document. 100% implementation would incorporate all the issues and objectives in the IRMP and allow resource managers to update the document as needed. This would also allow for new issues and technologies to be incorporated

into the document to meet the rising demands of these resources. This alternative provides the highest level of implementation provided for within the document.

Impacts from Alternative 4

The associated impacts from Alternative 4 would be the greatest of all the identified alternatives. Resource managers would be able to use the IRMP as a management tool to identify which resources need further development. This alternative would also allow resource managers to implement all the identified objectives set forth within this document. Once the objectives are completed for a specific resource, the resource manager would be able to provide future management options and direction for concurrent management activities using the IRMP document as a tool. This alternative would provide the Tribe with the greatest amount of development and management activities necessary to implement the document in whole and complete work identified through the IRMP.

Work to be completed through Alternative 4

Current management activities can continue and expand through this alternative as identified by resource managers. All activities identified through the No Action Alternative, Alternative 1, Alternative 2, and Alternative 3 will be incorporated as well as those objectives found in the Alternative Table under Alternative 4. For more detailed information about the objectives, please see the related section.

Approximate costs to implement Alternative 4

The cost to implement Alternative 1 would include all costs associated with the No Action Alternative plus the following additional staff. Approximate costs do not incorporate fringe benefits, supplies, travel, equipment, or other costs associated. The approximate costs will be determined by the number of employees needed to implement the objectives. These costs will be supported through grant writing activities to various agencies supporting this type of work.

Resource	Number of Employees	Resource	Number of Employees
Cultural/Traditional	2	Air	2
Forestry	2	Agriculture	1
Land	2	Recreational	1
Wildlife/Habitat	2	Energy	1
Fisheries	1	Waste	1
Water	4	Resource Emergency Response	1

Total number of Employees to implement Alternative 4 = 20 Employees

<u>Resources</u>	<u>No Action</u> - (Includes current management efforts)	<u>Alternative 1</u> - (Includes No Action Alternative)	<u>Alternative 2</u> - (Includes No Action and Alternative 1)	<u>Alternative 3</u> - (Includes No Action, and Alternatives 1 and 2)	<u>Alternative 4</u> - (Includes No Action and Alternatives 1, 2, and 3)
Cultural/ Traditional	<ul style="list-style-type: none"> - Regulate archeological activity - Identify and protect cultural resource sites on reservation land 	<ul style="list-style-type: none"> - Educate general public about Tribal cultural history 	<ul style="list-style-type: none"> - Enhance sugarbushes, berry picking, medicinal plants, wild rice, white birch, and basswood bark gathering and other important resources 	<ul style="list-style-type: none"> - Purchase or acquire cultural sites near the Reservation 	<ul style="list-style-type: none"> - Acquire prehistoric and historic sites relative to the Tribe - Develop Tribal Museum and/or Arts and Crafts center
Forestry	<ul style="list-style-type: none"> - Preserve water quality through the use of BMP's on all managed forest lands - protection of riparian buffer zones - Identify and preserve cultural, sensitive, and unique forest land areas - Focus commercial harvesting to employ and benefit tribal members and the Tribal economy 	<ul style="list-style-type: none"> - Utilize sound silvicultural principles, and soil/site/habitat type indicators to regenerate desired tree species - Develop timber sale development "Green Sheet" or "checklist" - Develop "Visual Best Management Practices" to be utilized when near areas of special concern - Improve wildlife habitat 	<ul style="list-style-type: none"> - Develop timber sale offer system, allowing RC Tribal members preference on timber cutting contracts when offered at fair market prices for stumpage - Incorporate forest landscape principles into timber sale designs 	<ul style="list-style-type: none"> - Develop harvest permitting system for other non-timber commercial forest products 	<ul style="list-style-type: none"> - Incorporate and control the use of fire as a land management tool - Identify and develop a Forest Development "Herbicide Use" section for the Tribal Pesticide Code
Land	<ul style="list-style-type: none"> - Assess current land base needs and uses - Identify areas for future housing and development 	<ul style="list-style-type: none"> - Develop working relationship with landowners within or near the boundary of the Reservation - Continue seeking funding for land acquisition activities to develop system for locating and acquiring alienated lands within or near the boundary 	<ul style="list-style-type: none"> - Develop curriculum of land history and tenure issues 	<ul style="list-style-type: none"> - Develop a Tribal Realty program to manage and acquire Tribal lands 	<ul style="list-style-type: none"> - Reclaim and successfully manage original land base of the Reservation
Wildlife/ Habitat	<ul style="list-style-type: none"> - Provide habitat for culturally important species - Work cooperatively with other agencies for management strategies - Incorporate the use of GIS for management purposes - Preservation of critical habitat for rare, threatened, endangered culturally significant wildlife 	<ul style="list-style-type: none"> - Educate Tribal Community about wildlife species, functions, and cultural importance. - Monitor game and non-game animal species. - Monitor migratory species and provide adequate habitat - Invasive species control and management 	<ul style="list-style-type: none"> - Acquire land for habitat protection, preservation, or enhancement. - Survey biological community of Reservation - Wetland and wetland species preservation 	<ul style="list-style-type: none"> - Education of respectful harvesting techniques - Enforcement of proper harvest methods and harvest numbers 	<ul style="list-style-type: none"> - Identify additional areas suitable for wildlife protection and habitat
Fisheries	<ul style="list-style-type: none"> - Continue monitoring and management of Lake Superior fishery - Continue stocking walleyes in the 1842 Ceded Territory - Continue stocking Coaster Brook Trout into Lake Superior and reservation streams 	<ul style="list-style-type: none"> - Conduct routine habitat and fish population assessments of reservation streams - Continue and develop exotic species management 	<ul style="list-style-type: none"> - Increase opportunity for tribal members to catch quality fish both recreationally and for subsistence. 	<ul style="list-style-type: none"> - Create a Red Cliff Fisheries Management Plan - Research and develop strains of native fish to stock in 1842 ceded territory and L. Superior 	<ul style="list-style-type: none"> - Research and monitor other species in the Lake Superior Fish Community and baseline information for future needs - Restore degraded streams to support optimum population levels of Coaster Brook Trout

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Surface Water	<ul style="list-style-type: none"> - Continue to support land acquisition efforts and participate in water quality program with land acquisition components - Continue to participate in regional and international efforts for Lake Superior Protection 	<ul style="list-style-type: none"> - Development of Water Quality Standards for the reservation. - Require BMP's on development including, construction, road-building, forestry and other activities. - Institute a Tribal process for all development projects to ensure environmental regulations are followed - Re-establish the position of Lake Superior Protection Coordinator 	<ul style="list-style-type: none"> - Establish an Environmental Education Program and conduct community events including education on water quality 	<ul style="list-style-type: none"> - Continue to expand the Water Resources Program to include a Groundwater and Source Water Protection Program and a Wetlands Program - Increase size of riparian buffer zones on Reservation rivers and streams and Lake Superior 	<ul style="list-style-type: none"> - Work with area schools and community colleges to offer education opportunities for Tribal members to obtain training or degrees needed to enter the career field of natural resources management
Groundwater	<ul style="list-style-type: none"> - Participate in regional efforts to protect water quantity in the Lake Superior Basin - Update the Red Cliff Tribal Wellhead Protection Plan (1995) and develop into a comprehensive Source Water Protection Plan. 	<ul style="list-style-type: none"> - Document dumpsites, improperly or unclosed landfills, and all other possible contaminant sources that could be affecting groundwater quality - Locate and close all abandoned wells - Ensure Tribal Code compliance for auto salvage yards 	<ul style="list-style-type: none"> - Develop a comprehensive Groundwater Program and acquire funding to hire a Groundwater Specialist - Incorporate groundwater monitoring wells in the Water Resources Water Quality Monitoring Program to determine groundwater quality 	<ul style="list-style-type: none"> - Implement a project to determine aquifer levels and groundwater quality - Determine recharge rates and critical recharge areas and preserve - Conduct an educational campaign in the community regarding groundwater issues 	<ul style="list-style-type: none"> - Conduct an inventory and determine approximate total aquifer draw downs - Work towards obtaining funding, training, and equipment to enable the Tribe to conduct a yearly Tribal household hazardous waste collection
Wetlands	<ul style="list-style-type: none"> - Continue to conduct and monitor annual wild-rice reseeded projects - Make regulatory decisions based on the watershed approach and continue implementation of watershed level planning - Select upland rather than wetlands sites for development projects and avoid wetland alteration or degradation - Maintain wetlands and adjacent buffer strips zones 	<ul style="list-style-type: none"> - Delineate wetlands to know the location of wetland losses and gains and provide a system to determine impacts to a wetland(s), the size of the impact, a map of the site, and a description of the impact as well as track wetland restoration, enhancement, and creation activities - Participate in active review of federal and state wetland permits 	<ul style="list-style-type: none"> - Actively educate and inform the community about the function, condition, extent, and importance of wetland protection at Red Cliff - Conduct public outreach on the benefits of, and opportunities for, restoration on private land - Collect physical data on wetlands through a comprehensive wetland inventory and adopt and apply a wetland classification system based on landscape position, hydrology, and vegetation 	<ul style="list-style-type: none"> - Establish a program to monitor and assess biological, physical, and chemical conditions of wetlands and integrate wetlands into existing surface water quality monitoring program - Undertake a comprehensive Tribal Wetland Conservation Plan 	<ul style="list-style-type: none"> - Develop and work towards a comprehensive Tribal Wetlands Program which encourages and directly supports wetland data collection, restoration, and enhancement - Conduct active research regarding effective wetland restoration techniques and methods to measure the success of restoration activities - Develop and/or adopt EPA approved wetland water quality standards - Assess and when feasible assume a reservation-wide wetland permitting program - initiate and maintain a program that protects private wetlands through conservation easements - Develop an active funded wetland acquisition program to increase wetland acreage protected

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Soil	<ul style="list-style-type: none"> - Use soil survey information for basic land use planning, resource management, and decision making on the Reservation - Conduct field visits to determine site-specific soil properties prior to development of management actions 				
Air	<ul style="list-style-type: none"> - Education of human health concerns regarding air quality - Increased education of smoking hazards - Increase awareness of smoking cessation programs 	<ul style="list-style-type: none"> - Establish Air Quality Program for monitoring and educational activities - Obtain available air monitoring data for the region - Improve air quality through reducing local sources of pollution - Participate in efforts to reduce air emissions and deposition - Educate the community on indoor and outdoor air quality issues and air toxics 	<ul style="list-style-type: none"> - Establish a monitoring system for mercury and total suspended particulate matter - Install HEPA filters in Tribal places of employment, community centers, and residences - Increase smoke ventilation systems in smoking allowable facilities 	<ul style="list-style-type: none"> - Investigate feasibility of establishing air quality codes - Advocate for and implement alternative energy for clean air - Assess extent of mold in housing and other buildings and repair - Removal of asbestos in Tribal Buildings and training on cleanup 	<ul style="list-style-type: none"> - Work with local, regional, and national agencies to investigate feasibility of attaining Class I Air designation
Agricultural	<ul style="list-style-type: none"> - Continue and enlarge community garden activities - Education of proper health and diet 	<ul style="list-style-type: none"> - Establish agricultural committee - Develop agricultural farm plan for recently purchased old dairy farm property - Education of proper harvesting techniques for cultural resources 	<ul style="list-style-type: none"> - Provide Tribal members and elders with gardening activities - Identify area for increased composting activities 	<ul style="list-style-type: none"> - Identify areas for preservation of natural agricultural harvesting activities - Increase population and density of Wild Rice 	<ul style="list-style-type: none"> - Develop sustainable agricultural business plan for Tribal economic development
Housing	<ul style="list-style-type: none"> - Consolidate housing ventures in areas suitable for development and near existing infrastructure 	<ul style="list-style-type: none"> - Educate general public in basic energy conservation activities 	<ul style="list-style-type: none"> - Develop a guidebook for new home owners 	<ul style="list-style-type: none"> - Provide incentives to using energy conservation practices in the home 	<ul style="list-style-type: none"> - Develop housing communities designed for all ages and/or elders and new families
Recreational	<ul style="list-style-type: none"> - Identify areas for "Tribal Member's Only" and "Public" use. - Establish reasonable signage for parks and camping areas regarding waste disposal 	<ul style="list-style-type: none"> - Establish recreational committee - Review trail and non-trail usage of motorized vehicles - Provide information and recreational tools to Members 	<ul style="list-style-type: none"> - Assess and repair damage caused by past motorized recreational use - Update and establish motorized and non-motorized trails 	<ul style="list-style-type: none"> - Establish adequate boat cleaning facilities to prevent spread of invasive species - Areas identified and preserved for all types of outdoor activities 	<ul style="list-style-type: none"> - Establish facility or facilities for recreational use

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Energy	- No current activity	- Acquire and assess wind monitoring equipment and data - Assess extent of Tribal energy usage - Educate public about energy conservation practices	- Assess amount of energy conserved by using low energy consumption equipment	- Develop Tribal Utility policy	- Develop partnerships and agreements with local power distributors - Provide incentives to lowering energy usage - Reduce costs of energy use through energy programs
Waste Resources	- Provide incentives and education to bring an end to backyard burning - Locate new lease sites in areas that hook into existing infrastructure - Provide further education of recycling program and benefits.	- Develop ordinances to discontinue backyard burning - Increase awareness and education of composting activities and benefits - Acquire a large building for the Transfer Station	- Identify areas for holding junk cars and assist in developing an adequate lining system. - Require auto salvage yards to follow Tribal Codes. - Continue education and participation in hazardous materials disposal and area community clean ups.	- Identify illegal and old, unclosed dumping sites and clean up - Expand recycling efforts to include all recyclable materials. - Inventory small waste water treatment systems on the Reservation (septic and mounds)	- Establish annual Red Cliff hazardous waste clean sweeps. - Establish oil drum for free recycling of used motor oil for Tribal Members. - Yearly tire collection project for Tribal Members
Resource Emergency Response	- Work with other agencies to minimize impacts to natural resources when a natural resource disaster occurs	- Develop strategy for monitoring and controlling invasive species - Develop management strategies for responding to natural resource emergencies.	- Increase knowledge of invasive species and chemical and biological threats - Provide hazardous waste training to Tribal Members and Employees.	- Determine incident objectives and strategies - Utilize an Incident Command System - Educate community on how to respond to potential natural resource emergencies	- Monitor livestock for possible contamination and provide education on their care and health - Prevent disease from entering the reservation through contaminated sources

Finding of No Significant Impact

The Bureau of Indian Affairs is proposing to approve an Integrated Resource Management Plan (IRMP) for the Red Cliff Band of Lake Superior Chippewa Indians (the Tribe), located in Bayfield County, Wisconsin. The IRMP is the Tribe's strategic plan for the comprehensive management of the resources on the Red Cliff Reservation. The plan will be used to ensure coordination and cooperation of resource managers and to ensure that best management practices are used for resource management decisions to benefit the Tribe and its members. It is to be used as a management guide and does not represent a contractual obligation of the Tribe or the Tribal Governing Body. The IRMP was prepared in compliance with provisions of the National Environmental Policy Act (NEPA) as implemented in 40 CFR §1500-1508 and Forest Management and Operations implemented in 25 CFR §163. Individual actions implemented by the IRMP must comply with all applicable federal regulations. A number of alternatives were considered for IRMP implementation. The "no-action" alternative was also considered. The preferred alternative was selected based on input from Tribal members, the Tribal Council, resource managers and technical experts. It has been determined that the action will not have significant impacts on the quality of the human environment. Therefore, in accordance with Section 102(2)(a) of the National Environmental Policy Act of 1969, as amended, a higher level of environmental analysis will not be required.

This determination is supported by the following findings:

1. This finding is predicated on the individual actions conforming to all applicable environmental and historic preservation laws and regulations.
2. This action would not have significant adverse effects on public health or safety, unique geographical features, wetlands, wild or scenic rivers, refuges, floodplains, rivers placed on nationwide river inventory, or prime or unique farmlands.
3. The action will not have highly controversial environmental effects or any highly uncertain environmental impacts or involve unique or unknown environmental risks.
4. This action will not establish a precedent for future actions and is not related to other actions with individually insignificant, but cumulatively significant environmental effects.
5. This action will not affect properties listed or eligible for listing in the National Register of Historic Places or affect a species listed, or proposed to be listed, as endangered or threatened.
6. This action will not have a disproportionately high and adverse effect on low income or minority populations and will not limit access to, or the ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners, or significantly adversely affect the physical integrity of such sacred sites.
7. This action will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area and will not promote the introduction, growth, or expansion of the range of such species.
8. The proposed action would improve the economic and social conditions of the subject Indian Tribe, Tribal community, and/or individual Indians.


Director, Midwest Region

9-29-06
Date


Superintendent, Great Lakes Agency

9-28-06
Date