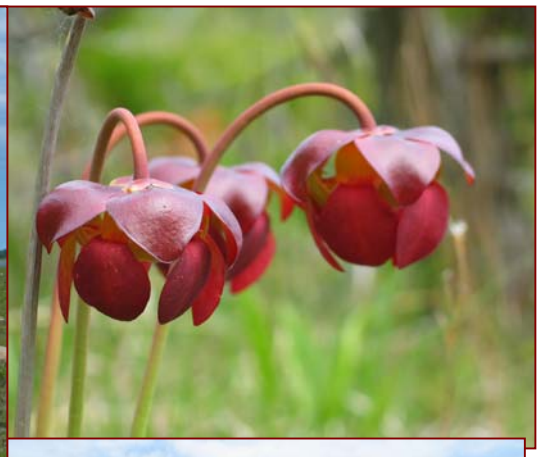
Nature Preserve Plan

Alpena Township

Alpena County

Prepared by: Nature Preserve Committee
July of 2008

Introduction

Background

Great Lakes coastal ecosystems are some of the most biologically rich landscapes in Michigan. In northeast Michigan, near shore land areas are post glacial lake plains, typified by water deposited sand and gravel overlaying limestone bedrock. Great Lakes marshes and bedrock shoals provide cover, feeding and spawning habitat for fish populations. Coastal ecosystems provide critical habitat for resident and migratory birds. Coastal zones are prime areas for a wide variety of outdoor recreation. Hunting, fishing, boating, paddle sports, birding and hiking are a few of the recreational activities pursued within coastal areas. Quality of the recreational experience is dependent upon the quality and condition of the natural resources. Healthy ecosystems are better places to hunt, fish and bird watch than degraded, exhausted environs.

Misery Bay was identified as an area of exceptionally high ecological values in the 1998 State of the Lakes Ecosystem Conference paper entitled Biodiversity Investment Areas, Near shore Terrestrial Ecosystems. The bay is one of only 20 such sites identified across the entire Great Lakes Region. One of the exceptional ecological features of Misery Bay is El Cajon Bay. The long narrow "boot shaped" bay contains a large sinkhole that is an outlet to an underground stream. Alpena Township purchased a 133 acre tract of land including 9,632 feet of Lake Huron shoreline along the south shore of El Cajon Bay. The property has karst geologic features, woodlands, conifer swamps, Great Lakes marsh and endangered plant species.

1998 Color Infrared Aerial – Figure 1.2

The Nature Conservancy played a key role facilitating the property acquisition, as well as providing some of the funding. A large part of the funding was provided by the Michigan Natural Resources Trust Fund and a Great Lakes Coastal Restoration Grant, provided through the Michigan Coastal Management Program, Michigan Department of Environmental Quality and the National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

As part of the grant agreement Alpena Township was charged with providing long-term management that will protect conservation values of the property such as habitat for fish, wildlife, waterfowl and other birds, amphibians, insects and native plants. Secondly, the property must provide a place for passive recreation and access to Lake Huron for non-motorized watercraft such as canoes and kayaks. To fulfill these responsibilities, a community driven, science-based management plan needed to be completed, however, the Township did not have the staff and resources to complete such a plan on it's own. Additionally, key elements of the background studies, such as soils, plant and animal inventories, did not exist. Alpena Township sought the services of the Northeast Michigan Council of Governments (NEMCOG) to assist in securing grant funding and facilitate the development of a park management plan.

Location and Regional Setting

The Alpena Township Nature Preserve is located along the Lake Huron Coastline in eastern Alpena County. The property covers 133 acres including 9,632 feet of Lake Huron shoreline along the south shore of El Cajon Bay and is located in Section 15 of T.31N.-R.9E.

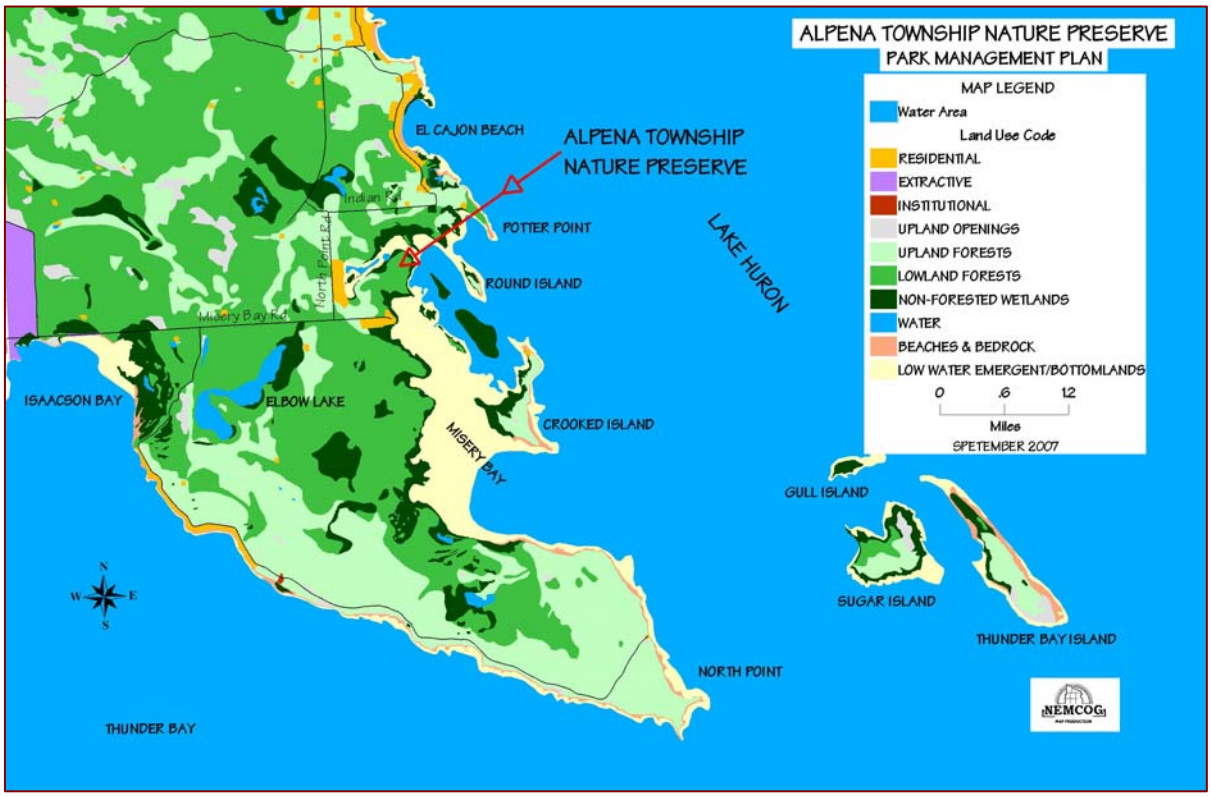


Figure 1.2

Plan Development

This project was funded in part under the Coastal Zone Management Act of 1972, as amended, Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, U.S. Department of Commerce and the Michigan Coastal Management Program, Michigan Department of Environmental Quality. In addition to matching money from its general fund, the Township received a supporting grant from the Community Foundation for Northeast Michigan.

The overall goal of the Alpena Township Nature Preserve Management Plan is to develop a resource friendly, management plan that will allow for recreational enjoyment, while protecting the natural resource integrity of the nature preserve. The effort documents existing conditions including soils, plant and wildlife communities, geology, water resources, views, recreation activities, existing trails and development. The Natural Resource Conservation Service completed a detailed soil survey on the un-mapped property. The Michigan Natural Features Inventory conducted rare plant and rare and/or high quality natural community surveys. This information was fed into the process with the end product being an opportunities and constraints map of the property.

To establish compatible uses and intensities of uses, the property was delineated into management zones. This approach used the State Parks and Recreation Division, Standard Management Zone Planning. *"Critical to the management planning process is the identification and delineation of "Management Zones". These are areas with defined characteristics and qualities, for which there are related user expectations, management guidance, and defined levels of development."* Management recommendations that address natural resources, recreation and education have been developed for each management zone. The plan includes sketches to more effectively convey the low-impact development concepts, and includes concept level design details. Preliminary cost estimates have been prepared for the development of the project areas. A licensed Landscape Architect from Environmental Consulting and Technology, Inc. was retained to assist in this task.

The completed draft plan was presented to and shared with the community during an open house. Community input helped refine the final plan. The plan was submitted to the Township Board for their approval.

Nature Preserve Committee

This plan was developed with the oversight of the Nature Preserve Committee. The committee served as an advisory group, meeting several times throughout plan development. The committee worked together to create a vision for the future of the Nature Preserve. The following committee members participated in the planning effort: Kirk Kowalski, Don Beem, Elizabeth Littler, Marie Twite, John McConnell, Aubrey Golden and Norman Dutcher. Other interested parties attended meetings and participated in the process.

Existing Conditions

Water Resources

The 133-acre tract of land has over 9,600 feet of Lake Huron shoreline along Misery Bay and the south shore of El Cajon Bay. Shallow waters and a soft, unstable, gradually sloping lake bottom significantly limit opportunities for launching watercraft. Existing conditions warrant launching to hand carried canoes, kayaks and small boats. El Cajon Bay is very shallow and during periods of low lake level in Lake Huron, much of the bay consists of exposed bottomlands. Two small depressions, possible sinkholes remain wet during low water periods. The deep El Cajon sinkhole is an outlet of bedrock stream and provides a constant flow or discharge of water into the eastern section of the bay. The discharge water has extremely low oxygen content and high levels of chemicals such as sulfate and calcium that originate from the soluble bedrock aquifer.

"Flow in the bedrock aquifers of Northeast Michigan area is generally toward one of two different drainage routes. The most obvious of course is directly toward Lake Huron. The other is toward a cavernous system along a major fault line which in turn drains to Lake Huron. One can easily trace this system through a series of sinkholes and valleys from the Shoepac Lake area to Kelsey Lake and Sunken Lake to Misery Bay by Alpena. There are other faults and probably cavernous systems that branch off of the major system which also act as drains in their areas of influence. This influence is mostly limited to the ground water at the base of the drift deposits and may not have a significant effect on ground water flow closer to the surface." Ty Black

Geology

The property is located in a region influenced by limestone bedrock/karst geology. While no bedrock outcrops were noted on the property during field surveys, the bedrock is near the surface and influences drainage and vegetation. Limestone bedrock/karst geology greatly influences the surface drainage in the region by impeding water percolation into the ground in some locations and by rapidly draining water through bedrock cracks at other sites. On the north side of the bay, bedrock cracks at the surface, called swallow holes, can drain large volumes of water into the limestone bedrock aquifers of cracks and porous stone. Water flowing through fractured bedrock will slowly dissolve the limestone, enlarging the network of cracks into subterranean channelways and caves. In some instances the rock above the cavern collapses forming sinkholes.

Karst geology features are prominent in and around El Cajon Bay. The bay itself may have been formed by the collapse of the bedrock foundation. Earth cracks are common around the bedrock north and west rim of the bay. A large sinkhole in the bay is the outlet of an underground stream. Water discharge from the outlet empties into Lake Huron and, due to the constant flow and warmer temperature of water, the sinkhole never freezes over. When water levels in Lake Huron are high, the El Cajon sinkhole is submerged, but still visible on aerial photos. During low water levels like recent years, one can walk up to the edge of the sinkhole. The sinkhole discharge water has a different chemical composition than surface water of the bay and has a noticeable sulfur-like aroma. The photo below shows El Cajon Bay and the prominent sinkhole. Other sinkholes are located in Misery Bay and north in the Rock Port area.

Figure 2.1: Sinkholes

Soils

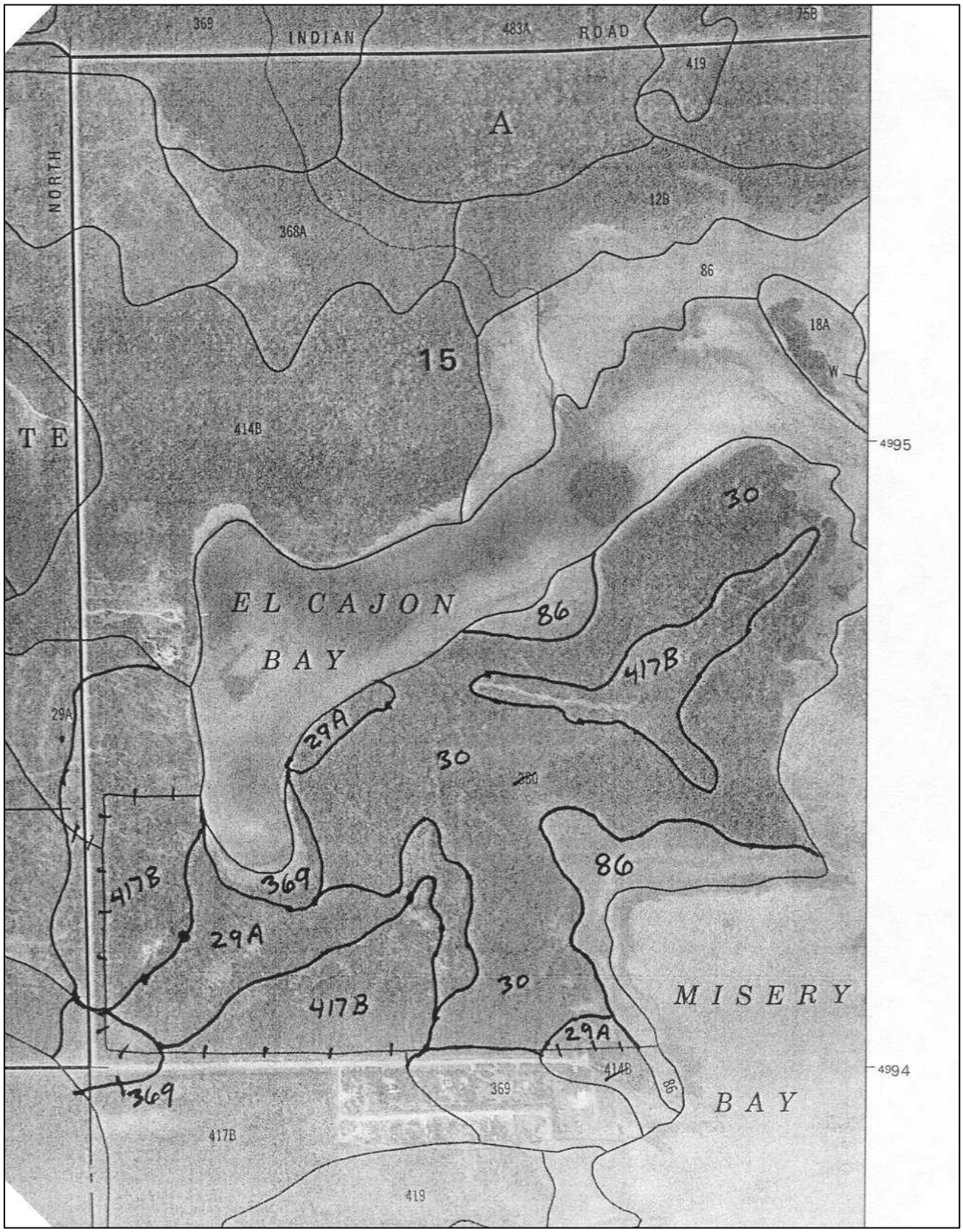
The Natural Resource Conservation Service (NRCS) completed a detailed soil survey in the fall of 2006. Figure 2.2 is a soil map of the property. According to the NRCS, Alpena gravely sandy loam soils (417B) with 0 to 6 percent slope have good potential for recreational use. The soils are moderately well drained with a water table at 3 to 6 feet below the surface. The central access trail is primarily located on these soils. Battlefield sand (29A), 0-3 percent slope have good potential for recreational uses.

Most of the area is mapped as Wheatly muck (30), which has mucky gravelly sandy loam surface. These soils are classified as hydric and have limited potential for recreational uses such as trail development and picnic areas. The remaining soils are classified as hydric with a high water table and very limited potential for recreational development.

Listing of primary soil types, see following page for a copy of the soil map.

Map Unit
29A – Battlefield Sand, 0 to 3 percent slopes. somewhat poorly drained
30 – Wheatly Muck, hydric soils, seasonally high water table
86 – Histosols and Aquents, ponded, hydric soils, seasonally high water table
39 – Deford Muck, hydric soils, seasonally high water table
369 – , hydric soils, seasonally high water table
417B – Alpena Gravelly Sandy Loam, 0 to 6 percent. excessively drained

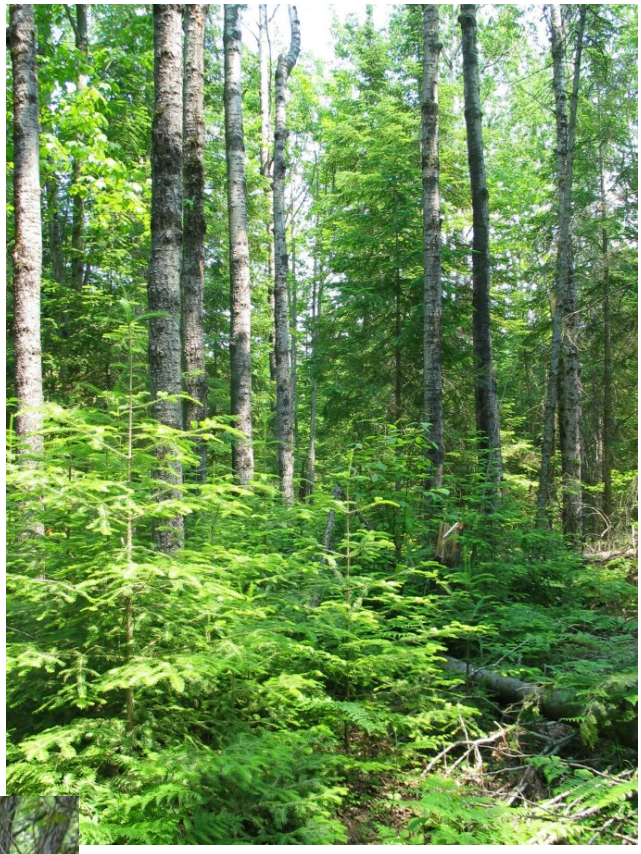
Figure 2.2: Soils Map



Cover Type Map

Area 1: Mixed trembling aspen, red maple, white birch, and balsam fir forest. Red oak, black ash, northern white cedar, white pine, red pine and white spruce also present. Aspen, white birch and balsam fir are mature, declining and dieing. In areas where larger overstory of trees are dieing, balsam fir regeneration is very thick. The forest is in transition from the dominant aspen and white birch to younger balsam fir and red maple forest. If no major disturbance occurs, aspen and white birch will become a minor species. Larger white pine trees can be found in the forest bordering El Cajon Bay.

Area 2: Mature northern white cedar forest with old growth trees over 100 years old. Soils are mostly organic and have a high water table. Dwarf lake iris is prolific in the eastern and northeastern parts of the property.



Aspen-Fir

Northern White Cedar

Area 3: Openings. There are several openings created by the pervious landowner. Dominant ground covers are grasses and bracken fern. Well-drained soils at some sites would allow for recreational uses such as vehicle parking, camping and picnic areas.

A. Long narrow opening, potential for staging area/parking. There are a few small piles of construction debris and household appliances.
B. Large opening located in the central part of the property. Several trail intersect in this long narrow opening. Opportunity for parking, picnic, and possibly primitive camping.

C. Small opening adjacent to El Cajon Bay. Large white pine and northern white cedar trees, excellent view of the foot of El Cajon Bay. Opportunity for picnic area and benches.

D. Small opening adjacent to El Cajon Bay. Large white pine trees, large boulders, offers an excellent view of central El Cajon Bay. Opportunity for picnic area and viewing benches. Provides access to shoreline of the bay.

E. Opening at the tip of the point. Staging area for access to sinkhole and Misery Bay. Opportunity for parking, picnic area, and paddle sport access to the bays.

Openings

Area 4: Fens and marshes. High quality fens and narrow marshes are key natural features of the property. These areas provide habitat for rare plants and are very fragile. Foot traffic would have negative impacts to these sites.

Coastal Fen

Coastal Marsh

Shoreline

Area 5: Shoreline/beaches and exposed bottomlands (5A). Due to the fluctuating lake levels the width of these shoreline/beach areas and the depth to water table is highly variable from year to year. Rocks and small boulders are common in the shoreline/beaches near the tree line. Exposed bottomlands are dominated by soft calcareous soils that are easily damaged by vehicle usage and intensive foot traffic. There is lingering evidence of ATV and truck traffic, particularly from the point to the El Cajon Bay sinkhole, can be found.

Area 6: El Cajon Bay and Sinkholes (6A). The depth of water and surface water area of the bay is closely is related to the fluctuating levels of Lake Huron. During periods of low lake levels, much of the bay is exposed bottom lands. The sinkholes and flowing springs are a central feature of the shallow bay.

El Cajon Sinkhole Shoreline

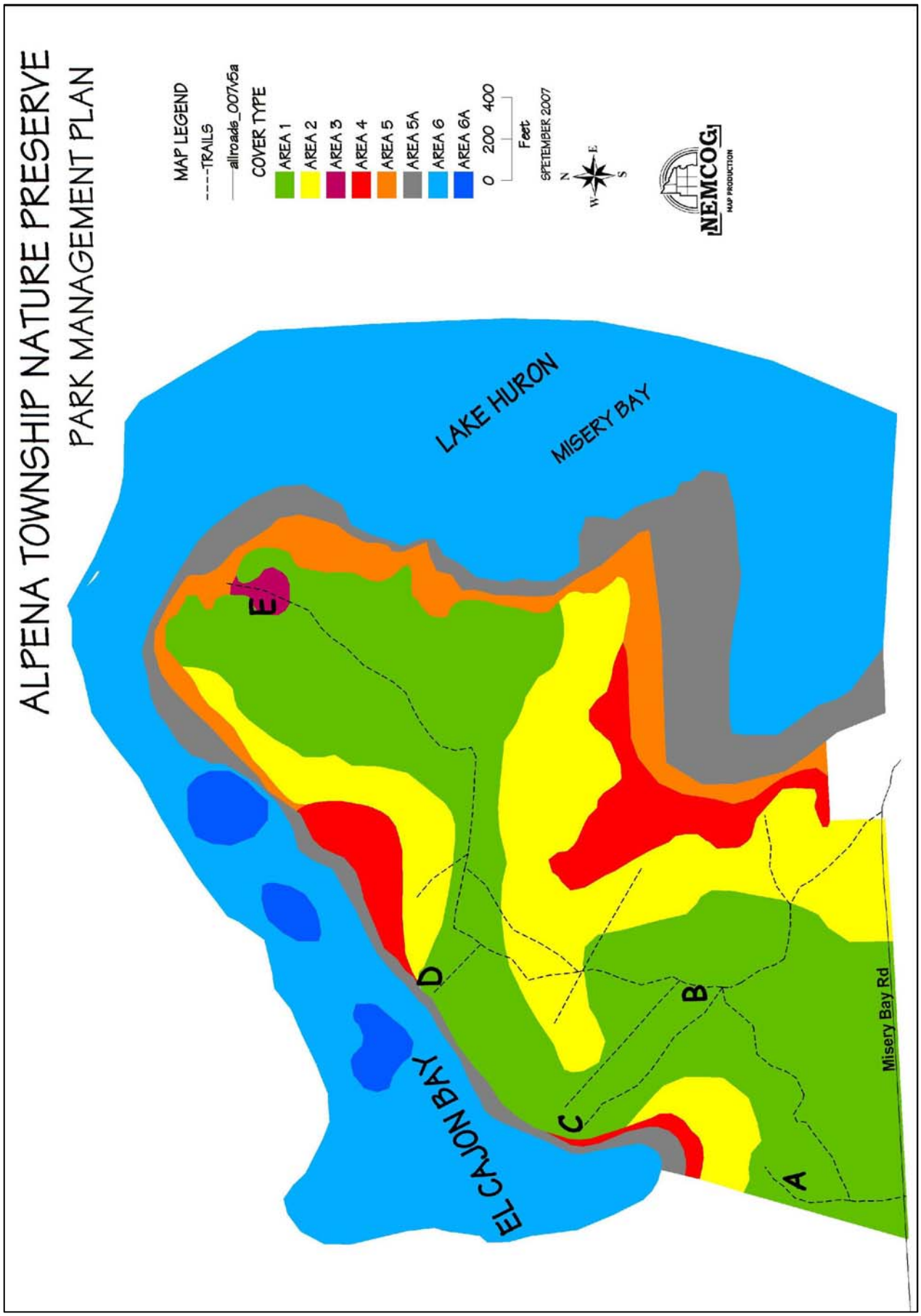


Figure 2.3: Cover Type Map

Trails and Openings

There is a network of trials on the property that was created by the previous landowner, see **Figure 2.4**. The central trail enters the property on the southwest corner off Misery Bay Road meandering in a northeasterly direction with its terminus on the point at the outfall of El Cajon Bay. The central trail is located primarily on well-drained soils, and should accommodate traffic during dry periods. A second entrance into the property is located at the southeast corner. The first 600 feet runs through a cedar forest. A high water table and the presence of Dwarf Lake Iris diminish the potential for making this trail a viable route for heavy recreational use. There are numerous side trails, cleared to access lots that had been subdivided prior to the Township acquiring the property. Three of these trails have potential for use by hikers. They provide access to El Cajon Bay and have small clearings at their terminus. These openings are labeled as C, D & E. Another side trail provides access to the Misery Bay Fen. The trail bed is wet in locations and covered with dwarf lake iris.

Views

The property offers the only mainland view of the Thunder Bay Island group from publicly owned land. There are several locations on the Nature Preserve that provide viewing sites of El Cajon Bay and Misery Bay (see **Figure 2.4**). Existing trails provide access to these sites. Signage, benches and minor improvements would enhance viewing sites.

Surrounding Land Use and Development

Land on the north side of El Cajon Bay is owned by the State of Michigan and is in a natural forested condition. The Forest Management Division is pursuing designation of old growth forest. The parcel east of the state land, including Potters Point, is under single ownership and has a one cabin. The west end of El Cajon Bay is subdivided into parcels approximately three acres in size. On the south side of Misery Bay Road, the land is privately owned and is a platted subdivision with lots approximately 100' x 150' in size. With the exception of the homes and cottages, the surrounding landscape is a mix of forest types, similar to the Nature Preserve. Lowland conifer forests with northern white cedar, balsam fir, black spruce and white spruce; lowland hardwoods with balsam poplar, trembling aspen, black ash, red maple, and balsam fir; upland forests with aspen, red maple, white birch, balsam fir, white pine and red oak are the typical forest types found in the area.

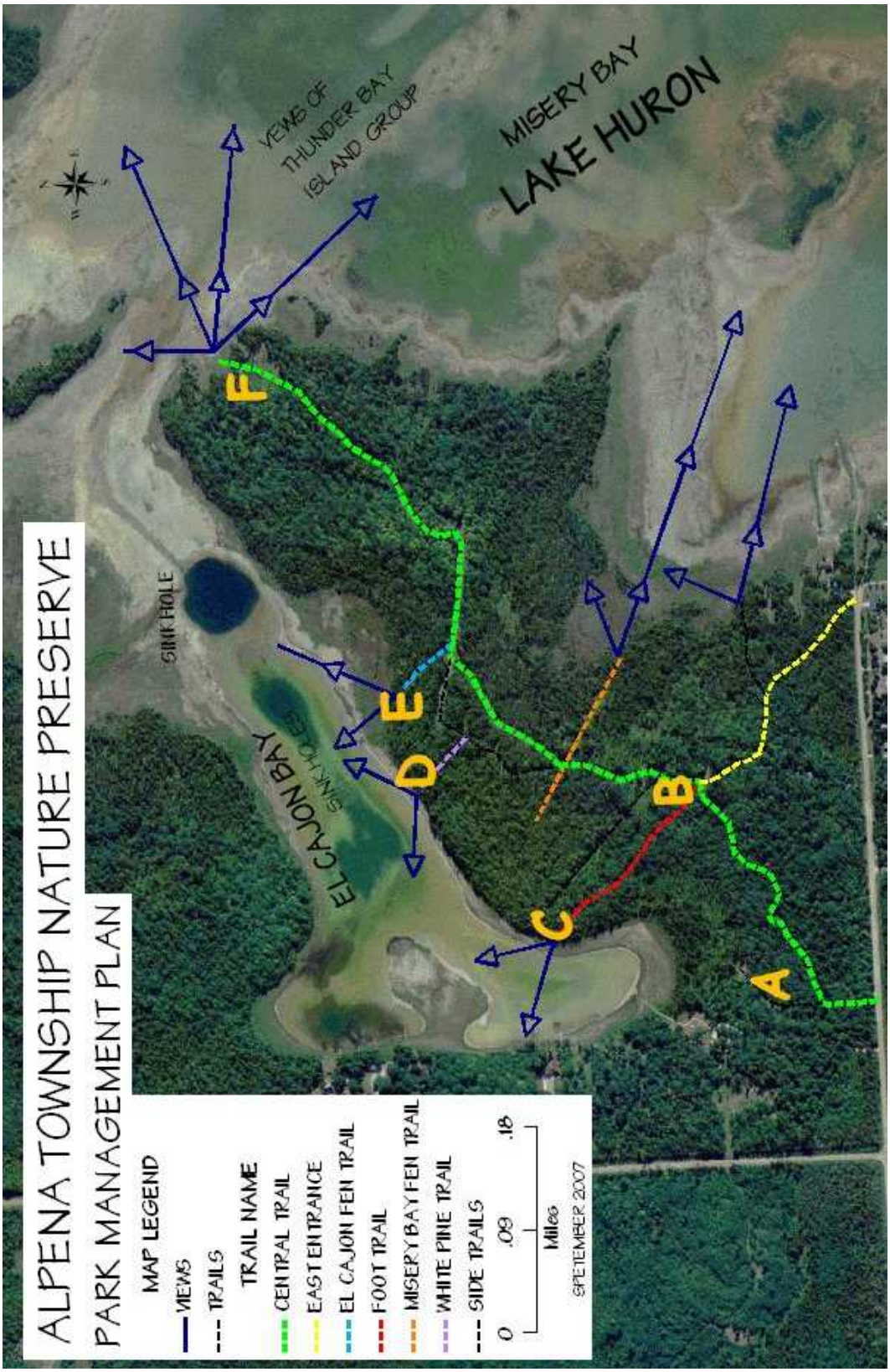


Figure 2.4: Trails and Views

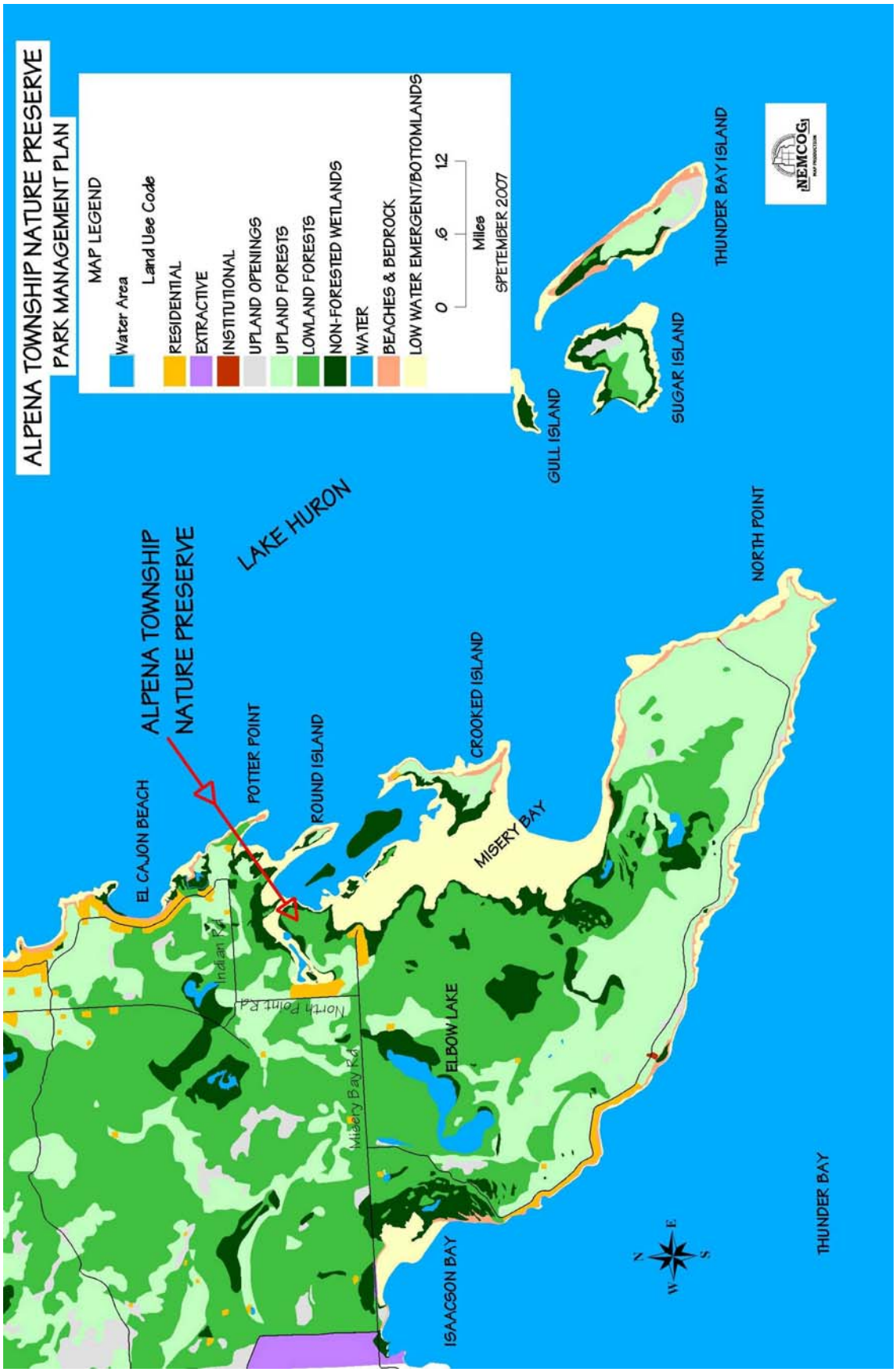


Figure 2.5: Land Use

Natural Features Report

Introduction

The primary objective of this project was to assist Alpena Township with the development of a science based management plan for a recently acquired 133 acre tract located along the southern shoreline of El Cajon Bay. The primary role of the Michigan Natural Features Inventory was to conduct surveys for rare plants and high quality natural communities, summarize the results, and provide recommendations for future management and protection strategies within the site boundaries.

Methods

Michigan Natural Features Inventory conducted rare plant and rare and/or high quality natural community surveys within the boundaries of the 133 acres park in Alpena Township from August 1-3, 2007. These surveys were completed by staff botanist M. Penskar. Prior to conducting the field inventory, the statewide natural heritage database was reviewed for previously identified element occurrences of rare species and high quality natural communities within and near the park. In addition to examining the comprehensive database, the MNFI Web-based Species Explorer was queried to develop a list of potential rare species to seek based on the natural communities known to occur in or near the park.

The park and local environs were examined via 1998 color infrared (CIR) aerial photos, USGS topographic maps, and also digital orthophotos displaying the MNFI data layers for known element occurrences. Botanical and natural community surveys were subsequently scheduled based on the results and the necessity of optimizing field work owing to the limited time and resources available for field studies. Due to the limited amount of field work, this study was not intended to be a comprehensive survey of plant species.

Other MNFI staff members were consulted for recommendations regarding particular natural features and specific survey sites familiar to them within the area. In addition, a meeting was held with Rick Deuell of NEMCOG immediately prior to field inventories. This resulted in the acquisition of additional aerial imagery and other information, including Mr. Deuell's personal knowledge of the site, which assisted significantly in directing the field efforts.

Field surveys were conducted primarily through meander searches within targeted habitats based on their potential to harbor rare plant species and comprise high quality natural communities. Initially, a traverse of the principal trails throughout the site was performed as a general reconnaissance and to confirm the presence of delineated community types. For the remainder of the study, meander searches were conducted throughout representative portions of the natural communities present, and when encountered, high quality communities were more systematically and intensively searched to document their quality and seek potential rare plant colonies.

A comprehensive vascular plant list was compiled for the park, recording plant species by natural community type, and photo documentation was obtained as needed throughout the survey area.

Where identified, data for rare plant populations or high quality natural community occurrences were recorded on the appropriate MNFI field forms. GPS equipment was used as necessary to record specific rare plant locations for subsequent mapping in the MNFI database. Additional field notes were recorded on local disturbance features (natural and artificial) and the presence of exotic plant species.

Following field surveys, rare plant and natural community data were reviewed, summarized and queued for processing into the MNFI statewide database. As part of the transcription and entry process, the occurrences will include mapped boundaries and a ranking indicating their relative quality and viability. Both rare plant and natural community occurrences will be given a rank (A-D) based on relative quality, condition, and landscape context. Plant lists, including a master plant list for the park, were entered and prepared via the Michigan Floristic Quality Assessment System (FQAS) (Herman et al. 2001). Digital photos were downloaded, examined, and annotated by community type and/or location for inclusion with the MNFI report.

General Site Description

The site is located in Alpena Township, Alpena County. The park is bordered by El Cajon Bay to the north, Lake Huron to the east, and Misery Bay Road to the south. The western boundary is a narrow strip in between El Cajon Bay and Misery Bay Road bordered by private land. Within the state ecoregional framework, the park is located in the southern portion of the Cheboygan sub-subsection (Albert 1995). The sub-subsection forms a narrow band of sandy lake plain along Lake Huron. Limestone bedrock is near the surface of almost the entire sub-subsection and exposed bedrock and cobble beach are common. Karst depressions are common in the southern part of the sub-subsection.

The interior of the park is comprised primarily of dry mesic forest, rich conifer swamp, and boreal forest with a few scattered openings and depressions. The shoreline consists of broad to narrow bands of coastal fen (some of these forming significant embayments) and cobble beach bordered by a mosaic of rich conifer swamp and boreal forest. A small pocket of limestone bedrock glade, a rare shoreline community imperiled in Michigan, was found in the southeast corner of the property.

Results

Field surveys resulted in the documentation of a new occurrence of the globally imperiled (G2) coastal fen (known formerly as northern fen) a new occurrence of the state special concern Indian plantain (*Cacalia plantaginea*), and an update of a well known occurrence of federal threatened and globally rare (G3) dwarf lake iris (*Iris lacustris*) (**Table 3.1**). A total of 149 plant species were recorded, composed of 128 native species and 21 non-native taxa, and

resulting in an overall Floristic Quality Index (FQI) of between 50 and 60 (55.4 with adventives included, 59.8 without adventives), indicating a high degree of natural area quality based on floristic composition (Herman et al. 2001). Of the relatively few exotic species identified, the most potentially problematical was the presence of individuals of glossy-leaved buckthorn (*Rhamnus frangula*) and autumn olive (*Elaeagnus umbellata*).

Table 3.1: Rare plant and natural community occurrences identified during Alpena Township Park surveys, with annotations of global and state element ranks.

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Iris lacustris	Dwarf lake iris	G3	S3	LT	T
Cacalia plantaginea	Indian plantain	G5	S3		SC
	Coastal fen	G2	S2		

Summary of Ecological Significance

The most significant features within the park are located along or near the Lake Huron shoreline. The coastal fen essentially extends the entire length of the shoreline, and contains the highest number of plant species in the park. Coastal fen is considered to be very rare throughout its range both globally and in Michigan. The portion of coastal fen located in the southernmost bay contains a population of Indian plantain (*Cacalia plantaginea*). Dwarf Lake Iris (*Iris lacustris*), federally listed as threatened, is common throughout the site, and locally abundant along the majority of shoreline, particularly in areas dominated by northern white cedar *(Thuja occidentalis).* Some of the more open areas in the coastal forests form a dense carpet of dwarf lake iris. A small pocket of limestone bedrock glade was found in the southeast corner of the property adjacent to coastal fen. Limestone bedrock glade is a very rare natural community in Michigan that is very sensitive to human disturbance. This community type is only found along the northern Lake Huron and Lake Michigan shorelines. Although this occurrence is probably too small to incorporate into the MNFI database, it is still a significant natural feature within the park.

In addition, shallow protected bays, particularly those bays adjacent to conifer forests along northern Lake Huron, can provide critical food sources for migratory songbirds in the form of aquatic midges. Midge adults emerge in early spring when bird migration is at its peak. With very few forage alternatives during that time period, migratory songbirds tend to concentrate along

these shoreline areas and forage on adult midges found in the coastal conifer forests, particularly northern white cedar trees (Smith, et al. 1998).

Lastly, it is important to note that this study was not intended to be a comprehensive rare plant and animal survey. As a result, there is potential for several rare plant and animal species to occur within the park that were not located during the botanical and natural community surveys (**Table 3.2**).

Table 3.2: Rare plants and animals that could potentially occur in Alpena Township Park

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Adlumia fungosa	climbing fumitory	G4	S3		SC
Amerorchis rotundifolia	round-leaved orchid	G5	S1		T
Calypso bulbosa	calypso	G5	S2		T
Carex scirpoidea	bulrush sedge	G5	S2		T
Cypripedium arietinum	ram's head orchid	G3	S3		SC
Drosera anglica	English sundew	G5	S3		SC
Gymnocarpium robertianum	limestone oak fern	G5	S2		T
Mimulus michiganensis	Michigan monkey-flower	G5T1	S1	LE	E
Pinguicula vulgaris	butterwort	G5	S3		SC
Pterospora andromedea	pinedrops	G5	S2		T
Sistrurus catenatus catenatus	eastern massasauga	G3G4	S3S4	C	SC
Solidago houghtonii	Houghton's goldenrod	G3	S3	LT	T
Somatochlora hineana	Hine's emerald dragonfly	G2G3	S1	LE	E
Somatochlora incurvata	incurvate emerald	G4	S1S2		SC

Evidence of Artificial Disturbance

All forested communities within the park boundary appear to have been logged at least once within the past 200 years. Majority of trees on site are relatively small in diameter, and cut tree stumps are scattered throughout the forest patches. White cedar stumps are prevalent in areas where several trails have been cut through rich conifer swamp. Walking trails and cleared lines are found throughout the site and

could act as pathways for the introduction and spread of exotic species from peripheral areas into the core of the site. Both glossy-leaved buckthorn and autumn olive were found in the park, and both could become a problem in the future without active management. Several common exotic plant species occur along forest edges, trails, and other openings, the most invasive consisting of such species as spotted knapweed (*Centaurea maculosa*), St. John's-wort (*Hypericum perforatum*), and white sweet clover (*Melilotus alba*), with common but generally less problematical species as wild carrot (*Daucus carota*), blue-grass (*Poa compressa*), and redtop (*Agrostis gigantea*).

Beyond the creation of roads and trails, additional artificial disturbance features include a few areas where construction materials have been deposited in the western region of the park, largely north to northeast of the gated entrance, and evidence of occasional off-road-vehicle (ORV) use along the shoreline. A few ORV tracks were observed during surveys along the south shore of El Cajon Bay, although this use appears to be fairly limited.

Management Recommendations

As mentioned above, the most significant features within the park are located along or near the Lake Huron shoreline: coastal fen, boreal forest, and rich conifer swamp. We strongly recommend that all shoreline communities, particularly the coastal fen and adjacent boreal and rich conifer forests are maintained as intact mosaics of natural communities. As a result, use of vehicles on beaches and bottomlands should be strictly prohibited. Another suggestion regarding vehicles, is to limit vehicular access beyond the proposed parking area just off the road. If it was decided that vehicles should go beyond the parking area, we suggest that vehicles should not be allowed past the point where the rich conifer swamp crosses the main pathway. Foot and bike traffic should primarily be limited to the existing trail that traverses the center of the park to minimize trampling of the fragile coastal fen environment. This could be accomplished by only maintaining the main trail, and allowing the other linear cut areas to revegetate through natural succession. Lastly, glossy-leaved buckthorn and autumn olive should be removed as quickly as possible, by cutting and herbiciding, before they become a bigger problem.

Literature Citations

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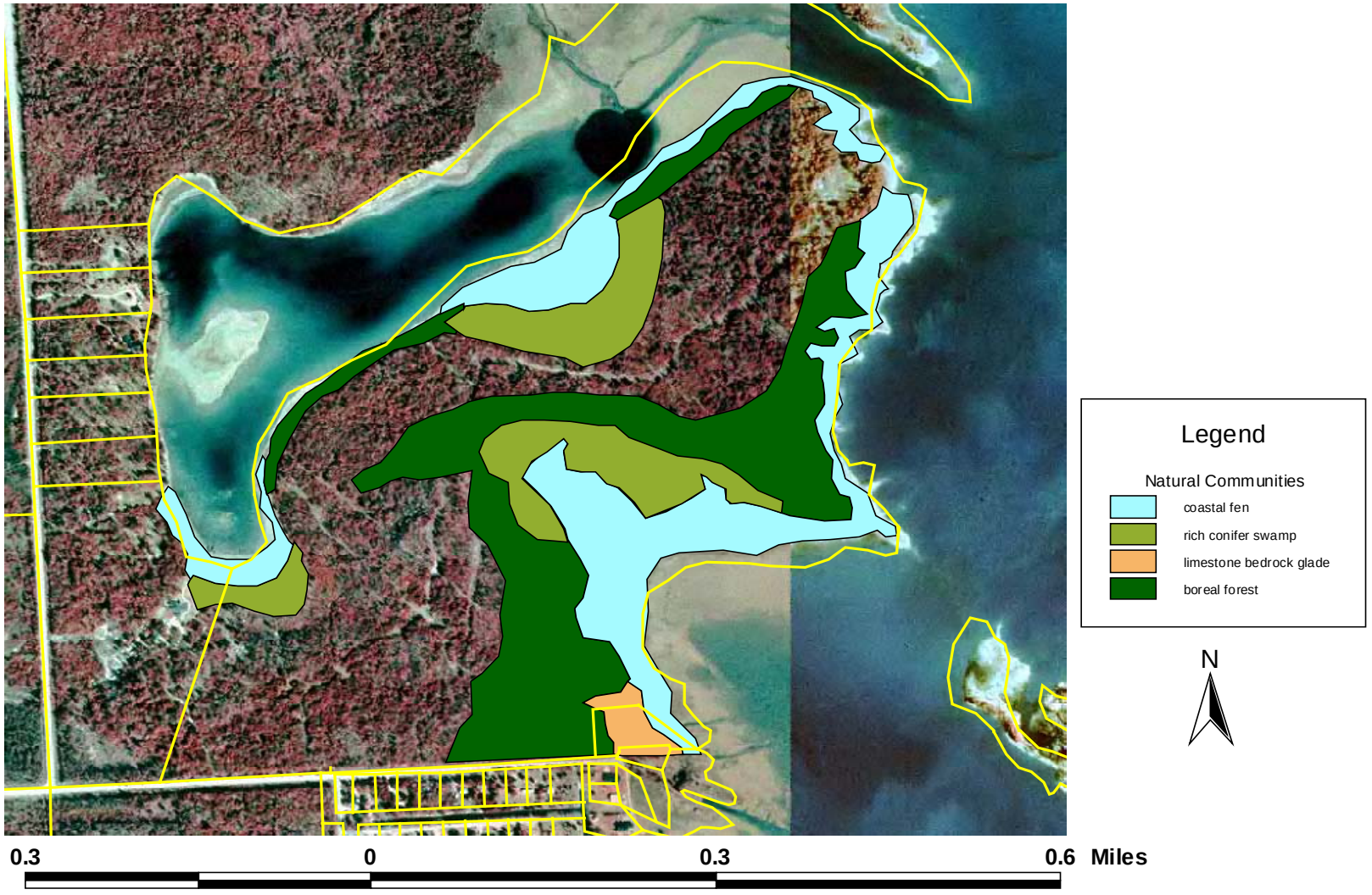
Herman, K. D., L. A. Masters, M. R. Penskar, A. A. Reznichek, G. S. Wilhelm, W. W. Brodovich, and K. P. Gardiner. 2001. Floristic Quality Assessment with Wetland Categories and Examples of Computer Applications for the State of Michigan – Revised, 2nd Edition. Michigan Department of Natural Resources, Wildlife, Natural Heritage Program. Lansing, MI. 19 pp. + Appendices.

Smith, R, M. Hamas, M. Dallman, D. Ewert. 1998. Spatial variation in Foraging of the Black-Throated Green Warbler along the Shoreline of Nothern Lake Huron. The Condor, Vol.. 100, No. 3. pp. 478-484.

Alpena Township Park Vegetation Map



Goals and Objectives

Nature Preserve Goals and Objectives

Provide an opportunity for residents, tourists and future generations to experience the natural environment of coastal communities – plants and wildlife.

- Provide birding a site for people.
- Provide views to the Thunder Bay Island Group.
- Provide access to the many ecological communities and rare biological species.
- Provide a place for schools and individuals to study natural ecosystems, flora and fauna.
- Develop a nature study brochure and signage to feature the natural communities and flora.

Coordinate with existing activities to make the Nature Preserve part of a regional tourism package.

- The Preserve can be an attraction for tourism, and part of an eco-tourism/historic/outdoor recreation package that will draw people to the area.
- Work with organizations and efforts such as the Alpena Tourism and Convention Bureau, US-23 Heritage Route, Michigan State Parks, Huron Greenways, NOAA Maritime Heritage Center, Sunrise Side Tourism.

Protect natural communities, and rare flora and fauna.

- The property is home to a number of rare species and functions as an important migratory bird stop-over (neo-tropical birds, shorebirds and waterfowl). Public use should be allowed within reason with an emphasis on protecting the sensitive areas.
- To maintain ecosystem integrity, invasive species should be monitored and managed. Invasive species can become an issue during construction projects. Disturbed sites create a receptive seed bed; equipment and fill such as road gravel and top soil bring in the seed source. The monitoring program should be stepped up after any construction project.
- Periodically evaluate the threat of wildfires and develop a policy to address fighting wildfires.

Provide for a variety of outdoor recreational activities while protecting the fragile environment of the property.

- Provide access to Misery Bay for canoes and kayaks.
- Provide controlled access to sinkholes for diving and observation.
- Provide an area for the public to hunt.
- Provide off road parking.
- Provide a marked/signed trail system for people to hike the property and not get lost.
- Develop a brochure of the property that shows trail system, cover type, plant communities, sinkhole, parking, park rules, picnic areas, etc.
- Provide nature education for schools and individuals by placing signs, and developing a brochure.
- Establish a means to provide surveillance and policing of the park.
- Monitor and regulate usage so overuse and abuse of the land do not negatively impact the fragile communities on the property.
- The Township needs to be flexible with options and adjust management activities to address needs and concerns.

- Make sure management activities and recreational development on the property is covered by liability insurance.
- Ban the use of snowmobiles and ATV's on the property, including but not limited to along the shore and on the exposed bottomlands.
- Ban the use of motor vehicles along the shoreline and on the exposed bottomlands, particularly driving to the sinkholes.

Support the long term management of the park

- Establish a mechanism to provide long term funding for management and maintenance.
- Explore the possibility of setting up some endowment that can accept private funds and public funds earmarked for the preserve.
- Establish a mechanism for enforcing park rules.

Management Zones

Opportunities and Constraints

Based on information provided in previous chapters (soils, natural features surveys, existing vegetation, existing development) and committee discussions an opportunity and constraints map has been development. This map will help guide the establishment of management zones and identification of potential projects. The property offers access to coastal resources, both terrestrial and aquatic. Opportunities include an existing trail system, access to El Cajon Bay sinkholes for diving and access to Misery Bay for kayaking and canoeing. Existing small openings with additional site development can be used for parking and picnic areas. Clearly the greatest opportunity is to provide a quiet natural place for hiking and exploration of intact coastal ecosystems that abound with natural beauty. The property also provides opportunities to view rare plants and animals. Constraints include extensive wetlands, high water table, mucky soils, rare plant communities, and extremely fragile coastal fens and shorelines. Due to the fragile nature of the property, snowmobile and ORV use would have detrimental impacts and should not be allowed on the preserve. Vehicle use should be restricted to existing trails and directed to parking areas. The challenge will be installing barriers to stop vehicles from driving to the point and onto beaches. Another major constraint is an organizational constraint; the Township does not have staff to oversee day-to-day operations and policing of the preserve. Vehicle access onto the preserve will have to the carefully monitored and management options may have to be altered depending upon how users treat the property. **Figure 5.1** is an opportunity and constraints map of the property.

Overall Approach to Property Management

The Nature Conservancy, Michigan Natural Resources Trust Fund and a Great Lakes Coastal Restoration Grant all contributed to making the purchase possible. As part of the grant agreement Alpena Township was charged with providing long-term management that will protect conservation values of the property such as habitat for fish, wildlife, waterfowl and other birds, amphibians, insects and native plants. Secondly, the property is to provide a place for passive recreation and access to Lake Huron for non-motorized watercraft such as canoes and kayaks. Access to coastal resources can be interpreted as both physical and visual access. Access does not mean complete access to everyone, for all possible uses, on every square foot of the property.

The primary purpose of the property is to provide low to moderate levels of natural resource related recreation (passive recreation) while protecting the native plant communities, rare plants and rare animals. Hunting/trapping and fishing are compatible uses. Timber harvest or vegetative management should be restricted to controlling invasive species and re-establish native systems. Exotic species will need to be monitored and removed. Snowmobiles and ORV's are NOT compatible with the overall purpose of the property and are not allowed anywhere on the property.

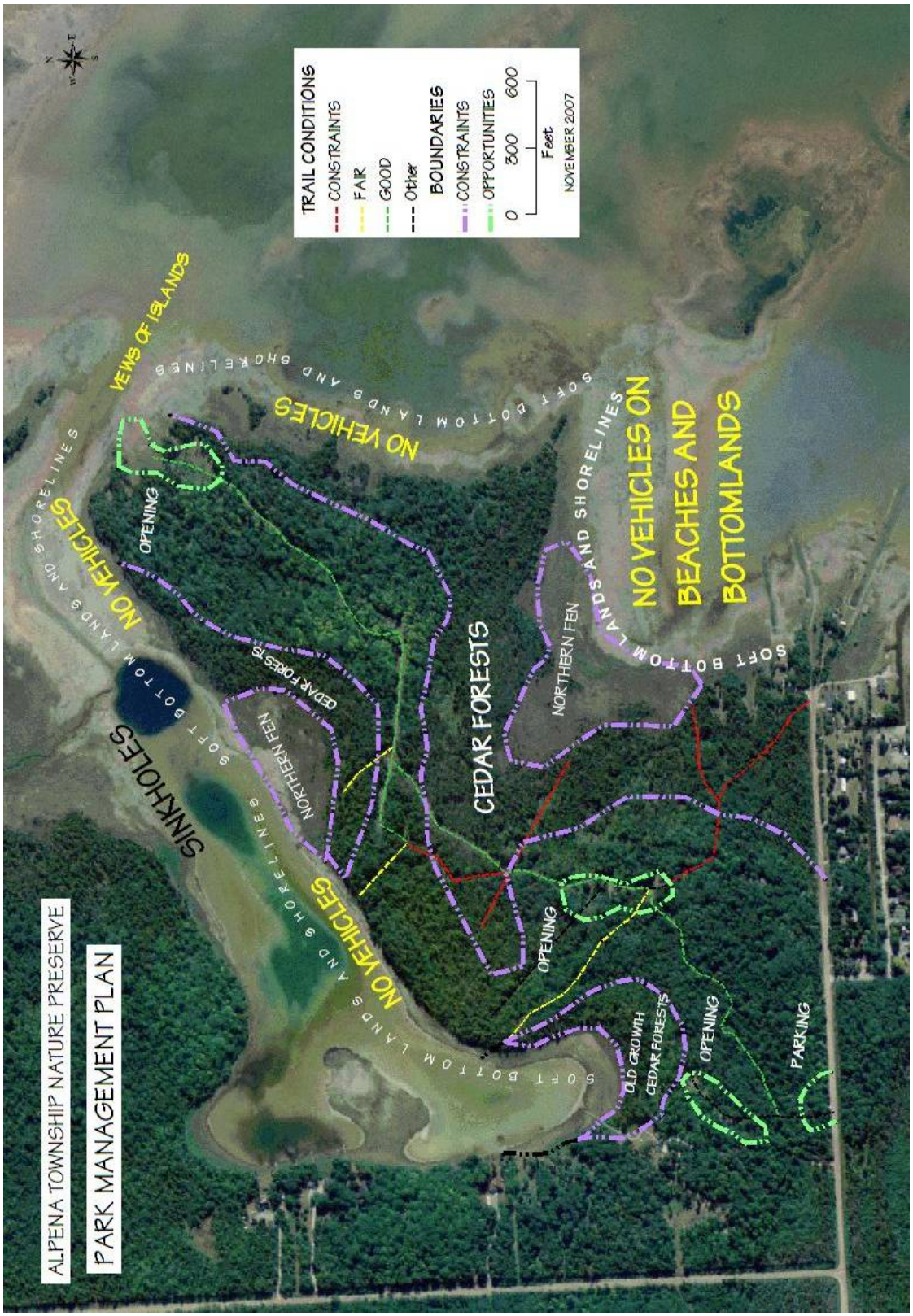


Figure 5.1: Opportunities and Constraints Map

Management Zones

An important step in the management planning process is the identification and delineation of Management Zones. The Nature Preserve Committee used an approach similar to the Michigan State Parks and National Park Service. Information provided in the background studies guided the committee's decision to designate three management zones on the property. Management zones are areas with defined characteristics and qualities for which there are related user expectations, management guidance and defined levels of development. **Figure 5.2** is a graphic from the Michigan Department of Natural Resources State Parks management zone planning approach.

Source: DNR Parks Division Management Planning Process

Ecologically Sensitive Zone

The purpose of the ecologically sensitive zone is enhancement and protection of the native community and natural process over and above any other uses (including recreational) that might be contemplated. This zone restricts public use and development. Ehe Ecologically Sensitive Zone is used when critical habitat must be protected, such as a coastal fen or where federally protected species are found, such as the Dwarf Lake Iris, the Lake Huron tansy or the piping plover. Native species and natural processes dominate and the overall character is pristine. Pre-European ecosystem components and processes should be maintained, restored and protected. Recreational activities such as hiking trails, picnic areas and observation points should be limited within these zones and in the case of the coastal fens restricted. One exception might be x-country skiing. Hunting/trapping/fishing and other low-impact dispersed recreational use can occur, however these usages should be monitored. Educational opportunities would typically be off-site for general public, with allowance for highly controlled access where appropriate and feasible for researchers/scientists. The zones would support ecological research and monitoring. Due to the sensitivity of sites, visitor use should be directed away from these zones. There will be no interpretation signage on-site; off-site interpretation will focus on the resource. The management focus should be protection for the resource. There should be no development except as needed for resource protection. There will be little evidence of human activity.

Scenic Zone

The Scenic Zone recognizes that there are aesthetic qualities to be preserved and protected. The Scenic Zones offer views of El Cajon Bay, Misery Bay and the Thunder Bay Island Group. The observation points are located along the shoreline and in existing open areas. Select removal of trees and shrubs to improve views would be acceptable. To keep the Native greenbelts intact, filtered views through shrubs and trees are preferred. This zone is only accessible by foot traffic

and other non-motorized activity. Low level of development to support visitor access, interpretive activities and sightseeing such as trails, small picnic areas and interpretive media would be acceptable Interpretive signage could be placed at key viewing points, as well as benches, picnic tables and viewing platforms. All activities or developments in this zone must be compatible with the over-riding purpose of view quality. Development should blend with the natural environment. Site hardening such as boardwalks, barriers and fencing would be allowed to protect sensitive resources.

Natural Resource Recreation Zone

The character of the Natural Resource Recreation Zone is natural with minimal evidence of human impact while allowing for low to moderate levels of recreation use, and modifications of the landscape (i.e., trail development) to accommodate that use. There is still an emphasis on resource quality over recreation. This zone allows for increased use, including bicycle and equestrian, and modifications of the landscape (i.e., trail development) to accommodate that use. Exotic species should be removed. Protection of water quality should be a priority. Timber harvest and vegetative management, including controlled burns, can occur on a limited, short-term basis for habitat improvement. Moderate levels of recreation compatible with natural character of the zone are acceptable. Non-motorized outdoor activities are allowed and would include the following: hiking, backpacking, bicycling, canoeing, diving, kayaking, nature observation, cross-country skiing, snowshoeing, and hunting/trapping/fishing). Interpretive signage would be allowed at trailheads, on the trail and at overlooks. Low level of development is acceptable to support visitor access to outdoor activities: trails, trailhead parking, marked routes, and educational opportunities. Development would be unobtrusive and would blend with natural environment. Site hardening (i.e., boardwalks, fencing, pedestrian paths) may be necessary to protect sensitive resources. Clearly the overriding approach to this zone is to maintain its low-impact character, with an emphasis on natural resource quality.

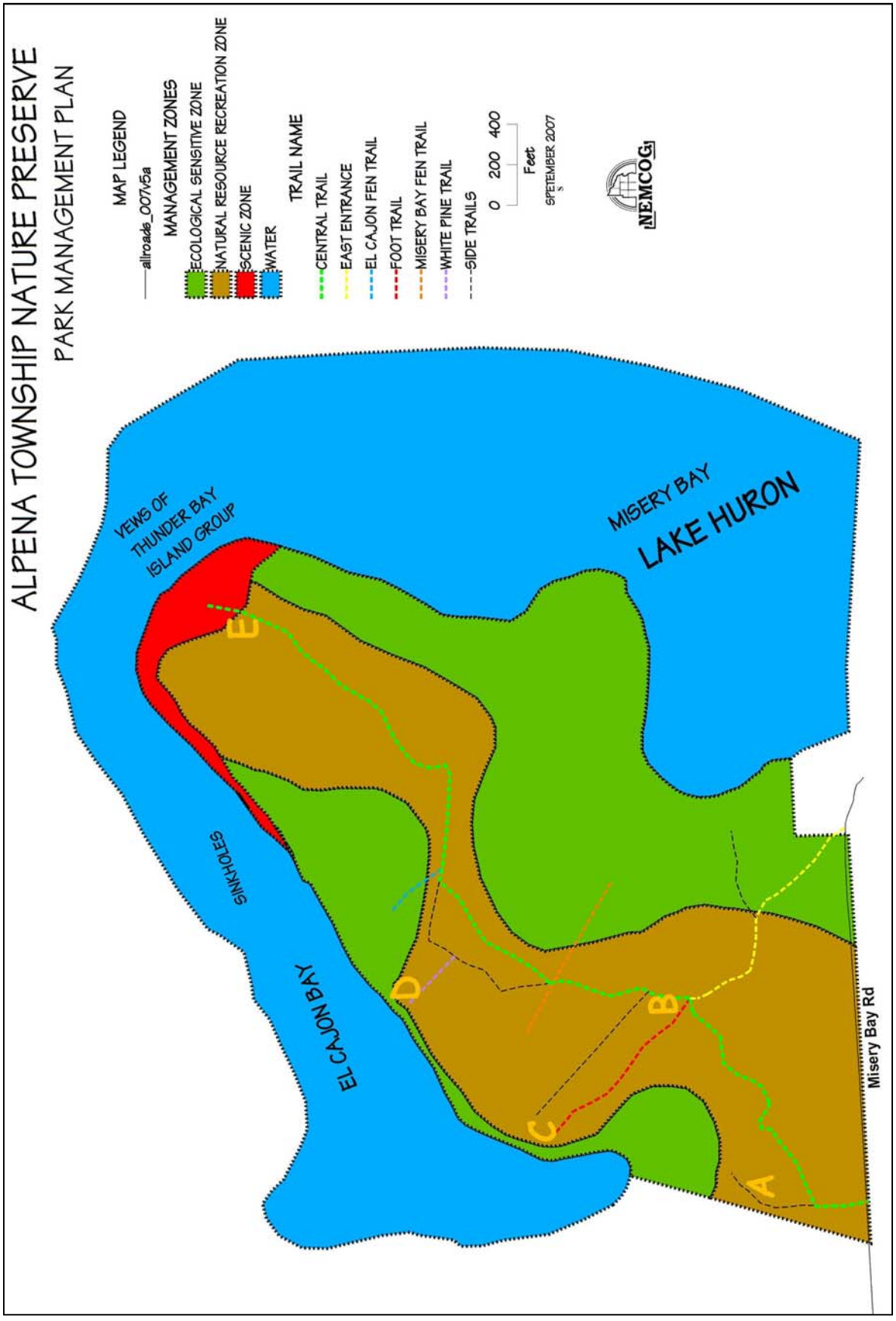


Figure 5.2: Management Zones Map

Management Recommendations

Recommendations

The underlying purpose of the Nature Preserve is to provide access to coastal resources while preserving those resources for future generations. These resources include both nearshore and terrestrial environs. The intent is to provide reasonable access while protecting the fragile nature of the property, which sometimes can be a balancing act. Reasonable access does not mean unlimited access for all types of recreation and use of motorized vehicles. Given constraints of the property, the Nature Preserve Planning Committee and Alpena Township has decided general access will be limited to foot traffic. The Township will investigate implementing a vendor subscription system for diving guides and other tour guides. This approach would support limited, controlled vehicle access. It is not the intention for the township to provide dedicated staff to manage or police the preserve. The approach will be low impact, wildlands recreation with a focus on nature study, hiking, and bird watching. All management activities should be guided by the goals and objectives of this plan

Long Term Resource Management

The property is home to a number of rare species and functions as an important migratory bird stop-over (neo-tropical birds, shorebirds and waterfowl). While the intention is to minimize impacts to flora and fauna by leaving the property in an undisturbed, natural state, the community will still have to monitor the property and in some case actively manage the natural systems. Public use should be allowed within reason with an emphasis on protecting sensitive areas.

- To maintain ecosystem integrity, invasive species should be monitored and managed. The Natural Features Inventory identified glossy-leaved buckthorn and autumn olive on the property. These plants should be removed as quickly as possible, by cutting and herbicides before they become a bigger problem. A volunteer group could be used to assist in monitoring and removal of invasive species. Timeline: 2008

- An ecological conditions site inspection should be completed every 3-5 years. The site inspection should cover the entire property and be completed by a resource professional with knowledge and experience in completing resource inventories. The inspection should document presence of invasive species, recreational impacts, forest condition and potential threats, and include management recommendations. Timeline: 2011

- The Alpena Township Board and/or the Nature Preserve Committee should evaluate the management plan every five years, or more often if needed, to evaluate management activities and recreational usage in the context of resource protection. If it is determined the Nature Preserve Management Plan should be amended, the Nature Preserve Committee will make those recommendations to the Township Board for their consideration and approval. Timeline: 2013

Trails

There is an existing network of trails developed by the previous owner. The Lake Huron View Trail enters the property from the southeast corner eventually ending at the point. The first several

hundred feet of the trail has populations of Dwarf Lake Iris. Therefore, this segment is able to accommodate foot traffic, but will not accommodate vehicular access. A trail runs from the southwest corner of the property in a northeasterly direction and connects to the main trail. This western trail has a gate at the property line and should function as a service drive for vehicular traffic. The service drive is in good condition and does not need any work. Several spurs stub off the main trail, ending at El Cajon Bay.

- Side trails identified for retention are in reasonable condition. Brushing out will be necessary within the next five years to keep the trails open. With increased foot traffic, there are several sites that will need mulching or possible a short boardwalk. Trails ending at Openings C and D offer access and views of El Cajon Bay. *Timeline: 2010*

- To provide kayak access to Misery Bay, a short trail will need to be developed from the proposed parking lot to the water. Location of the trail should be sensitive to rare plants such as Dwarf Lake Iris. *Timeline: 2009*

- The trails will need to be mowed and brushed out every two to five years. *Timeline: 2012*

- The existing trail network does not offer any loop routes. Construction of a short trail connecting openings C and D would offer a short loop as well as views of El Cajon Bay. Construction of the connection trail is a long-term priority and should be considered after higher priority projects are completed. *Timeline: 2013*

Nature Preserve Web Site

A cost effective means of providing information to the public is to use the internet.

- The Community should design a Nature Preserve Web Page. The management plan should be posted on the Community's web site. *Timeline: 2008*

- As educational materials are developed such as brochures, plant lists, park rules and maps, they should be posted on the Nature Preserve Web Page. *Timeline: 2009*

Nature Preserve Brochures

The Nature Preserve Committee has identified the need to develop two brochures for the Nature Preserve.

- Develop a brochure with a trail map, park rules and water access points. Basic information on special plants and animals should be included in this brochure. *Timeline: 2008*

- A separate nature study brochure should be developed. The brochure would provide information on rare plants and animals, plant communities, and cautions to protect fragile areas. Information on bloom times and bird watching should be included in the brochure. *Timeline: 2010*

Parking Lot

The lack of onsite parking, clearly limits use of the Nature Preserve. Visitors are required to park on the roadside, which has narrow shoulders, resulting in unsafe conditions.

- Pursue acquisition of lots and easements on the south side of Misery Bay Road to construct a parking lot, to provide direct water access and to develop facilities related to the Nature Preserve. *Timeline: 2008-2009*

- Construct a gravel parking lot near the eastern entrance of the Nature Preserve. Location of the parking lot near the eastern entrance would support reasonable access to Lake Huron for paddle sports. The size is designed to accommodate four cars and one school bus. Placement of boulders will help define parking lot edges. It will be necessary to provide barriers at the walking trail entrances to prohibit vehicle access into the Preserve. It will be necessary to conduct site exams to assess presence of wetlands, and rare plants and animals. *Timeline: 2009-2010*

- A kiosk with nature preserve trails map and plant communities, rare plants and animals, geology and park rules should be erected at the parking lot. *Timeline: 2010*

Signage

Directional and informational signs will improve visitors experience at the Nature Preserve.

- Purchase and erect directional signs and information signs along the trails. *Timeline: 2009*

- Construct a kiosk at the parking lot with the following information: nature preserve trails map and plant communities, rare plants and animals, geology and park rules. *Timeline: 2010*

- Construct a kiosk at the end of the point with information such as plants and communities, karst geology, sinkhole, Misery Bay, Thunder Bay Island Group. *Timeline: 2014*

El Cajon Board Walk and Sinkhole Overlook

The sinkhole in El Cajon Bay is a major focal point of the Preserve. To access the sinkhole, it is necessary to walk to the end of the point then follow the shoreline of El Cajon Bay. A boardwalk will provide more direct access to the sinkhole and protect shoreline resources from overuse. An observation platform will give visitors an elevated view of the sinkhole and bay. The boardwalk will enable divers to have better access to the sinkhole. *Timeline: 2012*

- The Township will need to seek grant funding for both design and construction phases of the boardwalk/overlook project. *Timeline: 2010*

- Conduct a site assessment to determine potential impacts to wetlands and rare plants and animals. *Timeline: 2011*

- Apply for all appropriate permits to the DEQ and Army Corps of Engineers to construct the boardwalk. *Timeline: 2011*

- Once funding is procured, construction plans and detailed design for the boardwalk/overlook including construction costs will be developed. *Timeline: 2012*

Observation Tower

The point offers the only public views of the Thunder Bay Island Group. To improve visual access, the plan recommends construction of a viewing platform. *Timeline: 2018*

- The Township will need to seek grant funding for both design and construction phases of the observation tower project. *Timeline: 2015*
- Conduct a site assessment to determine potential impacts to wetlands and rare plants and animals. *Timeline: 2016*
- Apply for all appropriate permits to the DEQ and Army Corps of Engineers to construct the observation tower. *Timeline: 2016*
- Once funding is procured, construction plans and detailed design for the observation tower, including construction costs will be developed. *Timeline: 2017*

Design Details

Alpena Township retained the services of ECT (Environmental Consulting & Technology, Inc.) to assist with developing low-impact development concepts and concept level design details. A field visit was conducted early winter to examine the property and identify opportunities and constraints. Based on analysis of existing conditions, planning goals, and management zones designations, new park facilities have been identified. **Figure 6.1** shows location of proposed park improvements, including trails, parking lot, boardwalk and observation tower. **Figure 6.2** is the conceptual design of the parking facility. The parking lot is designed to accommodate four cars and one school bus. Landscaping will screen the parking lot from the road. **Figure 6.3** is a conceptual design of the El Cajon sinkhole overlook. The design includes a scuba staging area to provide diving access to the sinkhole. **Figure 6.4** presents the design of the El Cajon Bay boardwalk.

Preliminary cost estimates

Parking Lot

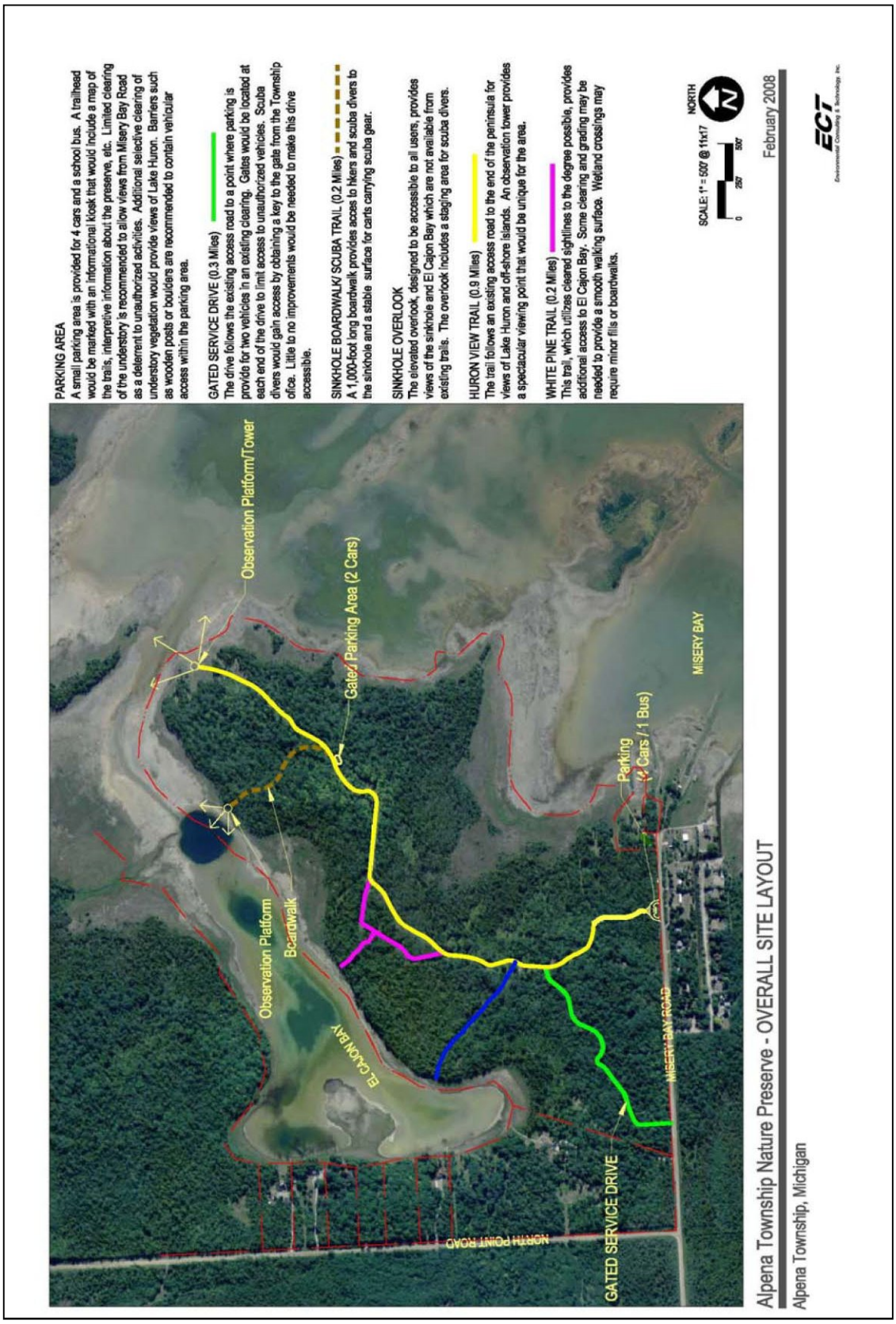
Construction (includes Kiosk and entrance sign)	$26,500
Design Fees:	$ 3,200
Wetland delineation, plant survey, permit applications	$ 3,500
Construction Oversight:	$ 1,900

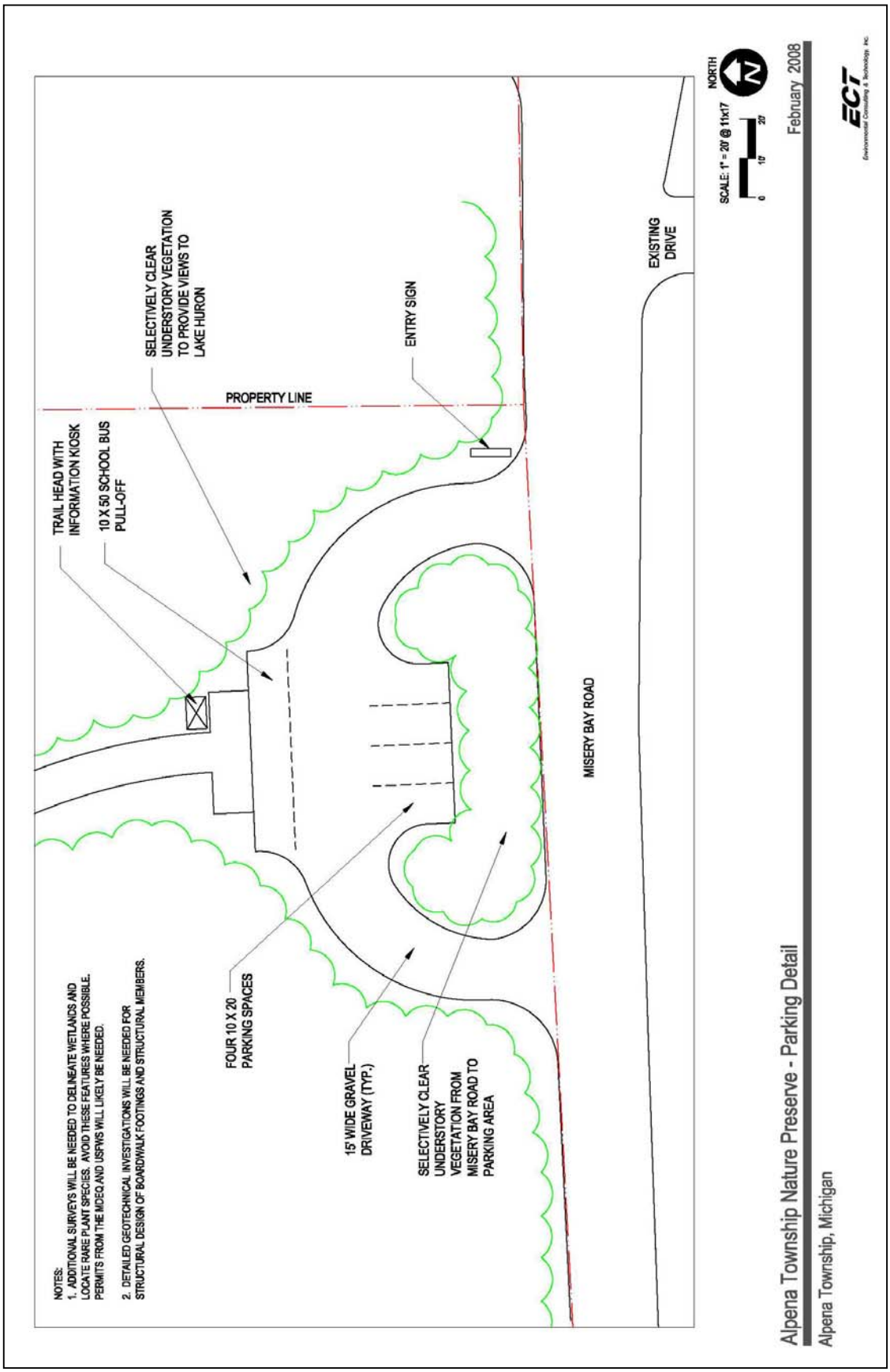
Signs

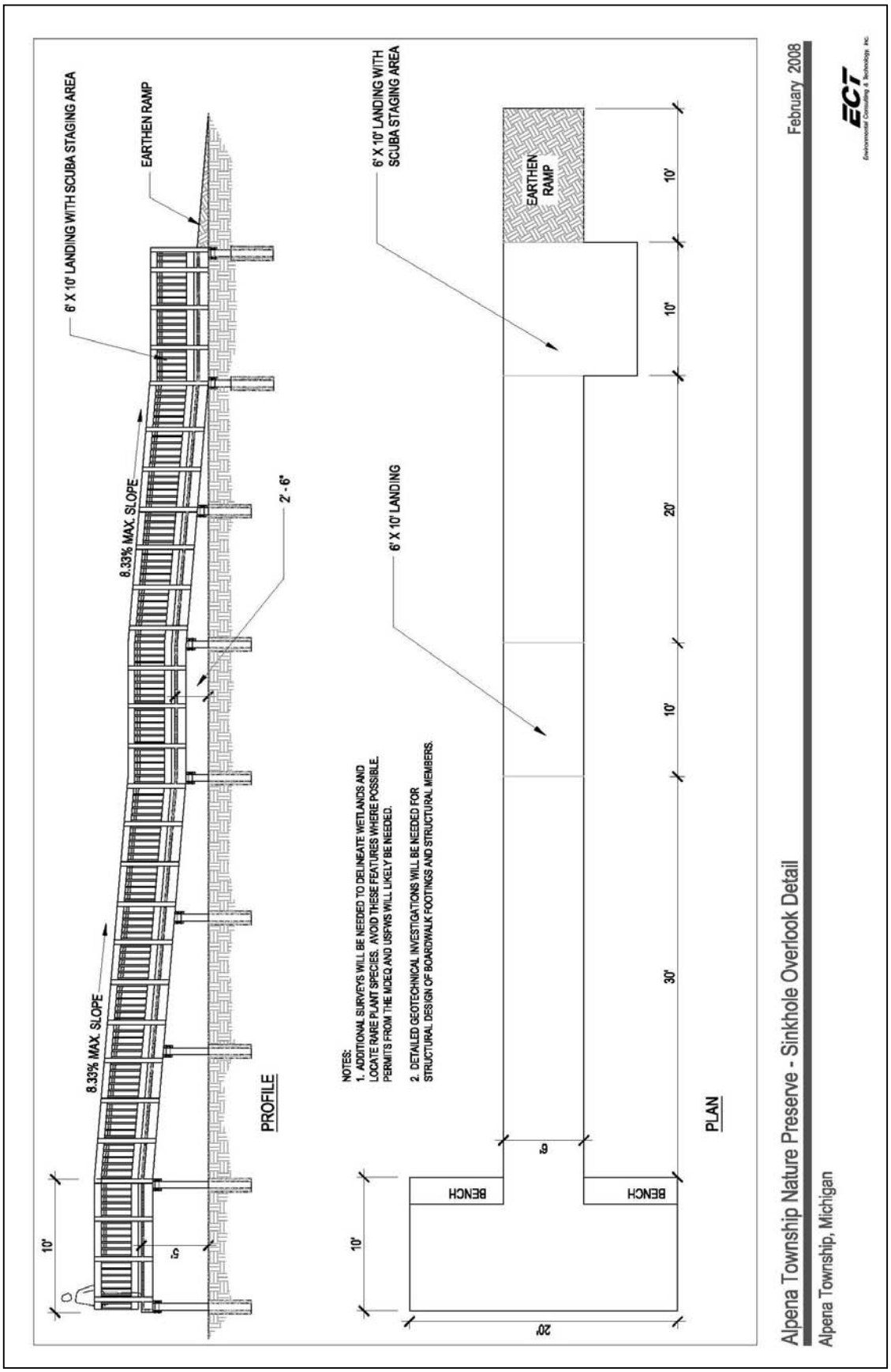
Trail signs (per sign includes post)	$ 100
Informational signs (per sign includes post)	$ 100

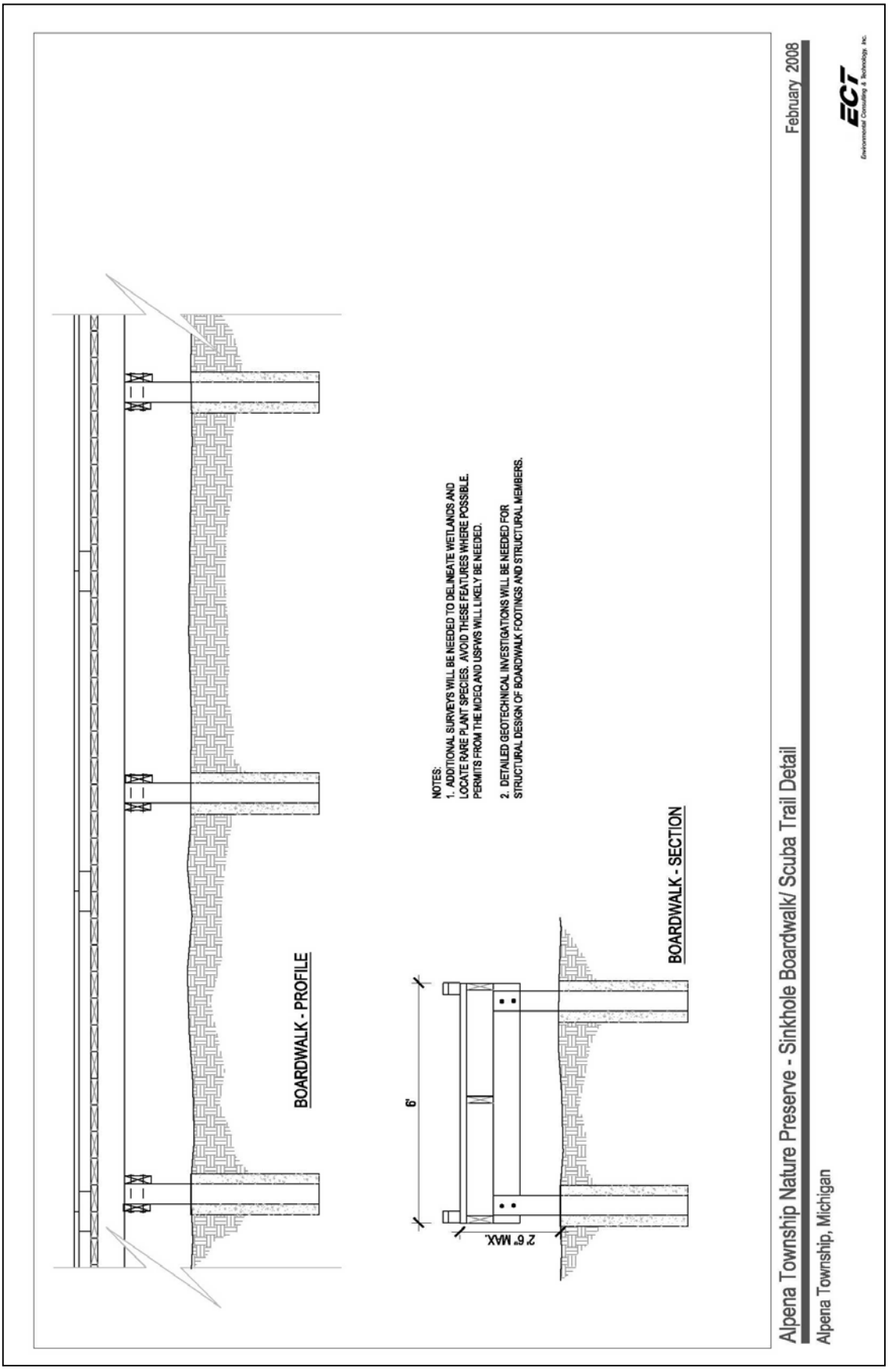
Brochures

Design (per brochure)	$ 600
Printing ($0.50 per brochure @ 1000 printed)	$ 500


PARKING AREA
A small parking area is provided for 4 cars and a school bus. A trailhead would be marked with an informational kiosk that would include a map of the trails, interpretive information about the preserve, etc. Limited clearing of the understory is recommended to allow views from Misery Bay Road as a deterrent to unauthorized activities. Additional selective clearing of understory vegetation would provide views of Lake Huron. Barriers such as wooden posts or boulders are recommended to contain vehicular access within the parking area.
GATED SERVICE DRIVE (0.3 Miles)
The drive follows the existing access road to a point where parking is provide for two vehicles in an existing clearing. Gates would be located at each end of the drive to limit access to unauthorized vehicles. Scuba divers would gain access by obtaining a key to the gate from the Township ofice. Little to no improvements would be needed to make this drive accessible.
SINKHOLE BOARDWALK/ SCUBA TRAIL (0.2 Miles)
A 1,000-foot long boardwalk provides acces to hikers and scuba divers to the sinkhole and a stable surface for carts carrying scuba gear.
SINKHOLE OVERLOOK
The elevated overlook, designed to be accessible to all users, provides views of the sinkhole and El Cajon Bay which are not available from existing trails. The overlook includes a staging area for scuba divers.
HURON VIEW TRAIL (0.9 Miles)
The trail follows an existing access road to the end of the peninsula for views of Lake Huron and off-shore islands. An observation tower provides a spectacular viewing point that would be unique for the area.
WHITE PINE TRAIL (0.2 Miles)
This trail, which utilizes cleared sightlines to the degree possible, provides additional access to El Cajon Bay. Some clearing and grading may be needed to provide a smooth walking surface. Wetland crossings may require minor fills or boardwalks.
Observation Platform/Tower
Gated Parking Area (2 Cars)
Observation Platform
Boardwalk
EL CAJON BAY
NORTH POINT ROAD
GATED SERVICE DRIVE
MISERY BAY ROAD
Parking (4 Cars / 1 Bus)
MISERY BAY
SCALE: 1" = 500' @ 11x17
0
250'
500'
NORTH
Alpena Township Nature Preserve - OVERALL SITE LAYOUT
Alpena Township, Michigan
February 2008
ECT


NOTES:
1. ADDITIONAL SURVEYS WILL BE NEEDED TO DELINEATE WETLANDS AND LOCATE RARE PLANT SPECIES. AVOID THESE FEATURES WHERE POSSIBLE. PERMITS FROM THE MDEQ AND USFWS WILL LIKELY BE NEEDED.
2. DETAILED GEOTECHNICAL INVESTIGATIONS WILL BE NEEDED FOR STRUCTURAL DESIGN OF BOARDWALK FOOTINGS AND STRUCTURAL MEMBERS.
FOUR 10 X 20 PARKING SPACES
15' WIDE GRAVEL DRIVEWAY (TYP.)
SELECTIVELY CLEAR UNDERSTORY VEGETATION FROM MISERY BAY ROAD TO PARKING AREA
MISERY BAY ROAD
EXISTING DRIVE
TRAIL HEAD WITH INFORMATION KIOSK
10 X 50 SCHOOL BUS PULL-OFF
SELECTIVELY CLEAR UNDERSTORY VEGETATION TO PROVIDE VIEWS TO LAKE HURON
PROPERTY LINE
ENTRY SIGN
NORTH
SCALE: 1" = 20' @ 11x17
0
10'
20'
Alpena Township Nature Preserve - Parking Detail
Alpena Township, Michigan
February 2008
ECT
Environmental Consulting & Technology, Inc.


6' X 10' LANDING WITH SCUBA STAGING AREA
EARTHEN RAMP
8.33% MAX. SLOPE
2' - 6"
8.33% MAX. SLOPE
10'
PROFILE
NOTES:
1. ADDITIONAL SURVEYS WILL BE NEEDED TO DELINEATE WETLANDS AND LOCATE RARE PLANT SPECIES. AVOID THESE FEATURES WHERE POSSIBLE. PERMITS FROM THE MDEQ AND USFWS WILL LIKELY BE NEEDED.
2. DETAILED GEOTECHNICAL INVESTIGATIONS WILL BE NEEDED FOR STRUCTURAL DESIGN OF BOARDWALK FOOTINGS AND STRUCTURAL MEMBERS.
6' X 10' LANDING WITH SCUBA STAGING AREA
EARTHEN RAMP
6' X 10' LANDING
10'
10'
10'
20'
30'
6'
BENCH
BENCH
10'
20'
PLAN
Alpena Township Nature Preserve - Sinkhole Overlook Detail
February 2008
Alpena Township, Michigan
ECT
Environmental Consulting & Technology, Inc.


BOARDWALK - PROFILE
BOARDWALK - SECTION
6'
2'6" MAX.
NOTES:
1. ADDITIONAL SURVEYS WILL BE NEEDED TO DELINEATE WETLANDS AND LOCATE RARE PLANT SPECIES. AVOID THESE FEATURES WHERE POSSIBLE. PERMITS FROM THE MDEQ AND USFWS WILL LIKELY BE NEEDED.
2. DETAILED GEOTECHNICAL INVESTIGATIONS WILL BE NEEDED FOR STRUCTURAL DESIGN OF BOARDWALK FOOTINGS AND STRUCTURAL MEMBERS.
Alpena Township Nature Preserve - Sinkhole Boardwalk/ Scuba Trail Detail
Alpena Township, Michigan
February 2008
ECT

Appendix A

Township Board Minutes

Appendix A

Township Board Minutes

Appendix B

Michigan Natural Features Plant List