

# **Management Plan for Magney Snively Nomination Duluth Natural Areas Program**

**Submitted by:** The City of Duluth in cooperation with The Nature Conservancy

## **I. General Management**

### **A. Overview**

The purpose for all management activities on lands nominated to the Duluth Natural Areas Program (DNAP) is to maintain the features for which the area was nominated, in this case the ecological integrity of the native plant communities of the Magney Snively area and to protect the area's special species and geologic landforms. At the time of nomination, each of the area's natural features is in good condition. In this highly functional native ecosystem, the goal of maintaining the area's integrity can be reached with relatively little management intervention.

### **B. Management authority**

The majority of the lands within the Magney Snively area are and will continue to be managed by the City of Duluth. However, the possibility remains open for the City to enter into a future cooperative management agreement with a local citizen's group, non-profit agency, or other entity to:

- 1) Assist the City in the management of a portion of the nominated lands; or,
- 2) Assume responsibility for a specific task(s) that helps the City achieve the overall management goal for the area.

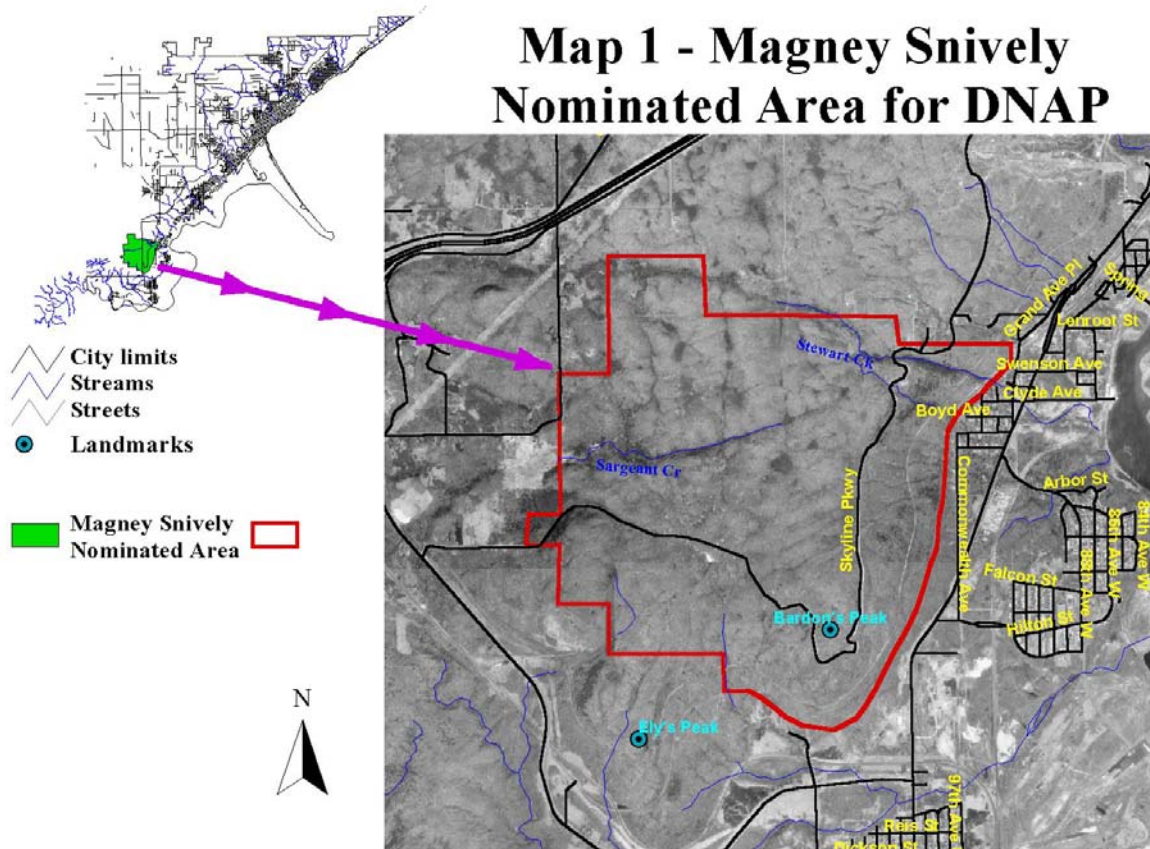
One 60-acre parcel included in the nomination is privately owned by The Nature Conservancy (TNC). TNC intends to convey the tract by gift to the City for protection under DNAP. This tract will be managed by the City of Duluth.

### **C. Site Description**

Details of the site location and land uses are described in the Magney Snively nomination materials. Small signs will be posted on the periphery at appropriate locations informing the public that the area is a designated DNAP. Map 1 below shows the nominated area. The lands surrounding Magney Snively are primarily used as follows:

1. Private residential to the northeast and west
2. Sprit Mountain Authority to the north
3. Industrial primarily to the southwest (e.g., gravel pit).

## Map 1 - Magney Snively Nominated Area for DNAP



### D. Real Estate Considerations

The nomination and designation includes lands owned by the City of Duluth and lands pledged to the City by gift from The Nature Conservancy. Additionally, the city and The Nature Conservancy are working with owners of small, private tracts of land within the designation. These tracts, upon successful conveyance to the city will become part of the designated natural area. These tracts are generally unbuildable parcels (refer to Magney Snively Nomination - Appendix C). For example, four properties of 0.14 acres are located in the defunct subdivision known as Mesaba Heights 2nd Division. As of the date of this writing, negotiations for all of these parcels is underway and it is anticipated that these parcels will be donated to the City (either directly by the landowner, or after purchase by The Nature Conservancy). Another unbuildable parcel of 0.14 acres is located between the Munger Trail and Duluth Winnipeg & Pacific Railroad in the "Pittsburg Addition." As of this writing, a gift has been pledged. Four other parcels (also unbuildable under existing zoning) are located on the eastern edge of the nomination area between the Munger Trail and the Duluth Winnipeg & Pacific Railroad. Negotiations are underway with most of these for either gifts, exchanges or otherwise.

### **E. Natural Resources**

Refer to the nomination materials for the Magney Snively area for a detailed description of the native plant communities, special species and geologic features to which this management plan applies.

### **F. Human Uses**

Magney Snively area is used for a number of recreation purposes, mostly passive. The scenic views and varied habitats provide great opportunities to enjoy the natural world, including birding, hiking, and skiing. The property contains a system of ski trails. Although portions of the ski trail system are wet for much of the year, the ski trail system affords opportunities for hikers. A portion of the Duluth Cross City Snowmobile Trail that also includes Skyline Drive passes through the northern portion of the nominated lands. Snowmobiles are the only form of motorized recreation permitted in Magney Snively Park. The Superior Hiking Trail Association is in the process of flagging a trail across the City of Duluth and will be working with the City in 2003 to permit this use. Plans are for this hiking trail to cross through the nominated area and be managed by the Superior Hiking Trail Association.

## **II. Natural Resource and Human Use Management Approach**

### **A. Adaptive Management**

The guidelines contained in this document are intended to serve as a framework for adaptive management. Adaptive management involves setting ecological goals based on what the land can support, monitoring the effectiveness of management techniques implemented, and adjusting land management based on monitoring. In this way, the effectiveness of land management can be improved over time. Such an approach involves using the best scientific information currently available to make management decisions that are consistent with the overall goal of maintaining the ecological integrity of the Magney Snively lands.

At Magney Snively, adaptive management will be implemented by emphasizing existing natural processes whenever possible to achieve management goals. Where natural processes are no longer functioning properly, management techniques will be designed to mimic natural processes if possible. In some places, more active management may be appropriate. All management activities will be based on an understanding of natural disturbance regimes and other natural processes.

### **B. Natural Dynamics**

Ecologists and natural resource managers have worked together over the last decade to create recommendations for land management that is based on an

understanding of ecosystem processes or natural dynamics. This approach represents the best of science-based land management that is most compatible with the conservation or restoration of an area's ecological integrity. Two of the dynamics most frequently highlighted under such a framework are 1) succession and 2) natural disturbance regimes. Forest and wetland ecosystems rely on certain types of disturbance processes to maintain their array of native plants and animals, recycle nutrients, stimulate growth and reproduction, and provide for a number of other key functions. The recommendations contained in this management plan espouse the idea that management decisions will be aligned with an understanding of the timing, extent, severity, and frequency of natural dynamics. What follows is a broad grouping of the natural disturbance processes that drive groups of plant communities in the Magney Snively area. The Minnesota County Biological Survey is working on a detailed map of plant communities in the Magney Snively area. That map will be a useful product for planning future management activities in the area.

1. Mesic hardwood forest system – Much of Magney Snively is dominated by this system, which operates relatively independently of fire. It includes Sugar Maple-Basswood (Bluebead lily) forest (MHn47a), Black ash-basswood forest (MHn46b), Red Oak-Sugar Maple-Basswood (Bluebead lily) forest (MHn35a) and paper birch-sugar maple forests (North Shore) (MHn45a). Plant communities in this system seldom experience a catastrophic, stand-replacing disturbance. Rather than being driven by fire or wind, these communities are driven by gaps created through individual treefalls. They can operate for centuries to thousands of years without the need for management intervention under this disturbance regime, known as gap-phase dynamics (Frelich, 1998).
2. Forested Wetlands – The forested wetlands include black ash-conifer swamp (northeast) (WFn64a). The disturbance regime in this system was likely maintained by windthrow events that uprooted the shallow systems and turned the soil to maintain the conifer component (Frechlich, 1998).
3. Open wetlands and shrub swamps – Alder swamps are the primary shrub dominated wetland (WMn73a). Some very small examples of Northern Bulrush-Arrowhead Marsh (MRn93) are present, as well as a number of open vernal ponds in the mesic hardwood forests. In the absence of fires, open wetlands may succeed to shrub swamps. This is a natural transition, but it is possible that some kind of ecological management, such as brush removal or prescribed fire, may be

desirable in some circumstances to maintain the small examples of marshes in a relatively open state.

4. Fire dependent forest system – Examples of the fire-dependent forest system are uncommon in the Magney Snively forest and consist largely of aspen-birch woodland (FDn33b). Stand-maintaining fires may have occurred on the order of every 150 to 350 years in this community type (Shadis 2000), with stand-replacing fires occurring less frequently. The use of prescribed fires or strategies designed to emulate fire may be appropriate management options in these areas.
5. Rock outcrop communities – Northern bedrock outcrops (Ron12), Northern Bedrock shrublands (Ron23), and Dry Mafic Cliff (Northern) (CTn11a) are present in the park. In these sparsely-vegetated communities, the best approach may be not to overly stress the tenacious plants in these already stressful environments. It is possible that encroachment by shrubs may be occurring in some places in the absence of fire, but fire should be used with care in these areas as soil is very shallow and may be easily damaged. The driving disturbance regimes in these communities are not fully-understood, and vegetation is easily damaged by excessive use.

### **C. Threats and Strategies**

What follows is a description of the threats that may compromise the integrity of the plant communities, special plant populations, and geologic features. Each is accompanied by suggested strategies for addressing the threat. The threats and strategies are in **no particular order of importance**.

Each strategy may be implemented as funds and other resources become available, although such implementation is not a requirement. The list of threats and strategies is by no means exhaustive, and therefore, strategies developed to address unanticipated threats may be appended to or integrated into the document. The same general rule also follows for new strategies in that they should be consistent with the overall goal of maintaining the area's ecological integrity.

1. Illegal use by all terrain vehicles (ATVs) – Motorized vehicles are currently not permitted on City-owned lands in the Magney Snively area, with the exception of snowmobiles on the Munger and Duluth Cross City Snowmobile trails at the southern edge of the nominated lands. Illegal ATV use not only damages the existing trail system, but many users establish new trails or ride off-trail. The consequences of these activities include soil erosion, compaction, wildlife disturbance,

wildlife mortality, destruction of native plant populations, and many other issues.

*Strategies:* Although the exclusion of ATV use from the nominated tracts is compatible with the main management goals, enforcement can be very difficult and costly. As funds become available, some of the following options may help to alleviate the problem. Signs stating the rules of the area may be placed at strategic locations. Existing trails and roads may be gated to discourage entry. Additional enforcement personnel may be encouraged to emphasize patrolling Magney Snively and other DNAP lands. Finally, citizen volunteers may offer to patrol the area and turn in license plate numbers and other information on violators.

An education initiative letting ATV users and the general public know the harm that this use can cause natural areas is another possible strategy. This strategy could be implemented through non-municipal funding sources through intergovernmental or private foundation grants (e.g., DNR's Environmental Partnership program). Peer pressure and additional public scrutiny may result, making the Magney Snively area less attractive for ATV recreation.

2. Hunting – Although hunting deer, grouse, and other game can be an activity that is compatible with the conservation of a natural area such as Magney Snively, these activities are currently not permitted by City Ordinance in the area. The urban setting, multiple non-hunting uses, and adjoining residential properties make hunting activities a potential liability for the City.

*Strategies:* Much of the hunting that takes place at Magney Snively may result from a lack of familiarity with the ownership boundaries on the part of the hunters. Portions of the City lands are also outside the city limits, which may further contribute to the confusion. Signs placed at strategic locations with rules listed may help to alleviate this problem. Additional enforcement (e.g., DNR Conservation Officers) may also be of use in this situation.

3. Dumping and littering – As with most urban parks, illegal dumping of household garbage occurs from time to time at Magney Snively. Dumping seems especially prevalent along the Skyline Parkway corridor.

*Strategies:* Identify the areas most vulnerable to dumping. Work with citizen volunteer groups to have regular cleanups of these areas. Such

groups can either work independently or in regular coordination with the City as part of an organized activity.

4. Graffiti and other vandalism – Again, these illegal activities tend to happen in parks that are located near urban areas.

*Strategies:* Identify concentrations where these activities have most often occurred in the past. As funds are available, work with the Citizens Task Force of the Skyline Parkway Corridor Management Plan or other groups to create a cleanup and restoration program for previously damaged areas. Strive for an increased law enforcement presence at high risk times (e.g., weekdays, late evening/early morning).

Timely graffiti removal, particularly in the popular, well-visited areas, may have a greater deterrence to future graffiti than other law enforcement activities. When perpetrators learn that their efforts will go unrewarded because their graffiti has been removed, it has been found that incidents decrease.

5. Invasive-exotic species – Although the plant communities of Magney Snively are in generally in excellent condition, it is important to note that a handful of invasive-exotic species are present. Invasive-exotic species can pose problems in natural areas by out-competing native vegetation and reducing the integrity of the plant communities they invade. Among these species are common buckthorn in some of the wooded habitats, glossy buckthorn in wetland habitats, and purple loostrife and reed canary grass in wetland habitats. Other invasive-exotic species may also be present at Magney Snively.

*Strategies:* Train a volunteer citizens group to recognize infestations of invasive exotic plant species. Over the course of a summer, make a thorough baseline documentation of the extent and severity of invasive-exotic plant populations within the nominated tracts. Using this information, the City may choose to collaborate with other natural resource management partners to prioritize areas for action. As with any portion of this plan, the priority list must be related to the resource potential and ability to perform the removal of the invasive/exotic plants.

Involve City seasonal staff and citizen's groups in the strategic removal of invasive-exotic plants from priority areas. See references at the end of this document for suggestions on up-to-date control methods. Note that methods for controlling invasive-exotics is an area of active

research. Seek the most current information. Depending on the species, habitat, and goals, a selection of physical, mechanical, chemical and biological control may be available. Use the most targeted, effective approach to control possible while keeping in mind the overall management goal of conserving ecological integrity.

Keep in mind that in areas of heavy infestation it may be necessary to replant with native species appropriate to the habitat in order to fill the void created by the removal of most of the vegetation (in this case non-native vegetation).

Avoid introducing other uses into the area that are likely to introduce or spread new invasive-exotic plant problems.

6. Insect and disease outbreaks – As noted above, outbreaks of diseases and insects are a natural part of forest ecosystems. Rather than being viewed as extraordinary circumstances in need of correction, insects and diseases perform many of the vital functions of natural disturbance regimes, and are considered to be a necessary part of forest cycles.

However, it is useful to distinguish native insect and disease outbreaks from those that have been introduced from other parts of the world. Native plant communities have evolved with native insect and disease outbreaks. Like invasive exotic plants, introduced insect and disease problems arrive in North America with few natural enemies. Native plant communities have fewer defenses to cope with insects and diseases from other places. Other insects and diseases, such as spruce budworm, are a natural part of northern forest ecosystems but occur with greater frequency than in the past due to the altered forest composition in the landscape.

*Strategies.* It is not possible to anticipate the variety of insect and disease problems that may eventually find their way to the Magney Snively area. Instead, a few general guidelines are offered for consideration by future land managers. First, it is advisable to assemble a team consisting of the City Forester, a forest pathologist and/or entomologist, and an ecologist to discuss the most up-to-date science available on the organism and its effects on the affected plant community. The University of Minnesota Extension Service and the Minnesota Department of Agriculture are examples of the kinds of technical support the City may wish to consult in order to make a decision about outbreaks. A diverse team of professionals will help to ensure that all the options are carefully weighed and that the decision



made best reflects the overarching management goal of conserving ecological integrity as well as concerns related to costs.

The best defense against unwanted damage caused by insects and diseases is a diverse landscape comprising numerous plant communities with a full array of native plant species. Magney Snively possesses this natural defense system. In the event of an outbreak of a native disease or insect, trees that die as the result of the outbreak may be left standing if possible. Such trees, known as "snags," provide nesting habitat, resources for insects, retain moisture and provide shade. If they pose a risk to heavily used areas, dead trees could be felled but should be left on the ground.

In the case of an introduced insect, such as gypsy moth, a range of options may be considered. The management of disease and insect outbreaks is an area of active research. Before deciding how to act, all the current information should be considered along with the risk to the primary management goal of conserving ecological integrity. If the City decides that the risk to the plant community is lowered by taking action, the City has the final authority to select a targeted approach after consulting with a forest pathologist or entomologist for the latest, least invasive approach.

In other cases, evidence as to whether a pathogen is native or introduced may be conflicting. Oak wilt is an example of such a pathogen. The best defense for many diseases is prevention through common sense measures. Oak wilt typically spreads from tree to tree by root grafts. The vector beetle infects trees that are physically damaged during the months of April and May. By first avoiding the kinds of construction and/or pruning projects that are inconsistent with the broad management goals and limiting activities that may disrupt the forest during most vulnerable periods, many problems can be avoided.

7. Trail maintenance – Downed logs on trails, encroaching brush, and washouts along the trails are all examples of the kinds of problems that may need attention through trail maintenance. Some of the maintenance may strive to provide an enjoyable experience for users. Some of the problems arising with trails may also negatively affect the condition of the very resources the DNAP designation was intended to protect. The City maintains the ability to address washouts or wet trail conditions (e.g. with culvert replacement, geotextile fabrics and fill) within the context of maintaining the overall goal of the plan to maintain ecological integrity.

*Strategies:* Have seasonal park crews or a volunteer adopt-a-trail program assume the responsibility of maintaining trails clear of brush and logs. Good judgment should be used during these activities, keeping the broad goal of maintaining ecological integrity in mind. For example, unnecessary brushwork should be avoided (e.g., outside the area of the main trail). Chainsaw work should strive to leave logs intact whenever possible, moving only the small section that is blocking the trail. Avoid cutting hazard trees outside the trail area. If an area is receiving too much use, it may be appropriate to close a trail or to reroute it to a less sensitive area.

8. Natural disasters – As noted above, many of the phenomena considered to be “natural disasters” are actually a natural part of the forest ecosystem. Among these events are fires, windstorms, ice storms, etc.

*Strategies:* To the extent possible, allow these phenomena to run their course with some exceptions. Keep in mind that most of the plant communities of Magney Snively are not actually fire-dependent. If a natural fire starts and does not threaten lives or structures, consider letting it burn (but under careful surveillance). Windstorms and ice storms are part of the natural ecosystem in any northern Minnesota forest. Salvage cutting is discouraged as the snags, downed branches, and logs that result from such disturbances provide vital habitat and other important functions. Some cleanup around trails as noted above (7) may be appropriate.

9. Increased popularity – It is not clear whether the DNAP designation will result in an increased popularity of the Magney Snively area. If use increases, the City may anticipate an intensification of the above threats and possibly some new ones. New opportunities may also arise in the form of a larger pool of volunteers to help implement stewardship projects.

*Strategies:* Consider working with a University recreation resource management class or with a group of trained/qualified volunteers to determine changes from the baseline number of users over time. If popularity does increase, the ways in which to manage it must be weighed. For example, many users currently park along Skyline Parkway as there is very little official parking available. The creation of large parking lots may be incompatible with the ecological purpose of the designation, particularly if it leads to significant destruction or degradation of the area’s habitats, special species, or geological

features. Alternative parking solutions may arise that could help alleviate some of the stress caused by increased parking along Skyline Parkway.

### **III. Additional Recreational Amenities or Related Uses**

What follows is a listing of some of the additional amenities that may be provided at Magney Snively. To clarify, the DNAP framework does not require that any of these amenities be provided. Instead, the items listed below are intended to serve as examples of the kinds of amenities that may be consistent with the overall management goal under some circumstances. Such amenities may be pursued as funding and other resources become available. It should be noted that many additional amenities are incompatible with the goal of conserving the area's ecological integrity and may be excluded on this basis. Again, the overall goal of any additional amenity is that it enhance rather than compromise the conservation of the area's ecological integrity. A description of caveats and considerations for such possible future amenities follows each as appropriate. If additional amenities not anticipated here are desired by the City or user groups, they should be carefully considered in the context of whether they are consistent with the overarching management goal.

#### **A. Overlooks**

A number of overlooks occur within the park in particular along the Skyline Parkway corridor. The skyline corridor management plan proposes some improvement activities at these overlooks (e.g., the Bardon's Peak overlook, which offers a view of the St. Louis River estuary, Morgan Park, and Gary/New Duluth). Skyline Parkway is closed in the Magney Snively area from November through May. Hard surfacing to switch over to a year-round road may not be compatible with the area's ecological values. Asphalt millings have been applied to portions of Skyline Parkway to reduce dust in the past. Asphalt millings are asphalt-coated aggregates ground up from other asphalt pavements in Duluth. Due to the asphalt coating, dust is effectively controlled. The application of asphalt millings gives the appearance of a paved surface initially. Such applications may take place in the future along Skyline Drive.

*Strategies:* Coordinate with the Citizens' Task Force and other interested parties to clarify the overlooks of interest and to ensure that proposed vegetation management activities do not compromise the ecological integrity of nearby plant communities or special species populations. Consult with local geologists and ecologists to make sure that any new amenities do not damage the condition of the geologic and other features of the area that visitors are drawn to in the first place. This management plan should be consistent with the Skyline Drive Plan for parking options. Consideration may

need to be given to develop additional parking for a few cars to pull off at various access points along Skyline Drive.

### **B. Additional Trails**

When planning any additional trails or trail users, it is important to consider whether they are compatible with the conservation and ecological goals of the area. In addition to the destruction of the plants in the line of the new trail, vegetation adjacent to trails is often degraded. Whether wide or narrow, trails often serve as conduits for the invasion of invasive-exotic plant species that otherwise would be less able to invade natural areas. Particularly in forests, trails create more exposure to light and wind, creating a drier, warmer environment. Predators of nesting songbirds, a conservation concern at Magney Snively, also may be funneled along trails (Dunevitz 1997).

The Superior Hiking Trail is an example of a new trail that is likely to run through a portion of the lands included in the Magney Snively area. The City and the Nature Conservancy is working with the Superior Hiking Trail Association on the careful placement and construction of the trail, so that impacts to the special species, plant communities, and geologic features can be minimized.

*Strategies:* Carefully evaluate the need for additional trails. Consider limiting new trails to narrow footpaths. Avoid wider trails, particularly hard-surface trails, with the understanding that outside funding may have certain requirements or specifications that may or may not be appropriate to a natural area such as Magney Snively. Some funding sources may not be desirable for use at Magney Snively if their specifications are incompatible with maintaining the ecological integrity of the area. The same maintenance considerations as described above apply to new trails.

### **C. Interpretation of Natural Features**

The DNAP encourages education and information about the nominated area, while still protecting the viable resource. People wandering off the designated trails to view special features can be a detriment to the area. It is important that people understand the area's ecological value and have some opportunity to learn and see some of the special features that make the area ecological valuable to the community.

*Strategies:* Low impact interpretive techniques are allowed and encouraged. The City may elect to partner with agencies, nonprofit organizations, or other volunteer groups to provide financial resources for interpretation on designated trails.

#### **D. Special Uses**

Among the uses currently being considered for the Magney Snively area are horseback riding and mountain biking. Many studies have shown that impacts to vegetation by horses can be severe (Weaver et al. 1979). Horses tend to dislodge more soil and compact soil to greater depths than hikers, causing greater disturbance (Great Smoky Mountains National Park 1995). (Dunevitz 1997). In addition, horses tend to spread non-native species, the seeds of which may remain viable in their manure. Off-road bicycle use causes severe soil compaction, erosion, and rapid vegetation death (Bjorkman 1996).

*Strategies:* Horseback riding may be permitted under certain conditions at Magney Snively, but in restricted locations. Determine designated areas for horseback riding, taking the above ecological concerns into consideration.

Consider involving horseback riders in an adopt-a-trail program to maintain, repair, and restore areas that this new use may impact.

#### **IV. Cost Estimates**

Cost estimates for each of the strategies above have not been given as the Magney Snively area is very large and it is difficult at this time to arrive at an accurate figure. However, it is expected that the initial costs for trail damage repair, signage, and enforcement of existing ordinances for the area will consist of the bulk of the expenses for management of the area. The City should make a best effort to secure funding for the more immediate management needs and place it in a dedicated City account for such costs. The Nature Conservancy will donate DNAP signs for this project. These small signs will be posted on the periphery at appropriate locations informing the public that the area is a designated DNAP.

#### **V. Monitoring**

Upon official designation of the area, the City may consider enlisting the appropriate agencies and nonprofit groups to establish baseline data on the site for the purpose of monitoring implementation and/or attainment of the goals and strategies stated in this management plan. Baseline data is an inventory of existing conditions (i.e. biological data) in the area. In the future, the baseline data is reviewed to help the City assess changes (positive or negative) in order to adapt management practices that will retain the ecological viability of the area. After five years of DNAP status, it is recommended that the monitoring groups check on the progress being made and make recommendations to revise this plan where necessary.

**VI. Compliance with Local, State, and Federal Regulations**

Nothing in the above language of this management plan shall be construed to mean that any local codes, ordinances, policies, or state or federal laws are not to be enforced within the boundaries of the adopted DNAP. It is fully expected that the designated enforcement officials will enforce all applicable rules and regulations as appropriate.

## References

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