

# **MUD LAKE OPEN SPACE MANAGEMENT PLAN**



**Boulder County Parks & Open Space Department**

**Adopted by:**

**Town of Nederland Board of Trustees- August 3, 2004**

**Board of County Commissioners- August 17, 2004**

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## VISION STATEMENT

Mud Lake Open Space will be managed to protect the site's ecological and scenic features while providing quality recreational and educational experiences. Mud Lake Open Space provides a buffer and transition zone between the more developed areas of Nederland to the south and the more wild areas to the northwest, including Caribou Ranch and the Indian Peaks Wilderness Area. At the same time, the property's geographic position allows it to be a link, connecting residents on the south to areas of interest to the northwest. These buffering and linking functions create a unique setting for an outdoor science school.

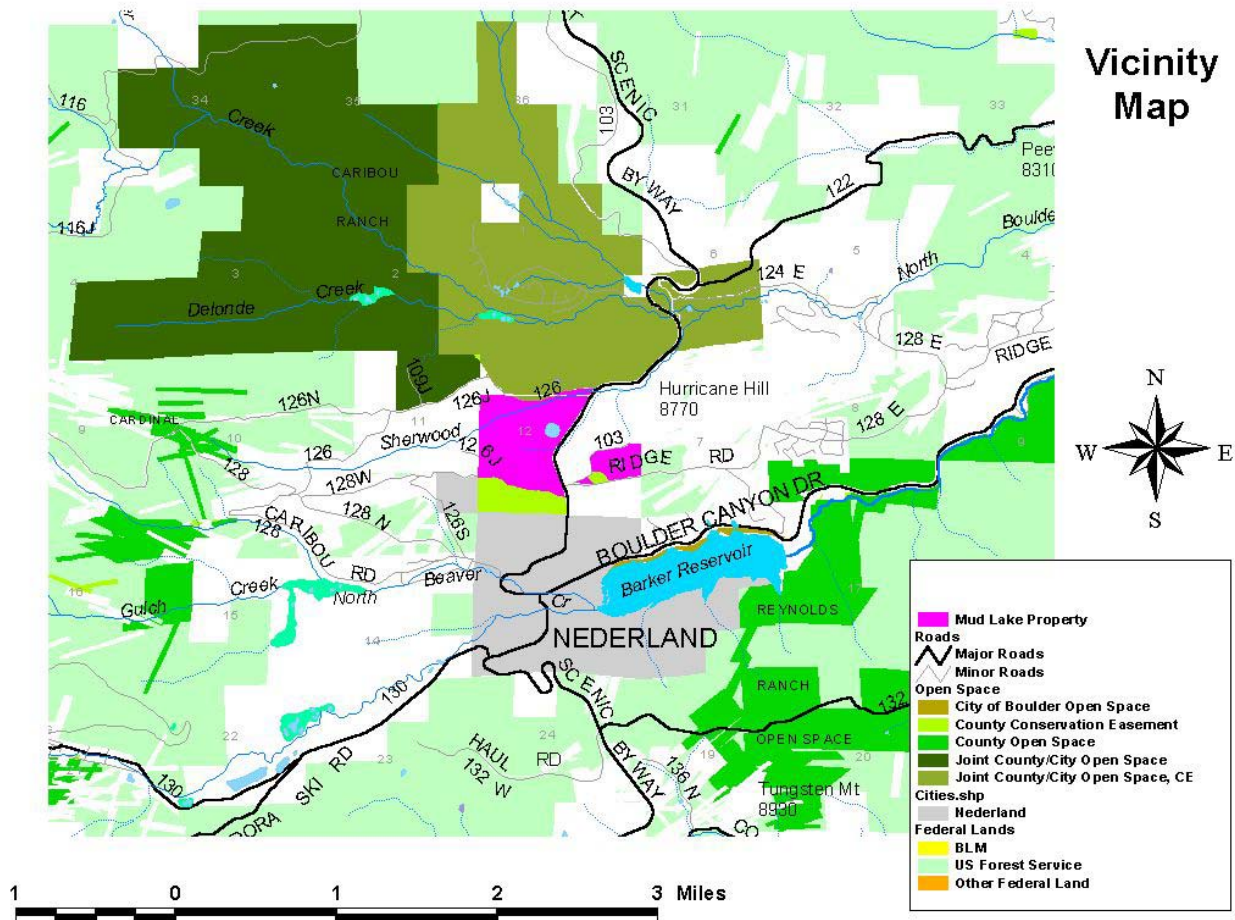


Figure 1, Vicinity Map

## INTRODUCTION

This document extends and builds on the information covered in the Mud Lake Open Space Resource Evaluation and Management Considerations (Boulder County, 2003) in order to define and prioritize management activities for the property. It begins with a section on historic resource use to add some temporal context to the current environment and landscape of Mud Lake Open Space. Following the environmental history is a brief summary of the property's natural resources and its ecological condition. With this basic grounding, the plan proceeds to outline and summarize the proposed natural resource management goals, objectives, and actions for the property. It then describes that strategy in more specific terms for the various resource categories



and ecosystems. Following that, the plan addresses the management of visitor services, including recreational development and uses, in the same fashion. First outlining the management goals and objectives for visitor services, and then explaining these in more detailed narrative sections afterwards. The document concludes with a section on resource monitoring.

A brief review of the key factors about the property follows in order to help orient the reader. Mud Lake Open Space is located in western Boulder County, about one mile north of the Town of Nederland. Technically, the property consists of two separate parcels. A 190-acre parcel (referred to as “Mud Lake Open Space”) is bounded by Indian Peaks Drive on the south, the Peak-to-Peak Highway on the east, and County Road 126 on its north. A 36-acre parcel (referred to as the “Ridge Road Parcel”) is located 1/4 mile east of the Peak-to-Peak Highway along Ridge Road. Both parcels are in Section 12, Township 1 South, Range 73 West. In 1999, Boulder County and the Town of Nederland began the process of jointly purchasing the property. Another partner in the real estate transaction was the Wild Bear Center for Nature Discovery, a non-profit environmental education organization, which bought, and now owns, a five-acre tract within Mud Lake Open Space.

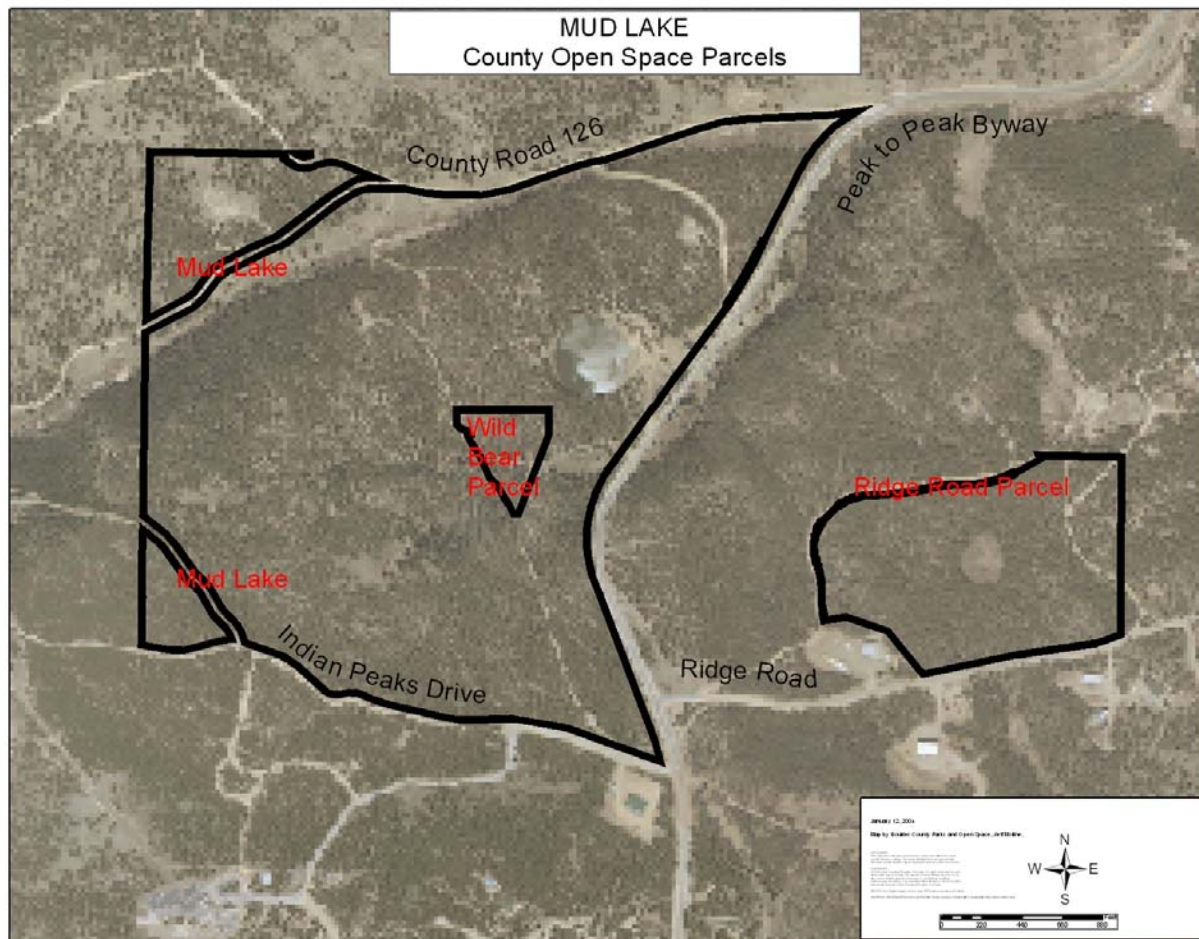


Figure 2, Digital Orthophoto of Mud Lake Open Space and Ridge Road Parcel.

(Note: This graphic depicts the previous location of the Wild Bear parcel- please refer to Pg. 21 for more detail.)

## ENVIRONMENTAL HISTORY

The impacts of resource use, especially mining, during the 19<sup>th</sup> and 20<sup>th</sup> centuries are readily apparent in the current Mud Lake landscape. Features such as roads, shafts, adits, pits, and clearings are obvious inheritances, but the overall condition of the forest is a reflection of the past as well. The arrival of Anglo settlers upon the discovery of gold in Gold Run in 1859 initiated the period of large and intense disturbances to the forests of the area. As the frenzy of gold mining diminished in the 1860s, the discovery of silver just to the west of Mud Lake at Caribou in 1869 led to heavy prospecting across this whole region of present-day Boulder County. By 1871 silver mining had begun at the Bluebird Mine, just one and a half miles northwest of Mud Lake. These first mineral “booms” led to the initial resource development impacts and land patenting activities in the Mud Lake area-only a mere 10 to 15 years following the first camps of Anglos in what would become Boulder County.

However, tungsten mining would be the extractive industry that would dramatically transform the land in the vicinity of Mud Lake. In 1900, following the identification of a tungsten mineral in Ward in 1899, W. H. Wanamaker identified the same mineral in the main tungsten district near Nederland. By August of 1900, Wanamaker and S. T. Conger had purchased a lease on a part of the Boulder County Ranch (just west of the present Mud Lake property) where 40 tons of high-grade ore was picked from the surface. Conger subsequently discovered a vein of the material and together, Wanamaker and Conger discovered additional veins nearby and applied for mineral patents on the adjacent government lands. By 1904, the Wolf Tongue Mining Company and the Primos Chemical Company purchased most of the holdings and industrial mining began around Mud Lake. Most of the milling was first done at the Midget Mill in Nederland. At the time, most of the tungsten mined in the United States came from this tungsten mining district of Boulder County.

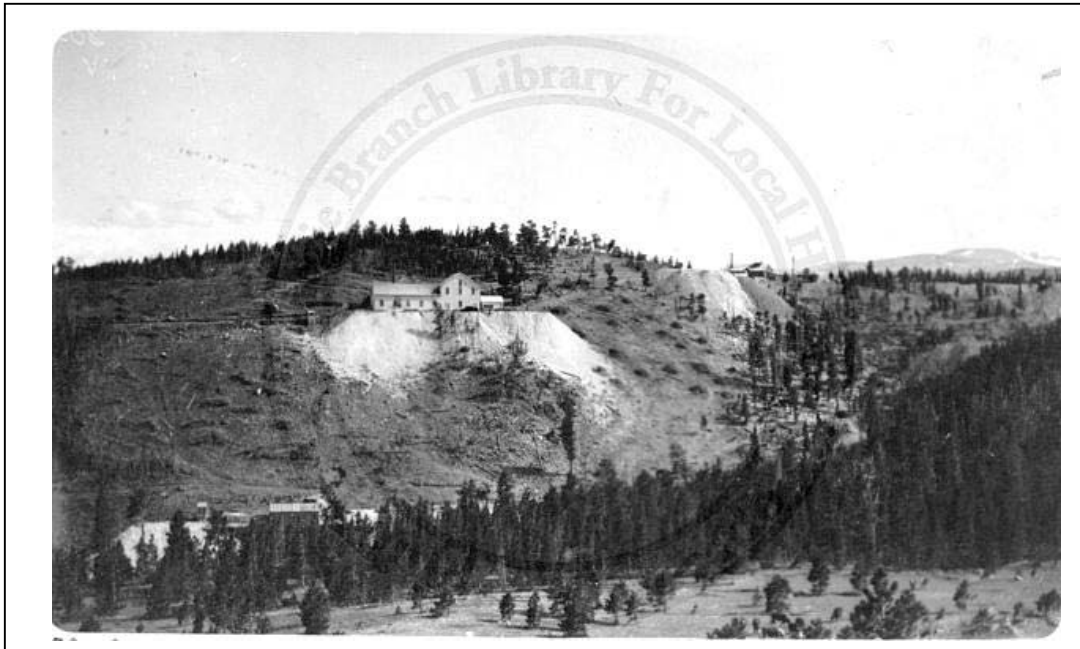


Figure 3, Conger Mine, Carnegie Branch Library for Local History, Boulder Historical Society Collection.



The Colorado Tungsten Corporation acquired the Crow Agricultural (homesteaded) tracts and mined areas on the north part of the Mud Lake property. The company operated the Boyd Mill in Boulder and processed the ores at that site. During a peak in values during World War I, the district produced most of the tungsten ore in the world. Meanwhile, the Primos Company built a large mill at the junction of Sherwood and North Boulder Creeks at the settlement of Lakewood, which during its heyday had over 200 residents. A precipitous decline in tungsten values followed the development of mining and production in China. Due in part to the fact that most of the easily accessible and apparent ore had been mined, the drop in value limited Boulder County tungsten mining. The boom had gone bust and the market for tungsten never recovered to a level that would support continuous, extensive, and profitable mining in the county.

While the Mud Lake Open Space property includes a number of mines and shafts such as the Crow No. 4 in the northwest corner, several of the largest tungsten mines in the county were in very close proximity. The Conger, not only the most productive tungsten mine in the county but also the whole country during parts of the early 1900s (Lovering and Tweto, 1953), lies about 800 feet to the west of the property.

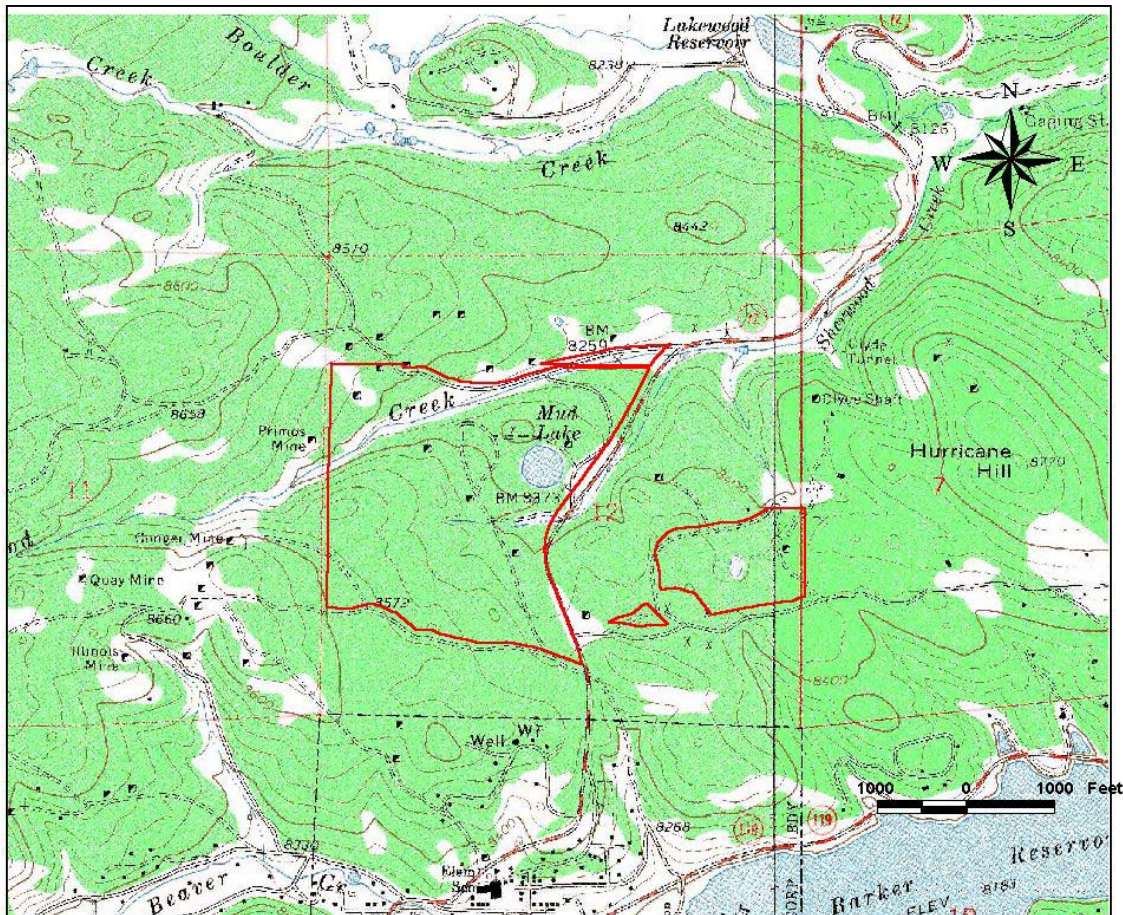


Figure 4, Topographic Map showing the numerous mines, shafts, and old roads on the Mud Lake Open Space property. From a Digital Raster Graph of the Nederland and Tungsten Quadrangles, U. S. Geological Survey, 1972.

Not only did the mines require clearing for operations around the shaft, but also forest trees would have been used for timbers in shafts and adits, lumber for all of the associated structures, and as fuel for steam-powered machines and for heating structures in the cold climate. In the years following the initial gold rush of 1859 in the county, settlers patented mountain lands for their timber value and then abandoned the parcels after the valuable trees had been logged.



Figure 5, “4 hoists on the hill”, the Primos tungsten mine just west of the present day Mud Lake Open Space property, between 1900 and 1930?. Photograph by Charles S. Price. Copyright: Western History/Genealogy Dept., Denver Public Library.

Forest fires become much more frequent following settlement during the 1860s. Intentionally set fires allowed prospectors to clear the vegetation to expose the rocks and geology of the landscape. And, with the use of fire for heat and wood for construction materials, accidental fires were commonplace. It is probably not coincidence that 1859 was a year of widespread forest fires in the region given the influx of miners looking for metals and very dry climatic conditions (Brown and Carpenter, 2001).

Because Mud Lake Open Space lies between many of the mines and Nederland, transportation of supplies necessitated the creation of numerous roads through the property as well. These roads, along with the mining of the past, have left denuded areas susceptible to erosion. In particular, the bare slopes near the old Conger mine supplies large amounts of sediment into Sherwood Creek. Together with the amount of human activity, the habitat destruction during the mining boom probably dramatically reduced the amount of wildlife in the region.



Following the bust in tungsten mining after WWI, most of the lands around Mud Lake were probably used primarily for pasture and grazing. In 1915 the Boulder County Ranch encompassed a majority of the original agricultural homesteads in the area. In 1936 Lynn Van Vleet purchased Tucker Ranch. During its zenith, the Van Vleet Ranch covered 13,000 acres of private and Forest Service lands, centered on what would become Caribou Ranch just northwest of Mud Lake, and ranged 200 to 500 head of cattle.

Following the disturbances due to mining and related activities, the area responded with very high rates of tree recruitment. As residential development and mountain property values increased, suppression of forest fires kept these forest stands thick and homogeneous. As use of the property waxed even further, the remnants of the mining era fell into disrepair and became convenient locations for trash dumping. Social use of the property increased and, because of the proximity of the property to Nederland, the owners prepared to develop the property for residential use. At that point, the Nederland community pushed for public acquisition of the parcel and together, the Town of Nederland, Boulder County, and the Wild Bear Center for Nature Discovery completed a real estate transaction to purchase the land. Following the purchase, Wild Bear organized 134 volunteers to remove over 30 tons of trash from the property.

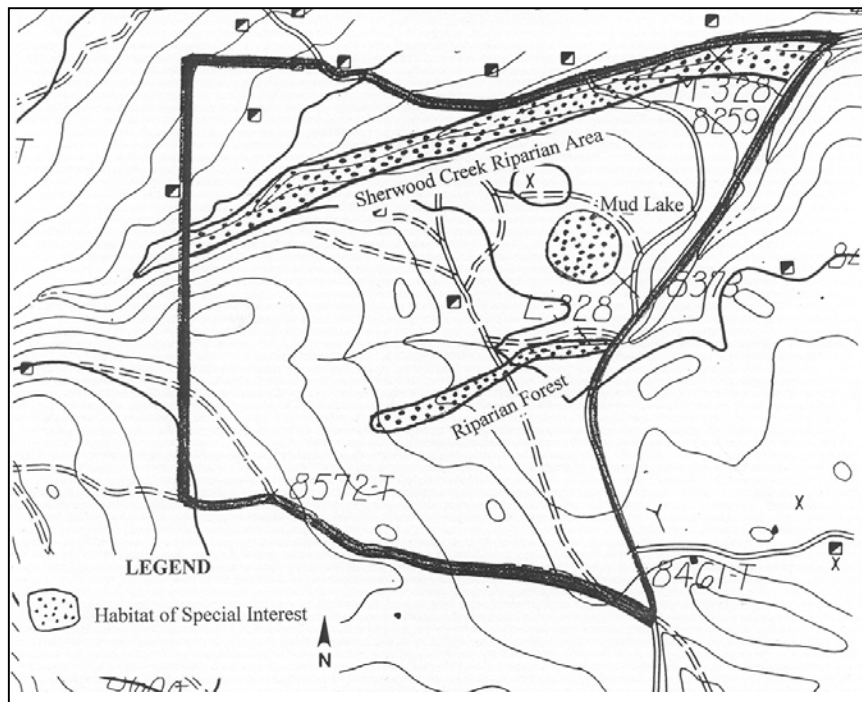


Figure 6, Habitats of Special Interest on Mud Lake Open Space.

## SUMMARY OF NATURAL RESOURCES

The Mud Lake Open Space Resource Evaluation and Management Considerations (Boulder County, 2003) assessed the natural resources of the property. In general, the document indicated that both the flora and fauna of the site are typical of montane locations, especially those with a history of mining and disturbance. In broad terms the property consists of a mixed conifer forest with lodgepole pine predominating in most situations. Patches and small groves of aspen are found

in slightly more mesic portions of the property. The Sherwood Creek drainage provides a riparian zone along much of the northern edge of the property. In the northeast corner of the parcel, much of this riparian zone takes the form of a willow carr. In the west, a meadow occupies the area between the riparian vegetation and County Road 126 and 126J. The property's northwest corner is a south-facing slope of thick ponderosa pine and a large disturbed opening. In the east-central portion of the property, Mud Lake creates a wetland zone along its shore while further south and east, two shallow drainages from the southwest contain larger trees in mixed forest and ponderosa pine stands. The more diverse vegetation associated with Sherwood Creek, Mud Lake, and other drainages provide increased wildlife habitat, including the Significant Avian Habitats identified in the Resource Evaluation (Figure 6).

## **MANAGEMENT GOALS**

A number of different sources provide background on management for Mud Lake Open Space. The Boulder County Comprehensive Plan (BCCP) offers broad goals and policies for the protection of scenic corridors and riparian areas, both of which are found on the property. The BCCP's more detailed Open Space policies discuss guidelines for passive recreational use and trail planning. While the Comprehensive Plan supplies some general direction for management of the property, the Intergovernmental Agreement (IGA) between the Town of Nederland and Boulder County that is associated with the public purchase of Mud Lake Open Space includes some things that the management plan must provide, such as public passive recreational use and the opportunity for the Wild Bear Center to participate in the maintenance of the property on a volunteer basis as part of its curriculum. The IGA also prohibits activities on the property that interfere with passive open space uses—motorized use, structures, commercial harvesting of timber, building or expansion of any roads—and other uses prohibited by the Open Space Sales Tax Resolution. The Town of Nederland completed an Open Space Master Plan in 2002 that examined a geographic area outside the town limits, including the Mud Lake area. While the document did not make explicit land management recommendations, it did provide conceptual trail corridors linking the Town with Mud Lake Open Space and Caribou Ranch Open Space. Finally, the Resource Evaluation and the public meetings associated with its review provided very specific recommendations for management of the property. Staff analyzed these various policies, documents, and comments and distilled them into a list of basic and foundational management goals for the property:

### **Management Goals**

1. Protect the scenic qualities and cultural resources of the property.
2. Conserve the ecosystem functions and natural resources of the property.
3. Protect and maintain the wetlands, riparian areas, and special avian habitats.
4. Provide compatible recreational uses for visitors.
5. Provide trail connections between Nederland, the Mud Lake Open Space trailhead, and the Caribou Ranch Open Space trailhead.
6. Provide an appropriate setting for an outdoor educational facility.
7. Be a good neighbor to adjacent landowners.

## **OVERVIEW OF MANAGEMENT STRATEGY**

With the above goals in mind, the overall management direction for the property will be to incorporate visitor use into the maintenance of the property's dynamic ecosystem processes. Compared to other Boulder County Parks and Open Space ("BCPOS") properties in the mountains, Mud Lake Open Space more easily accommodates visitor use and facilities. While beautiful and scenic, the site is not ecologically unique. Although important within the context of the property itself, the most significant resources of Mud Lake Open Space do not warrant the same level of protection as elements of identified County, State, or Federal importance. And, overall, its predominant habitats are similar to those of other montane locations. The proximity of the property to roads and residential development decreases its habitats effectiveness. However, by virtue of its protection from future residential development, Mud Lake Open Space retains both important natural and cultural resource values. And, the department's management of the property will recognize these basic facts. For example, while the property will have one of the highest densities of trails in the entire County Open Space system, new visitor facilities will affect only a very small percentage of significant habitats on the property.

Management will be responsive to the physical and biological geography of the site, emphasizing the protection of critical resources, encouraging native species over exotics, and maintaining natural processes. This will not require extensive work or aggressive techniques, but rather a thoughtful visitor services plan, which locates new development in tune with the site's resources. Access roads on the property are numerous. Many of these will be reclaimed, but a few of the existing access roads will be retained and used for emergency access, facility maintenance, and land management purposes. The more diverse areas of the property, including wetlands, riparian areas, and Significant Avian Habitats, will be managed to protect their resource values. Visitor use will be guided away from these areas by locating access roads, trails, trailheads, the nature center, and other developments on less sensitive parts of the property to the maximum extent possible. However, some impacts to the higher-quality habitats will be necessary. First, the aesthetic qualities of some of these habitats, such as Mud Lake itself, make them destinations for the trail system and some level of visitor use. Second, the small size of the property and the linear nature of some of the habitats makes avoidance of these features very difficult. For example, a Significant Avian Habitat designation covers the entire length of Sherwood Creek through the property. But, in order to provide a trail connection to Caribou Ranch Open Space from Mud Lake, a crossing of the habitat designation must occur. Another example is Mud Lake itself. This feature does provide important habitat for waterfowl and shorebirds, and at the same time is an important scenic element. This plan creates a space for both visitor enjoyment and resource protection. Specifically, continuing with the specific case of Mud Lake, the plan allows two shore access points and a pedestrian-only trail near one side of the lake. At the same time, the other side of the lake will be left wild. The south shore and bank will be permanently closed to increase the effectiveness of avian habitat on the lake.

As indicated above, management of Mud Lake Open Space will be primarily achieved by the thoughtful siting of visitor facilities. Apart from the construction and maintenance of the visitor improvements, forestry operations will be the most obvious and apparent natural resource management on the property. Visitors may also notice other natural resource management projects, such as the restoration of disturbed areas and periodic weed control.



## **VEGETATION MANAGEMENT**

### **Objectives**

- Minimize soil loss and improve stormwater runoff quality.
- Manage noxious weeds using an integrated pest management approach.
- Restore habitat effectiveness
- Actively manage roads and trails to control invasive alien plants.
- Monitor natural resources through inventories and other tools.
- Promote cooperation with neighbors to create a consistent management strategy for the vegetation in the region.
- Maintain a mosaic of stand density, size, and age for vegetation types.
- Maintain and improve the natural diversity of vegetation types.
- Mimic natural disturbances with forest management.

### **Meadows**

In the future, open meadows could be converted to native grasses, as time and resources allow. At this time, native plant reintroductions will not be undertaken since the introduced grasses have functional value as forage for wildlife and soil stabilizers. With fire suppression, conifers have encroached in meadows, therefore some thinning of the invading trees will be necessary over time to maintain this vegetation community.

- Maintain vegetative cover and minimize weeds in open areas.
- Use thinning to minimize tree establishment in existing meadow areas.

### **Forests**

Of the total acreage of the Mud Lake and Ridge Road parcels, about 80% is classified as either lodgepole or mixed conifer. Most of the rest of the forested vegetation, roughly 10% of the total acreage, is dominated by ponderosa pine. Fire history studies at nearby Caribou Ranch reveal a mean fire-return interval on the order of 150 years for montane ponderosa pine forests (Brown and Carpenter, 2001), suggesting that current forest conditions in the lodgepole and mixed conifer stands of Mud Lake are probably within the historical range of variability. A closed-canopy forest is therefore the typical successional stage for much of the property through time. Generally this stage of forest development will only be altered by a dramatic disturbance event, typically a fire, which would open the forest back up in a mosaic of burned and unburned patches. Aspen and lodgepole would regenerate in the severely burned patches. Fires also create snags that benefit a variety of animals. While a fire would dramatically change the pine forests of Mud Lake, the property's landscape does contain other patches that are less prone to stand-replacing fires, including woodlands, meadows, wetlands, and riparian areas. These areas would provide a continuity through the period of recovery following a large-scale fire.

Although within the range of historic variability, the forests of the property have become very dense as a result of fire suppression since the disturbances around the turn of the 20th century. Perhaps because the drastic tree loss was so complete and severe disturbances so long-lasting on the Mud Lake property, the second-growth forests are missing some of their patchiness and mosaic pattern that result from natural disturbances, especially fire. Whatever the causes, the consequence has been dense forests that encourage the spread of forest diseases, in particular mistletoe, among lodgepole pines.

Because of the proximity of this small property to adjacent, forested private lands, the ability to let "nature take its course" during large-scale disturbances such as fires and pest or disease outbreaks is severely limited. Therefore, measures will be taken to address the tree density and pest outbreaks while mimicking natural disturbances and processes to restore natural communities and minimize off-site impacts. The Department's forestry staff has been doing inventories and surveys of the forests at Mud Lake and will be writing detailed management prescriptions for them later in 2004. Some general objectives of the forestry operations on the property are described below. In sum, the anticipated forest management to occur on the property will focus on particular sites with an aim toward improving wildlife habitat, ecological features, and watershed values. Thinning operations in the vicinity of the Wild Bear parcel will retain sufficient screening of the property (and its future structures) in order to preserve scenic views from Mud Lake and nearby trails.

Maintaining Forest Health: Insects and disease, which are natural elements of our forest, will be managed on a case-by-case basis. Where mistletoe infestations are acute, the Department will perform small "patch cuts" to remove the affected trees and minimize the further spread of the disease. These patches would be small areas (typically one to two acres but usually less than five acres) within a matrix of untreated forest. Because of the presence of aspen scattered throughout the property, staff anticipates that these patch cuts will foster regeneration of aspen stands. Where aspen patches are already found, forest management will expand these groves to counteract the invasion of conifers into these areas resulting from fire suppression. The forest areas within the Significant Avian Habitats will be left alone or treated only to protect them by reducing ladder fuels—vegetative structures that can carry ground fires to the crowns of trees. Emergency pest control may be necessary to prevent large forest die-offs due to pine beetles or other pests.

Protection of Ecological Features: The mixed-conifer forest of the drainage in the center of the property is a Significant Avian Habitat and important plant community. Currently, it is not in need of any management. Stand density should be periodically monitored. In the future, possible management may be considered to retain this community. The ponderosa pine forests in the central and northwestern portions of the property include small meadows of native grasses, which could be expanded through forest thinning. More detailed stand prescriptions will be developed for this area.

Wildfires: All wildfires will be aggressively controlled and extinguished as quickly as possible. The County will coordinate with the Nederland Fire Protection District and the U.S. Forest Service to plan for wildland firefighting in the area.

Methods: Forest thinning will be performed either by the Department's forestry crew or contractors. This management tool is utilized in order to decrease tree density in stands, increase species diversity, and preserve meadows and aspen groves. Thinning also reduces the potential for catastrophic wildfire by reducing fuels, maintaining a less hazardous forest structure, and eliminating ladder fuels. Thinning generally focuses on removing understory trees, as well as seedlings and saplings. Thinning operations typically only remove trees smaller than 12" diameter at breast height (d.b.h.), but in lodgepole stands that threshold may drop lower so that only trees 6" d.b.h. or smaller are removed. Thinned material will be utilized as much as possible for fencing, biomass fuel, or other products that the Department can use. The Department will begin management by conducting a patch cut within a 5-acre demonstration site to allow visitors to see the effects of this proposed property management tool.

While the use of prescribed fire is possible as a forest management technique, it is unlikely due to the proximity of the property to adjacent private lands and residences and because the primary forest type on the property did not coevolve with frequent fires. Instead of low-intensity ground fires, lodgepole-dominated forests are generally subject to infrequent crown fires that often become stand-replacing conflagrations. If it was planned to be used, County staff would first hold public meetings to ensure that it would be supported by the community. Prescribed fire would only be used under very controlled, ideal conditions.

#### Summary of Forest Management Actions

- Thin dense woodlands and stands for forest health.
- Thin invading conifers from existing aspen groves and meadows.
- Patch cuts to remove mistletoe and regenerate aspen.
- Perform demonstration site patch cut.
- Emergency pest control may warrant management.
- Forest management will require occasional vehicle use of existing roads and trails.
- Forest management can be used as a tool to close areas by felling trees.
- No commercial timber operations are allowed (per IGA).
- Removed wood will be re-used as feasible—e.g. mulch, fencing, or biomass fuel.

#### **Noxious Weeds**

When devising a plan for managing weeds on a property, a number of factors are important. Not only are the location, type, and amount of weeds critical, but also crucial is the invasiveness of a weed species—its ability to disrupt the community of a site. Weeds with an aggressive behavior that pose a threat to agricultural and natural communities are often designated as noxious. The State of Colorado Noxious Weed Act includes a list of weeds that by law landowners must treat.

The high elevation of the Mud Lake property limits the number of weeds that can establish at the site because of the reduced growing season. However, although Mud Lake does not have a significant weed problem, there are some locations where weeds and non-native plants have become established, primarily in the disturbed and open habitats. Smooth brome (*Bromopsis inermis*) and Kentucky bluegrass (*Poa pratensis*) are the primary Eurasian grasses that have invaded meadows and grasslands. Noxious weeds include Canada thistle (*Breea arvense*) and musk thistle (*Carduus nutans*) usually found in moist, grassy areas; ox-eye daisy (*Chrysanthemum leucanthemum*) and Dalmatian toadflax (*Linaria genistifolia ssp. dalmatica*) are found in upland sites but are not common. Other weed hotspots include areas along County Road 126 and Sherwood Creek. BCPOS staff will be doing a detailed mapping of the property's weeds in 2004 and formulating a weed management plan. Treatment of the thistles will be a priority. Weed mapping will be updated every 5 years.

The County utilizes an integrated pest management approach that typically incorporates a variety of techniques including manual, cultural, mechanical, biological, and herbicidal methods. The use of herbicides on the property, including road-side applications and spot-spraying with backpacks, will be conducted in accordance with the County's Noxious Weed Management Plan. The Noxious Weed Management Plan requires that permission be obtained from the Board of County Commissioners for herbicide use in the mountains prior to application in road rights-of-way or



within 200 feet of a County-owned trail (Boulder County, 2004). Herbicides are used judiciously and only under strict guidelines. Those herbicides that are persistent in soil and move easily in water are used in spot applications away from trees, sensitive vegetation, and streams. Herbicides with low toxicity, low movement rates in water, and very selective target plants can have a wider application. There have been no weed treatments of any methods by the County on the property yet, but limited herbicide use is anticipated. The County will strive to keep Wild Bear and the Town of Nederland informed about its weed management activities. The County agrees to host a public hearing in Nederland if weed management activities on the property exceed what is contemplated in this plan.

**Management Objective:**

- Manage undesirable vegetation, including noxious weeds, using an integrated pest management approach. Unwanted vegetation may be managed using manual removal, prescribed fire, mechanical, biological, or herbicidal methods. All methods of control will be evaluated to reduce potential adverse effects to human health and the environment.

**Management Action:**

- BCPOS weed management staff will survey and map weeds on the property in 2004. Staff will subsequently develop a weed plan for the property and treat any noxious weeds.

**WILDLIFE MANAGEMENT**

**Objectives**

- Conserve wildlife habitat by maintaining natural food, cover, nesting sites, resting areas and habitat effectiveness.
- Manage vegetation to provide a mix of forest stages. Meadows, aspen groves, and woodlands should be retained and enhanced by halting conifer encroachment. Large diameter trees, snags and deadfall should be retained and perpetuated throughout the forest and woodland landscape, particularly in old-growth areas, to help those wildlife specialists that depend on these features.
- Reclaim unused roads/trails.
- Rehabilitate disturbed areas.
- Encourage visitors to stay on trails so their activities and movements through the property are predictable to wildlife.

The most critical wildlife habitat resources at Mud Lake are specific sites within the property. The context of the property's habitat value to the surrounding landscape has been impacted by roads, trails, and development. For example, instead of functioning as a key migratory route for mammals, the property more likely serves as a buffer. This is due to the property's location between the larger, less fragmented habitats to the north and west (including Caribou Ranch and the Indian Peaks Wilderness Area) and the residential and business areas of Nederland and its adjacent mountain subdivisions to the south. Wildlife use of the property is further limited by adjacent land uses that interrupt connections to adjacent habitat. These obstacles include a county road on the north, the Peak-to-Peak Scenic and Historic Byway on the east, the Conger mine area on the west, and Indian Peaks Drive along with a residential subdivision on the south. As a whole, the Mud Lake property functions as a fragmented parcel. This is corroborated in the Revised Forest Management Plan of 1997 for the Arapaho and Roosevelt National Forest, wherein the U. S. Forest

Service examined habitat effectiveness for all of the private and public lands within the forest boundary. Using their analysis, the Mud Lake property contains no effective habitat due to its proximity to adjacent roads and because of the old roads and trails within the property. County staff feels that existing wildlife use patterns on the property probably allow it to serve as marginal habitat for large and small mammals, but that the level of surrounding development and traffic probably precludes significant or important use for most wildlife. While the visitor use portion of this management plan will increase recreational impacts and incrementally reduce wildlife use of the property, this is not anticipated to constitute a significant impact. Finally, this plan does protect the more critical wildlife habitat areas that do serve as important habitat to birds and other animals that are less impacted by fragmentation. This will be discussed further in the next section.

Hunting will not be allowed on the property. Due to its small size and anticipated levels of public use, hunting is not considered an acceptable tool for managing any game species on this property.

## **SPECIAL HABITATS AND RESOURCES**

### **Objectives**

- Minimize visitor use and facility development in these areas.
- Avoid impacting and fragmenting special habitats and resources.
- Protect Mud Lake habitats.
- Protect Sherwood Gulch wetlands and avian habitat.
- Any activities in or near significant resources should only be carried out with the most current information and best management practices.
- Any potential management tools need to be utilized in a manner that protects the resource.

### Wetlands and Riparian Areas

Wetlands and riparian areas will primarily be protected and maintained by minimizing recreational development through or near these areas. Active management will concentrate on reclamation of trails and roads marked for closure in the trail plan.

- Ensure new visitor facilities will not have negative wetland impacts.
- Restore disturbed wetland and riparian areas as resources allow.

### Rare Plants

While no rare and imperiled plants were found in the initial botanical surveys of the property, there could be habitat for a moonwort species (*Bortyichium lineare*). Thus, prior to disturbance activities in suitable habitat (grassy slopes along streamside forests according to the Colorado Rare Plant Field Guide 1997), staff will survey areas for this rare plant. If found, the proposed management activity will be modified to ensure that the plant occurrence is not impacted.

- New visitor facilities will not have rare plant impacts.

### Mud Lake

While it is a unique scenic feature and provides a diversity of habitats, the lake itself is a small, shallow, muddy, and fishless pond. The open water habitat is dominated by crayfish, while tiger salamanders, other amphibians, and reptiles use the shoreline of the lake. These non-critical wildlife species can be protected by minimizing use of the lake and shoreline habitats. Waterfowl and other birds do use the lake and adjacent wetlands. By keeping the south side of the lake free

from public access, the wildlife use of these habitats and the open water should continue (Mud Lake Resource Evaluation, 2003).

- Protect the south shore of Mud Lake by creating a permanent wildlife closure area.
- Preserve wetlands around lake, using signage and fencing if necessary.
- Maintain and improve the two shoreline access points, and prevent new lake accesses.
- Close social trails through wetlands.
- Construct boardwalk or small pier at the lake's west access point to provide access to the water while minimizing impacts to the shoreline.

### Sherwood Gulch

Paradoxically, the Sherwood Creek drainage contains some of the best and most impacted habitats on Mud Lake Open Space. For about half of its length through the property, County Road 126 lies adjacent to the north side of the riparian area. Sedimentation from areas upstream has also affected the creek channel. The east section however is composed of a willow carr and the west end is less disturbed. By keeping the portion of the drainage in the west side of the property free from new development and using existing disturbances for one road and one trail crossing, new facility impacts to this feature are minimized. By properly reconstructing the access road from CR126 to the Mud Lake Trailhead, the impacts of this road crossing on the creek can be reduced.

- Minimize visitor use of the area
  - Provide a single trail crossing and avoid trails parallel to corridor.
- Minimize sediment inputs to Sherwood Creek.
  - Explore options to reduce runoff from County Road 126.
  - Explore options to reduce sedimentation from Conger Mine.
  - Improve the existing access road crossing.



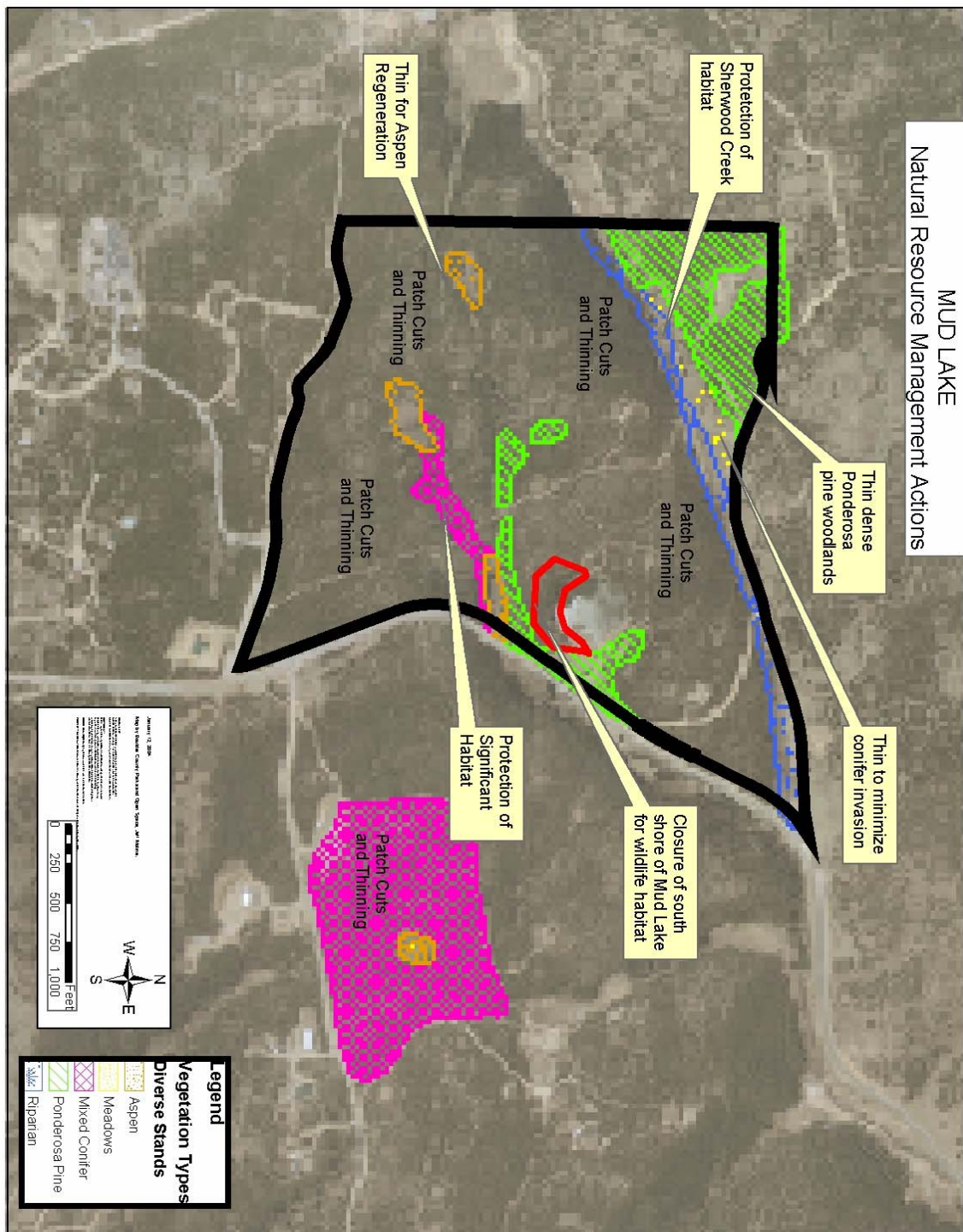


Figure 7, Nature Resource Management Actions for Mud Lake Open Space.

## **VISITOR SERVICES**

### **Management Direction**

As mentioned earlier in the management goals for the property and the management strategy overview, Mud Lake Open Space will be a place where people will appreciate the site's resources and scenery by using facilities that sustain and conserve those same resources. Facilities and services will minimize resource impacts while enhancing the visitor's enjoyment of the property.

With the current status of recreation, trails, and natural resources on the property, Mud Lake can absorb the proposed public use without significant negative resource effects. This contrasts with neighboring Caribou Ranch--which doesn't have the same recreational use history--where the approved management plan includes both closed areas and seasonal limitations on access to protect the more sensitive resources. However, the level of visitor use on the Mud Lake Open Space property will be unique for the County's more passive open space system. There will be year-round use since the lake will be available for ice-skating and the trail system will be frequently used due to the proximity of the parcel to residences and the Town of Nederland. With the added attractions of outdoor education and a future nature center this may be one of the most developed and active mountain properties in the County Parks and Open Space system.

On Mud Lake, balancing resource protection with visitor use will primarily involve locating recreational and other features in those areas more suitable for visitor use and avoiding those areas more suitable for resource protection. New development will avoid sensitive areas and improvements will be kept subordinate to the property's scenic resources. For example, because of the aesthetics associated with the lake, no parking will be visible from it. At the same time, there will be some impacts. New trail segments will be needed to avoid unsuitable social trail/road locations, to bring visitors to important site features, and to lead visitors away from sensitive areas.

### **Goals**

1. Provide passive outdoor recreation opportunities that do not adversely impact special habitats or resources.
2. Provide opportunities for environmental and cultural interpretation to the public.
3. Provide more active uses such as ice-skating, nature programs, and a nature center.
4. Provide facilities to make visits safe and enjoyable.
5. Protect the scenic values of the Peak-to-Peak Scenic and Historic Byway.

### **Management Context**

Given its location, Mud Lake will serve as both a destination itself and as a connecting property between Nederland and the Caribou Ranch area. This general use guideline has been contemplated during the management planning for Caribou Ranch as well as the open space master planning for the Town of Nederland. Mud Lake is close to the Town and has been used in the past by residents for recreation and enjoyment of the site's beauty. Residents and other visitors can enjoy the features of the site itself or, once Caribou Ranch is opened to the public, people could travel through Mud Lake as a way of reaching Caribou. Nederland's 2001 Open Space Management Plan reinforces this pattern for the property, indicating that future trails from the town will end at the southern boundary of Mud Lake. The trail plan for Mud Lake Open Space accommodates these trail connections to the south. Future trails from Nederland may also approach the Ridge Road parcel. However, until this trail on the northeast side of Nederland is planned for construction, the

County will not plan any formal trails on the Ridge Road parcel. The planning and delineation of trails on the Ridge Road parcel will require an amendment to this management plan.

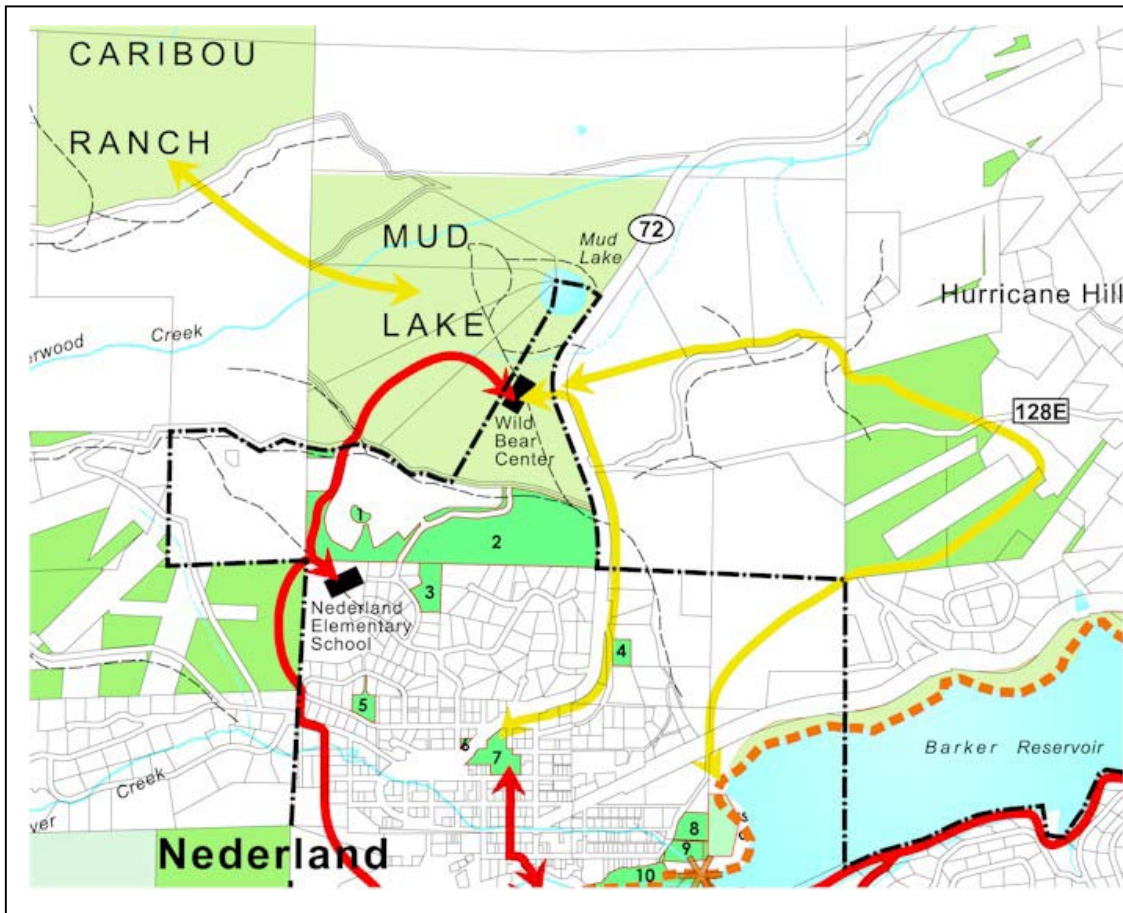


Figure 8, Mud Lake Open Space in the context of the Parks and Trails Plan. The red lines indicate conceptual trail alignments, the yellow lines indicate conceptual trail corridors. From The Town of Nederland and Surrounding Area Open Space, Trails, Parks, and Outdoor Recreation Master Plan (2001). (Note: This graphic depicts the previous location of the Wild Bear Center- please refer to Pg. 21 for more detail.)

Mud Lake Open Space will also carry some of the visitor use for Caribou Ranch Open Space. The management planning process for Caribou Ranch determined that horse trailer parking for that property would be built at the trailhead for Mud Lake Open Space. In an effort to minimize the number of separate parking lots/trailheads on Mud Lake and improve property management, staff identified the northeast part of the property as the primary on-site parking area. It has an old road that is in relatively good shape that can serve as access to County Road 126 and it includes some disturbed areas with topography suitable for parking. At the same time, Wild Bear felt that they could help the parking and trailhead situation if they were to move their inholding to the northeast of the property and also use this same area for development of the nature center and share in the parking. A multi-use trail will connect the Caribou Ranch and Mud Lake Open Space trailheads, most of which will be constructed on the Mud Lake property.

Once all of these various uses and activities are implemented, Mud Lake Open Space will be a busy, year-round property for visitors. In order to manage this diversity of use, the Mud Lake IGA between the County and the Town of Nederland was amended so that the Town can undertake the management responsibilities associated with the trailhead area and the access to it—the more active area of Mud Lake Open Space (Mud Lake Property IGA, 2004). According to the amended IGA, the County will construct the trailhead, parking lot, and access road; and the Town will perform the routine maintenance and snowplowing for the site. Because of the activity and use at the site, the Town will share in the resource protection and law enforcement duties in the trailhead/parking lot as well. The remainder of the site will be managed by Boulder County with the assistance of Nederland and Wild Bear when practical and appropriate. Maintenance of trash and toilet facilities will be by Boulder County.

- Nederland and Boulder County will share frontcountry resource protection/law enforcement duties.
- Nederland will perform routine maintenance and snowplowing of access road and trailhead parking area.
- Boulder County will manage all other facilities, trails, and resources. Wild Bear and Nederland may participate in property management under the direction of BCPOS.

#### Wild Bear Center for Nature Discovery

The Wild Bear Center for Nature Discovery is a non-profit organization based in Nederland that offers year-round, hands-on environmental educational programs to people of all ages. As a non-profit, Wild Bear can use the Mud Lake property for educational and interpretive purposes in conjunction with the other rules and regulations for the property. However, because of the partnership between the County, Town of Nederland, and Wild Bear, this joint relationship with the property will be unique for Boulder County.

Wild Bear's use of the area is multifold. They will continue using the County's Mud Lake Open Space property for their daytime educational and interpretive programs. Wild Bear will also continue to fundraise on Mud Lake Open Space, something that has been allowed once annually for the last several years. Finally, at some point in the future, Wild Bear will likely construct a nature center on their parcel within the Mud Lake property. At that point, the Wild Bear Center for Nature Discovery will itself become a focal point for visitor use of the property. With the existing programs and the potential for a nature center within the property, the site offers a special opportunity for visitors to learn about the area. Wild Bear in turn will provide a valuable presence on the property, including assistance with management and stewardship of the property by arranging volunteer workdays.

Wild Bear's operation on the County's Mud Lake Open Space may include some uses that are not consistent with the current County Parks and Open Space Rules and Regulations. Current guidelines limit on the use of open space to groups smaller than 25. Wild Bear's individual classes are no larger than 25 students, but they could have multiple classes on the property at any one time. The County will work with Wild Bear to properly permit these multiple groups on the property. Finally, Wild Bear has requested the ability to use the County's property for fundraising. Typically, this involves a small donation to encounter a series of themed stations in a small part of the property. Visitors to the County property are not required to donate or participate. While non-profit fundraising is not inconsistent with County rules and regulations, some of the fundraising



events in the past have been held after the property is closed—i.e. after sunset. The County acknowledges Wild Bear’s request for these fundraising activities and will work with them to have these annual events properly managed and permitted. Wild Bear will need to supply the details of any of these events, coordinate planning with County staff, and receive permission from the BCPOS Director.

The creation and use of Wild Bear’s inholding in Mud Lake Open Space is the subject of the existing IGA between the County and Nederland. Currently, Wild Bear owns a 4-acre parcel to the southwest of the lake itself (Figure 9). Wild Bear chose the site because of its varied ecosystem, southern exposure, and perfect setting for learning about the ecosystems of the area. The IGA detailed the land transaction and a conservation easement over the parcel stipulates a number of things, chief among them that the buildings allowed (a school, nature center, offices, gift

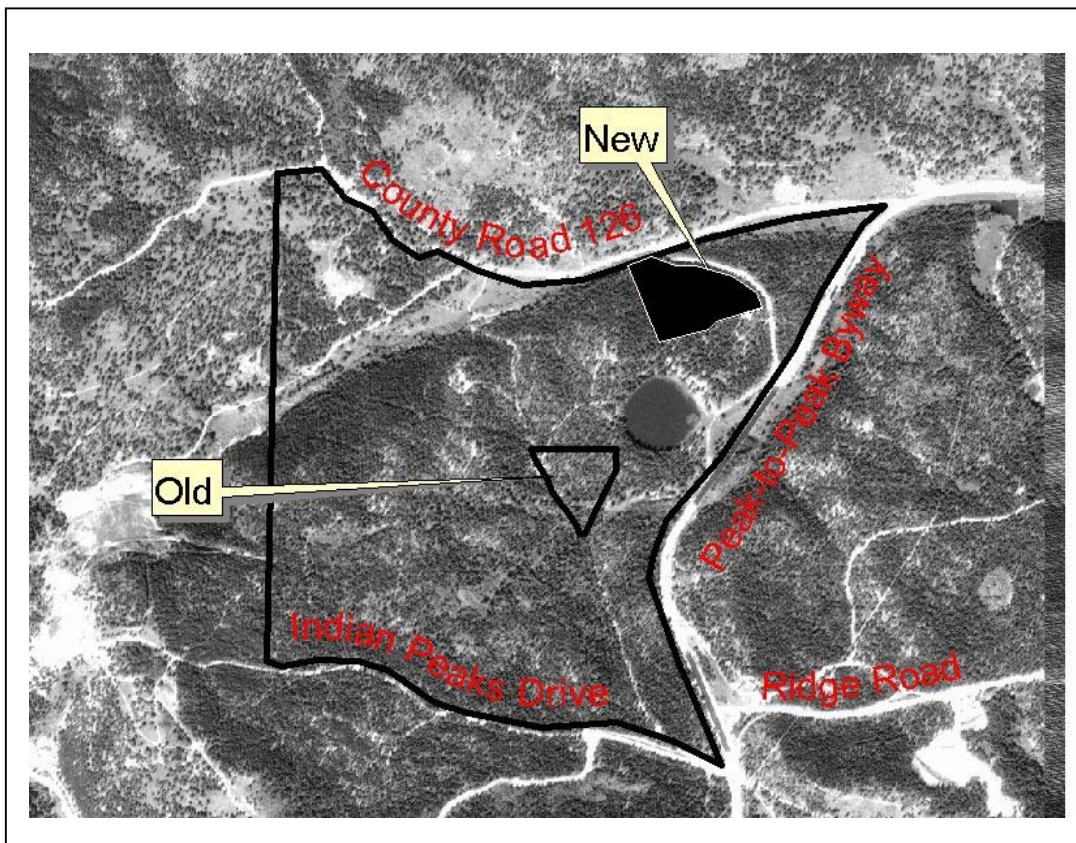


Figure 9, Wild Bear’s existing and proposed parcel locations.

shop, and two small outbuildings) on the property would not exceed 8,500 total square feet nor be visible from either the lake itself or the Peak-to-Peak Scenic and Historic Byway (State Highway 72). Included in the transaction were access easements to the property and strict limitations for on-site parking and use of the easements.

As indicated above, during planning for off-site parking for Caribou Ranch, Wild Bear proposed to move their parcel to the northeast part of the property. During public meetings in late 2003 and early 2004, all the parties and the public agreed that the new location provided better access and a consolidation of visitor services. Most of the restrictions in the existing conservation easement

covering the 4-acre parcel would transfer to the new parcel. An amendment to the IGA will formalize the change in parcel locations. Draft plans of this new parcel (about 5-acres in size) configuration and shared parking lot are attached. The new parcel includes a 50-foot buffer zone along the access road to minimize visibility of any structures on the parcel. The County has agreed to provide easements for necessary utilities across the Mud Lake property to serve the Wild Bear parcel. The parcel includes a small section of Sherwood Creek so that this feature can be incorporated into Wild Bear's programming. The details of the trailhead and parking area will be discussed below.

### **Site Opportunities**

While much of Mud Lake Open Space is lodgepole-dominated forest, the property has a surprising variety of resources and scenery. While some of these resources are important and will need protection, the management plan also strives to provide a varied experience for visitors. The lake itself is one of the most important features on the property. Not only because of its scenic prominence or the views of the mountains across it, but also because of the water itself. In the summer, this area is an oasis, a rich habitat for the senses. In the winter, once the lake has frozen, it becomes a magnet for outdoor recreation—ice-skating. By locating the trailhead and parking area in the northeast part of the property, walking distances to the lake are short. Other features combine topographic and vegetative diversity. The drainages foster some of the largest trees on the property as well as aspen groves. Several high points on the west side of the property provide stunning vistas to the west and north.



Figure 10, View west across Mud Lake.





Figure 11, Social trail along drainage.

### **Trailhead and Parking**

For reasons mentioned previously, the northeast corner of the property will be the primary access point for Mud Lake Open Space. This site already has an existing road grade that can provide access with very little improvement necessary. Further, this portion of the property is one of the most affected by mining features. The configuration of the parking lot and related facilities over the existing disturbances (including reclaimed pits) will reduce cost and minimize impacts. Because it is relatively close to the lake (about 500 feet northeast of the lake) it provides convenient access for visitors. This convenience should eliminate the need for skaters to park on State Highway 72; a situation that is not safe or appropriate for visitors. This location will allow for a consolidation of parking that will serve the current Wild Bear program, a future nature center, ice skating, and trail users. Because there is no horse trailer parking at Caribou Ranch Open Space, the parking at this trailhead is intended to accommodate equestrians visiting Caribou Ranch and will include a connecting trail. The existing clearing and access may be used for temporary parking for Caribou Ranch prior to the construction of the permanent trailhead and parking lot.





Figure 12, Access road to proposed trailhead and parking area.

In addition, clustering the active uses in the northeast part of the property will help manage visitor impacts. Because of Nederland's proximity to the site, the town will maintain and plow the access road and parking as well as provide patrol of this part of the property. This more frequent management attention will be necessary and is generally outside the scope of the Boulder County Parks & Open Space Department. However, at least one County Open Space employee will be near the property--the Caribou Ranch Caretaker.

#### Objectives

- Provide auto and horse trailer parking, restrooms, and picnic facilities convenient to Mud Lake and the future Wild Bear Center.
- Prevent the visibility of cars and parking lots from visitors at the lake.
- Consolidate parking and facilities to a single location that also serves Wild Bear.
- Screen facilities from the Peak to Peak Scenic and Historic Byway viewshed.
- Interpret natural and cultural resources of Mud Lake Open Space at the trailhead.

#### Trails

The 4.5 miles of existing social trails and roads on Mud Lake are the result of the extensive number of historic roads through the property. Instead of sustainable recreational trails, these old roads were constructed with very different purposes in mind and consequently they often traverse along drainages and shorelines impacting habitat or utilize grades that erode. However, because of the

intensity of past uses, there are many old roads resulting in a relatively high amount of social trails for a property this size. This does create an opportunity to use many existing segments in order to minimize the impacts of new trail construction. Nevertheless, some existing trails may not be in appropriate locations for reasons like safety, resource conflicts, trail maintenance problems, or poor visitor enjoyment. Existing routes that do not become part of the formal trail system (totaling approximately 1.6 miles) will be reclaimed unless they are necessary for emergency or management access. In order to have safe trails with better maintenance characteristics and more sensitive locations, new trail segments may need to be created; this would be done in a manner to minimize overall trail impacts to the property. Some new trail construction will reduce impacts to Habitats of Significant Interest. Approximately 1.2 miles of new trail will be constructed. The trail plan uses existing trails where they satisfy other objectives and goals for the trail system.

The Trails Master Plan portrays a system that will integrate connections to off-site destinations while providing a sensible pattern for on-site use. Short trails provide easy access to the lake and allows access to Caribou Ranch Open Space from the trailhead. Access from future trails and existing road intersections with Indian Peaks Drive are accommodated by the system. The trail system will get visitors to much of the property, while avoiding the more significant habitats.

Proposed trail corridors and adjacent areas were examined for archaeological and historic features. An archaeological reconnaissance of the Mud Lake parcel was conducted on May 20, 2004. No significant archaeological or architectural sites were found (Native Cultural Services, 2004). Consequently, trail development and subsequent visitor use will not impact cultural resources.

Trails on County Open Space properties are multi-use (allowing for pedestrians, equestrians, and bicyclists) unless specifically closed to a particular use. Motorized use is prohibited in accordance with our current Rules and Regulations. Because of the property's use by an outdoor education facility, there are some areas where groups of participants are likely to be gathered, particularly around the lake. Further, the aesthetics of the lake encourage a slower pace to enjoy the scenery. Thus, to avoid user conflicts, the trail closest to the lakeshore will be pedestrian only—closed to both bicycles and equestrians. All other trails would be multi-use.

The public trail system will be entirely on the County's land. This will simplify the application of rules and regulations for visitors and rangers. If Wild Bear allows the public to use their property or trails on their property, signage and, perhaps in places, subtle boundaries will be necessary to make the different ownerships clear to visitors.

Trail connections in the SW portion of the property are conceptual at this point in time due to the status of plans for Nederland's open space property across Indian Peaks Drive. The intention is to provide a trail link to a future Town recreation area.

The Ridge Road Parcel may serve as a connecting property for a trail corridor that is on the Nederland's Open Space Management Plan. This trail begins on the east side of town and heads north, perhaps using some National Forest land. North of Ridge Road, the trail could use this County property and, after crossing County Road 103, work its way back west toward Mud Lake. While local visitors may find the Ridge Road property a destination, typically it would be used as a

component of a longer recreational experience. The formalization of a trail on the Ridge Road parcel will require an amendment to this management plan.

#### Objectives

- Provide a trail connection to Caribou Ranch Open Space.
- Provide connections to Nederland's future trails on south.
- Provide mountain bike access to all Mud Lake Open Space destinations including Wild Bear's parcel.
- Provide a pedestrian only trail along the lake.
- Improve the clarity of the trail system for visitor experience and safety.
- Utilize single-track trail as much as possible to maximize visitor experience.
- Use existing trails to minimize new construction/disturbance as feasible.
- Create a main north-south trail to link the Nederland area with Caribou Ranch Open Space.
- Prevent motorized use through road closures/vacations, gates, fences, and barriers.
- Construct boardwalk or small pier on the west shoreline access point to provide access to the lake for outdoor education.

#### Interpretation

There are many opportunities for interpretation on the site. Because of Wild Bear's presence, many programs and exhibits will be available to interpret the site. Topics could include the natural and cultural—e.g. mining—resources of both Mud Lake Open Space and Caribou Ranch Open Space. A kiosk is planned for the trailhead and other signs and panels could be used to help inform the public about the site. The County may also construct a small, low-impact amphitheater on the site for programs.

#### Mine Safety

One legacy of past mining activity is the number of shafts, adits, and pits on the property. BCPOS staff has already mapped and documented 13 unsafe areas. These have been fenced off. The Inactive Mine Reclamation Program of the Colorado State Division of Minerals and Geology will be closing all of these features in the summer of 2004. The Program focuses on mine safety but also includes site reclamation. The County will monitor the areas for reseeding success and weed control once the work is complete. BCPOS and Colorado Division of Wildlife staff checked for bats and did not find any using these features.

#### Road Closures and Right-of-Way Vacations

Two spurs of County Road 126J pass through the property to the land west of Mud Lake. In an effort to discourage illegal camping and motor vehicle use of the property as well as trespass on adjacent lands, staff has temporarily barricaded these access points. In order to prevent unauthorized motor vehicle access of the Mud Lake Open Space and private property, staff would like to gate and lock off these two roads. This will require a formal road vacation and approval by the affected landowner to the west.

#### RESOURCE MONITORING

Resource monitoring is done to determine how well management objectives are being met. Monitoring provides a feedback mechanism for decision-making that keeps the plan dynamic and responsive. Monitoring provides information on what changes are occurring on the property.

Management of some resources may lead to adverse impacts necessitating a change. Other resources may improve as a result of management activities. Visitor use patterns, user conflicts, and the creation of social trails will influence future recreation management.

The monitoring of specific resources is performed on a periodic basis. Some inventories are ongoing and occur through standard patrol activities. Others are scheduled several times a year (trail inspections), annually, or every 5 years (detailed weed mapping). Still other monitoring projects are triggered by specific events, such as the vegetative monitoring needed before and after forest management.

Every ten years, staff will undertake a major evaluation of management direction for the property.

## RESOURCE AND FACILITY MONITORING

<u>What</u>	<u>Frequency</u>	<u>Who</u>
Vegetation/Forest Condition	Every 5 years	BCPOS
Detailed Weed Mapping	Every 5 years	BCPOS
Social Trail Inventory	Ongoing	BCPOS
Trails, Signs, Facilities	Ongoing	BCPOS, Nederland
Visitor Use-Violations	Annually	BCPOS, Nederland
Visitor Use-Emergency Response	Annually	BCPOS/FPD/Sheriff

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## **APPENDIX I**

### **Mud Lake Open Space Management Planning Team**

#### Boulder County Parks & Open Space Department

David Bell, Law Enforcement Supervisor  
Randy Coombs, Forestry Supervisor  
Tim D'Amato, Weed Coordinator  
Claire DeLeo, Plant Ecology Supervisor  
Pascale Fried, Interpretation Supervisor  
Therese Glowacki, Resource Management Manager  
Al Hardy, Trails Supervisor  
Dave Hoerath, Wildlife Biologist  
Rich Koopmann, Resource Planning Manager  
Kevin Lyles, Landscape Architect  
Jeff Moline, Resource Planner and Project Manager  
Ben Pearlman, Special Projects Manager  
Ron Stewart, Director  
Brent Wheeler, Park Operations Manager

#### Wild Bear Center for Nature Discovery

Jill Dreves, Director  
Jennipher Murphy, Nature Center Committee Member  
Paul Turnburke, Landscape Architect

#### Town of Nederland

##### Board of Trustees

Scott Bruntjeon, Former Mayor  
Roger Cornell, Mayor Pro Tem  
Laura Farris, Trustee  
Chris B. Perret, Mayor  
Doug Radandt, Trustee  
Vicky Sama, Trustee  
Mike Torpie, Trustee

##### Planning Commission

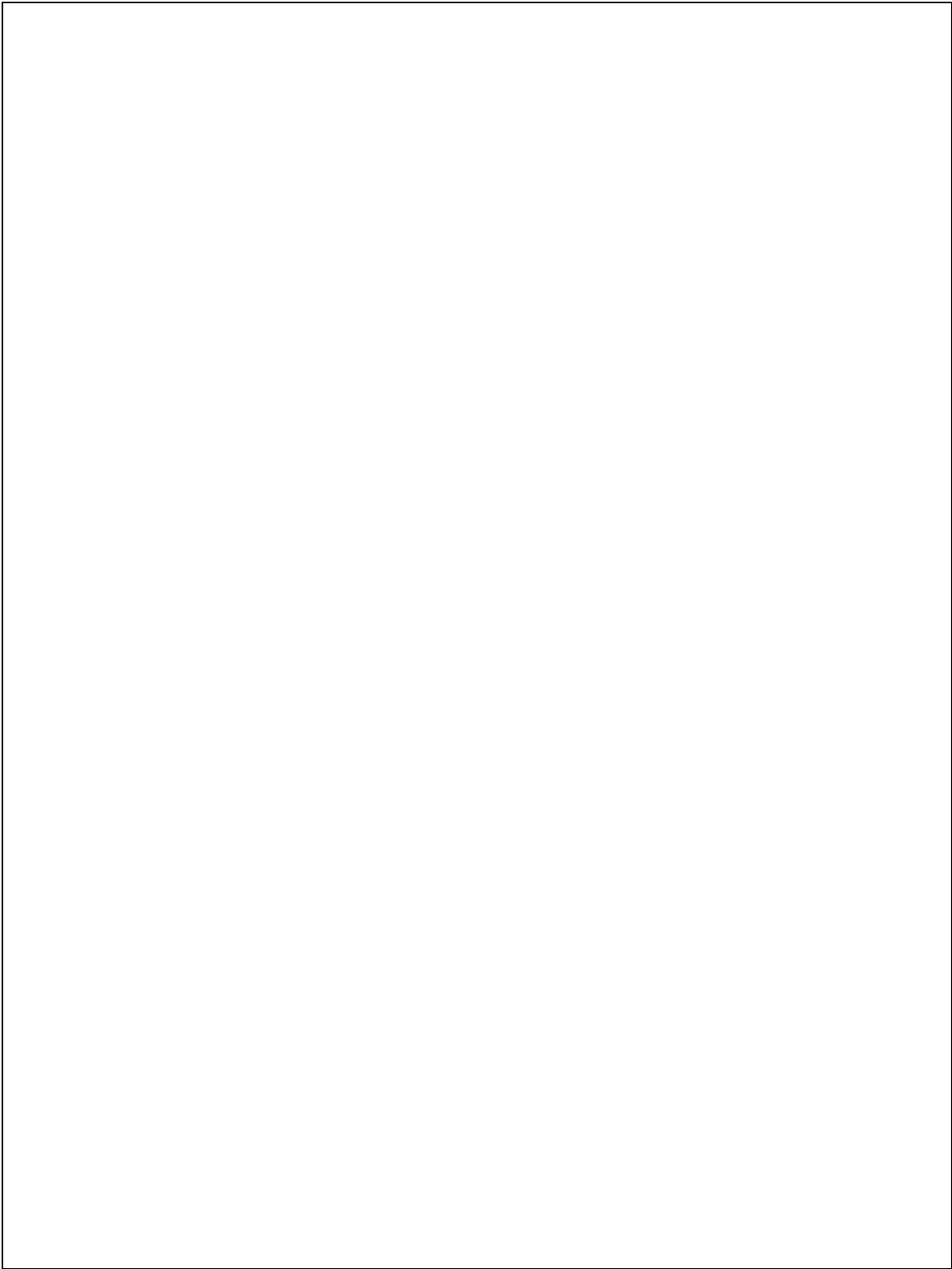
Roger Cornell, Ex-Officio  
Aime' Fournier  
Sue Leto  
Bill Martin, Chairperson Pro-Tem  
Kevin Mueller  
Sean Smith  
Steven Williams

##### Staff

Judy Richardson, Planning & Zoning Technical Assistant  
Ron Trzepacz, Director of Operations

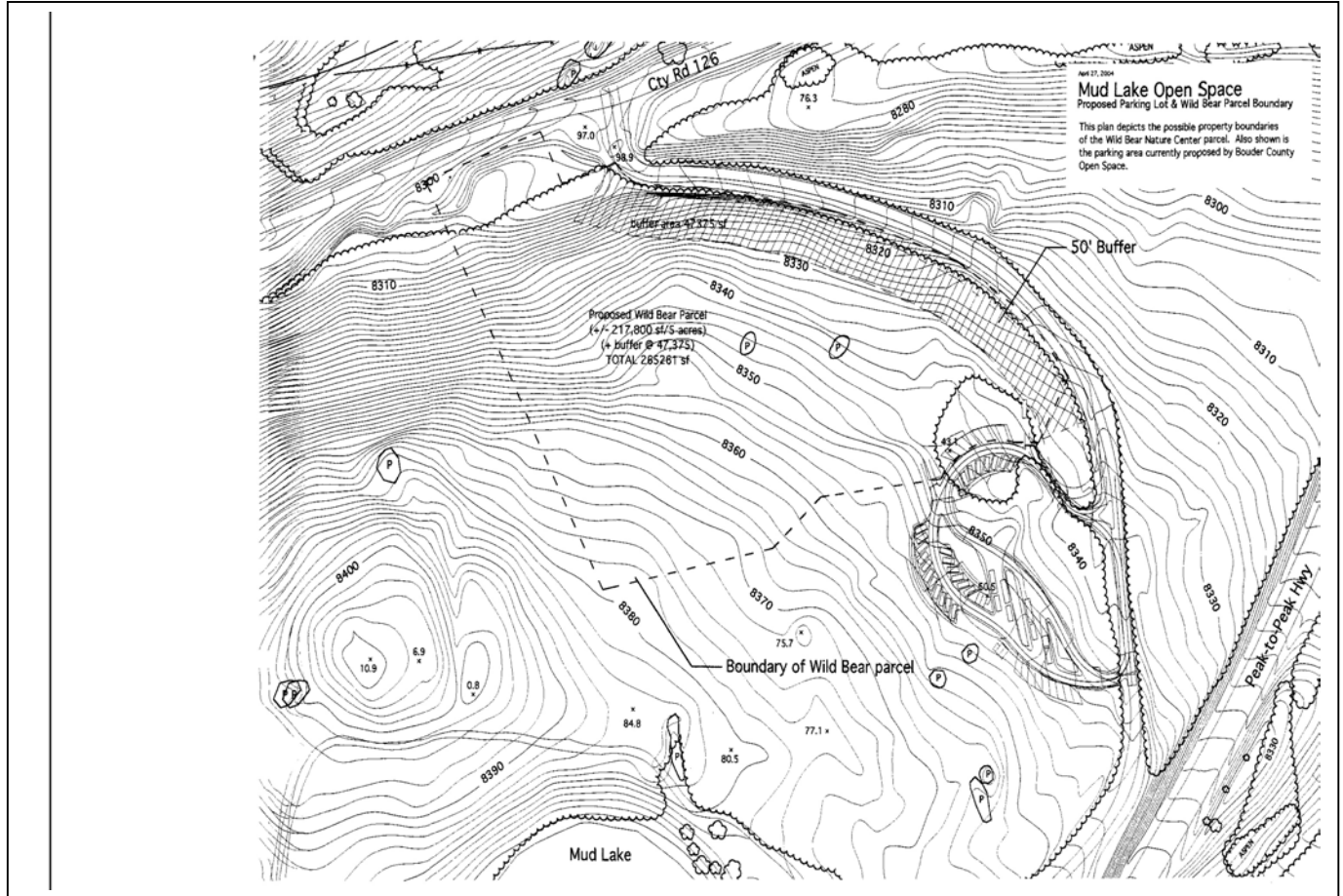
## **APPENDIX II**

### **Mud Lake Open Space Preliminary Parking Lot Plan**

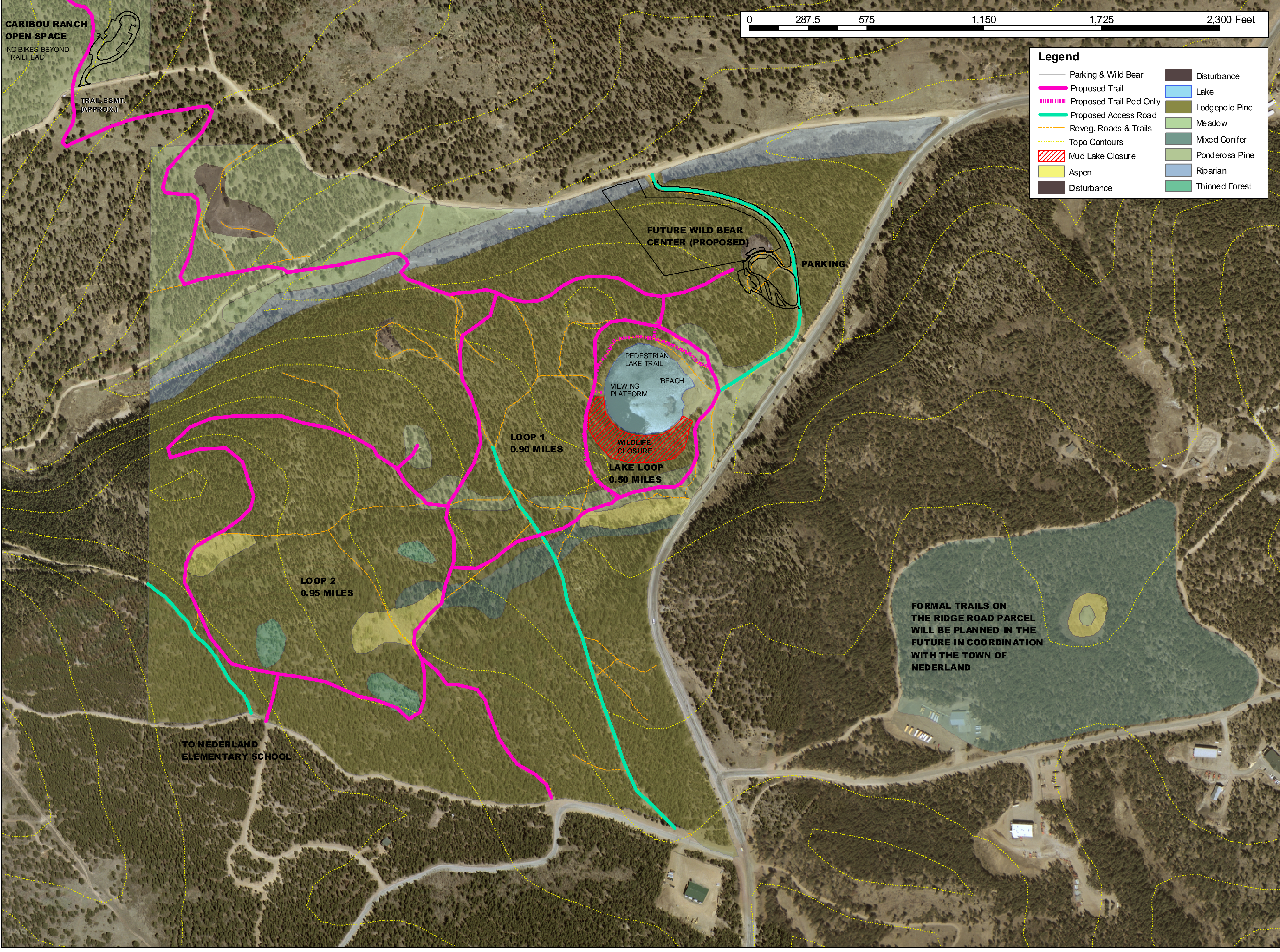


### APPENDIX III

#### Mud Lake Open Space: Preliminary Parking Lot & Wild Bear Parcel Boundary







**DISCLAIMER**  
This map is for illustrative purposes only, and is not suitable for parcel-specific decision making. The areas depicted here are approximate. More site-specific studies may be required to draw accurate conclusions.

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**TRAIL CALCULATIONS**

Total Trail System:  
Approx. 3.0 Miles

Road / Social Trail Revegetation:  
Approx. 1.6 Miles

New Trail Construction:  
Approx. 1.2 Miles

Mud Lake - Caribou Trail:  
Approx. 1.0 Miles  
(Lot to Lot)

**TRAIL DESIGN VISION**

The trail system at Mud Lake Open Space will maximize the quality and diversity of recreational experiences while protecting Sherwood Gulch, Mud Lake, and significant avian habitat.

An emphasis will be placed on maximizing viewing and scenic opportunities while improving the clarity of the trail system. Narrow trails are preferred over wide roads, and buffer from highway noise is maximized.

To the extent possible and appropriate, existing trails will be utilized. However, new construction is necessary to meet these objectives. Alignments shown are approximate, final adjustments will be made in field based on site conditions.

**MUD LAKE OPEN SPACE  
TRAILS MASTER PLAN**

AUGUST 2004