



L C O S I

Final
Lake County Open Space Initiative
Ecosystem Management Plan

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LCOSI Partnership

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Lake County Open Space Initiative Ecosystem Management Plan



Preface

The *Lake County Open Space Initiative Ecosystem Management Plan* has been cooperatively developed to allow for consistent management of the lands assembled under the Lake County Open Space Initiative, in a manner that recognizes the landmass as a part of a natural ecosystem, rather than a matrix of discrete political subdivisions. The Management Plan is not a decision document in and of itself, but rather, provides a common data base for informed decision making by the partnership of local, state and federal agencies and organizations who share the commitment to preservation and stewardship of land and water resources in Lake County for open space, wildlife, historic preservation, smart growth, education, and outdoor recreation.

This Plan was funded in part by a Planning Grant from the Great Outdoors Colorado Trust, with contributions of cash and in-kind services from Lake County, City of Aurora, Pueblo Board of Water Works, U.S. Forest Service, U.S. Bureau of Land Management, U.S. Fish & Wildlife Service, Colorado State Parks, Colorado Division of Wildlife, Arkansas Headwaters Recreation Area, Colorado Mountain College, Outward Bound West, Top of the Rockies National Byway Committee, and the ASARCO Mining Company.



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**Lake County Open Space Initiative
Ecosystem Management Plan**

**Section I
The Plan**



Lake County Open Space Initiative Ecosystem Management Plan

Section I The Plan

Background



Mike Conlin

Lake County Open Space Initiative: Formation

In the summer of 1997, approximately 7000 acres of historic ranch land in Lake County was simultaneously placed on the real estate market. This landmass represented 11% of all privately held land within the County, and controlled some of the Upper Arkansas River Valley's most impressive viewshed's, critical wildlife habitat and migration linkages, significant cultural resources, and unique recreational opportunities. This action came at a time when Lake County was recovering from the loss of over 80% in its assessed tax valuation due to the collapse of the local mining industry, and was attempting to make the difficult transition from an economy based on the extraction of natural resources, to one that capitalized on its remaining strengths in the areas of historic, natural, and recreation tourism.

With limited financial resources and planning staff, Lake County recognized its inability to act alone to avoid the prevalent trend in Colorado that has witnessed the subdivision of hundreds of historic ranches into low-density residential properties. This trend has historically contributed to unsightly rural sprawl, created a demand for services in excess of tax revenues generated, fragmented critical wildlife habitat, and resulted in the loss of open space, the degradation of scenic viewshed's, the reduction of public access to recreation, and the severance of community ties to their cultural heritage.

Recognizing that the loss of these resources could adversely affect not only the County's success in diversifying and stabilizing its economy, but the efforts of all public and private stakeholders in Lake County's future, the Lake County Board of Commissioners established the partnership that today is known as the *Lake County Open Space Initiative* (LCOSI). The partnership is bound by a Memorandum of Understanding (MOU) between federal, state, and local agencies, municipalities, and organizations who share in the common goal of protection and stewardship of Lake County's historic ranch lands and water resources for open space, wildlife, historic preservation, smart growth, public education, and outdoor recreation.

Lake County Open Space Initiative: The Partnership

The LCOSI partnership includes, but is not limited to:

U.S. Fish and Wildlife Service	Colorado Division of Wildlife
U.S. Bureau of Land Management	Colorado State Parks
U.S. Environmental Protection Agency	Arkansas Headwaters Recreation Area
U.S. Forest Service	Top of the Rockies National Byway
U.S. Natural Resource Conservation Service	Colorado Mountain College
U.S. Bureau of Reclamation	Colorado Wild
Arkansas River Restoration Core Team	City of Leadville
ASARCO Mining Co.	City of Aurora
Leadville Coalition	Leadville Chamber of Commerce
Pueblo Board of Water Works	Lake County Soil Conservation Service
Arkansas River Watershed Council	Greater Arkansas River Nature Association
Colo. Outward Bound School	Lake County Board of Commissioners
Natural Resource Management Institute	Colorado Preservation Inc.

Lake County Open Space Initiative: Vision Statement

The acquisition and stewardship of land and water resources in Lake County by a partnership of federal, state and local agencies and organizations for the purpose of: protecting and enhancing critical wildlife habitat; conserving open space; restoring impacted habitats; securing public access; increasing recreational opportunities; preserving cultural, agricultural, scenic and historic resources; increasing public awareness and education; and enhancing smart growth and development opportunities in Lake County.

Lake County Open Space Initiative: Mission Statement

The mission of the Lake County Open Space Initiative is to prepare a multi-jurisdictional planning document that:

- Regards the project area as a single ecosystem, regardless of man-made boundaries or political sub-divisions.
- Identifies the existing condition of the resources, anticipates changes that will occur with the conversion from private to public ownership, and recommends management strategies and action plans for long term resource protection, public safety, access, maintenance, enhancement, restoration, and interpretation of identified resources.
- Establishes long-term administration roles and responsibilities.
- Promotes controlled growth and economic stability within Lake County.



Lake County Open Space Initiative Ecosystem Management Plan

Section I The Plan

Lake County Open Space Initiative: Memorandum of Understanding

On January 1, 2001, the partners to the LCOSI project mutually agreed to the formalization of agreements and commitments to meeting the goals and objectives of LCOSI through the drafting of a multi-jurisdictional Memorandum of Understanding (MOU) with Colorado Mountain College.

The Purpose of the MOU was to:

- Provide a formal structure for perpetuation and administration of the LCOSI partnership
- Provide a repository for disbursement of existing and future planning and operational funds and grants
- Retain and encourage the voluntary nature of the LCOSI partnership
- Retain the autonomous decision making authority of LCOSI
- Assume the tasks and associated costs of administering planning and capital improvement grants
- Facilitate and encourage collaborative, multi-jurisdictional planning and decision-making
- Perpetuate the LCOSI goal of protection and stewardship of Lake County's land and water resources for open space, wildlife, historic preservation, and outdoor recreation as outlined in the LCOSI Goals and Objectives.
- Perpetuate the LCOSI goals of smart growth and economic diversification
- Continue preparation and implementation of the LCOSI Master Plan
- Implement the strategies that have been developed for the protection enhancement, and long-term management of wildlife, recreational, educational, and cultural resources within Lake County
- Strengthen the partnership as it moves toward its role in recreation management, education and interpretation
- Provide state-of-the-art educational opportunities for LCOSI partners and the citizens of Lake County
- More easily access the faculty and student skills of CMC in order to carry out the goals and objectives of the partnership
- Help fulfill CMC's goal for building Lake County partnerships

By mutual Consent, it was agreed that:

1. CMC will provide the following services to the LCOSI partnership:
 - A management and administrative structure
 - A repository for funds to be used as decided upon by LCOSI, including an accounting of all revenues and expenditures
 - A contact person, an employee of CMC, designated by CMC and approved by LCOSI, whose responsibility it will be to assist in reaching the goals of the partnership
 - To contract consultants and other services at the direction of the LCOSI partnership

- Development of a non-profit Foundation for LCOSI, the exact nature to be decided upon by the partnership
- The ability to purchase appropriate materials and supplies for LCOSI projects as directed by the LCOSI partnership.
- Access to and use of CMC educational facilities, academic faculty, training activities, and student workers in order to carry out the goals and objectives of LCOSI
- Access to and use of CMC "grants" organization and CMC Foundation 501(c)(3) status

2. LCOSI will provide the following to CMC:

- a volunteer organization that will work toward the established goals of LCOSI, of which CMC is a member in good standing
- the willingness to develop new ideas, work out solutions to common issues, and evaluate the new structure on a quarterly basis



Lake County Open Space Initiative Ecosystem Management Plan

Section I The Plan

Lake County Open Space Initiative: **Goals and Objectives**

The following issues, principal partners, goals, and objectives were identified by LCOSI in 1998, and have guided its actions from that point forward:

<u>Wildlife</u>	<u>Issues</u>	<u>Principal Partners</u>
<p style="text-align: center;">Habitat Preservation</p>	<p>T&E and State Sensitive Species Big Game Small Game Waterfowl Fisheries Non-Game</p>	<p>Colo. Div. of Wildlife U.S. Fish & Wildlife Lake County Colorado State Parks Colorado Wild GARNA</p>
<p style="text-align: center;">Habitat Improvement</p>	<p>Hunting Fishing Recreation Wetland Riparian Habitat Range Management Wildlife Viewing</p>	<p>USFS BLM</p>

<u>Wildlife</u>	<u>Goals/Objectives</u>
	<p>To Protect Threatened, Endangered and Sensitive Species and their habitats To enhance, restore, and protect wetland and riparian habitats To Maintain Wildlife Habitat To enhance Hayden and Hallenbeck Ranches for big game forage To enhance habitat for migratory birds and waterfowl To enhance vegetative diversity To provide watchable wildlife opportunities To restore damaged habitats To maximize acreage available for hunting and fishing</p>

Recreation	Issues	Principal Partners
Recreation	Hunting / Fishing Boating Hiking Mountain Biking Four Wheeling Rails to Trails Horseback Riding Sightseeing / Interpretation Cross Country Skiing Snow Mobiling Camping Watchable Wildlife	USFS Colorado State Parks BLM Lake County

Recreation	Goals/Objectives
	Identify and provide for a wide spectrum of recreational opportunities Three ranches will be limited to non-motorized recreational use Do not take away existing legal motorized use Mechanized use on designated trails only No new trails or trailheads onto Mount Elbert No camping on Hayden or Arkansas River Ranches No commercial rafting on Arkansas Limit private boaters to 10 craft per day Control outfitter/guide use with wade/walk permits Monitor use

Historic/Cultural	Issues	Principal Partners
Structures & Landscapes	Deteriorating ranch structures, ditches, stage road, historic highways etc. Re-use of abandoned RR Preserving mining landscapes and artifacts Preserving Archeological sites. Preserving traditional ranching heritage	BLM USFS Lake County Byway Committee AG. Land Trusts Colo. Historical Society LCCCA CPI



Lake County Open Space Initiative Ecosystem Management Plan

Section I The Plan

Historic/Cultural

Goals/Objectives

Preservation and recordation
 Develop Historic Preservation Plan
 Interpretation and Public Education
 Save Hayden/Hallenbeck Ranch Buildings
 Preserve Archeological Sites

Vegetation

Issues

Principal Partners

Agricultural

Grazing
 Irrigation
 Hay production
 Forage production
 Fencing
 Timber production

USFS
 NRCS
 CDOW
 Aurora
 Lake County
 State Land Board

Vegetation

Goals/Objectives

Maintain healthy, diverse vegetative communities
 Maintain Land Health
 Maintain agricultural presence for wildlife, cultural, scenic and historic values

Transportation/Utilities

Issues

Principal Partners

Transportation / Utilities

Trailheads
 Trails
 Rail Banking
 Parking
 Accel / Decel Lanes
 Access
 Rights -of-way

USFS
 BLM
 Lake County
 Byway Committee
 Colorado State Parks
 CDOT

Transportation/Utilities**Goals/Objectives**

Identify and categorize existing system of roads/trails
 Identify and categorize existing utility system
 Identify and categorize structural development
 Identify and categorize ponds and natural features
 Designate open and closed roads and trails
 Coordinate activities with adjacent landowners and existing uses

Extractive Industries**Issues****Principal Partners**

Extractive Industries

Timber
 Mining
 Sand / Gravel

USFS
 BLM
 Lake County
 Div. of Minerals and Geology

Extractive Industries**Goals/Objectives**

Use extractive industries only as a tool for maintaining natural resource values and management plan goals

River Restoration**Issues****Principal Partners****River Restoration**

Instream wetlands
 Sediment
 Water Quality
 Mining (Dredge Piles)

USF&WS
 NRCS
 EPA
 MOU Parties / Core Group
 CDOW
 Soil Conservation District
 Lake County

River Restoration**Goals/Objectives**

Coordinate and cooperate with MOU Parties on cleanup of the main stem of the Arkansas River
 Off channel restoration of Box and Union Creeks
 Minimize liability to LCOSI partners
 Minimize new impacts to the river



Lake County Open Space Initiative Ecosystem Management Plan

Section I The Plan

Scenic	Issues	Principal Partners
Scenic Quality	Preservation of Structures Safe Pull-Offs Interpretation Power Lines Trash Collection	USFS Lake County AHRA BLM Colorado State Parks

Scenic	Goals/Objectives
	Maintain or Improve existing Scenic Vistas Maintain or Improve Visitor Safety Coordinate and cooperate with the Top of the Rockies Byway Committee to interpret and sign US 24 through LCOSI

Water Resources	Issues	Principal Partners
Water Resources	Reservoirs / Ponds Hydrology Water Quality Sediment Water Rights Ditches History Minimum Stream Flows Future Economic Needs Off-site needs Restoration / Remediation Wetland Banking Wetland Maintenance/Enhancement Stream Management Beaver management	Aurora Pueblo CDOW Lake County USFS USF&WS BLM ARRG

Water Resources

Goals/Objectives

Maintain water rights, operations, and beneficial use of associated water rights
Increase water storage capacity for wildlife, recreation, and economic development purposes
Cooperate and coordinate with MOU Parties and water owners to ensure favorable flows for fisheries
Maintain or improve water quality
Allow for the opportunity to enhance or create new wetlands



Lake County Open Space Initiative Ecosystem Management Plan

Section I The Plan

Lake County Open Space Initiative: **Accomplishments**

Since its inception in 1998, LCOSI has accomplished a number of actions in support of its vision and mission statements. A partial list of accomplishments would include:

Wildlife

- Secured over 5000 acres of critical winter range
- Created a landscape linkage between the Sawatch and Mosquito ranges
- Secured critical nesting and forage areas along the Arkansas River Flyway
- Secured critical big-game migration routes and transitional habitat
- Secured critical spawning habitat along the Arkansas River and its tributaries

Open Space

- Assembled over 8600 acres of public and private lands for ecosystem management as open space through fee simple purchases, conservation easements, management agreements, stewardship trusts, and land tenure options

Historic Preservation

- Inventory, archival photography, and engineering evaluation of 25 historic structures on the Hayden and Hallenbeck ranches for stabilization and preservation
- Listed the Derry Mining Camp on the National Historic Register
- Determined the Hayden Ranch structures eligible for the National Historic Register
- Performed preliminary stabilization of the Hayden Barns
- Worked with CPI to establish a Conservation Easement and Rehabilitation Agreement for the adaptive re-use of the Hayden Ranch structures

Public Education

- Worked with EPA and University of Washington to secure, manufacture, and install \$20,000 in interpretive kiosks and remediation demonstration plots
- Worked with the Top of the Rockies Byway Committee toward the design, manufacture, and installation of \$30,000 in interpretive displays
- Worked with Colorado Mountain College to utilize the LCOSI properties as a living laboratory for its Natural Resource Management Institute
- Worked with Colorado Mountain College to establish a 2+2+2 degree program in Historic Preservation, based at the Hayden Ranch

Smart Growth and Development

- Secured an option for approximately 100 acre-feet of fully consumptive water rights to support Lake County's future municipal and recreational needs
- Secured over \$1.1 million in funding and constructed a new 50 acre-foot reservoir for storage and augmentation of Lake County's newly acquired water rights

Outdoor Recreation

- Opened over 3000 acres of formerly closed lands to public hunting, fishing, and recreational access
- Opened over 6 miles of the main stem of the Arkansas River and 5 miles of its tributaries to public fishing
- Opened over a dozen formerly private ponds to public fishing and hunting
- Constructed a 7 surface acre reservoir for public recreation
- Secured over \$150,000 in grant funding, in-kind services, and volunteer labor to construct a $\frac{3}{4}$ mile long compacted gravel interpretive trail around the reservoir, with bridges, wetland boardwalks, wildlife observation platform, and handicap accessible fishing stations
- Added over six miles of river access to the congressionally designated Arkansas Headwaters Recreation Area.



Lake County Open Space Initiative Ecosystem Management Plan

Section I The Plan

Purpose and Need

The Lake County Open Space Initiative Project Area (Project Area) represents a complex ownership matrix of federal, state, and local lands, all administered under different implementing legislation and jurisdictional regulations (See: Existing Condition – Administration). For the LCOSI properties to function together as an integral component of the overall environment of the Upper Arkansas River Valley, it was mutually agreed that a single, unifying, Ecosystem Management Plan was needed to provide guidance and direction for future jurisdictional management plans and inter-jurisdictional planning decisions.

It is the intended purpose of the *Lake County Open Space Initiative: Ecosystem Management Plan* (Plan) to consider the lands within the Project Area as part of a single ecosystem, rather than a collection of discrete jurisdictional parcels, circumscribed by man-made property lines. It is in their unification that the lands of the LCOSI form the crucial landscape linkage connecting the Sawatch and Mosquito Ranges, protect the viewshed's of Colorado's highest peaks, preserve critical wildlife habitats and migration routes, conserve the Valley's rich cultural heritage, and secure the legacy of open space for future generations.

By mutual consent, the partners to the LCOSI Memorandum of Understanding (MOU) have agreed to participate in the preparation of the Plan, and to use the consensus recommendations contained therein to help guide future planning decisions on LCOSI lands under their jurisdiction. It is not the intended role of LCOSI to hold land, or to supercede the management directives of its individual partners, but rather, to create the common thread that binds future decision making to the shared goals of its partnership and the benefit of the ecosystem as a whole.

Planning Process Description

Draft: *Lake County Open Space Initiative: Ecosystem Management Plan*

The Draft LCOSI Ecosystem Management Plan (EMP) is divided into four sections, briefly described as follows:

Section 1 - The Plan

Section 1 provides a basic **background** on the **formation, vision, mission goals** and **objectives** of LCOSI, its **organizational foundation**, and selected **accomplishments**. It also presents a **Purpose and Need** statement for the preparation of the Plan, a description of the **planning process**, and a **glossary** of terms that may be found within the context of the document.

Section 2 – Existing Condition

Section 2 provides a **profile and inventory of the natural resources and manmade infrastructure** within the Project Area, as they existed at the time of the Plan's writing. A knowledge of the existing condition is a necessary element in: understanding the resource base and its significance, constraints and opportunities; predicting changes that will occur as a result of selected actions; developing strategies for managing and enhancing resource values, overcoming constraints, and mitigating impacts; and monitoring change over time.

Section 3 – Anticipated Change

Section 3 explores the **conditions that are likely to change** as a result of adjustments to ownership, operations, management, or maintenance of the lands within the Project Area as a result of LCOSI actions.

Section 4 – Management Strategies

Section 4 establishes proposed strategies for management, mitigation, or enhancement of natural resources and manmade infrastructure that are constrained, impacted, or altered as a result of LCOSI actions, within the overall context of meeting LCOSI's goals and objectives. **Management Emphasis Areas** describe *where* actions may occur, **Management Objectives** describe *what* the management Strategy is intended to do, **Underlying Principals** describe *why* the action is being taken, and Proposed **Management Actions** describe *how* the strategy will be implemented



Lake County Open Space Initiative Ecosystem Management Plan

Section I The Plan

Public Participation Plan

The Draft EMP will be reviewed internally by the LCOSI partnership for accuracy, completeness, and compliance with LCOSI's stated goals and objectives prior to release to the public.

Following revisions to the Internal Review document, a Public Review Plan will be released to participating agencies and to the general public for review and comment. Newspaper articles will provide a synopsis of the plan, and provide information as to where it can be reviewed, how to provide input, and the timeframe for participating in the review process. Hard copies of the Draft Plan will be made available for on-premises review at local libraries and the offices of the Lake County Board of County Commissioners, for a period of 30 days, with a request for written comments. The Plan will also be available on a CD-ROM format for off-premises review.

Following the public review period of the Draft Plan, public-planning workshops will be held to; discuss and explain the plan; field questions; take input; and gauge the level of public support for the recommendations contained therein.

Final: *Lake County Open Space Initiative Ecosystem Management Plan*

Following the Public Review Process, responses will be documented and evaluated, and revisions or corrections will be incorporated into the Final EMP document, as deemed appropriate by the LCOSI partnership.

The final document will be reproduced in hard copy for distribution to the local libraries, and in CD-ROM format for participating agencies and LCOSI Partners.

Glossary of Terms

Acre-foot – The amount of water needed to cover one acre to a depth of one foot, 43,560 cubic feet, or 325,851 gallons.

ADA - Americans With Disabilities Act of 1990, as amended, PL 101-336.

Aliquot Parts – Divisions and subdivisions of a section of land described in relation to the four points of the compass. Sections are divided into halves (320-acres) and quarters (160-acres). Divisions can be further subdivided (eg. NW 1/4 of the NE ¼) until the position and size of the parcel are defined.

Alluvium – Unconsolidated rock or soil material deposited by running water, including gravel, silt, clay and various mixtures of these

Areal – A specified area of land or water defined by square feet or acres

Avoidance – A partial or complete redesign or relocation of a proposed land use to prevent a potential adverse effect from occurring

Basin – A region drained by a single river system: e.g., the Arkansas River Basin

Biodiversity – A variety of life forms, the genetic diversity contained, and the ecological functions performed

BLM – United States Department of the Interior, Bureau of Land Management

BOR – United States Department of the Interior, Bureau of Reclamation

Canopy – The continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth

Cfs – Cubic feet per second, a measure of water flow equal to 449 gallons per minute, or 646,317 gallons (1.983 acre-feet) per day

Clean Air Act - National Clean Air Act of 1970, as amended, PL 101-549

Clean Water Act - National Clean Water Act of 1977, as amended, 33 USC 1251-1387, PL 95-217

Critical Winter Range – Lands identified as critical to big game during the winter months

Cultural Resources – Fragile and non-renewable remains of human activity reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in human events

EA – Environmental Analysis

Ecosystem – Collectively, all populations in a community, plus the associated environmental factors

Effluent – Treated wastewater

EIS – Environmental Impact Statement

EMP – This document, the Lake County Open Space Initiative Ecosystem Management Plan



Lake County Open Space Initiative Ecosystem Management Plan

Section I The Plan

Endangered Species – Any species in danger of extinction throughout all or a significant portion of its range

Ephemeral Stream – A stream that flows occasionally because of surface runoff, but is not influenced by permanent groundwater

Erosion – The process by which soil particles are detached and moved

ESA - Endangered Species Act of 1973, as amended, 7 USC 136, 16 USC 460 et seq

FLPMA - Section 307{a} and {b} of the Federal Land Policy and Management Act of 1976

Flyway – An established air route of migratory birds

Forb – A non-woody herbaceous plant

Game Species – Those species legally harvested for sport

Groundwater – Water beneath the earth's surface, often between saturated soil and rock, that supplies wells and springs

Habitat – A specific set of physical conditions that surrounds the single species, a group of species, or a large community. In wildlife management, the major components of habitat are considered to be food, water, cover, and living space.

Hazardous Materials (Haz-Mat) – Substances that may be encountered that would be potentially harmful to users

Historic Preservation Act - National Historic Preservation Act of 1966, as amended, 16 USC 470, PL 89-665

Intermittent Stream – A stream that does not flow year-round but has some association with groundwater for surface or subsurface flow

LCOSI – Lake County Open Space Initiative, the partnership and the project.

Mineral Estate – The ownership of the right to all or certain minerals in the land, or the reservation of fractional interest in all or certain minerals in perpetuity or for a specified period of time

MOU – Memorandum of Understanding, the document that binds the partnering entities to the common goals and objectives of LCOSI

National Register – National Register of Historic Places, the official list, established by the National Historic Preservation Act of 1966, of the nation's cultural resources worthy of preservation.

Native Water – Water located in the original basin or drainage

NEPA - National Environmental Policy Act of 1969 (NEPA)– 40 CFR 1500, PL91-190, 42 USC 4321 – 4347

Non-potable water – Water that is not drinkable because it has not been treated

Nongame Species – Those species not commonly harvested for sport

NRCS – United States Department of Agriculture, Natural Resource Conservation Service

OHV – Off-Highway Vehicle, includes any vehicle capable of, or designed for, travel on or immediately over land, water, or other natural terrain

Perennial Stream – A stream that has year round flows

Plan – Within the context of this document, referring to the Lake County Open Space Initiative Ecosystem Management Plan

Project Area – The area encompassing the individual properties administered by the LCOSI partners, as well as external references such as surrounding land ownership patterns, water bodies, roadways etc. Includes all or part of Sections 13 – 36, Township 10 South, Range 80 West, and Sections 1 – 18, Township 11 South, Range 80 West, of the Sixth Principal Meridian, Lake County, Colorado.

Riparian Area – An area of land directly influenced by permanent water, which has visible vegetation or physical characteristics reflective of this permanent water influence

Riverine – Pertaining to or resembling a river. Located on or inhabiting the banks of a river

Roundwood – Non-lumber wood product, typically used for posts or poles.

Section – A land description used in defining a unit of land and its relative horizontal and vertical coordinates within a grid referred to as a Township. A Section of land contains approximately 640 acres, and measures approximately 1 mile on each side. 36 sections make up a Township

Sediment – Solid fragments if inorganic or organic material that come from the weathering of rock and are carried and deposited by wind, water, or ice

Soil Association – A mapping unit used on general soil maps in which two or more defined taxonomic units occurring together in a characteristic pattern are combined because of the scale of the map or the purpose for which it is being made does not require delineation of the individual soils

Solitude – The state of being alone or remote from habitations or human influences

Subject Lands - Within the context of this Plan, the term Subject Lands refers to parcels of real property that have been secured by partners of the Lake County Open Space Initiative through land tenure agreements including, but not limited to: fee simple ownership; conservation easements; stewardship trust agreements; recreational access agreements; or cooperative management agreements, under which jurisdiction over surface activities has been conveyed.

Sustained Yield – The achievement or maintenance, in perpetuity, of a high level of annual or regular periodic output of renewable resources consistent with multiple use.

Threatened Species – Any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range

Lake County Open Space Initiative Ecosystem Management Plan



Section I The Plan

Township and Range – The terms Township and Range are used to describe the horizontal and vertical coordinates of a Township unit. Townships are north and south of a baseline, ranges are east and west of a meridian line. A Township consists of 36 numbered sections, encompassing approximately 36 square miles.

Transmountain water – Water that is brought by pipeline, ditch, or tunnel from one side of the Continental Divide to the other

Used to Extinction – Using water until it is all used up

Viewshed – The combination of foreground, middle ground and background elements that make up an aesthetically pleasing panorama

Visual Resource – The land, water, vegetation, animal and other features that are visible on all lands

VQO – Visual Quality Objectives, standards for evaluating and preserving scenic resources

Watershed – The region draining into a river, river system, or other body of water.

Wetland – Permanently wet or intermittently flooded areas where the water table is at, near, or above the soil surface for extended intervals, where hydric wet soil conditions are normally exhibited and where water depths generally do not exceed two meters

Wilderness – Wild lands federally designated as Wilderness Areas through the RAREII process

WRIS – The Colorado Division of Wildlife's Wildlife Resource Inventory System



**Lake County Open Space Initiative
Ecosystem Management Plan**

**Section II
Existing Condition**



Lake County Open Space Initiative Ecosystem Management Plan

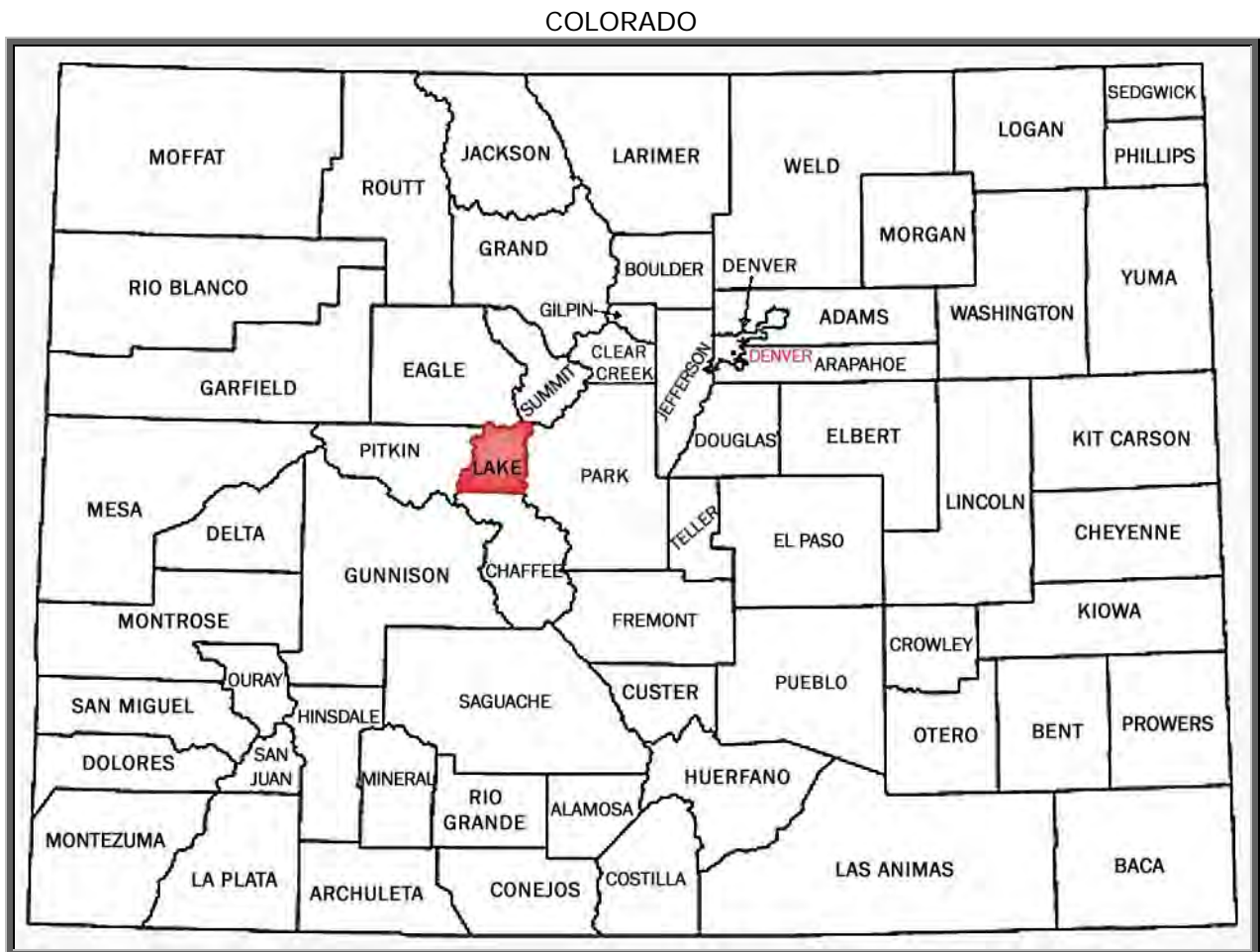
Section II Existing Condition

Setting

Location

General Location: Lake County

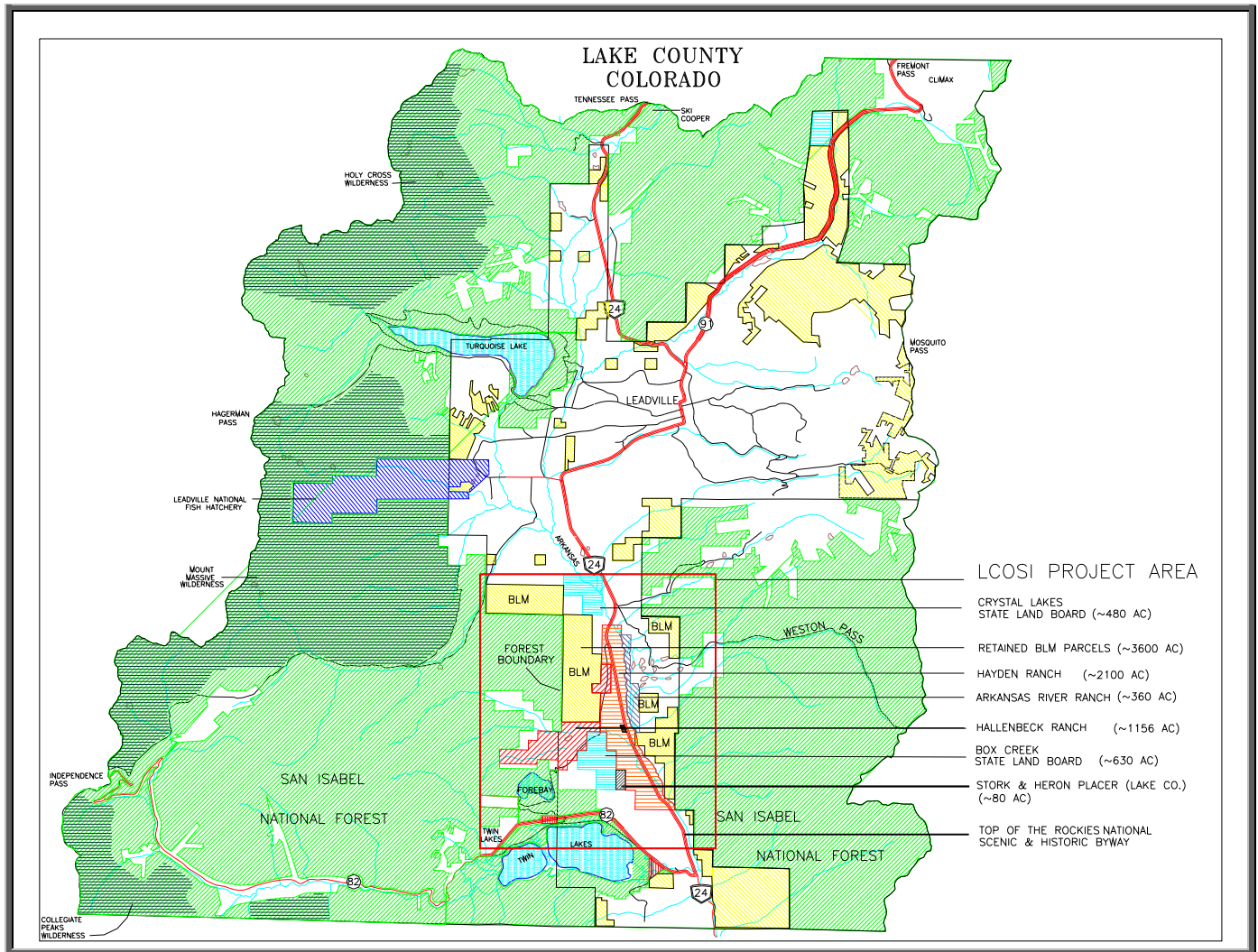
Lake County is geographically situated on the eastern slope of the Continental Divide of the Central Rocky Mountain Cordillera, approximately 100 miles southwest of the State Capital of Denver. With a landmass of approximately 376.9 square miles, Lake County is the third smallest County in the State. It is bordered to the north by Eagle and Summit Counties, to the west by Pitkin County, to the south by Chaffee County, and to the east by Park County. The City of Leadville, perched at an elevation of 10,450 feet above sea level, is the County seat of Lake County, and is the highest incorporated City in the United States.



Map 1 Lake County: General Location

General Location: LCOSI Project Area

The Lake County Open Space Initiative Project Area is located in the south central portion of Lake County, Colorado, and consists of: the Hayden, Hallenbeck and Arkansas River Ranches; the Box Creek and Crystal Lakes State Land Board parcels; seven BLM parcels prioritized for retention as open space; and Lake County's Stork & Heron Placer. The land tenure conditions of individual properties within the LCOSI Project Area are further described in the Land Status segment of this section. The Project Area, as defined within the context of this report, consists of approximately 42 square miles of land in Townships 10 and 11S, Ranges 80 and 81W of the Sixth Principal Meridian, in order to encompass all LCOSI properties, provide external reference, and allow for the identification of surrounding ownership.



Map 2 LCOSI Project Area

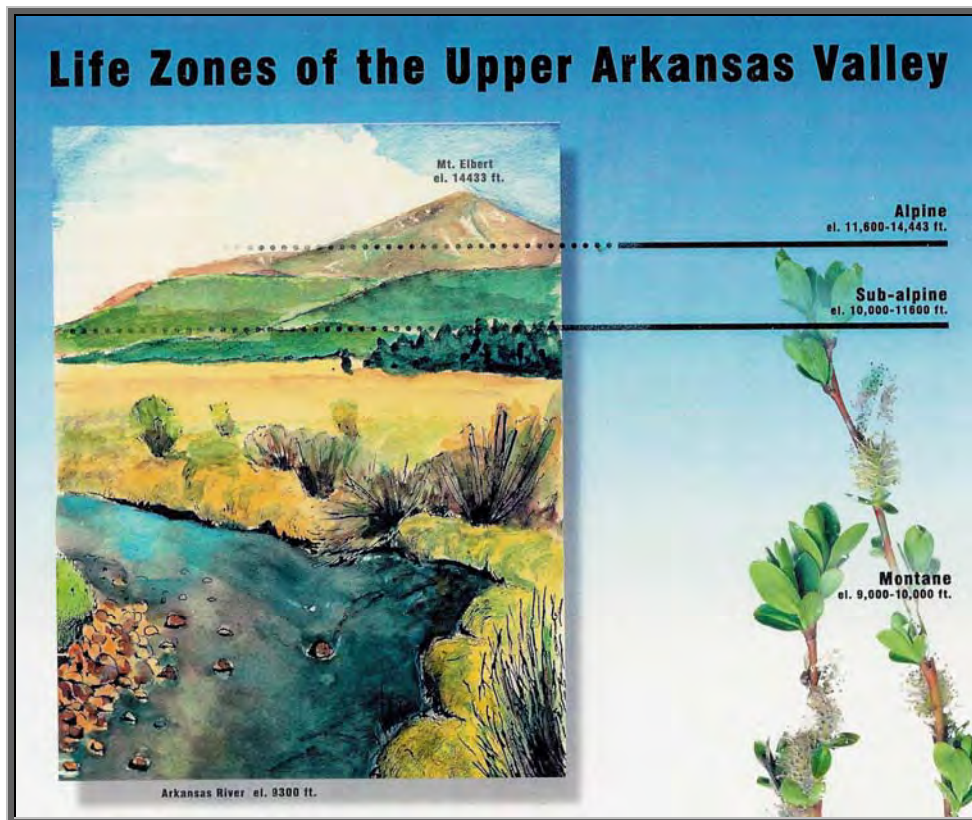
Physical Setting

Lake County is located in a high alpine valley surrounded by a ring of mountains that soar to elevations of over 14,000 feet above sea level. The ridgelines that form the County border seldom dip below 12,000 feet. The high peaks are predominantly located within the Alpine Life Zone (11,600 to 14,000'), characterized by tundra and barren windswept ridges above timberline, transitioning to the high mountain meadows and mixed conifer forests of the Sub-Alpine Life Zone (10,000 to 11,600'). The valley floor is located within the more hospitable Montaine Life Zone (9,000 to 10,000'), typified by willow, sage, and native grasses.



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition



Chris Conlin Image

Access to Lake County can be gained by following US Highway 24 northward through the relatively flat Arkansas River Valley from Chaffee County, or by traversing any of the six mountain passes that enter the valley. Of these routes, Mosquito and Weston Passes, which traverse the Mosquito Range to access Park County, and Hagerman which traverses the Sawatch Range to access Pitkin County, are unpaved mountain roads best suited to four wheel drive travel, and only during the short summer months. Highway 82, crossing the continental divide over Independence Pass to Aspen is paved, but is closed seasonally due to high avalanche danger.

US Highway 24, crossing the Continental Divide at Tennessee Pass (10,424'), and State Highway 91 that tops the Divide at Fremont Pass (11,400') provide paved, all season vehicular access to Interstate 70 and the communities of Eagle and Summit Counties to the north. As a consequence of its high altitude, harsh climate, relative remoteness and limited access, Lake County has not witnessed the rapid growth and development experienced by many of its neighboring communities, and retains the distinctive sense of open space and uncluttered scenic vistas that are an integral part of its unique character.

Settlement of Lake County came principally as a result of the world class ore bodies that underlie its high mountain cirques, verdant forests, and stream channels. Lake County includes some of the most highly mineralized formations in the world, and has produced the greatest value of mineral wealth of any County in the State of Colorado. In his book, *Leadville, a Miners Epic*, Steven Voynick states that, "*Leadville's mining heritage and history is the most comprehensive and continuous in the United States. Considering the geography*

and climate, the difficulties of early mining, and the relatively small area from which metals were taken, there are few mining districts in the world that can hold the proverbial miners candle to Leadville.” The “boom and bust” legacy of its rich mining heritage has bred an intense spirit of independence, as witnessed by the lifestyles and tenacity of its residents.

For over a century, Lake County was economically dependent upon the extraction of its mineral wealth, and the ancillary businesses that supported the mining industry. With the cessation of operations of the Climax Mine atop Fremont Pass in 1982, and the closure of its last active mine (Black Cloud) in 1999, Lake County was once again thrust into transition, and faced with the difficult conversion from an economy based on extractive industry, to one capitalizing on its rich heritage, vast open space, unparalleled scenic beauty, diverse wildlife, and extensive outdoor recreational resources.

It was within this setting that the Lake County Open Space Initiative was formed as a tool to help preserve the intrinsic qualities and irreplaceable natural resources that make the Upper Arkansas Valley of Lake County unique.

The Mountains



Lake County is located in the rift valley that formed as a graben or downthrown block between the high peaks of the Mosquito and Sawatch Ranges of the Central Colorado Rockies (See: Geology). The surrounding peaks represent the highest concentration of 14,000 foot peaks found anywhere in the continental United States, and include Colorado’s highest peak, Mount Elbert. Soaring to an elevation of 14,433 feet above sea level, Mount Elbert dominates the skyline of the

Sawatch Range on the western horizon. It is also the highest peak in the American Rockies, and the second highest peak in the lower 48 states.

To the north of Mount Elbert is Mount Massive, at 14,413 feet above sea level, the second highest peak in Colorado, and to the south is La Plata Peak, Colorado’s fifth highest peak at 14,336’.

Forming the eastern boundary of Lake County, the Mosquito Range pierces the skyline with four additional 14,000-foot peaks, Lincoln (14,286’), Democrat (14,148’), Bross (14,172), and Sherman (14,036). Flanking the southern boundary of Lake County are the Collegiate Peaks, which include Huron (14,005), Missouri (14,067), Belford (14,197), and Oxford (14,153). Together, the surrounding peaks have garnered Lake County the distinction of being referred to as the “Top of the Rockies.”

The peaks of the Mosquito and Sawatch Ranges were formed during the Laramide orogeny, some 60 to 70 million years ago, when the clashing of tectonic plates created the great upheaval of foundation rock and overlying sediments we now know as the Rocky Mountains. Subsequent actions of wind, ice, and water have eroded away much of the sedimentary rock to expose the pre-cambrian bedrock formed 1.7 billion years ago, and to fill the valley bottoms with glacial alluvium, softening the topography of the region to the landform we see today.

The Continental Divide

The Continental Divide is the backbone of the North American Continent, separating the river systems flowing east to the Atlantic Ocean, from those flowing west to the Pacific Ocean. The Continental Divide forms the western and northern borders of Lake



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

County. Waters flowing from the snowfields and cirques of the surrounding peaks are concentrated in the Arkansas River for its eventual journey to the Mississippi River and the Gulf of Mexico. Waters to the north and west of the divide recharge the Colorado River System, and flow westward to the Pacific Ocean.

Rivers and Streams

Lake County is the headwaters of the Arkansas River, one of the major river systems of the United States. From its humble beginnings as a series of rivulets emerging from the flanks of Mount Democrat (el. 14,145') near Fremont Pass, the Arkansas builds in volume as it tumbles and falls nearly 10,000 feet in its first 125 miles to the City of Pueblo (el. 4,600') on Colorado's Front Range. The resulting rapids located within this reach of the river have established the upper Arkansas as one of the top ten white-water boating rivers in America. Its icy, oxygenated waters also provide prime aquatic habitat for self-sustaining populations of Brown Trout, adding to its notoriety as a premier cold-water fishery. From Leadville to Lake Pueblo, 150 miles to the southeast, the river corridor has been Congressionally designated as the Arkansas Headwaters Recreation Area, and is jointly managed by the Bureau of Land Management and Colorado State Parks.

From its headwaters near Leadville, the Arkansas River drains some 24,904 square miles of the surrounding landscape, making it Colorado's single largest drainage basin. Its native inflow of 875,000 acre feet of water is supplemented by an additional 101,000 acre feet of water imported from the Western Slope of Colorado through a series of diversion structures, storage reservoirs, and tunnels. Water from the Arkansas River irrigates an estimated 440,200 acres of land within its basin in Colorado.

From its point of origin, the Arkansas River travels over 1450 miles through the States of Colorado, Kansas, Oklahoma, and Arkansas to its confluence with the Mississippi River, approximately 600 miles north of New Orleans, making it the longest tributary in the Mississippi / Missouri river system. Along the way, the river irrigates vast areas of the nation's heartland, and provides a navigable waterway along over 445 miles of its lower reach.

Major tributaries to the Arkansas River in Lake County include Tennessee Creek, Lake Fork Creek, Willow Creek, Halfmoon Creek, and Lake Creek, with numerous small tributary streams contributing to its ever-increasing volume as the river wends its way south through the County. Within the LCOSI Project Area, minor tributaries include Empire Creek, Union Creek, and Spring Creek on the east side of the river, and Box Creek, Corske Creek, and Herrington Creek on the west side of the river.

Water Bodies

Lake County is sprinkled with numerous small water bodies ranging in size from less than an acre to over one hundred acres, as well as three major water bodies ranging from 280 to over 2400 surface acres. Major water bodies include:

Twin Lakes

Twin Lakes, Colorado's largest glacially formed lake, was shaped during the Pleistocene Ice Age over 10,000 years ago. Its catchment basin was the result of the gouging and scouring action of the vast ice shield as it advanced down the Lake Creek Drainage, while its dam and shorelines were formed by the terminal and lateral moraines left behind as the glacier melted and retreated back up the valley.

The two adjoining natural lakes have subsequently been dammed to increase their water storage capacity, most recently as part of the Fryingpan Arkansas Project. In its current configuration, the reservoir covers approximately 2440 surface acres, and has the capacity to hold approximately 141,000 acre feet of water at its active conservation elevation of 9200'. Its active conservation pool is approximately 68,000 acre feet, with an inactive conservation pool of 18,000 acre feet, and 55,000 acre feet of dead storage below the outlet elevation. The Twin Lakes Dam is 53 feet high, and 3150 feet long. Water stored in Twin Lakes is used for wildlife, irrigation, recreation, fisheries, industrial, and municipal purposes.

Twin Lakes was enlarged in the early 1980's as part of the Fryingpan Arkansas Project, which was authorized by the US Congress on August 16, 1962 as Public Law 87-490. President John F. Kennedy signed the project into law, and flew to Pueblo, Colorado, to officially proclaim the authorization of the project and start construction. The project was designed to divert waters from the western slope's Hunter Creek and Fryingpan River Drainages, under the continental divide to the Arkansas River Drainage, to help meet irrigation and municipal demand, and to generate electrical power at the Twin Lakes Power Plant.

The Twin Lakes Power Plant consists of two 138,000 hp turbines capable of generating 200,000 Kw of power. Water drops 447 feet from the Mount Elbert Forebay above to charge the turbines during periods of peak demand, and is then pumped back up to the Forebay by reversing the turbines during low demand periods. Although the plant works at a net energy loss, its ability to help meet peak power demands justifies its operation.

As a part of the Authorization Act of 1962, the Bureau of Reclamation was authorized to condemn private lands lying between the high water mark of the reservoir and surrounding federal lands for the creation of public recreation. The BOR subsequently condemned approximately 5600 acres of land, and turned it over to the US Forest Service for administration. Today, USFS recreational facilities around the 14 mile shoreline of Twin Lakes consist of 160 acres of developed recreation, including: two campgrounds with 92 developed campsites; 21 picnic shelters; two boat launching ramps; sanitary facilities; and potable water.

The USFS also manages the Twin Lakes Interpretive Center, and the Interlaken Resort site on Twin Lakes south shore, which is listed on the National Register of Historic Landmarks.

Mount Elbert Forebay

The Mount Elbert Forebay was constructed as part of the Fryingpan Arkansas Project in the late 1970's to temporarily store water from Turquoise Lake in a vessel located vertically above the Mount Elbert Power Plant, in order to allow for its gravity transfer to the power generating turbines below.

Water to the Forebay is conveyed from Turquoise Lake by means of the Mount Elbert Conduit, a 90" pipeline capable of delivering 370 cubic feet of water per



Lake County Open Space Initiative Ecosystem Management Plan

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second (approximately 3000 gallons every second). Water from Turquoise Lake is augmented by water pumped back up to the Forebay from Twin Lakes by the Twin Lakes Power Plant during off-peak periods. As a result, rapid fluctuations of the Forebay's surface level of as much as 30' can be experienced over the course of a single day. For this reason, recreational use of the water body for boating, ice fishing, or other water related activities is limited, and consists principally of shoreline fishing. No developed campsites, boat ramps, or picnic areas have been constructed around the water body.

The Forebay was lined with an impervious membrane in 1980 to seal the vessel against groundwater infiltration and system loss, and to ensure the stability of the fine "glacial flower" found in the substrate that underlies the basin.

The Mount Elbert Forebay covers 281 surface acres, and has a total storage capacity of 11,143 acre feet of water at an active conservation elevation of 9645.7 feet above sea level. It has an inactive conservation pool of 3,269 acre feet, and 559 acre feet of dead storage, leaving an active conservation pool of 7,318 acre feet.

Hayden Meadows Reservoir

The Hayden Meadows Reservoir was constructed at the north end of the Hayden Ranch in the summer of 2001, and dedicated to the public in June of 2002. It consists an earthen dike approximately 1800 feet in length, with a maximum depth of 15 feet. Its surface area covers 7 acres, and its capacity is approximately 50 acre-feet.

The reservoir was constructed using grant funds from the Department of Local Affairs (DOLA,) the Great Outdoors Colorado Trust (GOCO,) Fishing is Fun (FIF), and the Enhancement provisions of the Transportation Equity Act for the Twenty First Century (TEA-21), with in-kind and cash match provided by partners to LCOSI. The owner of the reservoir is Lake County, and its intent is to provide water storage, habitat diversity, and recreation.

Turquoise Lake

Turquoise Lake was a natural water body located approximately 5 miles west of Leadville. In 1902 CF&I Steel built a small dam to increase water storage for industrial uses downstream in Pueblo, Colorado, and the lake became known as Sugarloaf Reservoir. The name Turquoise Lake is attributed to the discovery of the semi-precious mineral on the north shore of the lake in the 1930's, when two Navaho Indians discovered nearly 1000 pounds of raw turquoise at the Turquoise Chief and Poor Boy Lode mines. The Reservoir was further expanded to its current configuration with the construction of the Sugarloaf Dam between 1965 and 1968, as part of the Fryingpan Arkansas Project. Its dam is 135 feet high, and 2020 feet long.

The reservoir covers 1788 surface acres, and has a shoreline of 11 miles. Its storage capacity is 129,432 acre feet at an active conservation elevation of

9869.4 feet, of which 120,490 acre feet are considered to be active conservation pool, 6,175 are inactive, and 2,767 are in dead storage. Waters stored in the basin are utilized to support wildlife, irrigation, recreation, fisheries, industrial and municipal uses.

The land mass associated with the recreation area is 4928 acres, of which 184 have been developed to support public recreation. The USFS is the managing entity, and provides 8 campgrounds with 269 developed campsites, 4 picnic areas, 39 picnic tables, 2 boat launching ramps, potable water and sanitary facilities.

Native water to the reservoir comes from Busk, Lake Fork, Glacier, Mill and Bear Creeks. Water imported from the western slope is conveyed through the Bousted and Carlton Tunnels, originating in the Fryingpan / Hunter Creek Basins, and the Homestake Tunnel originating in the Eagle River Drainage.

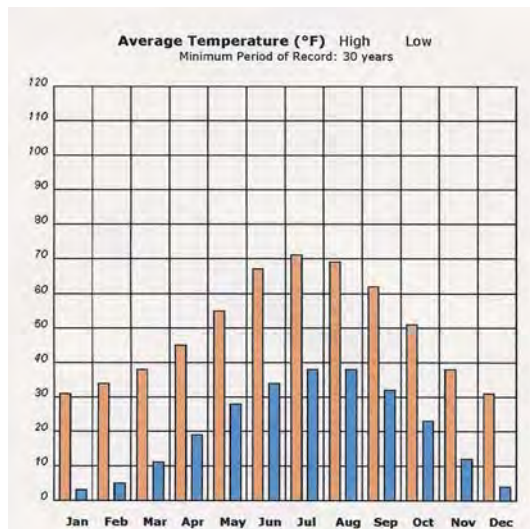
Wilderness Areas

Lake County is virtually surrounded by congressionally designated Rare II Wilderness Areas. Identified by Congress for their pristine beauty, primitive setting and rugged character, these lands have been protected in their natural state to ensure that future generations will be able to explore and experience the untouched, wild and scenic qualities of Colorado's Rocky Mountains.

In all, approximately 576,376 acres (over 900 square miles) have been set aside in the surrounding Wilderness Areas, including the Holy Cross and Eagles Nest Wilderness Areas to the north, the Hunter Fryingpan Wilderness to the west, the Collegiate Peaks Wilderness to the south, and the Buffalo Peaks Wilderness to the east. So significant is this concentration of pristine wilderness that the area has been designated as a Center of Excellence by the Rocky Mountain Region of the U.S. Forest Service.

Climate

The climate of Lake County is significantly influenced by its high elevation and the orographic effect imposed by the surrounding mountain ranges. Unlike the hot and dry climatic conditions of most of the surrounding desert southwest, Lake County's climate is more accurately compared to climates at much more northerly latitudes. Summer time temperatures, for example, are comparable to Seattle, Washington. Temperatures range from cool and pleasant in the summer months, to near arctic in the winter. Leadville often posts the coldest temperatures in Colorado and the United States.



Lake County experiences large seasonal temperature fluctuations and rapid weather changes caused by advancing storms, which typically travel from west to east. The average annual maximum temperature in Lake County is 50.5 degrees F., and the average annual minimum temperature is 21.9 degrees F. The average annual mean temperature is 37.3 degrees F. It is not uncommon to witness 40 degree shifts in temperature over the course of a single day.

At lower elevations in the County the growing season averages 81 days, but decreases substantially with increases in elevation. Spring snowmelt supplies the principal source of surface water, supplemented by periodic



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rains during the warmer seasons. Precipitation, mostly in the form of snowfall, varies drastically in proportion to elevation. Lower elevations at the southern end of the County may receive only 10 inches of annual precipitation, while higher elevations may see over 40 inches on a given year. Average snowfall depths vary from 54 inches at Twin Lakes (9200 ft.), to 125 inches in Leadville (10,154'), to 279 inches at Climax at the summit of Fremont Pass (11,350')

Population Centers

Lake County's population is centered around the City of Leadville, and the Village of Twin Lakes.

City of Leadville

The historic City of Leadville, North America's highest incorporated city (10,430 feet elevation), was once celebrated as the West's richest, wildest, and rowdiest silver mining boom-town. It all began with the discovery of gold in present day Leadville on April 24th, 1860. Abe Lee, a veteran of the California gold rush was washing gravels from a streambed at the base of a gulch when he was said to have exclaimed, "Oh boys, I've just got California in this here pan!" In his pan was the unmistakable glitter of gold. The rush was on!

The Gulch would thereafter be known as California Gulch, and the mining town became known as "Oro City", oro being the Spanish word for gold. The population of the Upper Arkansas Valley swelled to over 8000 by July of that year as word of the strike spread. The sounds of shovels and pick axes echoed from virtually every tributary stream along the Arkansas River. By 1865, miners extracted over \$5,000,000 in gold from just the first three miles of California gulch, but the deposits were rapidly depleting. To make matters worse, a heavy black sand clogged their sluice boxes and made extracting the gold more difficult. By 1870, the deposits were all but exhausted, and the population had slipped to only about 100 hardy souls. Oro City seemed destined to slip quietly into the history books as just another flash in the pan.

And so it might have been had an enterprising mining engineer named Alvinus B. Wood not gathered samples of the dense black sands that had plagued earlier miners. In 1873, he carried the samples across Mosquito Pass to Alma to be assayed, where they were found to be lead carbonate that ran twenty-seven percent lead, and fifteen ounces of silver to the ton. The rush was on once again to the carbonate camp high in the Rockies



During its heyday in the 1880's and early 90's, Leadville made its fortune extracting the rich veins of silver that lay buried beneath the hills east of town. Silver assays approaching and sometimes exceeding 10,000 troy ounces to the ton of ore yielded sufficient wealth to create one of the most ornate and modern

communities in the west, and establish the fortunes of the likes of Meyer Guggenheim, Charles Boettcher, and H.A.W. Tabor.

Because there were a lot of towns with "silver" in their names, the City Fathers suggested the name "Leadville." During its "boom" cycle, Leadville boasted a population of over 30,000, was the first community in Colorado to have electrical power, and was considered as a potential site for the State Capital. The repeal of the Sherman Silver Purchase Act in 1893 collapsed the economy, and the community began its roller coaster "boom and bust" ride through the 20th century, culminating in the closure of the last active mine, the Black Cloud, in 1999.

Leadville has been designated as a National Historic Landmark District, the largest in Colorado. Seventy square blocks of Victorian architecture and the adjoining twenty square mile Leadville Mining District, a fascinating graveyard of frontier mining, provide a titillating glimpse of the past. One of America's last remaining authentic mining towns, Leadville's wealth of historical attractions range from the federally chartered National Mining Hall of Fame and Museum, to the Healy House & Dexter Cabin State Museum, and the Mineral Belt National Recreation Trail, that winds through the City and surrounding mining district, telling the story of its fabled past. Leadville is also the hub of the Top of the Rockies National Scenic and Historic Byway, one of only 52 travel corridors to achieve that status in the United States.

Village of Twin Lakes

The Village of Twin Lakes is located at the northwest corner of the lakes that bear the same name, at the base of Independence Pass. Once a stage stop on the toll road between Leadville and Aspen, Twin Lakes provides support services for the growing population in southern Lake County and travelers using the pass. Twin Lakes is also the southern portal to the Top of the Rockies National Scenic and Historic Byway.

The sleepy village of Dayton, once the County seat of Lake County and a center of commerce for early day gold miners, was reborn as Twin Lakes in 1879. The route of current day Highway 82 over Independence Pass was pioneered in that same year as a toll road to connect the silver mining communities near Leadville with the bustling mining camp of Aspen.

Besides catering to miners, Twin Lakes became a favorite recreation destination for the "Silver Barons" of the age, drawn to the unrivaled beauty of the sparkling waters of the lakes set against a towering backdrop of ragged peaks. The Interlaken Hotel, located on Twin Lakes south shore was said to have rivaled the famous Broadmoor Hotel in Colorado Springs, sporting a steamship, dancehall, and a 30' yacht to ferry passengers across the lakes.



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Socioeconomic Setting

For over a century, Lake County depended almost entirely on the extraction of its mineral wealth to support its economy. Through boom and bust, new strikes and depleted reserves, the County alternately established itself as one of the richest communities in the State, and teetered on the brink of becoming a ghost town.

The first gold strikes in 1860 swelled the population of Oro City to over 8000 people in a matter of months, but was short lived. By 1870, the population had dwindled to about 100 hardy souls eking out a meager existence picking through the depleted reserves and looking for the “next big strike.”

The “next big strike” did come in 1873, when the heavy black sand that had plagued early day placer miners was found to be carbonate of lead, rich in silver. By 1880, the population of the community, now called Leadville, had swelled to over 20,000, and the wealth that flowed from the town is said to have built the City of Denver, and bankrolled the fortunes of such notables as H.A.W. Tabor and his wife Baby Doe, Meyer Guggenheim, the “Unsinkable” Molly Brown, and Charles Boettcher. Three Colorado Governors and two Denver Mayors got their financial and political start here. All of the major railroads of the era raced to be the first to reach Leadville to tap its riches. The spider web of rail lines and roads built to access Leadville opened the central Colorado Rockies to the settlement patterns still in evidence today.

By 1893, it is estimated that some \$250,000,000 in gold and silver reserves had been extracted from its rich placer and lode deposits, and Lake County’s population was pushing 30,000. In August of that year, however, the federal government repealed the Sherman Silver Purchase Act of 1890 that had authorized the government to purchase 4.5 million ounces of silver monthly, backing up the issuance of \$54,000,000 in paper money annually. With the switch from the silver to the gold standard, the bottom fell out of silver mining, and once again, Leadville began the precipitous slide so common in the “boom and bust” cycle of mining.

Following the turn of the century, copper, lead, and especially zinc supplemented the County’s dwindling gold and silver production, but by 1910, Leadville’s population had contracted to about 7,000 people. Strategic metals mining played an important role in the First World War effort and briefly stimulated the Leadville economy, but by 1921, Leadville’s metal production had fallen to barely one tenth of what it had been a mere five years earlier, and its population had decreased to 4,500. Of the 100 plus mines operating in 1900, only 26 were still active by 1931.

Relief was to come from an unlikely mineral with the ungainly name of molybdenum. Initial assays of the mineral found on Bartlett Mountain in 1890 had inaccurately identified it as graphite, and the claims had been dropped. In 1895, a Professor named Linderman correctly identified the ore as molybdenite, a metal used in industrial lubricants and in the hardening of steel. The American Metals Company first took options out on the Climax properties in 1916, and after struggling through the First World War years, finally showed a product in 1929. By 1939, Climax was employing a work force of 1000 men and women, and producing \$17 million of the mineral annually. A company town of 175 dwellings, complete with post office, shopping center, and recreational facilities sprang up at the summit of Fremont Pass to support the mine.

From its austere beginnings, the Climax Mine grew to become a giant of the mining industry. Molybdenite production continued largely unabated under the ownership of AMAX until 1982, making it one of the longest continuously operating mines in the history of American mining. The town of Climax was literally picked up and carried down to West Park, just north of Leadville in the early 1960's to take advantage of the milder climate and proximity of services.

By 1980, AMAX, ASARCO, and Day Mines were the principal employers in Lake County, accounting for a workforce of over 3,400 people, supporting an annual payroll approaching \$70,000,000, and paying over three quarters of Lake County's property taxes. Lake County's mineral production of \$300,000,000 in that year represented over one half of the State's entire annual production. Miners earned \$12.00 per hour with superb benefits, the equivalent of \$80,000 per year in today's dollars. During the Climax heyday, Lake County had the highest per capita income, by far, of any rural Colorado County, the highest percentage of seniors who went on to four-year colleges, and one of the top school systems in the state. Leadville was once again at the top of its game.

In 1982, however, competition from foreign producers dropped the bottom out of the molybdenum market, and the Climax mine ceased production. Over 3,000 jobs were lost, and in the ensuing years, the removal of structures at the mine reduced the County's assessed valuation from over \$258,000,000 in 1981 to \$44,000,000 in 1996. With the subsequent closure of Day Mines, and ASARCO's Black Cloud Mine in 1999, the era of large scale mining in Lake County came to an end.

Lake County was faced with the loss of its primary economic engine, and the challenge of "re-inventing" itself to capitalize on its remaining assets in order to diversify and stabilize its economy. The community initiated "Operation Bootstraps" in 1982, with a logo drawn from its past... "We ain't down yet!", and set about the process of identifying its strengths and weaknesses. A community visioning process, "Silver 2000", was initiated through Colorado Mountain College, and identified the County's primary strengths as being its open space, water resources, scenic beauty, rich cultural heritage, and vast outdoor recreational opportunities. It set as a goal, the protection, enhancement, and utilization of these resources to help make the difficult transition from an economy based on extractive industry, to one anchored in heritage and recreational tourism.

Selected examples of projects that have risen out of this vision to develop heritage and recreational tourism have included:

National Mining Hall of Fame and Museum

Opened to the public in 1988, the federally chartered National Mining Hall of Fame and Museum has been referred to as the "Smithsonian of the Rockies". Its world class exhibits and displays bring attention to the important role that Lake County has played in Colorado and world mining history, and forever etches the name of Leadville in the Colorado history books. The Museum draws over 30,000 heritage tourists from around the world into the community annually, and adds to the public education and interpretation of our rich history.

Top of the Rockies National Scenic and Historic Byway

The Top of the Rockies Byway was first nominated for State Scenic and Historic Byway status by the community of Lake County in the summer of 1993. The corridor included portions of U.S. Highway 24, and State Highways 82 and 91 in Lake, Eagle and Summit Counties. The Byway status was intended to help preserve the unique and irreplaceable intrinsic resources of the corridor, and to draw visitation to the rich historic resources and incredible scenic beauty found along its alignment. The Byway was awarded State Byway Status in September of 1993, one of only 21 elite road systems in the State to receive that designation. Between 1994 and 1996, a Corridor Management Plan for the Byway was generated through a tri-county community planning effort. In 1997, the Byway was nominated for, and awarded National Scenic



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and Historic Byway status, making it one of only 52 Byways nationwide to receive that distinction.

Mineral Belt National Recreational Trail

The Mineral Belt Trail was a product of a 1992 public survey to determine what Lake County would like to see as long term benefits from remediation of the California Gulch Superfund Site in Leadville, Colorado. The results of the survey indicated strong grassroots support for a non-motorized recreational trail around Leadville that showcased the incredible scenic beauty and mining heritage of the area. Initiated in 1993 through the cooperation of the ASARCO Mining Co., Lake County, the City of Leadville, and the Leadville Coalition, the paved 12.5 mile, ADA accessible trail was completed and dedicated to the public in July of 2000 at a cost of \$2.5 million, mostly secured through donations, contributions and grant funding. In the fall of 2001, at the urging of the State of Colorado, the Mineral Belt Trail was nominated for the designation of National Recreational Trail. On National Trails Day, June 2, 2002, Secretary of the Interior Gale Norton awarded the National Recreational Trails designation to 52 trails across the nation, among them, the Mineral Belt.

In 2002, following the preparation of the *Lake County Cultural Resource Preservation Plan*, *Lake County Interpretive Sign Guidelines*, and the *Mineral Belt Interpretive Sign Plan*, Lake County applied for and was awarded Superfund Redevelopment and Colorado Historical Society Grants to construct and install 26 individual interpretive signs, 6 information kiosks, and 13 low profile wayside exhibits along the trail to interpret the full circle of mining history, from early exploration through Superfund cleanup. Upon completion of the interpretive sign project, the Byway will seek a National Historic Trail designation.

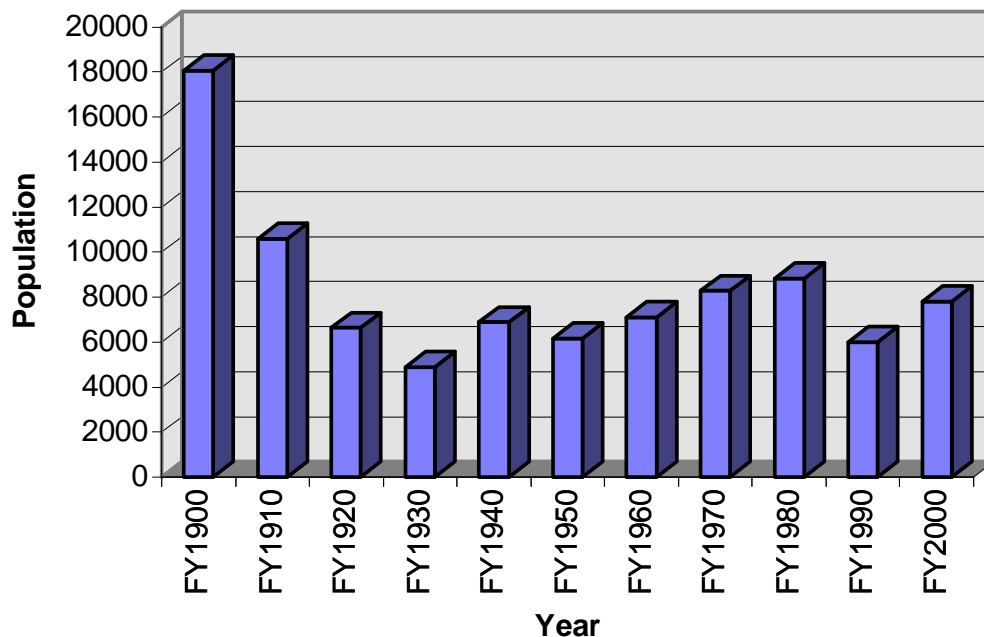
Demographics

Population

U.S. Census Bureau data for Lake County for the period from 1900 through 2000 (Graph 1) shows the general population trend following the crash of the silver market in 1893, through the current census year.

Graph 1

Lake County Population - 1900-2000



Graph 1 shows the dramatic trend of population decline from a peak of over 18,000 residents at the turn of the century, following the crash of the silver market, through the war years when the mining industry was supported by strategic metals mining, to its ebb of less than 5000 residents in the 1930's.

From 1930 through 1980, the general trend turned upward with the opening of the Climax Mine on Fremont Pass and the golden age of molybdenum production. The upward trend continued through 1980 when the population stabilized at almost 9000 residents. At this point in time, Leadville mines were employing over 3,400 men and women in high paying Union jobs, with an annual payroll of nearly \$70,000,000. Mineral production was approximately \$300,000,000, and Lake County's assessed valuation was over \$275,000,000.

The sharp decline in population from 1980 through 1990 reflects the closure of the Climax mine in 1982, and the out migration of nearly 30% of the County's population that followed (the single largest recorded out migration from any County in the US that year.) With the closure, mine related earnings fell (Graph 2) and the housing market plummeted, as wage earners were forced to move elsewhere to find work. With the glut of houses on the market, and the lack of local employment, housing supply quickly outstripped demand, driving down the value of residential properties, and the communities assessed valuation.

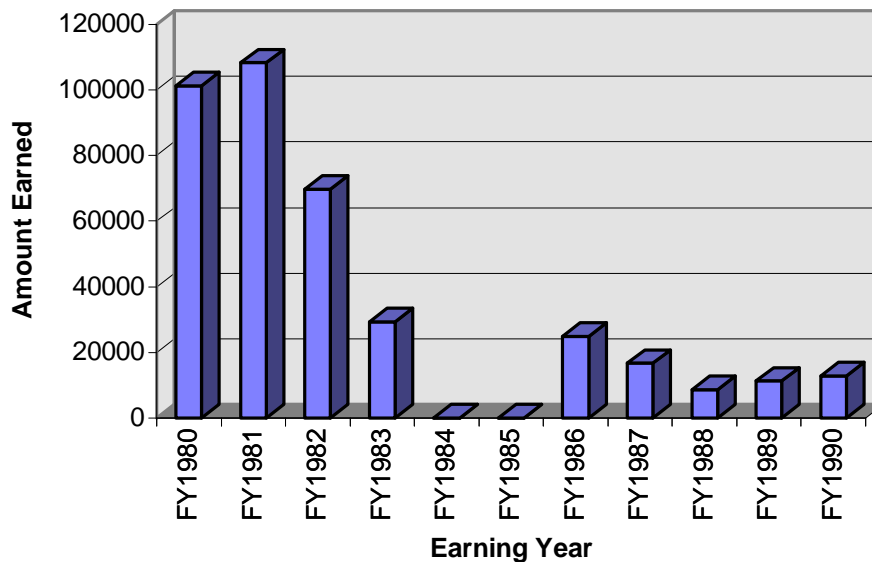


Lake County Open Space Initiative Ecosystem Management Plan

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Graph 2

Lake County Earnings - Mining



*FY 1984 – 85 figures were not provided by the mines to avoid disclosure of confidential information
Source: U.S. Census Bureau

During the years that followed the closure of the mine, taxable structures were gradually removed from the Climax property, and Lake County's assessed valuation dropped precipitously to approximately 14% of its 1981 value. Even though the population dropped by 30%, demand for County services remained relatively static, while the revenues to pay for the services dropped by a staggering 86%, resulting in deficit budgets and use of reserves to maintain even minimal levels of service.

School enrollment dropped by 41% from 2089 students in 1979, to 1212 students in 1986, forcing the closure of two local schools, and the creation of new programs to meet the growing need for child-care for the "latch key" children of commuting parents. High school dropout rates skyrocketed to the highest in the state. Students for whom English was a second language increased dramatically as the surrounding resorts went increasingly to hiring foreign employees for jobs that paid too little to entice American workers. In the 2000 Census, over 1 in 4 Lake County's residents responded that they spoke a language other than English at home. With a starting pay of \$24,000, the financially strapped school system can't compete for enough bi-lingual teachers to cope with the linguistic and cultural problems. Local medical services were taxed to their financial limits because most resort jobs did not provide medical benefits, and the resorts referred many of their Medicaid and indigent patients to medical facilities in Lake County.

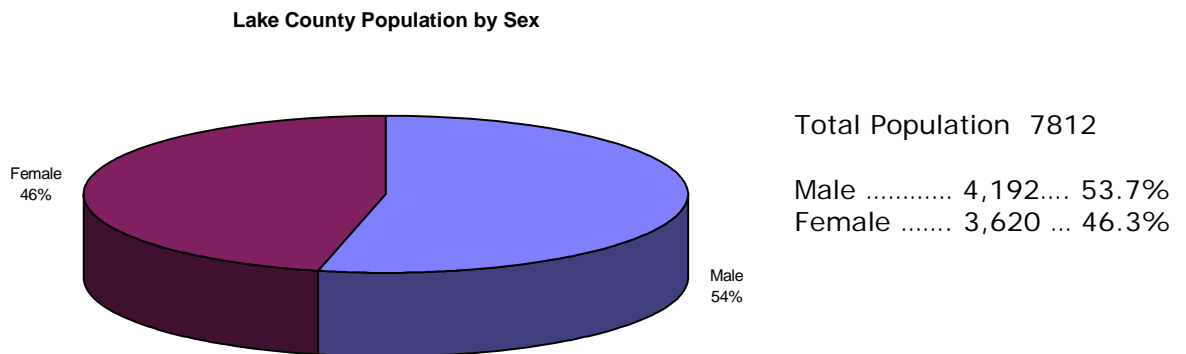
With the loss of population and decrease in discretionary income, numerous storefronts went vacant as retail sales dropped by 22% between 1982 and 1987. Building permits dropped from 52, with a value of \$1,955,000 in 1981, to 8 valued at \$375,000 in 1982. Unemployment that had been at 9% in 1981 while the mine was in operation, skyrocketed to 29.2% following the closure in 1982.

The composition of the community also began to change, as highly paid miners who lived, worked, and actively participated in the activities of their community, were displaced by lower paid seasonal resort workers who commuted tortuous hours over the continental divide to and from work every day, and spent much of their time and their paycheck in the surrounding communities where they were employed. Today, as many as 3000 commuter vehicles head north out of Leadville over the passes on an average day, according to State Transportation Department estimates. Per capita income dropped 29% between 1981 and 1983, while persons under the poverty level increased 47% between 1979 and 1984.

The upward population trend witnessed between 1990 to the 2000 census figure of 7812 residents reflects a paradigm shift from a blue collar working town, where the majority of the work force was employed in primary industry within the County, to a bedroom community, with over 70% of its labor force commuting to the surrounding resort towns where their wages are insufficient to afford the cost of on-site housing.

A thumbnail sketch of the community as it was surveyed in the 2000 Census would illustrate the following demographic characteristics:

Chart 1





Lake County Open Space Initiative Ecosystem Management Plan

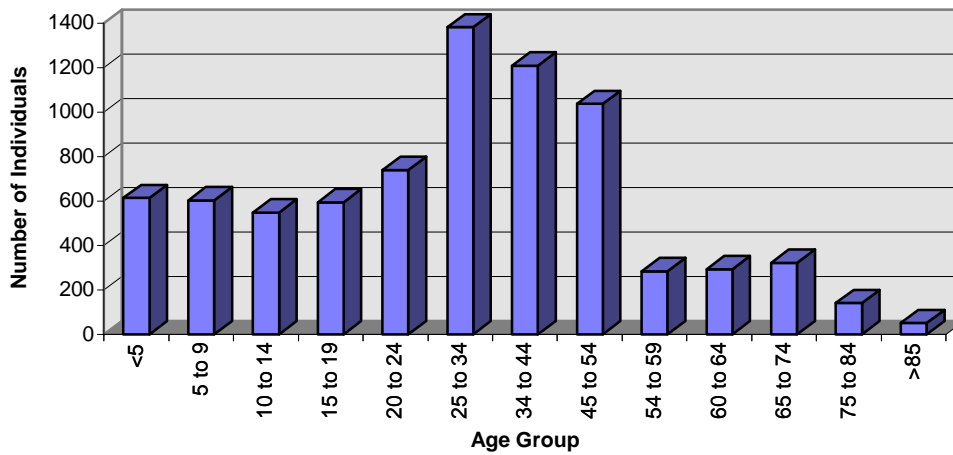
Section II Existing Condition

Population by Age

Lake County residents have a median age of 30.5 years, with 31.1% of the population under the age of 20, and only 10.3% of the population over 60 years of age.

Graph 3

Lake County Population by Age

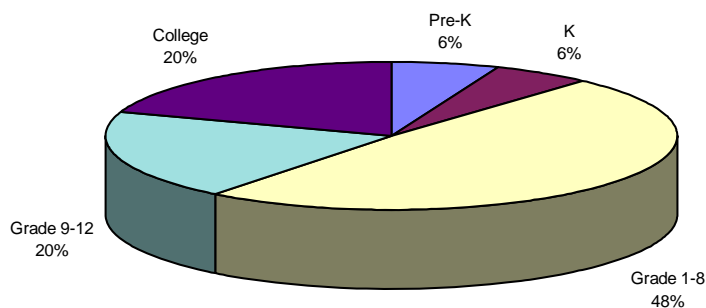


Lake County School enrollment

Nursery School / Preschool	123
Kindergarten	118
Elementary School (1-8)	999
High School (9-12)	404
College / Grad School	403

Graph 4

Lake County School Enrollment

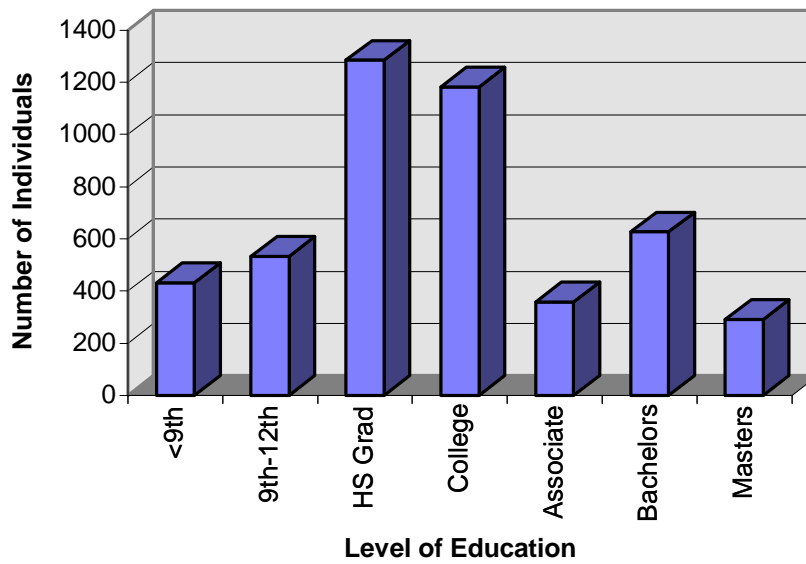


Level of Educational Attainment:

Less than 9 th Grade	432	Associates Degree	358
9-12 th Grade – No Diploma	534	Bachelors Degree	627
High School Graduate	1,285	Graduate / Professional Degree	292
Some College–No Degree	1,182		

Graph 4

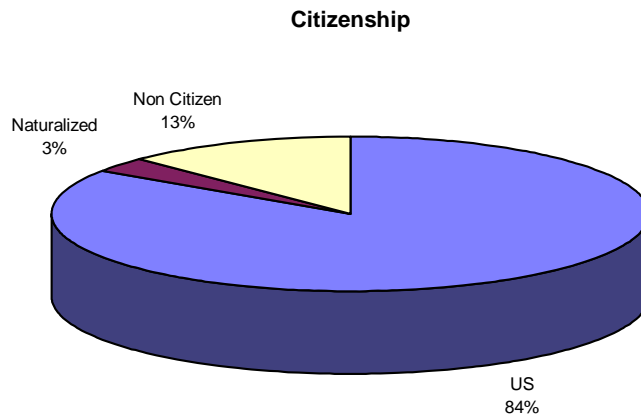
Educational Attainment



Citizenship

Thirteen percent of Lake County Residents are not U.S. Citizens.

Chart 3





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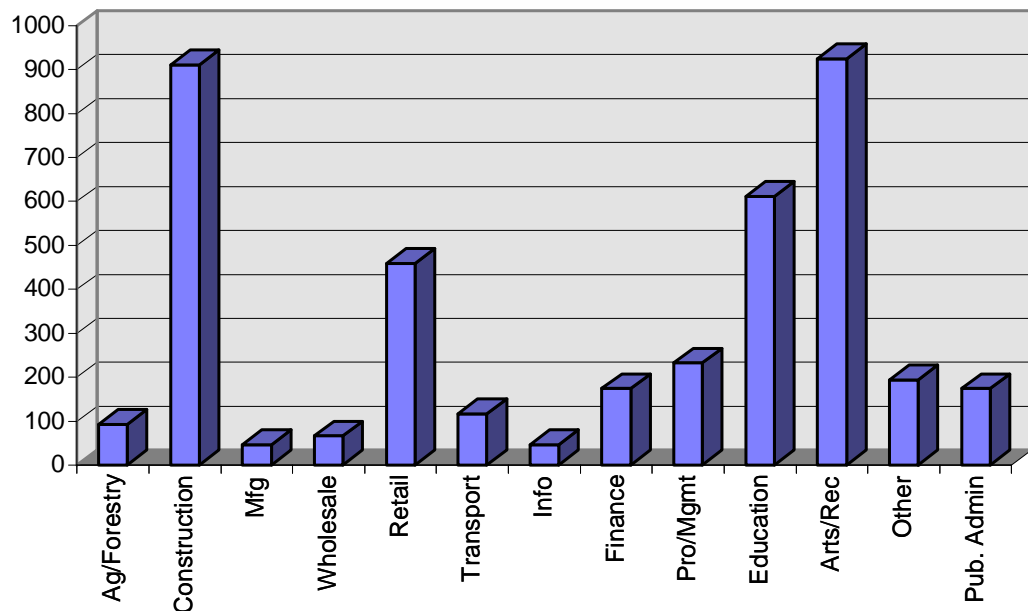
Occupation

The total Lake County civilian workforce, 16 years or over, is 4047 individuals. Types of employment and numbers of employees include:

Agriculture, forestry, fishing, hunting & mining	92
Construction	911
Manufacturing	46
Wholesale Trade	66
Retail Trade	459
Transportation, warehousing, and utilities	116
Information	47
Finance, insurance, real estate and rental/leasing	174
Professional, scientific, management, administration	232
Educational, health, and social services	611
Arts, entertainment, recreation, accommodation and food service	925
Other Services (except public administration)	194
Public Administration	174

Graph 5

Employed Civilian Population

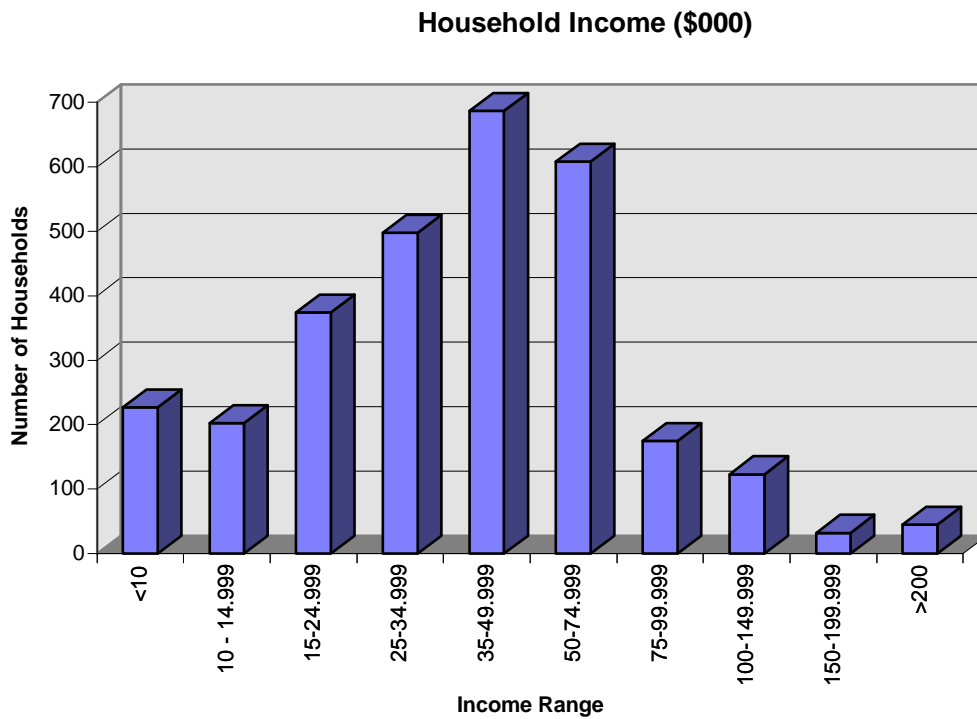


Household Income

There are a total of 2,971 households in Lake County, with a median household income of \$37,691. Of these households, 60.4% make between \$25,000 and \$75,000 per year, while 33% make \$50,000 or more per year.

Income Range	Households
Less than \$10,000	227
\$10,000 to \$14,999	202
\$15,000 to \$24,999	374
\$25,000 to \$34,999	498
\$35,000 to \$49,999	687
\$50,000 to \$74,999	608
\$75,000 to \$99,000	175
\$100,000 to \$149,000	123
\$150,000 to \$200,000	32
\$200,000 or more	45

Graph 6





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Additional Census Information

Persons with disability	1,187
Mean travel time to work	35.8 minutes
Housing Units	3,913
Households	2,977
Persons per Household	2.59
Homeownership rate	68.2%
Median value - owner occupied home	\$115,400
Per capita Income	\$18,524
Persons below poverty level	12.9%
Retail Sales 1997	\$25,853,000
Housing units authorized by Building Permits – 2000	61
Persons per square mile	20.7
Persons of Hispanic Origin	36.1%
White persons not of Hispanic Origin	61.6%



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Land Status

Lands of the Lake County Open Space Initiative represent a composite of fee simple purchases, options, conservation easements, land tenure adjustments, recreational access agreements, and Stewardship Trust allotments. In total, over 8600 acres of land are included within the LCOSI project area as illustrated on Planning Map 3. The reference date for establishing the existing condition delineates the ownership status of identified parcels, as they existed on or before September 1, 2002. Proposed changes in ownership or transfers occurring after September 1, 2002, will be discussed in Section 3, *Anticipated Changes*.

Background information, physical descriptions, current land uses, and the significance of the individual tracts in meeting the goals and objectives of the Open Space Initiative are described as follows:

Lake County Ranches

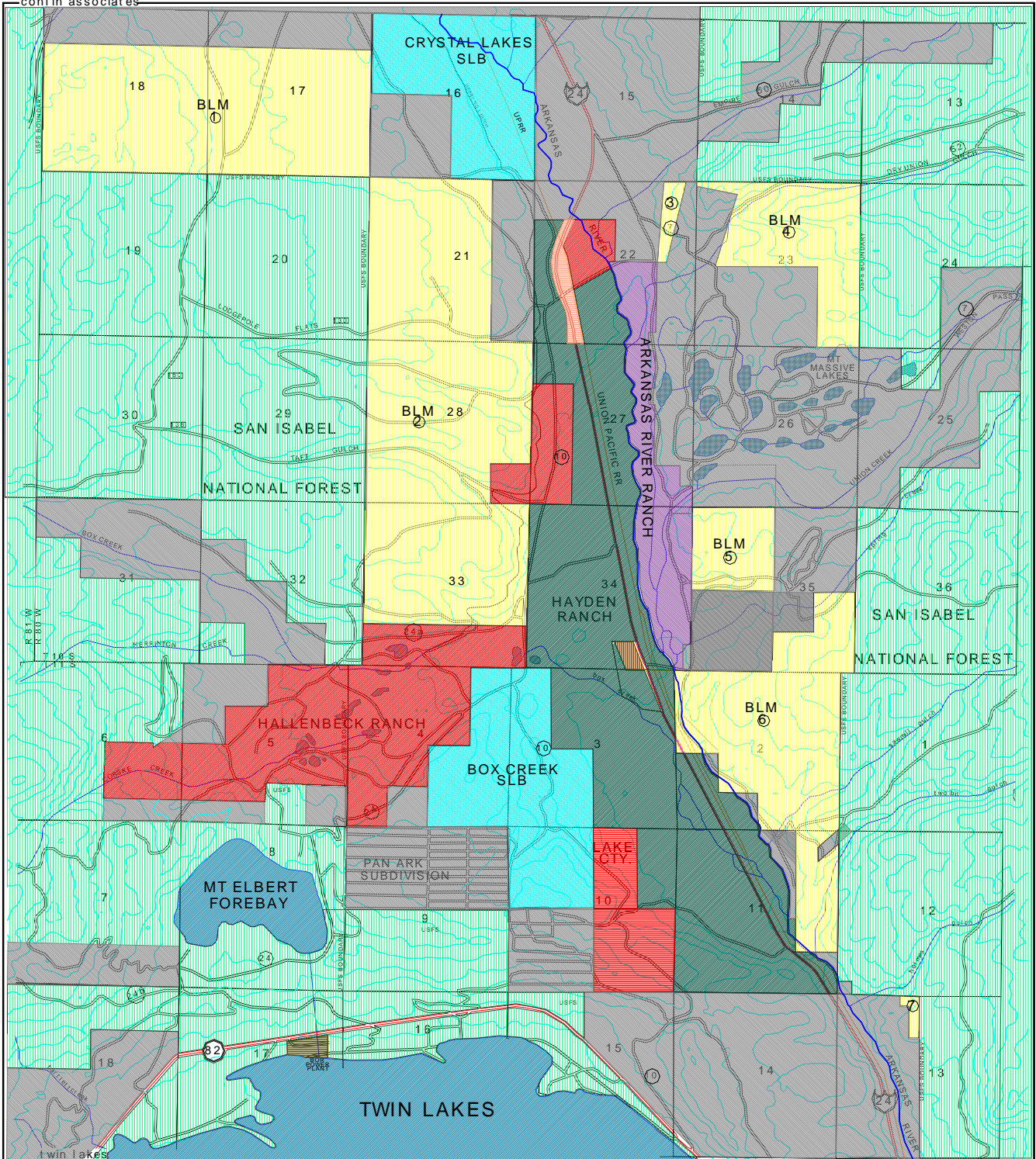
Three historic ranches have been acquired through a combination of fee simple ownership and conservation easements. These properties form the spine of the Open Space Initiative, controlling much of the access to the Arkansas River and its associated lowland riparian habitat, securing the critical foreground and middle-ground viewsheds of Colorado's highest peaks, and protecting some of the most significant artifacts of Lake County's ranching and mining heritage. The Ranches include:

Hayden Ranch



Arkansas River flowing through the Hayden Ranch, framed by Colorado's two highest peaks

The Hayden Ranch occupies a portion of Section 2, Section 3, Section 10, and Section 11, Township 11 South, Range 80 West, of the Sixth Principal Meridian, and a portion of Section 22, Section 27, and Section 34, Township 10 South, Range 80 West, of the Sixth Principal Meridian, in Lake County, Colorado. It consists of 1818.26 acres more or less.



LAKE COUNTY OPEN SPACE INITIATIVE

LAND OWNERSHIP MATRIX

city of aurora	
lake county	
colo. state parks	
state land board	
bureau of land mgmt	
moosehaven	
colo. dot	
private	
SAN ISABEL NATIONAL FOREST	

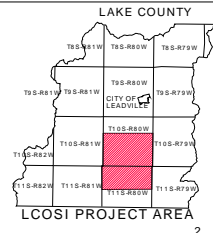
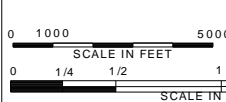
LAND OWNERSHIP
existing condition
September 30, 2002

map 3

ALL BOUNDARIES APPROXIMATE



CONTOUR INTERVAL 100'
COORDINATES - UTM-13



drawn by	date
m contin	11/17/98
revised	date
mike contin	11/26/02
mc	9/13/06

data source	
micro map & cad	
plss, dig, dem data	
blm land ownership	
status mapping	
bear surveying	

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MAP NO. 1



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

The Hayden is one of the oldest working ranches in Lake County. The chain of title of the earliest homesteads that make up the ranch can be traced back to 1859, when it was in the ownership of Benson & Company and operating under the name of the Elkhorn Ranch. From 1864 through 1871 the ranch became known as the Dyer and Harrington Hay Ranch, and its owners included luminaries of Colorado history, including Father John Dyer, the "Snowshoe Itinerant", and his son, Judge Elias Dyer, who was shot to death in his own courtroom during the infamous "Leadville Wars."

In March of 1871, the Dyer and Harrington Hay Ranch was sold to Charles Mater, Leadville's "Merchant Prince", and one of the founding fathers and original trustees of the newly formed City of Leadville. It was re-sold a little over a year later in November of 1872 to Olive A. and Francis Hayden. The Ranch still bears their name to this day.

Through the purchase and consolidation of surrounding homesteads, the Hayden's increased their holdings to over 3000 acres, spanning both sides of the Arkansas River. The ranch provided the literal horsepower of the day, feeding the mules, horses, burros and other beasts of burden that hauled the men and materials and turned the machinery of the mining boom that was to forever change the face of Colorado. At one point it was estimated that over 2000 head of livestock were being fed by hay harvested from the Ranch.

The Hayden Ranch was granted four water rights between 1877 and 1880, and a fifth water right in 1897, totaling 50 cubic feet per second from the Arkansas River. Under irrigation, peak hay production topped 3000 tons of hay on 2000 acres of irrigated land, and proved very lucrative for the Hayden family. With the Silver Panic of 1893 and the closure of many of the Leadville mines, however, came a dramatic reduction in the price and demand for hay. To exacerbate the problem, hay quality and quantity began to fall off as contaminated irrigation water from mining operations upstream decreased the lands productivity.

Management of the struggling ranch was turned over to John Weir, Francis Hayden's son-in-law in 1918. Weir managed to keep the ranch productive through his strong work ethic, and through innovative efficiencies of operation. He built a water wheel in one of the main barns to power a sawmill and stationary hay baler, and loaded his product onto railroad cars at the Ranch's Denver & Pacific rail siding for delivery to markets throughout Colorado.

The Ranch was sold to W.E. Callahan in 1933, and operated as a Hereford cow/calf ranching operation. With the existing ranch lands and surrounding USFS grazing allotments, the ranch supported 500 head of cattle annually. With adequate annual hay production, the ranch never sold calves, but fed them over the winter and sold them as the more profitable "long yearlings" the following spring.

Beginning in 1939, the Hayden Ranch also participated in the United States Army Remount Service, with the intent of providing choice horses for their cavalry. This effort was short lived due to the advent of World War II and the obsolescence of mounted cavalry in modern warfare, coupled with the appearance of a degenerative disease known as *osteochondrosis dessicans*. Water contaminated by mine tailings upstream was once again suspected of causing the debilitating disease that crippled many of the first year foals and prevented them from standing or nursing. Unable to nurse, many of the foals died.

Callahan Construction Co. sold the Ranch in 1947, after which it was used principally for seasonal grazing. Holdings on the east side of the Arkansas River were split off from the ranch and sold separately, reducing it to its current scope and configuration, and the buildings began to show the effects of age and neglect.

In the early 1960's the Ranch was once again sold, this time to a consortium of investors assembled by Moore Realty who believed that the fledgling ski resort boom in Vail and Aspen would one day spill over into Lake County, and envisioned a ski resort on the slopes of Mount Elbert, just west of the Hayden Ranch. Seasonal grazing of the land continued under Moore's ownership through a lease agreement with Mr. Walt Clotworthy. When the dream failed to materialize by the summer of 1997 the Hayden Ranch, along with Moore's other holdings in the Upper Arkansas Valley, were simultaneously placed on the real estate market.

The Hayden Ranch was purchased for its water rights by the City of Aurora for \$2.6 million on April 15th of 1998, and the surplus land was optioned to Lake County for \$840,000.00 for use as open space. From this action, the Lake County Open Space Initiative was born.

At the time of transfer to the City of Aurora, the Hayden Ranch was defined and recorded with the Lake County Clerk and Recorder in Book 532, Pages 836 through 864, and is depicted on Map 3, and was described as containing 2100 acres of land more or less. Subsequent investigations would indicate that approximately 80 acres of land in the S ½ of the SW¼ of Section 26, T 10 S, R 80 W had been previously sold to the Mount Massive Trout Club, and approximately 35 acres in the SW ¼ of Section 22, T 10S, R. 80 W had been acquired by the Colorado Department of Transportation for a borrow area to provide road materials to build the elevated highway grade over the Arkansas River. Additionally, 60.35 acres of land were subsequently donated to Lake County by the City of Aurora in 1999 for the creation of the Hayden Meadows Recreation Area.

An August 2002 boundary survey of the Hayden Ranch, performed by Bear Surveying, places the current acreage within the Ranch boundary at 1818.26 acres.

The five Hayden Ranch water rights were granted in 1877, 1878, 1879, 1880, and 1897, and total 50 cubic feet per second. The firm dry year yield from these rights, once irrigation has been discontinued, is estimated at 1000 acre-feet of fully consumptive water annually, a figure that will be quantified through Water Court proceedings currently in progress. Of the total consumptive rights, as determined by the Courts, 10% have been optioned to Lake County for a period of 20 years, with an additional 10-year extension negotiable upon request. The cost of the water to Lake County will be \$2,500 per acre-foot or Aurora's pro-rated cost following completion of the court case, whichever is less.



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

Aurora and Lake County are presenting the water case jointly, with costs being paid by the City of Aurora. Concurrently, Lake County is preparing a blanket augmentation plan to allow waters acquired through the Hayden Ranch transfer to be stored and put to productive use within the County. Water is the key to controlling and supporting future growth in Lake County, and therefore meets the LCOSI goal of preserving land and water to support smart growth and development.

All lands of the Hayden Ranch west of Highway 24 were re-zoned from Agricultural Forestry (AF) to Rural (RUR); a new zoning classification intended to protect the County's open space and water development values, at the regular meeting of the Lake County Board of Commissioners on May 21, 2001. Similarly, parcels of the Hayden Ranch east of US Highway 24 were rezoned from Recreational (RC) to Rural (RUR) for the same reasons.



The Hayden Ranch is the keystone of the Lake County Open Space Initiative, providing: over 500 acres of high quality wetland / riparian habitat; 5.5 miles of Class I river frontage; 2.5 miles of Class III tributaries; over 1800 acres of wildlife habitat, including critical winter range, migratory routes, nesting, and spawning grounds; 17 structures eligible for the National Register of Historic Places; and control of the foreground and middle ground views of Mount Elbert and Mount Massive.

Hallenbeck Ranch

The Hallenbeck Ranch is divided into two distinct and isolated tracts. The northern tract is described as the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 28, and the W $\frac{1}{2}$ of the SW $\frac{1}{4}$, and the SW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 27, Township 10S, Range 80W of the Sixth Principal Meridian, in Lake County Colorado, containing 160 acres more or less.

The southern tract is defined and recorded in the Office of the Lake County and includes a portion of Section 33, Township 10 South, Range 80 West of the Sixth Principal Meridian, and a portion of Section 4, Section 5, and Section 6, Township 11 South, Range 80 West of the Sixth Principal Meridian, in Lake County, Colorado, containing 1040 acres more or less.

The Hallenbeck Ranch was originally referred to as the Derry Ranch, and was one of the first homesteads recorded in Lake County. Its original owner, Samuel Derry, was a colorful character in the history of early Lake County. He arrived in what was then the mining camp at Oro City (present day Leadville)

in 1860 from Wisconsin, having lost three of his children to the arduous journey westward. He then moved his wife and remaining three children to Twin Lakes, where he built and operated a hotel on the north shore of the lower lake. Samuel continued prospecting, and in 1876, along with his son Caulaincourt and the Long brothers, is credited with the first discovery of valuable silver bearing carbonate ores on what would become known as Long & Derry Hill, in the fabled Leadville Mining District. He also worked for some time on the placer mines of Cache Creek Park, south of Twin Lakes.

In 1878, Samuel moved his family to the current site of the Derry Ranch, some 5 miles north of Twin Lakes. Cash Entry Patents were issued to both Samuel and Caulaincourt Derry in May of 1878, and farming was begun shortly thereafter. The primary crop was hay to feed the thousands of beasts of burden that fueled the mining boom in nearby Leadville.

In 1879, Warren Hussey and General Horatio Bearce formed the Hussey Placer Mining Company on claims located just west of the Derry Homestead. Fearing that debris from the mining activity would interfere with his irrigation, Derry sought a writ of prohibition against any mining activity. Hussey and Bearce offered to buy the ranch, but Derry refused, as the hay business was proving quite lucrative.

The issue smoldered for two years until Bearce and a party of men returned to the placer to do some survey work on June 7, 1884. Derry approached the men and accused them of trespassing. Bearce accused Derry of being a "perjurer," at which point Derry raised a shovel and threatened Bearce. During the ensuing confrontation, Derry stepped backwards, falling into a ditch.

Later that afternoon as the survey party passed the Derry homestead on their way back to Leadville, Derry confronted General Bearce and asked, "So, you think I have perjured myself?" to which Bearce answered in the affirmative. Pulling a revolver from under his vest, Derry promptly shot Bearce and calmly returned to his house and had dinner. Bearce died 36 hours later. Derry turned himself in to the sheriff later that night. Fearing a lynching for the senseless murder of one of Leadville's more prominent citizens, the Sheriff ordered extra protection for the prisoner. The trial that followed captivated Leadville, with Derry's attorney arguing that he had suffered extreme provocation, and was therefore not responsible for his actions.

The defense focused on the representation of Derry as a lunatic, pleading temporary insanity. To the astonishment of the Town's people, Derry was acquitted.

Derry retreated to the isolation of his ranch, where it is said he built the prominent tower to watch for vigilantes. He died in his home in 1889; a victim of burns suffered from a fall into the fireplace.



Lake County Open Space Initiative Ecosystem Management Plan

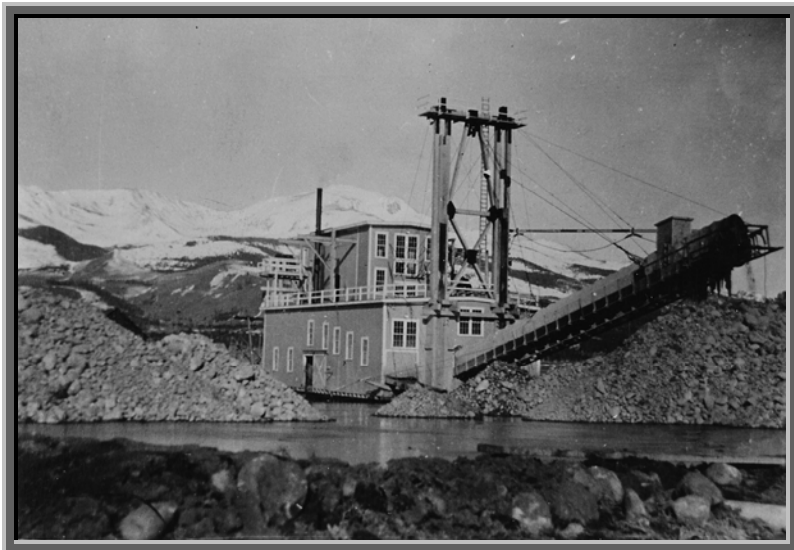
Section II Existing Condition



r "Vigilante" Tower of the Derry Homestead

Calaincourt Derry ran the ranch until his death in 1908, at which time the ranch was sold to the Saguache Gold Mining Company, who began small-scale placer mining. In 1913, the ranch was again sold, this time to the New York Engineering Company. For two years the company shipped components of a mechanical bucket dredge for assembly at the site, and in 1915, the 600-ton machine was ready for operation.

The Derry Dredge could dig to a depth of 30 feet, creating a deep cavity while imparting a slow forward motion to the dredge itself. Stream diversions or water pumped into the void formed a lake in which the dredge hull floated. The lake would "move" with the dredge as the buckets gouged out the earth in its path, and filled it in behind.



Derry Dredge in operation CHS Photo

From 1916 until 1924, the Derry Dredge was responsible for all of Lake County's placer gold production. It is said that some 3000 ounces of raw gold were recovered in the first three months of operation. What irony that Samuel Derry prospected for gold in Cache Creek to the south, and Leadville to the north, but lived and died never knowing that he was raising hay on top of one of Lake County's richest placer gold deposits!

The dredge operation was sold to the Mount Elbert Gold Dredging Company in 1924, and the operation was continued in Box Creek until 1926, when the dredge was dismantled and shipped to South America.

The property was again purchased in 1935-36, this time by Charles Hallenbeck and Bruce Claybaugh. The Paddock family rented the house in 1935 and raised hay until 1937. They were the last inhabitants of the homestead.

Hallenbeck and Claybaugh had some success in placer mining the property, and the ranch took on the name of its new owner, Charles Hallenbeck. During the war years, they hauled and sold gravel to the Climax Mine. In 1948 the Hallenbeck Ranch property was leased to Gold Field Consolidated of Fairbanks Alaska who mined it until 1951. The property was sold at sheriffs auction in 1952.

In the early 1960's, a consortium of investors, formed under Moore Realty, acquired the ranch as part of a plan to build a ski resort on the adjacent flanks of Mount Elbert. When the dream remained unrealized in 1997, the ranch holdings were put on the open market. Lake County purchased the property and its water rights for \$1,500,000 on May 28, 1998.

The water rights transferred with the Ranch include: the Derry No 1, which diverts 4 cubic feet per second (cfs) from Beaver Dam Creek and the main stem of the Arkansas River; the Derry No 2, which diverts 1 cfs from Box Creek; and the Derry No 3, which diverts 2 cfs from Corske Creek. Together, the three water rights annually produce approximately 97 acre feet of average year yield.



Corske, Box, and Harrington Creeks come together on the Hallenbeck Ranch, feeding a number of small stock watering, head stabilization, and dredge ponds. The abundance of water in turn supports rich wetlands, aquatic habitat, hunting and fishing opportunities, migratory bird nesting sites, winter and transitional range, migration routes, and critical calving and nurturing grounds for the Valley's elk herd.

Box Creek Drainage, Hallenbeck Ranch

The south tract of the Ranch is bordered: on the west by the Pike and San Isabel National Forest; on the north by private lands, Forest System lands, and BLM parcel 2; on the east by the Box Creek State Land Board parcel and the Hayden Ranch; and on the south by Forest System and private lands. The North tract is strategically located between BLM Parcel 2 and the Hayden Ranch. As such, it is integral to the landscape linkage between USFS lands on the Sawatch and Mosquito Ranges.

The site also includes the Derry Dredge Site (5LK1341) and 8 structures of the Derry Ranch that have been listed on the National Register of Historic Places under the categories of Agriculture and Industry (placer and dredge gold mining).



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

The south tract of the Ranch was placed under a one-year option to the City of Aurora in January of 2000, with said option extended by common agreement until January of 2003. Terms of the option are located in Appendix A, *Documentation*. The north tract is being appraised for a possible three-way exchange in which the City of Longmont would purchase the tract from Lake County for exchange to the US BLM for lands on the Front Range. BLM would then become the owner of record of the 160-acre tract, and Lake County would be made whole on its investment in the land.

All lands of the Hallenbeck Ranch were re-zoned from Agricultural Forestry (AF) to Rural (RUR); a new zoning classification intended to protect the County's open space and water development values, at the regular meeting of the Lake County Board of Commissioners on May 21, 2001.

Arkansas River Ranch

The Arkansas River Ranch includes portions of Section 22, Section 27, and Section 34, Township 10 South, Range 80 West of the Sixth Principal Meridian, in Lake County, Colorado, containing 364 acres more or less. A second tract of the Arkansas River Ranch was retained by the seller, and is described as the SW $\frac{1}{4}$ of Section 35, Township 10 South, Range 80 West of the Sixth Principal Meridian, in Lake County, Colorado, containing 160 acres more or less.

The purchase agreement for lands of the Arkansas River Ranch was signed by Colorado State Parks and the seller, Scott Sarbaugh, on March 31, 2000 and included 323 acres of land more or less. Of this land, the upstream $\frac{1}{2}$ of the property was sold in fee simple ownership to State Parks for \$345,000.00, while the downstream $\frac{1}{2}$ was transferred as a conservation easement for \$290,000.00. The conservation easement transferred any and all development rights on the subject property to State Parks, and placed surface management under their jurisdiction. The sale resulted in State Parks / AHRA control of approximately 3 $\frac{1}{2}$ miles of river frontage along the east side of the Arkansas River.

Funding for the purchase of the Arkansas River Ranch included approximately \$300,000.00 of State Parks Funding, a \$75,000.00 National Fish and Wildlife Foundation Grant awarded to the U.S. Fish and Wildlife Service in December of 1999, and Wetlands Initiative funding awarded to the Colorado Division of Wildlife on February 24, 2000.

A third parcel of the Ranch, referred to as Outlot C and located in Sections 27 and 34 of Township 10 South, Range 80 West of the Sixth Principal Meridian, in Lake County, Colorado, (See Map 3) totaling 41 acres more or less was donated to State Parks in July of 2001 by Mr. Scott Sarbaugh, bringing the total acreage of the Arkansas River Ranch tract to 364 acres. All of the parcels are currently zoned Agricultural Forestry (AF). No water rights were transferred with the property.



The Arkansas River Ranch tract contains approximately 3.5 miles of Class I waters of the main stem of the Arkansas River, and an estimated ½ mile of the Dry Union, 1 mile of the Weston, and 1.25 miles of the Union Creek tributaries to

the Arkansas River. The vast majority of the property is classified as lowland riparian habitat, and contains large tracts of high quality wetlands, riparian zones, and wet meadows that provide spawning, nesting, and winter forage areas for the regions wildlife. The 3.5-mile reach and its tributaries support a healthy, self- sustaining population of brown trout.

BLM Parcels

The Bureau of Land Management (BLM) manages over 8 million acres of land in the State of Colorado. Many of these acres consist of small, isolated, difficult to manage tracts of public land intermingled with private, state, and other federal agency lands. The Bureau's land tenure adjustment program regarding such isolated parcels prioritizes the following goals:

- Consolidate BLM lands to improve management efficiency and eliminate conflicts.
- Acquire lands with high resource values to enhance management capabilities.
- Dispose of isolated, difficult to manage tracts of public land that are better suited for local management. Methods of disposal can include land exchange, or the purchase of lands or land interests through conservation easements or land sales.

Seven small, isolated parcels of BLM land, totaling approximately 3700 acres, lie within the project area (Map 3). These tracts were designated as *Category II* parcels and prioritized for "disposal" under the Royal Gorge RMA Management Plan. Under the *Category II* management prescription, subject parcels targeted for disposal could be exchanged, sold, or transferred into private or public ownership to improve management efficiency, and could have been subsequently developed for purposes as broad ranging as cattle grazing, timber cutting, mining, recreation, or commercial development. The uncertainty of their final ownership status and the potential for end uses that would conflict with the goals and objectives of the Open Space Initiative led to the request that the parcels be reclassified for retention as open space.

When viewed within the overall matrix of tracts secured under LCOSI, these parcels help consolidate a block of public and private lands to create a nearly contiguous landscape linkage spanning the Arkansas Valley between the Forest Service lands of the Sawatch and Mosquito Ranges. The combined parcels also help secure vital calving habitat as well as wildlife transition, migration, and winter range, while preserving sensitive viewsheds from the Top of the Rockies National Scenic and Historic Byway, and opening significant public recreational opportunities along the Arkansas River corridor.



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

The BLM is a major force in providing recreation along the River in its role as the federal managing partner of the Arkansas Headwaters Recreation Area (AHRA). The Recreation Area, authorized by the Colorado Legislature in 1989, extends from the River's origin near the summit of Fremont Pass in Lake County, 148 miles south and east to Pueblo Reservoir, and provides public recreational access to the river for fishing, rafting, watchable wildlife, and a host of other outdoor recreational opportunities. Yet in Lake County, the actual birthplace of the Arkansas River, virtually no public access to the river existed prior to the formation of LCOSI in 1998. Through consolidation, the BLM tracts, State Land Board parcels, and the Leadville Ranches provide over 6 miles of public access to the Arkansas River.

In response to the high resource values of the subject parcels within the overall land matrix and the compatibility with the mission of LCOSI, the BLM management prescription was administratively changed to a *Visual Resource Management II* (VRM) classification in September of 1999, which will preserve the sensitive viewsheds, visual resources, critical habitats, and open space values of the land in perpetuity.

BLM Parcel 1

BLM Parcel 1 is described as being comprised of the S $\frac{1}{2}$ of the NW $\frac{1}{4}$, the S $\frac{1}{2}$ of the NE $\frac{1}{4}$, the SW $\frac{1}{4}$ and the SE $\frac{1}{4}$ of Section 18, containing 480 acres more or less; and the S $\frac{1}{2}$ of the NW $\frac{1}{4}$, the S $\frac{1}{2}$ of the NE $\frac{1}{4}$, the SW $\frac{1}{4}$ and the SE $\frac{1}{4}$ of Section 17, containing 480 acres more or less, in Township 10 South, Range 80 West, of the Sixth Principal Meridian, in Lake County Colorado.

Parcel 1 raises over 500 vertical feet from the ancestral terrace of the Arkansas River to the flanks of Mount Elbert, two miles to the west. Within this montaine life zone lies the unique combination of open meadows and dense forest that provide both forage and thermal / hiding cover favored by the ecotone species of the valley.

Parcel 1 is bordered on the west and south by the Pike and San Isabel National Forest, and shares a common border with a portion of the Crystal Lakes State Land Board parcel on the east. To the north, the parcel is bounded by private lands that currently include ranch land, a residential subdivision, and two gravel-mining operations.

BLM Parcel 2

BLM Parcel 2 is described as being comprised of the NW $\frac{1}{4}$, SW $\frac{1}{4}$, W $\frac{1}{2}$ of the NE $\frac{1}{4}$, and the W $\frac{1}{2}$ of the SE $\frac{1}{4}$ of Section 21, containing 480 acres more or less; the NW $\frac{1}{4}$, SW $\frac{1}{4}$, NE $\frac{1}{4}$, the N $\frac{1}{2}$ of the SE $\frac{1}{4}$, and the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 28, containing 600 acres more or less; and the NW $\frac{1}{4}$, NE $\frac{1}{4}$, N $\frac{1}{2}$ of the SW $\frac{1}{4}$, and N $\frac{1}{2}$ of the SE $\frac{1}{4}$ of Section 33, containing 480 acres more or less, in Township 10 South, Range 80 West, of the Sixth Principal Meridian, in Lake County, Colorado.

BLM Parcel 2 extends for a distance of 2.75 miles along its north / south axis, paralleling the Arkansas River and controls the foreground and middle-ground views of Colorado's two highest peaks from the Top of the Rockies National Scenic Byway. The terrain forms the transition break from the grasslands of the

ancestral floodplain of the Arkansas River to the glacial outwash terraces at the foot of Mount Elbert. This “edge” effect is critical to the ecotone species that graze on the vegetation of the ranchland, and seek thermal and hiding cover in the adjacent forest. The parcel provides a linkage from the protected lands of the Pike and San Isabel National Forest to the west; to the high forage values found along the meadows and riparian zones of the Arkansas River. The parcel supports both north / south and east / west migration routes through the Arkansas Valley, and provides critical winter range on its south facing hillsides.

Parcel 2 shares a portion of its northern border with the Crystal Lakes State Land Board parcel, and much of its eastern and southern borders with the Hayden and Hallenbeck Ranches. When viewed in context with the Hayden, Hallenbeck and Arkansas River Ranches, Parcel 1 plays an important role in forming the landscape linkage between the Sawatch and Mosquito Ranges.

BLM Parcel 3

BLM Parcel 3 is described as a fractional ownership within the NE $\frac{1}{4}$ of Section 22, containing 40 acres more or less, Township 10 South, Range 80 West, of the Sixth Principal Meridian, in Lake County, Colorado.

This small isolated parcel is encapsulated within the boundaries of the Moyer Ranch. Current use includes cattle grazing and limited forage for grazing and browsing wildlife. In the event that the Colorado Division of Wildlife is successful in obtaining a conservation easement and management agreement on the Moyer Ranch, this parcel can be managed as a part of the overall ecosystem, rather than as an individual land-locked parcel of the BLM land. If it is determined that this parcel has more utility as private land, it may still be exchanged as part of the Conservation Easement and Management Agreement for the Moyer Ranch.

BLM Parcel 4

BLM Parcel 4 is described as being comprised of the NE $\frac{1}{4}$, the E $\frac{1}{2}$ of the SE $\frac{1}{4}$, and fractional ownership of the NW $\frac{1}{4}$ of Section 23, containing 340 acres more or less, Township 10 South, Range 80 West, of the Sixth Principal Meridian, in Lake County, Colorado.

Parcel 4 is bordered on the south by the Mount Massive Trout Club, and on the west by the Moyer Ranch. Its north and east boundaries are contiguous with the Pike and San Isabel National Forest. Its continued status as public land creates a buffer around areas of human development and activity, facilitates migration routes through the Arkansas Valley to the Mosquito Range, provides hunting opportunities, and supports winter foraging on its western and southern slopes.

BLM Parcel 5

BLM Parcel 5 is described as being comprised of the NW $\frac{1}{4}$ of Section 2, containing 160 acres more or less, Township 10 South, Range 80 West, of the Sixth Principal Meridian, in Lake County, Colorado.

Parcel 5 shares its eastern boundary with Outlot-C of the Arkansas River Ranch, which was donated to Colorado State Parks for inclusion into the Arkansas Headwaters Recreation Area in 2001. As such, it extends the buffer around the park, and provides additional wildlife resources and recreational opportunities to visitors to the AHRA.

BLM Parcel 6

BLM Parcel 6 is described as being comprised of the NE $\frac{1}{4}$ and S $\frac{1}{2}$ of the SE $\frac{1}{4}$ of Section 35, containing 120 acres more or less, in Township 10 South, Range



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

80 West, Sixth Principal Meridian, Lake County, Colorado, and the NW $\frac{1}{4}$, NE $\frac{1}{4}$, SE $\frac{1}{4}$, and the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 2, containing 520 acres more or less, in Township 11 South, Range 80 West, and a portion of the E $\frac{1}{2}$ of the NE $\frac{1}{4}$, and the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 11, Township 11S, Range 80 W, of the Sixth Principal Meridian, in Lake County, Colorado.

Parcel 6 extends approximately 1.75 miles on its north / south axis along the eastern bank of the Arkansas River. Three parcels of private land, associated with the Plamor 2a subdivision, interrupt the continuity of ownership directly adjacent to the river. This parcel preserves the foreground and middle-ground views of the Mosquito Range and the Buffalo Peaks Wilderness Area as seen from the Top of the Rockies National Scenic Byway, and contains significant remnants of past civilizations that resided in the Valley. In combination with the lands of the Hayden Ranch and easement agreements with the subdivision, Parcel 6 provides critical river access to the AHRA, and important wildlife habitat values to both aquatic and terrestrial species.

BLM Parcel 7

BLM Parcel 7 is described as being comprised of the NW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$, and the E $\frac{1}{2}$ of the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$, and the E $\frac{1}{2}$ of the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 13, containing 12.5 acres more or less, Township 11 South, Range 80 West, of the Sixth Principal Meridian, in Lake County, Colorado.

Parcel 7 is a small, isolated piece of ground nestled between Forest Service and private lands on the bluffs overlooking the Arkansas River. Although too small to be managed independently, it does increase the buffer zone between public and private lands, and could be visually disruptive to the viewshed if it were to be developed. In the event that LCOSI seeks to acquire additional lands along the river corridor south of the Hayden Ranch, this parcel may become an integral part of the final land ownership.

State Land Board Parcels

The State Land Board manages approximately 3 million acres of surface land and 4 million acres of sub-surface mineral rights that were given to Colorado at statehood in 1876 by the federal government. These lands are managed for the benefit of eight trusts, the largest of which goes to support kindergarten – 12th grade education. State trust lands are leased for a variety of activities, including grazing and crop production, mining and oil and gas production, and recreation, such as hunting. In 1998, the Land Board contributed approximately \$36 million from land leases to support public education.

In November of 1996, the voters of Colorado passed a constitutional amendment (Section 10(1)(b) of Article IX, and sections 36-1-107.5 and 36-1-131, CRS) to set aside 10%, or approximately 300,000 acres of State Trust lands for the conservation of their natural resource values. The voters decided that land is more valuable if its natural resources are preserved, and more specifically, that sound stewardship equals economic productivity. The Stewardship Trust Program does not establish a permanent open space program, but is

described as a "trust within a trust", where lands with high natural values can be placed so that they receive special attention and protection as needed to conserve their unique resource values. The program allows for outright sale, transfer of conservation easements, or other creative protection options to communities who wish to place the parcel into permanent protection.

Two parcels of land within the LCOSI project area were nominated for inclusion into the State Land Board's Stewardship Trust Program. The Crystal Lakes parcel was nominated by the Colorado Division of Wildlife in December of 1998, and received Tier I designation in early 1999. The Box Creek parcel was nominated by LCOSI on April 3rd of 2000, and received a Tier II designation later that fall. Tier 2 parcels are held in reserve in the event that a Tier 1 project is dropped or is acquired by a conservation buyer. In this event, a Tier 2 parcel may be moved up to the full protection status of Tier 1 to maintain the required number of acres in the program.

Designation of land into the Stewardship Trust program does not automatically allow any new use of the land, such as hiking trails, hunting, fishing, or other recreational uses. Any new use of State Trust lands requires a lease application or recreational access agreement. Under the CDOW Wildlife Access Program, both parcels were placed under a Recreational Access Agreement between State Land Board and the Colorado Division of Wildlife on April 12, 1999, to allow public access for wildlife related recreation. The action was taken outside the normal cycle for considering such requests, and without the exception, the Box Creek and Crystal Lakes parcels would have been subject to the seven-year moratorium on such actions in place at that time. Public access to both parcels was authorized starting on September 1, 1999.

Crystal Lakes

The Crystal Lakes State Land Board Parcel is described as being comprised of the NW ¼, NE ¼ and SE ¼ of Section 16, containing 480 acres more or less in Township 10 South, Range 80 West, of the Sixth Principal Meridian, in Lake County, Colorado.

Crystal Lakes was enrolled in the Stewardship Trust Program by the CDOW in December of 1998. It was accepted as a Tier 1 parcel, and has been set aside to preserve resource values and promote wildlife related outdoor recreation. The Crystal Lakes parcel had an existing agricultural lease on property at the time of enrollment into the program, and the lessee retains the proprietary right, meaning that some grazing will continue on the land for the term of the lease.

CDOW has also entered into a recreational access agreement with the Land Board to allow year round public access to the property. The parcel includes approximately ½ mile of the main stem of the Arkansas River, plus several tributary streams and over 200 acres of high quality wetland / riparian habitat. Its upland component is principally grassland and lodgepole pine forest, and provides critical winter range as well as thermal and hiding cover when snows at the upper elevations drive herbivores into the valley bottoms.

Box Creek

The Box Creek State Land Board Parcel is described as being comprised of the E ½ of the NE ¼, and the SE ¼ of Section 4, the W ½ of the NW ¼ and the SW ¼ of Section 3, and the NW ¼ of Section 10, containing 629 acres more or less, Township 11 South, Range 80 West, of the Sixth Principal Meridian, in Lake County, Colorado.

At the time of the LCOSI nomination, the Box Creek parcel was encumbered by an active mining lease, (PL3126) issued to Continental Gold Inc., which was set



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to expire on October 15, 1999. The operation, located in the W ½ of the NW ¼ of Section 3, T 11 S, R 80 W, was in compliance with the terms and conditions of its lease at that time. In the event that the mining lease is renewed, the lessee retains a proprietary right to continue operations.

LCOSI submitted an application to the State Land Board to include the Box Creek parcel in the program on April 3, 2000. The Box Creek parcel was enrolled in the Stewardship Trust Program later that fall as a Tier 2 parcel. Tier 2 parcels are held in reserve in the event that a Tier 1 project is dropped, or is acquired by a conservation buyer. In this event, a Tier 2 parcel may be moved up to the full protection status of Tier 1 to maintain the required number of acres in the program. CDOW has also placed a Recreational Access Agreement on the parcel to allow seasonal public access for wildlife related recreation between September 31 and February 28 of each year.

The Box Creek Parcel is strategically situated between the Hallenbeck and Hayden Ranches, and provides a critical buffer zone between the winter range afforded by the Ranches and the man induced disturbances of the Pan Ark Subdivision to the south. It is part of an important elk migration route that utilizes the forest cover along the ridge tops to allow undetected passage between the open ground of the Hayden Ranch and the developed home sites of the Pan Ark Subdivision in both diurnal and annual passages up and down the valley.

Lake County Parcels

Stork & Heron Placer

The Stork & Heron Placer is described as being comprised of the W ½ of the NE ¼ of Section 10, containing 80 acres more or less, Township 11 South, Range 80 West, of the Sixth Principal Meridian, in Lake County, Colorado.

The Stork and Heron was originally patented as a placer claim in the late 1800's, but never showed a profit for its owners. Scars on the steep hillside provide the only evidence of past mining activity. Half of the original placer was split off and sold to surrounding landowners, while the remaining half was forfeited to Lake County for back taxes.



The property links surrounding tracts of the Hayden Ranch and the Box Creek State Land Board parcel, securing critical winter range, migration routes, and sensitive viewsheds, and acting as a buffer between encroaching development and the island of habitat created by the LCOSI project area.

The Stork and Heron Placer was rezoned from Agricultural Forestry (AF) to Rural (RUR) by resolution of the Lake County Board of Commissioners on May 21, 2001 to protect its open space and wildlife values.

The Hole

The "Hole" is a 160-acre parcel of land in the southeast $\frac{1}{4}$ of Section 10, Township 11 South, Range 80 West in Lake County, Colorado. It is referred to as "the hole" because it is characterized by a large depression, in which elk typically seek thermal and hiding cover during the winter months. The property was acquired by Lake County through the failure of its owners to meet their tax burden.

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History

The history surrounding the lands of the LCOSI is rich and varied, dating back many centuries before the Christian era when Folsom Man, and later the Yuma People wandered the high steppes and mountain ranges of what is today, Colorado. (See Map 4)

Early Inhabitants

Archeologists working on the Frying Pan Arkansas Project in the early 1970's found weapons, tools, and flakes indicating the presence of small nomadic bands of Paleo-Indians who hunted and camped in the Valley as early as 9000 years ago. It is believed that the hunter/gatherers of the earliest periods of habitation visited the Valley only on a seasonal basis, following the movements of game during the more hospitable summer and fall months, then moving out of the alpine environment to lower elevations to escape the ravages of winter.

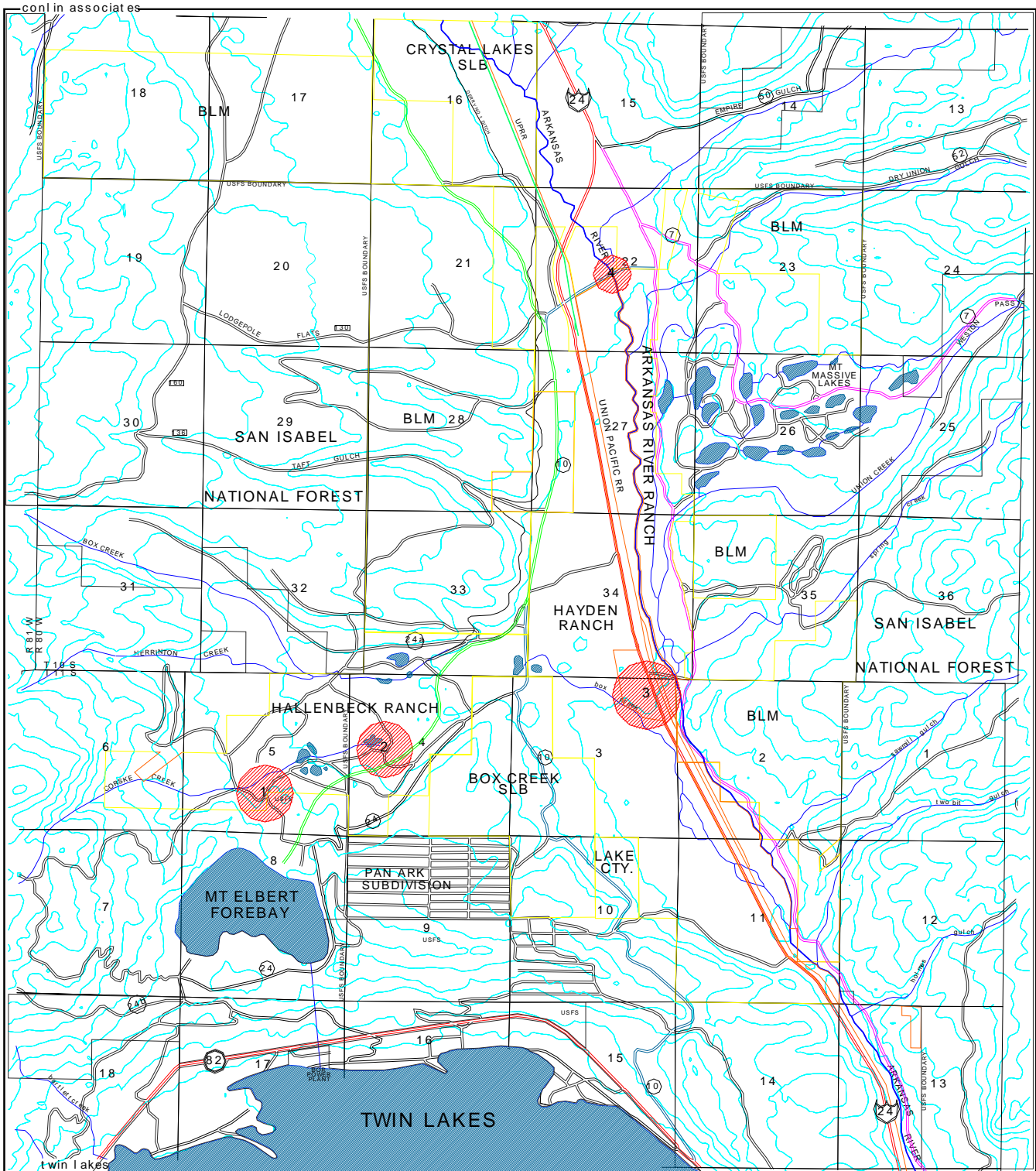
Evidence of prehistoric man in the high country of Colorado is meager, however, as populations were small and highly migratory. The harsh climate has erased most indications of their presence. Spearheads notched in the manner of the Yuma period have been found in the Upper Arkansas River Valley in Lake and Chaffee Counties, with at least one such point having been found in the vicinity of the Project Area in Twin Lakes¹.

Although it may seem a quantum leap, the history of the Anasazi Indians of southwest Colorado (300 to 1300 AD) can also be linked to the history of Lake County, in that when Lake County was first designated as one of the original 17 Counties of the Colorado Territory in 1861, it extended all the way to the Utah border, and included portions of the known range of the Anasazi People. (Griswold) Between 1867 and 1879, all or parts of Gunnison, Ouray, Chaffee, Pitkin, Delta, Mesa, Montrose and San Miguel Counties were carved out of what had been Lake County, shrinking it to Colorado's third smallest County, and severing its ties to the heritage of the southwest corner of the State.

Little is known of the early inhabitants of Colorado until the Spanish explorers came north from New Mexico in the sixteenth century. Of the various tribes encountered during that time period, the Ute's were thought to be the principal inhabitants of the Upper Arkansas River Valley.

Prior to the arrival of the Spaniards, tribal movements were inhibited in large part because the only beasts of burden were dogs. Travel by foot was slow and ponderous, resulting in relatively stable territorial boundaries. With the mobility gained through acquisition of the horse, either through trade or raids on Spanish settlements, the territorial distribution of the Indians of Colorado was to change dramatically. By the middle of the 1700's, for example, the Comanche's of southern Wyoming had pushed southward to the eastern plains of Colorado to be closer to the Spanish settlements and the source of horses.

¹ Griswold, Don and Jean, *History of Leadville, Lake County, Colorado*, Colorado Historical Society / University Press, 1996
Existing Condition



LAKE COUNTY OPEN SPACE INITIATIVE

KEY

- ① STONE BARN
- ② DERRY HOMESTEAD
- ③ HAYDEN HOMESTEAD
- ④ PIKES PEAK BRIDGE

TOLL ROAD TO ASPEN
 LEADVILLE STAGE ROAD
 D&RGW RR
 MIDLAND RR
 PIKES PEAK HWY.



resource mapping
 existing condition
 September 30, 2002

HISTORIC RESOURCES

map 4

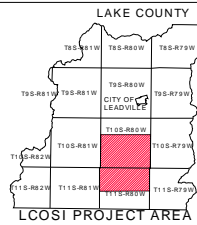
ALL BOUNDARIES APPROXIMATE



CONTOUR INTERVAL 100'
 COORDINATES - UTM-13

0 1000 5000
 SCALE IN FEET

0 1/4 1/2 1
 SCALE IN MILES



drawn by	date
m conlin	11/17/98
revised	date
make conlin	11/26/02
data source	
mcr o map & cad	
plss, dig, dem data	
blm land ownership	
state mapping	
bear surveying	
conlin associates	
875 mt. view dr.	
leadville, co. 80461	
(719) 466-2772	
MAP NO. 1	

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By the late 1700's the Arapaho and their allies the Cheyenne had moved down from the north to take over the Colorado Plains as far south as the lower Arkansas Valley, pushing the Comanche and neighboring Kiowa tribes southward toward the New Mexico border. (Griswold)

Most of the Great Plains tribes rarely penetrated the mountains to the west of the prairies, except to hunt game and gather lodgepole pine for their teepee poles. According to James Pursley, one of the first Anglo-Americans to enter the Colorado region, Sioux Indians invaded the southern Colorado Plains in 1804, driving thousands of Comanche's and Kiowa's westward, deep into the mountains in the region of South Park. Pursley, along with French trappers Dionisio Lacroix and Andres Terein, were captives of the Comanche's and Kiowa's at that time. It is believed that they crossed over Trout Creek Pass with Indian hunting parties, making them the first white men to see the Valley of the Upper Arkansas River.

Hunters, explorers, and beaver trappers began to increase the presence of the white man in the region through the early to mid 1800's. The chronicles of Kit Carson, noted explorer and trapper, indicate that he passed through the Arkansas Valley on his way to the fur rendezvous at Bents Fort as early as 1840, and the Fremont Expedition explored the region in 1845, but present day Lake County remained largely unknown, referred to only as "Ute Territory" well past the mid-point of the 19th century. The Upper Arkansas River Valley remained a blank spot on the map until the Hayden Survey of 1873.

It was the discovery of gold in California Gulch in April of 1860 that opened the floodgates of Anglo-American migration into the Valley of the Upper Arkansas. Within two months of the discovery, the White population had grown from a handful of miners at Kelly's Bar and Cache Creek Park near Granite, to over 4,000, and then doubled to 8,000 by July of that same year. Miners and prospectors fanned out over the length and breadth of the Upper Arkansas River Valley, spilling over the mountain passes into the valleys of the Eagle, Gunnison, and Roaring Fork Rivers in search of precious metals. To support the growing masses, market hunters ventured further and further from the mining camps in search of wild game, penetrating deep into Ute territory, and competing for the food sources that were the basis of the Tribe's subsistence.

An 1868 Treaty established the Southern Ute Indian Reservation, including portions of western Lake County (which at the time extended to the Utah border.) The illegal flood of miners into the reservation eventually escalated to a point of conflict, and in the winter of 1872, E.R. Ruffner of the Army Corps of Engineers reported that "the remonstrance's of the Ute's grew to threats, and they firmly said that the miners must leave or there would be war." In the spring of 1873, acting on behalf of the Secretary of the Interior, General John Pope issued what was referred to as the San Juan Order in an effort to quell the rising storm. The Order called for the "removal of all unauthorized persons from the Ute Reservation by government troops."

The proclamation was to be short lived. On April 26, 1873, Colorado Governor S. H. Elbert met with President Ulysses S. Grant in Denver. Citing the enormous size of the

reservation, and the sparse distribution of Ute Tribes over the landmass, he made the point that his evaluation "very clearly demonstrates the necessity for obtaining, if possible, this southern portion of the reservation as being utterly useless to the Ute's and valuable only to the miners..." He urged the revocation of the order for removal, and on May 22, 1873, the San Juan Order was cancelled, clearing the way for mineral exploration in much of southwest Lake County, and undermining the sovereignty and integrity of the Southern Ute Reservation. Tensions would continue to rise.

A group of Twin Lakes miners took the opportunity to thank the Governor by naming Colorado's highest peak, Mount Elbert, in his honor. On a new tin plate, they scratched the following inscription:

"Elbert Peak, named and dedicated to our Governor for the interest which he manifested in our behalf in having the San Juan Order rescinded."

Early settlers of Twin Lakes and Lake County recounted numerous tales of encounters with Ute and Arapaho Indians, and of the open hostility that is known to have existed between the two Indian Nations, but little conflict was recorded between the Red and White men in Lake County for nearly two decades following the first gold strike.

Then, on October 1, 1879, word reached Lake County of the Meeker Massacre in the White River Country, some 70 miles west of Leadville. Father Nathan Meeker, Major Thomas Thornburg and a number of his troops, as well as a handful of settlers were killed in a raid by a band of Northern Ute's. Couriers were sent to outlying camps in the Eagle, Gunnison, and Roaring Fork Valley's, telling them of the uprising and warning them of the impending danger of attacks by marauding bands of Indians. Miners from outlying camps with names like Ute City (Aspen) and Independence flooded back over the passes to the relative safety of Leadville, and the City girded itself against an attack that would never come.

Fear ran rampant, and rumors of Indian sightings in and around Lake County abounded. An article in the *Chronicle* fueled the flames of panic by suggesting that "The time has now come to settle the Ute question once and forever, and to do this the throat of every red devil within our borders should be cut. We must come to this finally, and why not now? ... The miners and ranchmen throughout Colorado should make it their duty to shoot down Indians wherever they find them."

In the name of "opening the country to civilization", encroachment onto Indian lands for ranching and mining continued to contract the territory of the once proud Ute Nation, forcing them from their traditional hunting grounds onto lands deemed worthless to the interests of the White man. Benignly referred to as the "Taming of the West", the extirpation and imprisonment of the indigenous population was largely supported as America's "Manifest Destiny."

Miners

Leadville, Colorado, overlays one of the richest mineral deposits ever found anywhere in the world. A thumbnail sketch of the history of mineral development in Lake County is contained within the *Setting* section of this plan.

Mineral extraction within the LCOSI Project Area was principally limited to placer gold mining, a process by which gold particles were washed from glacial alluvium where they had been concentrated by the past actions of ice, water, and gravity.

First with a simple pick, shovel, and gold pan, and later with sluices, "long toms", hydraulic giants, and floating dredges, gravel deposits were ripped and gouged from the streambeds and bottomlands of the Arkansas Valley in search of the precious metal. Evidence of past placer mining activity can be seen along the main stem of the

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Arkansas River at the southern end of the Hayden Ranch, and in the Corske and Box Creek drainages passing through the Hallenbeck Ranch and the Box Creek State Land Board parcel.

By far the most extensive placer mining took place on the Hallenbeck Ranch. Small-scale placer mining began in 1908 under the ownership of the Sagauche Gold Mining Company. In 1913, the ranch was sold to the New York Engineering Company. For two years the company shipped components of a mechanical bucket dredge for assembly at the site, and in 1915, the 600-ton machine was ready for operation.



Derry Dredge. Colorado Historical Society

The Derry Dredge could dig to a depth of 30 feet, creating a deep cavity while imparting a slow forward motion to the dredge itself. Stream diversions or water pumped into the void formed a lake in which the dredge hull floated. The lake would "move" with the dredge as the buckets gouged out the earth in its path, and filled it in behind.

From 1916 until 1924, the Derry Dredge was responsible for all of Lake County's placer gold production. It is said that some 3000 ounces of raw gold

were recovered in just the first three months of operation. The dredge operation was sold to the Mount Elbert Gold Dredging Company in 1924, and the operation was continued in Box Creek until 1926, when the dredge was dismantled and shipped to South America.

Approximately 230 acres of excavations and mine waste piles from the dredging operation are still evident on the Hallenbeck Ranch and the Box Creek State Land Board parcel (See: Soils Map 10, [Pn] Placer Diggings).

Small-scale placer mining continued in the Box Creek drainage under various ownerships, most notably under leases to Fred Garner and Mike Jelen in the years following World War II. Two permitted placer operations are still located on private property in the vicinity of the Glacier Placer, west of the Hallenbeck Ranch, and on the Box Creek State Land Board parcel east of the Hallenbeck Ranch.

In September of 1998, LCOSI applied for, and was subsequently awarded a \$40,419.00 Colorado Historical Society Grant to study, inventory, photograph, archive, record, and evaluate the structural integrity of the buildings of the historic Hayden Ranch and Derry Mining Camp (CHS/SHF Project # 99-02-053). LCOSI Partners provided a local in-kind match of \$9,190.00, while the City of Aurora provided \$5,000.00 in cash match.

The study, entitled *Lake County Open Space Initiative: Historic Ranches Survey*, was completed by A-E Design Associates and Foothills Engineering, and is incorporated by reference into this Master Plan. Medium format black and white photographs of the individual structures were archived with the Colorado Historical Society (CHS), while the *Historic Ranches Survey* is available through the CMC and Lake County Public Libraries.

LCOSI nominated The Derry Mining Camp for inclusion on the State and National Registers of Historic Places on March 3rd of 2000. Upon CHS review, the Derry Site (District No. 00000782) was determined eligible for listing under Criterion A of the USDI, National Park Service requirements. The Ranch qualified because: a) it functioned as an important hay producing, cattle, and dairy operation (Colorado Context – High Country Farming and Ranching); b) was associated with a notorious figure in Colorado History (Samuel Derry); and, c) was one of Colorado’s top gold producers (Colorado Context – Precious metal Mining.)



The 10-acre Derry Mining Camp Historic District consists of a portion of the Derry Dredge site (5LK1341) and the structures of the Derry

homestead, including the sprawling 2604 square foot main house, six log cabins, and one log cabin/barn adjacent to the house. The application states that, “Although the contributing buildings are vacant and suffer from varying degrees of deterioration, they still retain enough integrity to convey significance.” The period of significance is considered to extend from 1860 through 1952.

Responding to a request from LCOSI for emergency funds to stabilize the structures of the Derry Mining Camp, representatives from the Colorado Historical Society performed an on-site visit to the Derry site in the summer of 2000. At that time they determined that the primary structures were “too far gone” to warrant the expenditure of CHS funds for stabilization or restoration, and too fragile to be moved. They recommended that the buildings be fenced off to prevent further damage by grazing cattle and vandals, and to reduce human health risk. Fencing and signage were subsequently installed.

The suggested level of conservation of the historic values of the site was archival photography to document the condition of the buildings, as they existed in the year 2000, so that a photo record would remain even after the inevitable collapse of the structures. Archival photography was accomplished as part of the *Historic Ranch Survey*.

Ranchers

Lake County’s ranching history is inextricably intertwined with its mining heritage. It has been said that there would have been little reason to settle in the high mountain valley’s of Lake County had it not been for its vast mineral resources. At elevations rarely dropping below 9,000 feet, with only 12” of natural precipitation at its lower elevations, and a growing season of only 75 days at best, the region has little value as cropland.

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In the late 1800's, when a world-class ore body hidden just below the surface in Leadville was discovered, "horsepower" was a very literal term. For a period of almost two decades before the arrival of the Iron Horse, virtually all travel, material transport, and labor was done with the aid of beasts of burden. Materials were hauled over the high passes with the help of oxen, horses, mule trains and pack burro's. Roads were cut with mule drawn scrapers. The freighting of Leadville's ore employed almost six hundred teams and a corresponding number of skinnners. Settlers arrived in horse drawn Conestoga's. Teams of draft horses hauled timber down from the forests to help build homes, timber shafts, fuel the charcoal kilns, and heat homes. Stage lines carried passengers and mail in horse drawn Concord coaches or sleighs. Mules and burro's turned the winzes that lifted men and ore from shafts sunk deep into the bowels of the earth. Without "horsepower", the mining industry could not have sustained itself, and without feed, the beasts of burden could not have survived.

In the rarified atmosphere of the mountain peaks and hills surrounding the Arkansas River Valley, where most of the precious minerals were located, native forage for livestock was scant, low in both plant density and nutrient value, and highly susceptible to over-grazing. The literal "fuel" for the mining industry could be found in the hay and native grasses of the lowland riparian habitats and bottomlands along the Arkansas River and its tributaries. Ranchers quickly set about the task of homesteading the valley bottoms in order to provide the fodder for the nascent mining boom.

The haying of native grasses proved lucrative for the likes of Colorado's "Snowshoe Itinerant", Father John Dyer, his son Judge Elias Dyer, and Leadville's "Merchant Prince" Charles Mater, owners of the Elkhorn and Dyer & Harrington Hay Ranches, predecessors of the modern day Hayden Ranch, and for Samuel and Calaincourt Derry on the Derry Ranch. A brief thumbnail sketch of the history of the individual ranches of the LCOSI can be found in the *Land Status* section of this document.

Over time, steam locomotion, electrical power, and the advent of the internal combustion engine, coupled with downturns in the mineral based economy, would spell the end of the horse drawn era in the Upper Arkansas River Valley. Most ranches, including the Hayden, turned to raising beef cattle as a cash crop. The Hayden Ranch also attempted to raise remount horses for the military following the First World War, but the effort proved to be short lived due to the mechanization of the U.S. Calvary and the appearance of the joint disease known as *osteocondrosis dessicans*. Osteochondrosis proved fatal to many of the new foals reared on the Ranch, and was believed to have been caused by heavy metals bourn by the water used to irrigate the pastures, water that originated in the mining district upstream in Leadville.

Cattle grazing on the Hayden Ranch continued virtually uninterrupted until the summer of 2002, when it was suspended in response to severe drought conditions in order to retain wildlife forage values. The Hallenbeck Ranch saw limited grazing through the summer of 2002, when Lake County agreed to allow an adjacent landowner to release his livestock onto the ranch for a three-week period in order to relieve his overgrazed pasture.

The Hayden Ranch and its buildings were studied and evaluated as part of the *Lake County Open Space Initiative: Historic Ranches Survey* in 1999 and 2000. Medium format archival photographs of the contributing structures were taken by Foothills Engineering, and are on file with the Colorado Historical Society. The LCOSI *Historic Ranches Survey* is available through the CMC and Lake County Public Libraries. Based on the site forms incorporated in the Survey, LCOSI nominated the 16 contributing structures of the Hayden Ranch to the State and National Registers of Historic Places in March of 2000. The structures were found to be eligible under the National Park Service Criterion A (Colorado Context – High Country Farming and Ranching), and Criterion C (Embodies the distinctive characteristics of a type, period, or method of construction.)

The application was temporarily withdrawn from listing on the Register over concerns for the disposition of water rights in the Wheel Ditch, which once powered the stationary hay bailer and sawmill inside the Hayden Barn. The City of Aurora raised the question as to whether their drying up of the water right for conversion to municipal use would be affected by the decision to list the Hayden Barns on the National Historic Register. Once the question has been resolved, the application can be re-activated and the structures placed on the State and National Registers.

Contributing structures of the Hayden Ranch are thought to have been built between 1880 and 1930, and include: the Ranch/bunk house, large hay barn, ranch house, two general purpose sheds, chicken/rabbit coup, hen house/tack room, storage shed, garage, garage/storage building, barn/manger, horse barn, privy, log cabin, work shed, and slaughterhouse. Additionally, various corrals, separating pens and fences, and three man-made stock ponds are located within the historic district boundaries.

The conclusion of the Survey and Engineering Evaluation was that immediate stabilization and remediation were critical and clearly warranted. "Considering the degree and rapidly accelerating deterioration (since we first surveyed these buildings less than 2 years ago), we anticipate that synergistic, rapidly advancing deterioration will occur over the next year if nothing is done to protect these structures now!"

In the fall of 2001, the City of Aurora invested \$15,000.00 in the stabilization of the north and south sections of the main barn, in order to straighten tilting vertical support members, sway brace and close in the open ends against the weather, and to place concrete foundations under main support members. In the fall of 2002, the sawmill addition to the main barn collapsed under a heavy wind load, reinforcing the immediate need for additional stabilization efforts.

In May of 2002, Stephanie Evans of the University of Colorado-Denver completed a report entitled *Hayden Ranch Preservation Plan 2002: Preserving the Cultural Resources of Leadville, Colorado*. Ms. Evans was a graduate student at U.C.D.'s College of Architecture and Planning, studying under Ranch Preservation Specialist, Professor Kat Vlahos. Professor Vlahos is also a site reviewer for Colorado Preservation Inc., and had reviewed and become interested in the Hayden Ranch buildings as part of CPI's "Endangered Places Program." The report was created as a student project for voluntary use by LCOSI. The Plan created an outline of recommended preservation strategies and adaptive re-use alternatives to be considered in LCOSI's historic preservation planning efforts.

Acting on recommendations for stabilization, restoration, and adaptive re-use contained in the two studies, LCOSI contacted Colorado Preservation Inc. in the summer of 2002 to seek guidance and solicit participation in the long-term ownership, stewardship, and restoration of the Hayden Ranch structures. CPI subsequently agreed to take ownership of the structures, and to write a grant application for \$200,000.00 in CHS funds to stabilize the structures. Matching funds for the CHS Grant totaling \$50,000.00 were committed by the LCOSI partners. CPI will also

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provide assistance in writing the historic preservation easement and rehabilitation agreement in conjunction with the Colorado Historical Foundation, who will act as the Trustee for the agreements.

Colorado Mountain College was also contacted to explore the possibility of initiating an Associates Degree program in historic preservation that could be linked with bachelors and masters programs at other State Institutions. Those avenues are currently being pursued in an attempt to link the educational and preservation values of restoring the structures to a productive re-use as a hands-on classroom for training specialists in the fields of cultural and historic preservation. The educational program is scheduled to begin at CMC in 2004.

Historic Mountain Transportation

Early day travel was difficult at best in the high alpine environment of the Upper Arkansas Valley. During the winter months, it sometimes became downright impossible.

The first travelers to Lake County made extensive use of Ute hunting trails up and down the valley and over the mountain passes into the surrounding valleys. Most early travelers entered the valley from the east, across the formidable Mosquito Range, on their journey from the frontier town of Denver. The transportation routes in use today vary only slightly from those used by the first explorers of the region. It has been said that deep beneath the asphalt of today's highways and byways, the Ute's footprints still linger.

The relatively flat bottomlands of the LCOSI Project Area provided a critical travel corridor in the linkage of the supply hubs along the Front Range, the world-class ore bodies of the Leadville mining district, and the outlying mining camps of the Eagle, Roaring Fork and Gunnison Valleys. Remnants of many of the historic trails and transportation routes used by the first explorers, stage and freight lines, railroads, and early day automobile travelers run through the Project Area and are still in evidence today.

Old Stage Road to Leadville

The Old Stage Road to Leadville parallels the east side of the Arkansas River through the Arkansas River Ranch and BLM parcel 6. Like many of the routes into the Central Colorado Rockies, what started out as a single-track footpath was widened over the course of time to accommodate freight and passenger travel. Its grades and rock retaining walls, first constructed by man, dynamite, and mule power in the 1860's, stand as moot testimony to the arduous nature of early day road construction. "Travel over these rubble strewn routes made for tedious going. One early traveler complained that after a full days travel, she could still see the embers of the previous nights campfire." (CDOT)

Leadville-bound miners of the mid 1860's had their choice of roads through the formidable Mosquito Range – all of them long, difficult and hazardous. Mosquito

Pass offered the most direct route from Denver, but at 13,188 feet above sea level it was steep and often covered in snow. Trout Creek Pass, east of present day Buena Vista, was lower and easier, but was 65 miles longer than the Mosquito Pass route. Most travelers opted for the Tarryall and Arkansas Wagon Road, which crossed over 11,900 foot Weston Pass from South Park before entering the Arkansas River Valley at the north end of the Hayden and Arkansas River Ranches.

In 1866, the Lake County Board of Commissioners designated the Trout Creek to Leadville Road (Old Stage Road) as a public highway, opening the way to use tax money to improve and maintain the route.

By the mid 1870's, Spotswood and McClelland's *Denver and South Park Stage Line* was running two stages a day on the improved road between Denver and Leadville. Four horse teams pulled Concord coaches that could carry 12 passengers inside, and 8 outside, weather permitting.



CDOT tribute to Mountain Transportation.
US Highway 24, Hayden Ranch

In 1877, the U.S. Postal Service offered the *Denver and South Park Stage* a contract to deliver mail to Leadville. The mail traveled via the Old Stage Road until 1879 when the Mosquito Pass route was improved.

At one point during its heyday, the Old Stage Road had four stage companies vying for the Leadville/Denver trade, along with numerous slow moving freight wagons that sometimes slowed travel to a virtual crawl. Traffic was somewhat relieved with the improvement of Mosquito Pass.

The era of stage travel would come to an abrupt end in 1880 with the arrival of the Denver and Rio Grande Railroad.

Along the Stage route stands a solitary marble tombstone. As the story is recounted, gold shipments in the late 1870's were occasionally shipped by stage between Leadville and Buena Vista. For obvious reasons, scheduling of these shipments was a well-guarded secret. In spite of tight security, robberies were occurring far too often. It was a mystery as to how anyone would know when the gold would be on the stage.

An ambush was devised to catch the culprit, and the plan was a success. The robber lay hidden in the rocks that lie beside the old stage road just south of the Hayden Ranch, ready to strike with well-practiced precision. But when the masked robber jumped out, the law was waiting, and in the ensuing gunfight the robber was shot to death. When the robber's hood was removed, one of the law officers discovered that the culprit was none other than his wife!

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Shocked and ashamed by the betrayal, the lawman buried his wife on the spot where she died beside the trail.

Toll Road to Aspen

Present day Independence Pass was first mapped by the Hayden Survey in 1873, at which time it was called Hunter Pass. The route across the rugged Sawatch Range into the Roaring Fork Region followed game trails up Lake Creek from Twin Lakes to Mountain Boy Park before crossing the Continental Divide at a lofty elevation of 12,095 feet.

The trail went largely un-traveled until W.M. Hurst and Isaac Gaddis struck a rich mineral vein on the west side of Hunter Pass on July 4, 1879. Named the Independence claim for its date of discovery, the ore assayed out at \$400 in gold and 20 ounces of silver to the ton. A newspaper article chronicling the discovery dubbed the pass "Independence", and the name stuck. Miners began arriving at the new camp at a rate of 30 to 40 a day. Only weeks later, prospectors following Hunter Creek (later renamed the Roaring Fork River) downstream to the valley bottom discovered rich silver deposits about 12 miles west of Independence at the confluence of Maroon and Castle Creeks. They named the site Ute City (later renamed Aspen), in reference to the owners of the land upon which they were trespassing.

Ore from the mines had to be transported on the precipitous footpath over Independence Pass on the backs of burros to Twin Lakes, and from there, by wagon road 22 miles to the smelters of Leadville. On the return trip, pack strings carrying supplies and mining materials retraced the route back over the Pass to the outlying camps. It was a journey fraught with danger, requiring many days of exposure to the harsh elements.

The wagon road between Twin Lakes and Leadville traveled along the approximate alignment of Shore Pretty Drive as it passed through portions of the Hallenbeck and Hayden Ranches, then paralleled the west bank of the Arkansas River to a ford in the vicinity of Malta, where it crossed the river and turned east for the trip up California Gulch to Leadville.

In October of 1879, word filtered back to the outlying mining camps of Ute City and Independence of the Meeker Massacre. Fearing retaliation for their incursion into Ute Territory, the miners fled back over the pass to winter over in the safety of Leadville. As the fear of an Indian insurrection subsided, hundreds of miners provisioned themselves in anticipation of the spring thaw and the laborious trip over the pass to certain fortune. Outfitted with 12-foot long Norwegian skis or Canadian snowshoes, the first wave headed for the Pass in February of 1880.

In March of 1880, Dr. J.E. Rice and J.S.D. Manville formed the Twin Lakes, Roaring Fork & Grand (Colorado) River Toll Road Company to take advantage of the increasing traffic across the Pass. A wagon road was cleared for a distance of 12 miles west of Twin Lakes, from which point pack animals were

required to complete the crossing. The company was reorganized as the Leadville & Aspen Toll Road in 1881.

The first crossing of the Pass in a wagon occurred on May 25, 1880. Four mules pulled the wagon over a pack trail to Mountain Boy Park, where deep snows were encountered. Freighters disassembled the wagon and loaded it onto sleighs, which the mules pulled up the steep grades to the summit. The wagon reached Aspen a week later.

The Leadville and Aspen Toll Road Company finally opened its Independence Pass Toll Road for through traffic on November 1, 1881, and promptly closed it to all but sleigh traffic due to heavy snow. Snow shovel brigades worked almost constantly throughout the winter to clear heavy snow, avalanches, and drifts on both sides of the summit.

Freighter John Borrel recalled the toils and perils of a 14-day mid winter crossing of the Pass to Aspen in 1885:

"It was the dead of winter and snow had been falling until it was ten feet deep. Although traffic was heavy, the snow drifted so badly that the road was not kept open. We were near the top of the range for three days and nights in a traffic jam. Someone got stuck in the snow, teams began to line up, unable to pass, until they reached in both directions for a great distance. We finally cleared the jam by carrying sleds, stages and wagons and their loads out of the road and to new positions. It was mighty labor and we were all exhausted."

When spring finally arrived, the melting snows turned the road into a sea of mud. Harrowing tales of narrow escapes and sometimes-fatal mishaps while crossing the pass were the norm rather than the exception. The Toll Road Company's initial round trip rates from Twin Lakes to Aspen were \$1.00 for a pack animal, \$6.50 for a double team, and \$9.00 for a four-horse team.

In 1881, noted explorer and mountain man Kit Carson established the Leadville, Twin Lakes and Independence Stage and Express Company. The cost of a trip from Leadville to Twin Lakes was \$1.00, while the trip to Everett's at the South Fork of Lake Creek was \$1.75, and the journey to the mining camp of Independence cost \$3.50.

One of two express companies providing regular daily stage service to the Roaring Fork Region, Carson's stages fought for position with as many as 60 freight wagons crossing Independence Pass every day. The narrow road, perched precariously on the side of the steep hillsides offered little chance to pass, and the dirt track was notoriously muddy, sometimes slowing the trip to a veritable crawl.

The slow moving freight wagons with their cargoes of hand sorted high-grade silver ore, sometimes assaying at several thousand ounces to the ton, were also easy targets for wayside thieves. Although a reward was offered for the capture of the Independence Pass bandits, none was ever claimed. At least three thieves caught in the act were summarily shot to death on the spot.

The opening of the Denver & Rio Grande's "Baby Road" rail line between Leadville and Aspen on October 27, 1887, followed shortly by the completion of the Colorado Midland line to Aspen through the Hagerman Tunnel, signaled the end of profitability for the Independence Pass Toll Road. Kit Carson's last stage crossed the Pass on October 24, 1887.



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

In 1927, renewed interest in linking Leadville and Aspen for automobile travel prompted the Colorado Highway Department to extend State Highway 82 across the summit as a graded, gravel road, following much of the original Toll Road alignment. The roadway was paved in 1967, but remains closed during the winter months. John Borrel would certainly understand.

Ocean to Ocean Pikes Peak Highway

The Ocean to Ocean Pikes Peak Highway was the nations first trans-continental highway, traversing the country from Atlantic City to San Francisco. Completed in Lake County 1913, the alignment of the highway roughly followed the current route of U.S. Highway 24 (then designated as U.S. Highway 40) as it passes through the Lake County Open Space Initiative Project Area. The roadway crossed the Arkansas River on the concrete bridge located within the Hayden Meadows Recreation Area. Highway 40 was the first paved road through the mountains.

Early travelers on the Ocean to Ocean Pikes Peak Highway would often carry tents, boxes of tools, and cans of extra fuel as standard baggage, since service stations, restaurants and accommodations could sometimes be days apart.

An editorial in the Herald Democrat from May of 1913 hinted at the changes that would be seen in the age of automobile travel, and the new market niche that Leadville could fulfill as a mountain get-away.

"The automobile is doing wonders in link the whole country together. It is doing this in a more intimate sense, even, than the railways. The latter of course carry the vast percentage of tourist travel, but so far as places like Leadville are concerned, we receive comparatively little benefit from it."

"The leisurely auto tourist makes a point to stop a while at various points of interest... Leadville is an exceptionally beautiful summer resort... We cannot imagine the unfortunate dwellers in large cities as being really happy in the summer time, even with all the attractions offered by the brilliant lights..."

Eighty years later, in 1993, the citizens of Leadville would once again seize upon the importance of the U.S. Highway 24 corridor as a means of attracting visitors to the natural resources and intrinsic qualities of the Upper Arkansas River Valley, when they sought and received both State and National Scenic and Historic Byway status for the corridor. The Top of the Rockies National Scenic and Historic Byway is one of only 52 highways nationwide to receive that designation.

The original alignment of the Ocean to Ocean Pikes Peak Highway was altered in 1934 in order to provide an elevated grade crossing over the Arkansas River and the Denver and Rio Grande rail line. The old highway bridge is

experiencing adaptive re-use as a pedestrian bridge linking the east and west sides of the Hayden Meadows and Arkansas Headwaters Recreation Areas.

Railroads

Few events in the history of the American West had as great an influence on the patterns of settlement as the arrival of the Railroad.

In Lake County, the ability to transport large quantities of goods and materials inexpensively, quickly, and dependably, opened new avenues for extracted minerals and local products to reach the world marketplace. Travel times between commerce centers were cut from days to hours, and people could move freely and comfortably, regardless of season, and without appreciable threat to life and limb. Perishable items, such as meat, poultry, and fresh produce, could now reach the hungry mining camps of the Upper Arkansas River Valley. Interstate and trans-continental communication improved dramatically with punctual delivery of the mail and the installation of telegraph wires alongside the rail lines. Heavy ores and cumbersome mining equipment that taxed the limits of horse drawn wagons or sleighs, posed little challenge for the "Iron Horse." The productivity of the mining effort was no longer constrained by the inherent difficulties of transporting the product out of the remote mountain valley to the markets of the world. Productivity increased as costs decreased.

The discovery of incalculable mineral wealth in the Upper Arkansas River Valley spurred tremendous competition between the Denver South Park and Pacific (DSP&P), Denver & Rio Grande (D&RG), Atchison, Topeka & Santa Fe (AT&SF), and Central Colorado (CC) rail companies to be the first to tap the highly profitable market for transporting supplies and ore.

Denver & Rio Grande Railway Company (D&RG)

The Denver and Rio Grande Railway Company was chartered on October 27, 1870 with the intent of building southward from Denver to Mexico City, and westward into the mining districts of the Central Colorado Rockies. The D&RG was the first narrow gauge railroad in Colorado. The D&RG track reached Pueblo, Colorado, in August of 1872, and then turned westward up the Arkansas River toward Leadville, reaching Canon City on July 4, 1874.

In 1878, the infamous "Railroad Wars" erupted between the D&RG and the AT&SF railroads over control of the most favorable routes into the Upper Arkansas Valley, most specifically the alignment along the Arkansas River through the Royal Gorge west of Canon City. Tempers flared, guns were brandished, and litigation ran rampant. On April 21, 1879, the U.S. Supreme Court ruled that the D&RG had the prior right through the Royal Gorge, but did not deny AT&SF any right-of-way. The D&RG was also granted the right to build track from Buena Vista to Leadville.

A tripartite agreement between the AT&SF, D&RG, and the Union Pacific (who now owned the DSP&P) was signed on March 27, 1880 that granted the D&RG rights to build track to Leadville. Tracks across the Hayden Ranch were laid early that summer, and the Denver & Rio Grande became first railroad to reach the Leadville mining camp on July



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

22, 1880. Former President Ulysses S. Grant attended the celebration of the arrival of the first train.

The arrival of the Denver & Rio Grande Railroad in 1880 heralded a new era in transportation, easing the sense of remoteness of the Leadville Mining Camp, and opening the central Rocky Mountains to settlement patterns that are still evident today. Communities including Buena Vista, Salida, Canon City, Minturn, and Glenwood Springs still flourish along the original rail corridor, and bear witness to the profound impacts of the rail industry on Colorado's history.

The Denver and Rio Grande line passes through the Hayden Ranch and the Crystal Lakes State Land Board Parcel, and operated continuously under a variety of restructuring and ownership changes through the mid 1990's. Today, the line is owned by the Union Pacific Railroad, and has been de-activated. In the event that it is abandoned, the Union Pacific Railroad has agreed to donate the section of track between the Royal Gorge and Leadville to Colorado State Parks for conversion from rails-to-trails.

Denver, South Park & Pacific (DSP&P)

The Denver, South Park & Pacific Railroad was incorporated on October 1, 1872 to link the rich silver camp of Leadville to Colorado's front range. Narrow gauge track for the fabled "South Park" (SP) line, also known locally as the "Seldom Punctual", was laid from Denver westward through the South Platte Canyon starting in 1874. By December of 1878, the DSP&P had reached the base of Kenosha Pass on its climb into South Park, and crested the summit in May of 1879. By the end of 1879, rail had been laid across South Park to Trout Creek Pass, and by March 3, 1880, trains of the DSP&P were running in the Upper Arkansas River Valley.

In a joint operating agreement reached in 1879, the DSP&P was granted the right to rent the D&RG's tracks between Buena Vista and Leadville. The D&RG and DSP&P, therefore, shared the same alignment through the LCOSI Project Area. The DSP&P began running trains between Denver and Leadville by the end of 1880.

Not satisfied with the shared route, the DSP&P resolved to build a more direct line to Denver over Boreas Pass. The "High Line" left Leadville at an elevation of 10,200 feet for the gradual climb to the summit of Fremont Pass (el. 11,318 ft.), and the site of the Climax Mine, the worlds largest Molybdenum mine. Between 1884 and 1937, SP trains carried passengers back and forth to Denver on narrow gauge coaches, while freight trains carried gold and silver ore, coal, lumber, supplies, food and molybdenum concentrates. After 1937, the Highline road

carried "Moly" concentrates down from Climax to the world market until its last run in 1986. Today, the train is run as a tourist railroad.

The Colorado Midland Railroad (CMRR)

The Colorado Midland Railroad was incorporated on November 23, 1883 to build a standard gauge railroad from Colorado Springs, through Ute Pass and South Park, to the Leadville Mining District. Construction of the main line began in 1886 and reached Leadville on August 30, 1887. In that same year, CMRR completed driving standard gauge rail lines through the Hagerman Tunnel to Aspen. The arrival of the Midland signaled the industry switch from narrow to standard gauge track, and ushered in the era of sleeping cars, dining cars, and faster schedules.

The Midland tracks ran parallel to the Denver and Rio Grande line through the LCOSI Project Area, and remnants are still visible on the Crystal Lakes State Land Board parcel.

The Aspen Short Line Railroad (ASL), a Colorado Midland Company, was incorporated on November 11, 1888, to build a 6.5-mile cutoff from Crystal Lakes to Leadville. The original main line ran up California Gulch at grades of 3.8%, pushing the limits of the standard gauge locomotives of the period. The cutoff reduced the grade to 1.6%, making the haul more economical. The elevated grade of the Crystal Lakes Extension is most visible from U.S. Highway 24 as it passes through the Moyer Ranch, north of the current overpass. Colorado Midland leased the line from ASL for \$8,000 per year until 1893, when they purchased the route.

The Colorado Midland went into receivership on February 2, 1894, and was sold at foreclosure on September 8, 1897. It continued to operate under financial distress until 1921, when it was forced into abandonment.

Lake County Open Space Initiative Ecosystem Management Plan



Section II Existing Condition

Water

Lake County, Colorado, lies at the headwaters of the Arkansas River, on the east side of the Continental Divide. The waters passing through the County include both native streams and rivers, and trans-mountain diversions from Colorado's western slope. (See Map 5)

Map 5

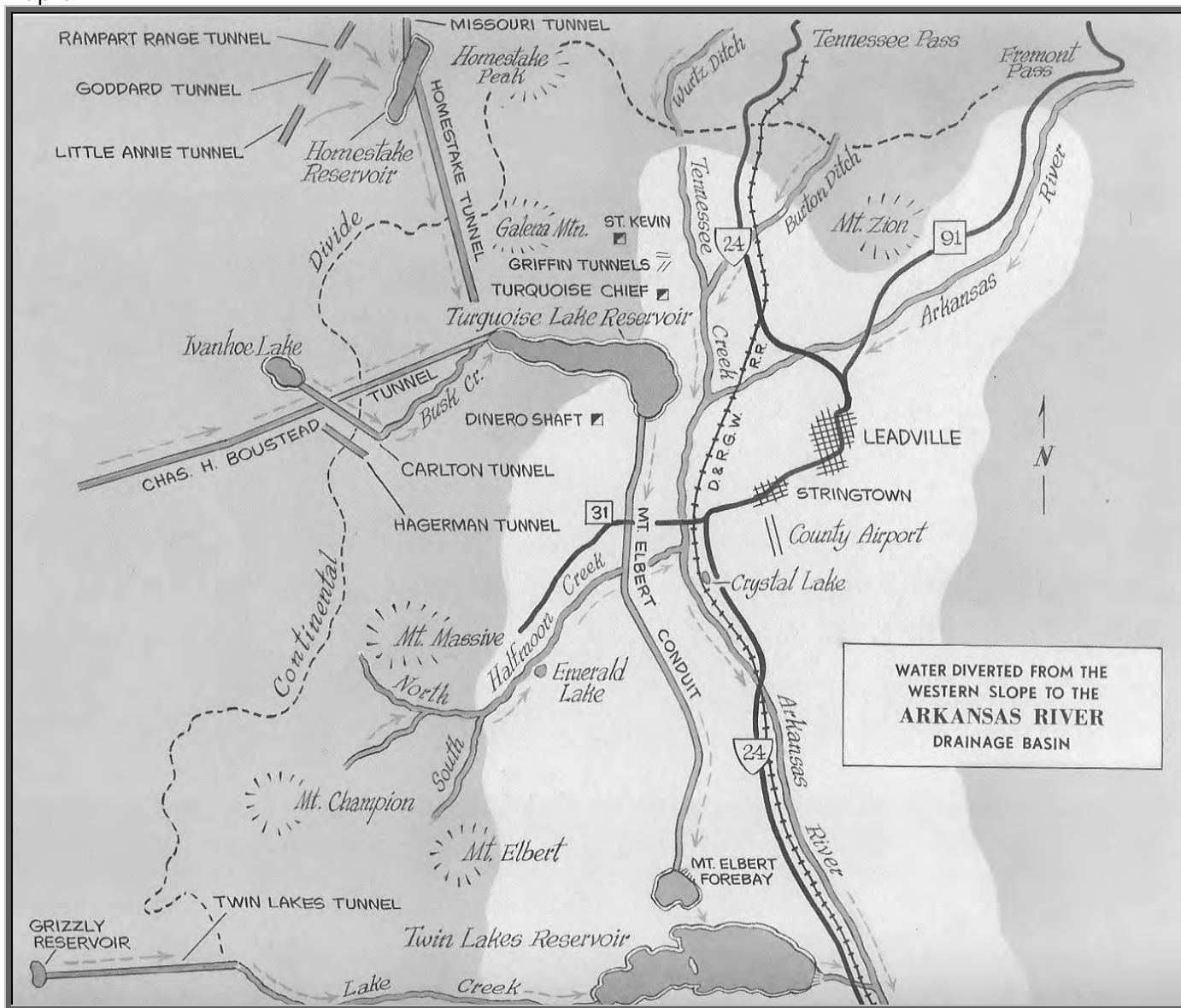


Illustration created by Ted Mullings, Leadville, Colorado

Colorado is a semi-arid state, in which most of the water supply is located in the river basins west of the continental divide, while most of the demand for water exists east of the divide. To meet the extensive demands for irrigated agriculture, and the more recent growing demand for municipal

water supplies along the Front Range, waters from the western slope have been diverted across the continental divide (transmountain water) through a complex system of reservoirs, ditches, tunnels, pipelines, and pump stations, for delivery to the eastern plains.

The LCOSI Project Area is strategically located along both the natural and manmade conduits that capture and deliver native and transmountain waters to meet these demands. Aside from the physical differentiation of where the water comes from, Colorado Law also makes a significant distinction between how native and transmountain water can be used. Native water, which comes from the watershed in which it is used, can be used only once. Transmountain water, which is imported from another watershed, and is therefore supplementary to native flows, can be used and re-used to extinction.

Native Waters

Arkansas River

The main stem of the Arkansas River originates on the flanks of 14,145 ft. Mount Democrat on Fremont Pass. Along its course, the Arkansas River drains some 24,904 square miles of the surrounding landscape. The Arkansas is Colorado's single largest drainage basin. Its average native inflow of 875,000 acre-feet of water is supplemented by an additional 101,000 acre feet of water imported from the Western Slope. The Arkansas provides a natural conduit for delivery of both native and transmountain diversions from its headwaters to Lake Pueblo, 125 miles downstream.

Major tributaries of the Arkansas River in Lake County include Tennessee Creek, Busk Creek, Halfmoon Creek, Willow Creek, and Lake Creek. Minor tributaries within the LCOSI Project Area include Box Creek, Corske Creek, Herrington Creek, Empire Creek, Spring Creek, and Big Union Creek. Ephemeral creeks that only run seasonally or during storm events include Twobit, Sawmill, and Holmes Gulches.

Two native water bodies, Twin and Turquoise Lakes, were present when the first white men reached the Valley of the Upper Arkansas. Both have subsequently been dammed to increase their water storage capacity.

Transmountain Waters

Over the course of the past century and a half, native water has been diverted from Lake County's streams and rivers to support localized activities such as mining, residential use, and agriculture. Early on, however, waters of the Arkansas River drainage proved inadequate to meet the state and regional demand generated within its downstream basin. Water laws were established in the 1870's to appropriate the existing supply among users, but the finite supply of water still fell significantly short of meeting the ever-increasing demands of a growing state.

When faced with shortages within one basin, early water users looked to adjacent or proximal watersheds to make up the shortfall. Starting simply, ditches were hand dug from high in the headwaters of one basin, diverting water into the headwaters of another, but topography and hydrology limited the number of locations where this method could work. Soon, tunnels under the continental divide were being constructed to feed flows by gravity from one basin to the next. As fossil fuels and electrical energy were harnessed, the ability to pump water over obstacles opened new avenues for delivering water from the western slope to the metropolitan centers far to the east.

Today, a complex maze of collection systems, storage vessels, inverters, siphons, and pump stations crisscross the peaks and river bottoms of the Upper Arkansas Valley in the vicinity of Lake County, capturing, storing, and delivering water to locations as far distant as Pueblo, Aurora, Colorado Springs, and the eastern plains.

Lake County Open Space Initiative

Ecosystem Management Plan



Section II

Existing Condition

Collection Systems

Tennessee Creek

One of the simplest systems of transmountain diversion can be seen in the headwaters of Tennessee Creek. Here, the Pueblo Board of Water Works diverts waters from Piney and Mitchell Creeks, in the headwaters of the Eagle River drainage, through the Ewing and Wurtz ditches, across Tennessee Pass, to the headwaters of Tennessee Creek. From here, the imported water travels down Tennessee Creek to its confluence with the Arkansas River, and then downstream to Pueblo, where it is put to beneficial use.

Columbine Ditch

The Columbine Ditch (not pictured on Map 5) is located near the summit of Fremont Pass, and transfers water from the headwaters of the Eagle River, in Eagle County, across the Continental Divide to the headwaters of the Arkansas River in Lake County. It is owned and operated by the Pueblo Board of Water Works.

Carlton Tunnel

The Colorado Midland Railroad's *Busk Ivanhoe Tunnel* (later re-named the Carlton) was originally bored under the Continental Divide in 1887 to accommodate rail travel between the mining camps of Leadville and Aspen. The Carlton tunnel was converted to accommodate automobile travel in 1922, but tunnel collapses and high maintenance costs forced its closure as a transportation route in the 1940's. The tunnel was repaired for its eventual conversion into a water delivery conduit.

Today, the Carlton Tunnel diverts surplus western slope water for Front Range municipal use, using a collection system feeding Ivanhoe Lake. The water is carried under the divide via the Carlton Tunnel to Busk Creek on the eastern slope, and then downstream to storage in Turquoise Lake. The system is jointly owned and operated by the City of Aurora and the Pueblo Board of Water Works.

Twin Lakes Collection System

The Twin Lakes Collection System picks up water stored in Grizzly Reservoir from the Lincoln and Grizzly Creek tributaries of the Roaring Fork River in Pitkin County, and moves it through the Twin Lakes Tunnel under the divide into Lake Creek, where it flows eastward to Twin Lakes. Imports through the tunnel in Water Year 2000 exceeded 40,000 acre-feet. The Twin Lakes System is owned by the Twin Lakes Reservoir and Canal Company, which has numerous irrigation and municipal shareholders.

Homestake Project

The Homestake Water Collection and Storage System was constructed in the mid 1960's by the Cities of Aurora and Colorado Springs. The Cities share equally in the costs and the water yield. The system consists of: a series of collection and diversion structures in the headwaters of the Eagle River; the Homestake Reservoir; the Homestake Tunnel; and the Otero Pipeline and Pump Station. The Homestake Project also makes use of facilities constructed by the federal government as part of the Bureau of Reclamation's *Fryingpan-Arkansas Project*, including the expanded storage capacities resulting from the construction of the Sugarloaf (Turquoise Lake) Dam and the Twin Lakes Reservoir.

The Missouri Tunnel collects and carries water from sources as far away as Cross Creek to the 45,000 acre-foot Homestake Reservoir, located near the headwaters of Homestake Creek. From storage in the Reservoir, the water is transported under the divide through the 5.4 mile long Homestake Tunnel to Turquoise Lake, where the project utilizes 30,000 acre-feet of Fry-Ark storage.

From Turquoise Lake, water from the Homestake Project is carried for 10.7 miles through the 90" diameter Mount Elbert Conduit to the Mount Elbert Forebay, where it is released through the Mount Elbert Power Plant into Twin Lakes below. From Twin Lakes, water flows through the Otero Pipeline to the Otero Pump Station, where it is lifted at a rate of 118 million gallons per day, 750 vertical feet across the dividing ridge into the South Platte River Basin in the vicinity of Trout Creek Pass. From here, it is transported by means of the Homestake Channel for storage in Aurora's Spinney Mountain Reservoir, or through a pipeline to Rampart Reservoir to be stored for use by Colorado Springs.

Frying Pan-Arkansas Project

By far, the most extensive transmountain diversion project to date has been the Bureau of Reclamation's Frying Pan-Arkansas Project. The Fryingpan-Arkansas Project is a multi-purpose transmountain water diversion and delivery project, authorized by Congress and President John F. Kennedy as Public Law 87-490 on August 16, 1962. It makes possible an average annual diversion of 69,200 acre-feet of surplus water from the Fryingpan River and other tributaries of the Roaring Fork River on the western slope of the Rocky Mountains to the Arkansas River basin on the eastern slope.

Water diverted from the western slope, together with available water supplies in the Arkansas River Basin, provides an annual average water supply of 80,400 acre feet for both municipal/domestic use and the supplemental irrigation of 280,600 acres in the Arkansas Valley.

There are two distinct areas of the project: the western slope, located within the Hunter Creek and Fryingpan watersheds in the White River National Forest; and the eastern slope in the Arkansas Valley.

The Western Slope

On the western slope, the Reudi Dam and reservoir provide storage for replacement and regulation of approximately 100,000 acre-feet of water for western slope users. The water is used for irrigation, municipal benefits, recreation, and fish and wildlife enhancement.

Lake County Open Space Initiative Ecosystem Management Plan



Section II Existing Condition

Seventeen diversion structures on the western slope are used to divert water into the Fryingpan-Arkansas collection system. The project includes nine tunnels with a combined length of 26.7 miles. The collection system is divided into two parts: the North and South Side Collection Systems.

The North Side Collection System diverts, collects and transports an average of 18,400 acre-feet of water annually through the Mormon, Carter, Ivanhoe, Granite, Lily Pad, North Cunningham, Middle Cunningham and South Cunningham Creek facilities.

The South Side Collection System transports an average of 50,800 acre-feet of project water annually from the Fryingpan and Roaring Fork River Basins. Facilities located on Hunter, Midway, and No-Name Creeks collect and divert water from Sawyer and Chapman Creeks, the South Fork of the Fryingpan River, and the main-stem of the Fryingpan River downstream of Martin Creek.

The north and south collection systems on the western slope collect the melting snow and runoff from the high mountains. The diverted waters of the Fryingpan and Roaring fork River Basins flow into the inlet portal of the Charles H. Boustead Tunnel. The Boustead Tunnel has a decreed diversion capacity of 1000 cubic feet per second (cfs), and conveys all the water of the North and South Collection Systems under the Continental Divide to Turquoise Lake.

The Eastern Slope

Turquoise Lake and the Sugarloaf Dam are located just east of the Continental Divide, approximately 5 miles west of Leadville, Colorado. The Lake provides storage capacity for the regulation of project water flowing from the Boustead Tunnel.

The Mount Elbert Conduit conveys water from Turquoise Lake to the Mount Elbert Forebay. The Conduit passes through BLM Parcels 1 and 2, and the western half of the Hallenbeck Ranch. The Halfmoon Diversion Dam also intercepts excess flows of Halfmoon Creek for diversion into the Mount Elbert Conduit. Water delivered to the Forebay is used for power generation in the Mount Elbert Pumped Storage Power Plant before entering Twin Lakes.

Water Storage Facilities

Three Fry-Ark water storage facilities are located within Lake County: Turquoise Lake; the Mount Elbert Forebay; Hayden Meadows Reservoir; and Twin Lakes.

Storage capacities of the three reservoirs are illustrated on the following table:

Table1

Reservoir	Active Conservation Pool (Acre-feet)	Total Capacity Storage (Acre-feet)
Turquoise	120,478	129,398
Mount Elbert Forebay	7,318	11.143
Twin Lakes	67,917	140,855

Turquoise Lake

Turquoise Lake and the Sugarloaf Dam are located east of the Continental Divide on the Lake Fork of the Arkansas River. The Sugarloaf Dam is an earth-fill structure, 2,020 feet in length and 135 feet in height above the river channel, containing approximately 1,833,700 cubic feet of material.

The reservoir covers 1788 surface acres, and has a shoreline of 11 miles. Its storage capacity is 129,398 acre feet at an active conservation elevation of 9869.4 feet, of which 120,478 acre-feet are considered to be active conservation pool, 6,175 are inactive, and 2,745 are in dead storage. Waters stored in the basin are utilized to support wildlife, irrigation, recreation, fisheries, industrial and municipal uses. Native water to the reservoir comes from Busk, Lake Fork, Glacier, Mill and Bear Creeks.



Turquoise Lake

Lake County Open Space Initiative Ecosystem Management Plan



Section II Existing Condition

Mount Elbert Forebay

The Mount Elbert Forebay covers 281 surface acres, and has a total storage capacity of 11,143 acre feet of water at an active conservation elevation of 9645.7 feet above sea level. It has an inactive conservation pool of 3,269 acre feet, and 559 acre feet of dead storage, leaving an active conservation pool of 7,318 acre feet.

The Forebay was lined with an impervious membrane in 1980 to seal the vessel against groundwater infiltration and system loss

Twin Lakes

Twin Lakes, Colorado's largest glacially formed lake, was shaped during the Pleistocene Ice Age over 10,000 years ago. Its catchment basin was the result of the gouging and scouring action of the vast ice shield as it advanced down the Lake Creek Drainage, while its dam and shorelines were formed by the terminal and lateral moraines left behind as the glacier melted and retreated back up the valley.

The two adjoining natural lakes have subsequently been dammed to increase their water storage capacity, most recently as part of the Fryingpan Arkansas Project. In its current configuration, the reservoir covers approximately 2440 surface acres, and has the capacity to hold approximately 141,000 acre feet of water at its active conservation elevation of 9200'. Its active conservation pool is approximately 68,000 acre feet, with an inactive conservation pool of 18,000 acre feet, and 55,000 acre feet of dead storage below the outlet elevation. The Twin Lakes Dam is 53 feet high, and 3150 feet long. Water stored in Twin Lakes is used for wildlife, irrigation, recreation, fisheries, industrial, and municipal purposes.



Twin Lakes / Mount Elbert Forebay

Lake County Storage

Lake County has constructed the Hayden Meadows Reservoir to provide storage for its water rights. The reservoir contains approximately 50 acre- feet of total storage behind a 10-foot high earthen dike, 1800 feet in length. The surface area is approximately 7 acres at its natural high water elevation 9316. Water to supply the reservoir is diverted directly from the Arkansas River via the Upper River Ditch.



Hayden Meadows Reservoir



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

Wetlands

Wetlands are described as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

The Lake County Open Space Initiative has prioritized wetland habitats in its acquisition and preservation strategy because of their relative scarcity and high resource value. Wetlands include swamps, marshes, bogs and similar areas, and provide critical habitat for many important species of fish and wildlife. Wetlands also export plant particles called detritus that serve as food for aquatic organisms in adjacent waters. Wetlands absorb peak floodwaters, reducing damage to downstream properties, and improve water quality by means of a number of natural processes that remove pollutants from waters flowing through them. Additionally, wetlands provide aesthetic, recreational, scientific and educational values.

Wetlands of the LCOSI project area were identified from the National Wetland Inventory. Due to the scale of the wetlands relative to the size of the LCOSI Project Area, the data-base is presented as two separate enlargements, identified as Detail's A (Map 7), and B (Map 8) of Planning Map 6. Due to the coarse scale of the NWI mapping, field verification and delineation are required prior to site-specific actions.

General Wetland Types

Four principal wetland types are found on Lake County Open Space, as summarized in the EPA "Types of Wetlands" and the DOW report "Colorado is Home to Four Types of Wetlands"

Wet meadows

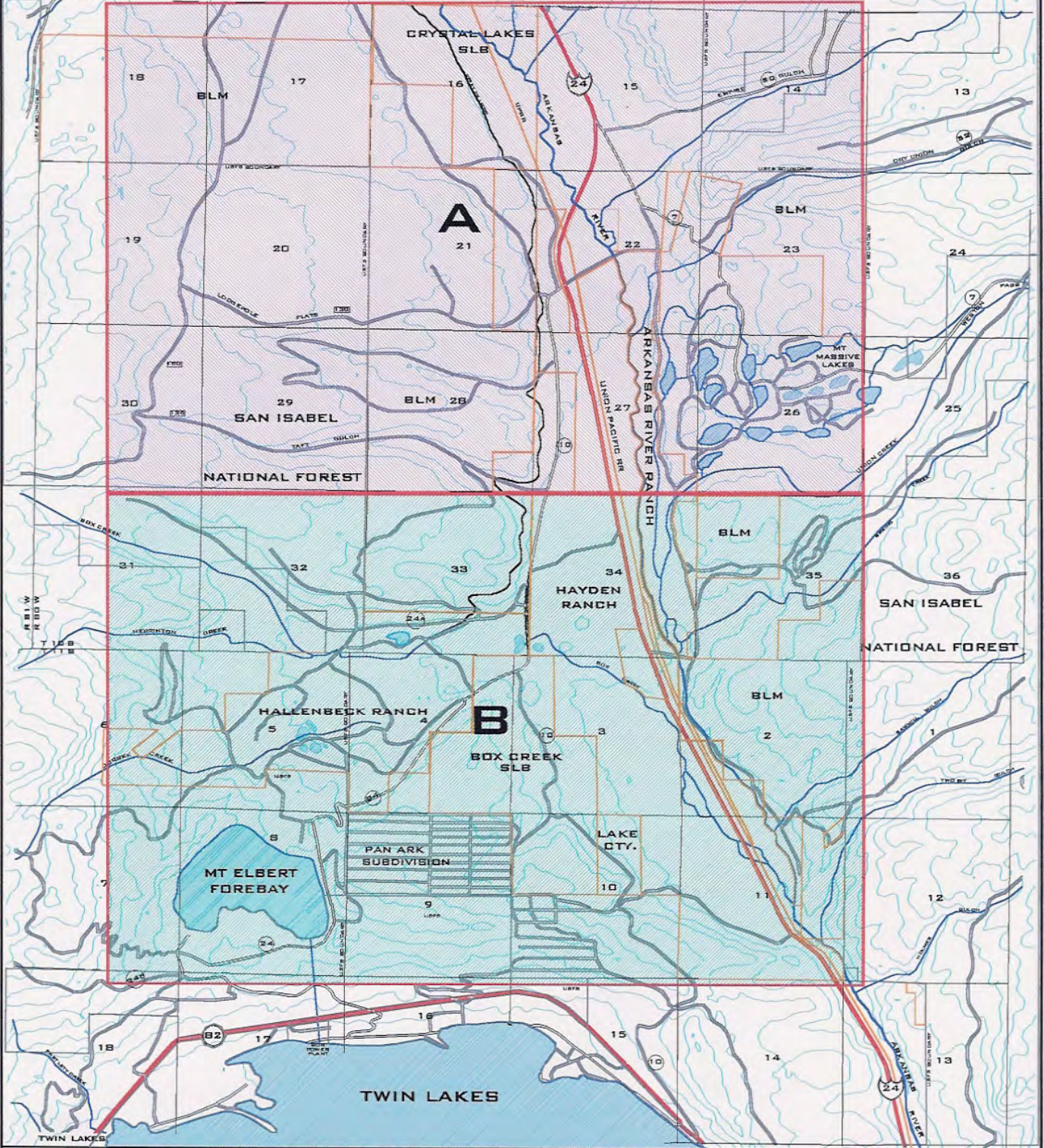
Wet meadows commonly occur in poorly drained areas such as shallow lake basins, low-lying depressions, and the land between shallow marshes and upland areas. Wet meadows depend on precipitation or ground water for a water source, but can be maintained or enlarged by irrigation. This means that they are often dry in the summer. They provide many important benefits to a watershed, including improved water quality. The most common type of wetland found in Colorado is the wet meadow.



Wet meadow located in Spring Creek just east of Kobe



Wet meadow east of Hayden Meadows and the Arkansas River



LAKE COUNTY OPEN SPACE INITIATIVE

KEY
 AREAS REPRODUCED IN DETAIL
 MAP SECTION A
 MAP SECTION B

RESOURCE MAPPING
EXISTING CONDITION
 SEPTEMBER 30, 2002

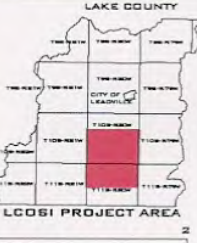
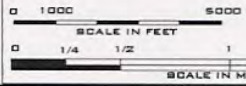
WETLAND MAP KEY

Map 6

ALL BOUNDARIES APPROXIMATE



CONTOUR INTERVAL 100'
 COORDINATES - UTM-12



DRAWN BY	DATE
M. CONLIN	11/21/08
REVISION	DATE
MARK DRINKER	11/25/02

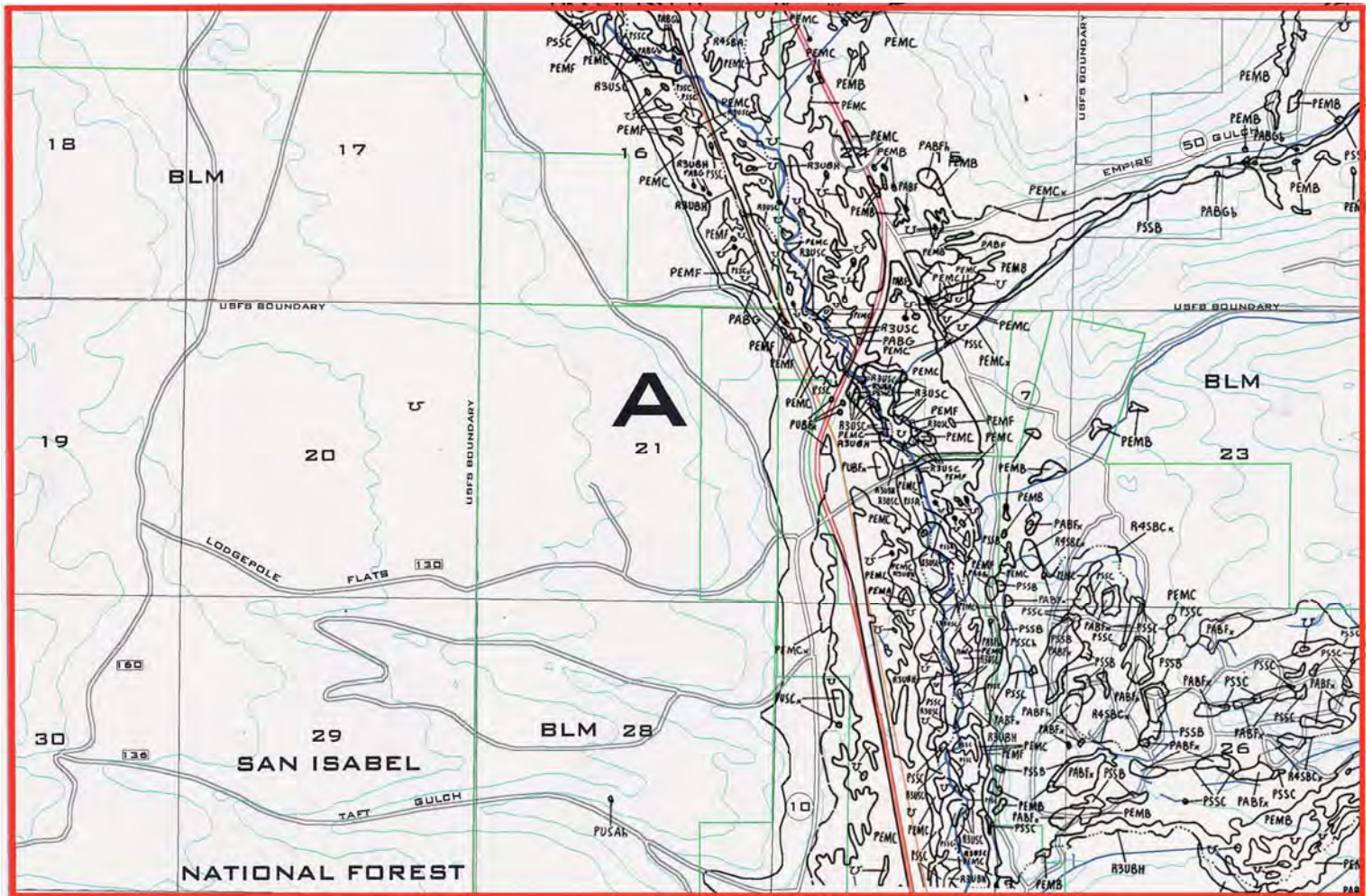
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BLM LAND OWNERSHIP	
STATUS MAP/POD	
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SDMR ASSOCIATES	
8728 W. W. VIEW DR.	
LEAVELLS, MO. 65468	
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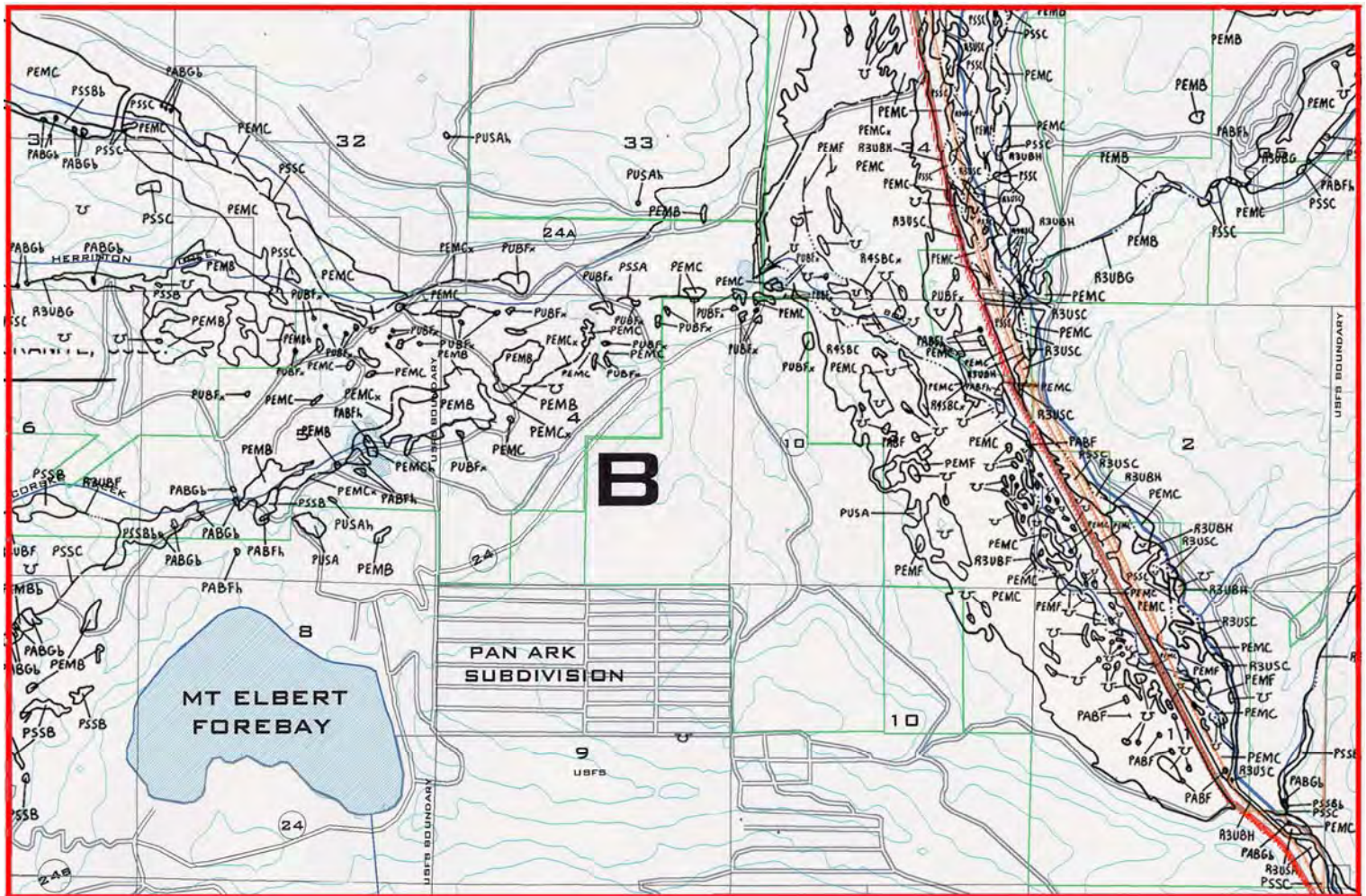
Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

Wetland Detail A



Match line: Wetland Detail B
Map 7 Northern Project Area Wetlands



Map 8 Southern Project Area Wetlands

Peatland

Peatland is a generic term for any ground water fed wetland that accumulates decayed plant material, and in Colorado the only known peatland is a fen. Fens are located at high elevations (above 8,000 ft.) and form at low points in the landscape or near slopes where groundwater intercepts the soil surface, maintaining a constant water level.



Seep wetland, possible fen, located below Mt. Massive Lakes



Peat bog, east side off the Arkansas River at Hayden Meadows



Lake County Open Space Initiative Ecosystem Management Plan

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Marshes

Marshes are periodically saturated, flooded, or ponded with water and characterized by herbaceous (non-wooded) vegetation adapted to wet soil conditions. Marshes are found next to bodies of water that don't flow, such as lakes or ponds, or by slow-flowing streams or rivers. Such areas have fluctuating levels of water, higher in the early spring and summer, and lower in late summer. Marshes are generally home to the greatest biodiversity of the four types of wetland found in Colorado. Cattails, bulrush, and many species of waterfowl, insects, mollusks, crustaceans and algae are all found in marshes.



Typical marsh along riparian wetlands south of Hayden Meadows, west of Arkansas river

Riparian Wetlands

Riparian Wetlands are associated with moving water and are seasonally flooded. Riparian wetlands are particularly productive ecosystems because they receive large inputs of water and nutrients from upstream sources during flooding. Riparian wetlands and their associated aquatic habitat are important for nutrient cycling and food chain support, providing litter and nesting habitat, fish habitat and forage for wildlife including migratory waterfowl and nesting shorebirds.

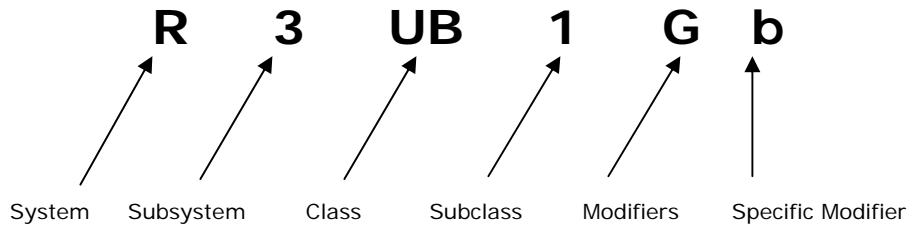


Typical riparian wetland primarily populated with willows and sedge
Primary wetland type found along the Arkansas River on the LCOSI

Wetland Classification

LCOSI wetlands illustrated on Planning Map ___ were mapped and classified under the National Wetland Inventory Classification System:

NWI System Classifications



Example:

[R] Riverine **[3]** Upper Perennial **[UB]** Unconsolidated Bottom **[1]** Cobble **[G]** Intermittently Exposed **[b]** beaver

System:

The National Wetland Inventory includes 5 identified Systems: **[M]** Marine, **[E]** Estuarine, **[R]** Riverine, **[L]** Lacustrine, and **[P]** Palustrine. Of these systems, the Marine and Estuarine classifications apply only to the sub-tidal and intertidal areas along the coastlines of the United States, and therefore do not apply to the LCOSI properties. Of the remaining three classifications: **[R]** Riverine systems are associated with rivers, streams, and moving waters; **[L]** Lacustrine systems are associated with still waters, such as lakes and ponds; and **[P]** Palustrine wetlands are typically associated with groundwater recharge. All wetlands on the LCOSI properties are classified as either **[R]** Riverine or **[P]** Palustrine Systems.

[R] Riverine –

The Riverine System includes all wetlands and deepwater habitats contained in natural or artificial channels periodically or continuously containing flowing water or which forms a connecting link between the two bodies of standing water. Upland islands or Palustrine wetlands may occur in the channel, but they are not part of the Riverine System.

Limits:

The Riverine System is bounded on the landward side by upland, by the channel bank (including natural and man-made levees), or by wetlands dominated by trees, shrubs, persistent emergents, mosses, or lichens. In braided streams, the system is bounded by the banks forming the outer limits of the depression within which the braiding occurs.

The Riverine System terminates at the downstream end where the concentration of ocean-derived salts in the water exceeds 0.5 ppt during the period of annual average low flow, or where the channel enters a lake. It terminates at the upstream end where tributary streams originate, or where the channel leaves a lake. Springs discharging into a channel are considered part of the Riverine System.

Where a river enters a lake, the extension of the Lacustrine shoreline across the mouth of the river forms the Riverine /Lacustrine break. Oxbow lakes are placed in the Palustrine or Lacustrine Systems unless they are connected to a Riverine System



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by an open channel at both ends either permanently or intermittently. Run-of-the-river dams should be handled in the same manner as described above, with the Lacustrine System extending upstream to the contour approximating the normal spillway or pool elevation.

The USGS maps or USGS Water Resources Data (stream gauge data) are used as the primary data source in determining if the riverine channel is a perennial or intermittent stream.

[P] Palustrine

Palustrine wetlands are the dominant form within the LCOSI Project Area. The Palustrine System includes all non-tidal wetlands dominated by trees, shrubs, emergents, mosses or lichens. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics:

1. Are less than 8 hectares (20 acres);
2. Do not have an active wave-formed or bedrock shoreline feature;
3. Have at low water a depth less than 2 meters (6.6 feet)in the deepest part of the basin;
4. Have a salinity due to ocean-derived salts of less than 0.5 ppt.

All water bodies visible on the aerial photography that are less than 8 hectares (20 acres) in size are considered to be in the Palustrine System unless depth information is available, or unless an active wave-formed or bedrock shoreline feature is visible.

Limits: The Palustrine System is bounded by upland or by any of the other four systems



[U] Upland

All areas not defined as wetland or deepwater habitats.



Subsystem

Systems are further broken down to identify Subsystems that physically differentiate conditions within an individual System. Riverine Systems include the following subsystems: **(1)** Tidal, **(2)** Lower Perennial, **(3)** Upper Perennial, **(4)** Intermittent, and **(5)** Unknown Perennial, to describe the diurnal and seasonal nature of the water source. Palustrine Systems are not differentiated by Subsystem. Of the Riverine Subsystems, only **(3)** Upper Perennial and **(4)** Intermittent apply to the rivers and streams of the LCOSI properties.

(3) Upper Perennial

This Subsystem is characterized by a high gradient and fast water velocity. There is no tidal influence, and some water flows throughout the year. This substrate consists of rock, cobbles, or gravel with occasional patches of sand. There is very little floodplain development. The main stem of the Arkansas River is identified as an Upper Perennial Subsystem.





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(4) Intermittent

This Subsystem includes channels that contain flowing water only part of the year, but may contain isolated pools when the flow stops. Many of the small tributaries on the east side of the Arkansas River are Intermittent, flowing only during spring runoff or during storm events.



Class:

The Class describes the general appearance of the habitat in terms of either the dominant life form of the vegetation or the physiography and composition of the substrate. Life forms (e.g. trees, shrubs, emergents) are used to define classes because they are easily recognizable, do not change distribution rapidly, and have traditionally been used to classify wetlands. Other forms of vegetation such as submerged or floating-leaved vascular plants are more difficult to detect. Substrates reflect regional and local variations in geology and the influence of wind, waves, and currents on erosion and deposition of substrate materials.

Of the identified Classes, the following apply to the LCOSI properties:

[UB] Unconsolidated Bottom

Includes all wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 6-7 cm), and a vegetative cover less than 30%. Water regimes are restricted to the following: sub-tidal, permanent-tidal, semi-permanent-tidal, permanently flooded, intermittently flooded, and semi-permanently flooded.



[EM] Emergent - Characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except sub-tidal and irregularly exposed.



[SS] Scrub-Shrub
Includes areas dominated by woody vegetation less than 6 m (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions. All water regimes except sub tidal are included.



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[US] Unconsolidated Shore

Includes all wetland habitats having three characteristics:

- (1) Unconsolidated substrates with less than 75% areal cover of stones, boulders, or bedrock;
- (2) Less than 30% areal cover of vegetation other than pioneering plants; and
- (3) Any of the following water regimes: irregularly exposed, regularly flooded, irregularly flooded, seasonally flooded, temporarily flooded, intermittently flooded, saturated, seasonal-tidal, temporary-tidal, or artificially flooded.

Intermittent or intertidal channels of the Riverine System or intertidal channels of the Estuarine System are classified as Streambed. Landforms such as beaches, bars, and flats are included in the Unconsolidated Shore class.



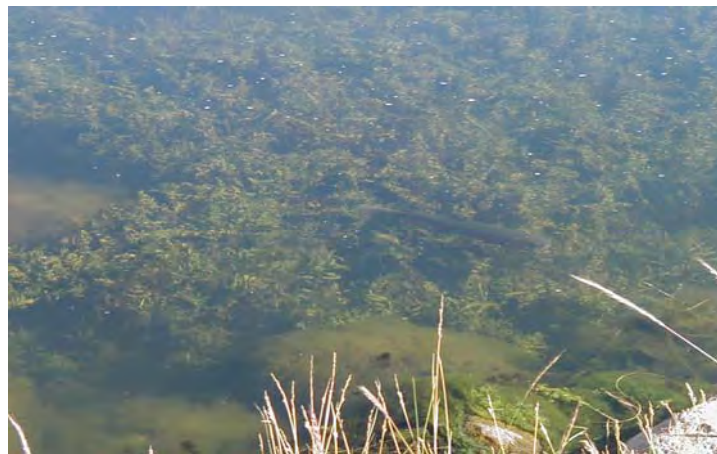
[SB] Streambed

Includes all wetlands contained within the Intermittent Subsystem of the Riverine System. Water regimes include the following: seasonally flooded, temporarily flooded, intermittently flooded, irregularly exposed, regularly flooded, irregularly flooded, seasonal-tidal, and temporary-tidal.



[AB] Aquatic Bed

Includes wetlands and deepwater habitats dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Aquatic beds generally occur in water less than 2 meters (6.6 feet) deep and are placed in the Littoral Subsystem (if in Lacustrine System). Water regimes include the following: sub-tidal, permanent-tidal, semi-permanent-tidal, irregularly exposed, regularly flooded, permanently flooded, intermittently flooded, semi-permanently flooded, and seasonally flooded.



Modifiers

[G] Intermittently Exposed - Surface water is present throughout the year except in years of extreme drought.

[H] Permanently Flooded - Water covers the land surface throughout the year

[C] Seasonally Flooded - Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

[A] Temporarily Flooded - Surface water is present for brief periods during growing season, but the water table usually lies well below the soil surface. Plants that grow both in uplands and wetlands may be characteristic of this water regime.



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[F] Semi permanently Flooded - Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.

Special Modifier

[h] Diked / Impounded - Created or modified by a man-made barrier or dam which obstructs the inflow or outflow of water. Originally, Diked and Impounded are described as separate modifiers (Cowardin et al. 1979). They have been combined here due to photo-interpretation limitations. For clarification of the extent of impoundment see discussion of Lacustrine System limits.

[x] Excavated - Lies within a basin or channel excavated by man.

[f] Farmed - The soil surface has been mechanically or physically altered for production of crops, but hydrophytes will become reestablished if farming is discontinued. The National Wetlands Inventory has operational instructions in place regarding the mapping of farmed wetlands. Farmed wetlands are limited to the following:

- farmed prairie potholes and pothole type depressions
- farmed intermittent lake bottoms (playa lakes)
- cranberry bogs

[b] Beaver - Created or modified by the action of beaver. Originally included under Impounded (Cowardin et al. 1979), the beaver modifier has been created as a separate modifier since beaver activity can be identified on aerial photography. The beaver modifier is used on all delineations where visible hydrologic changes have occurred due to beaver activity.



Wetlands modified by the activities of beavers

Water Regime

Freshwater Non-Tidal areas (L, P, and R systems.)

Though not influenced by oceanic tides, non-tidal water regimes may be affected by wind or seiches in lakes. Water regimes are defined in terms of the growing season, which we equate to the frost-free period. The rest of the year is defined as the dormant season, a time when even extended periods of flooding may have little influence on the development of plant communities.

Regulation and Jurisdiction

The U.S. Congress enacted the Clean Water Act (33 U.S.C. 1344) to "restore and maintain the chemical, physical, and biological integrity of the Nations waters." Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, and establishes a permit process to ensure that such discharges comply with environmental requirements.

The Section 404 program (33 CFR Parts 320 through 330) is administered by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service have important advisory roles. The Corps has the primary responsibility for the permit program and is authorized, after notice and opportunity for a public hearing, to issue permits for the discharge of dredged or fill material.



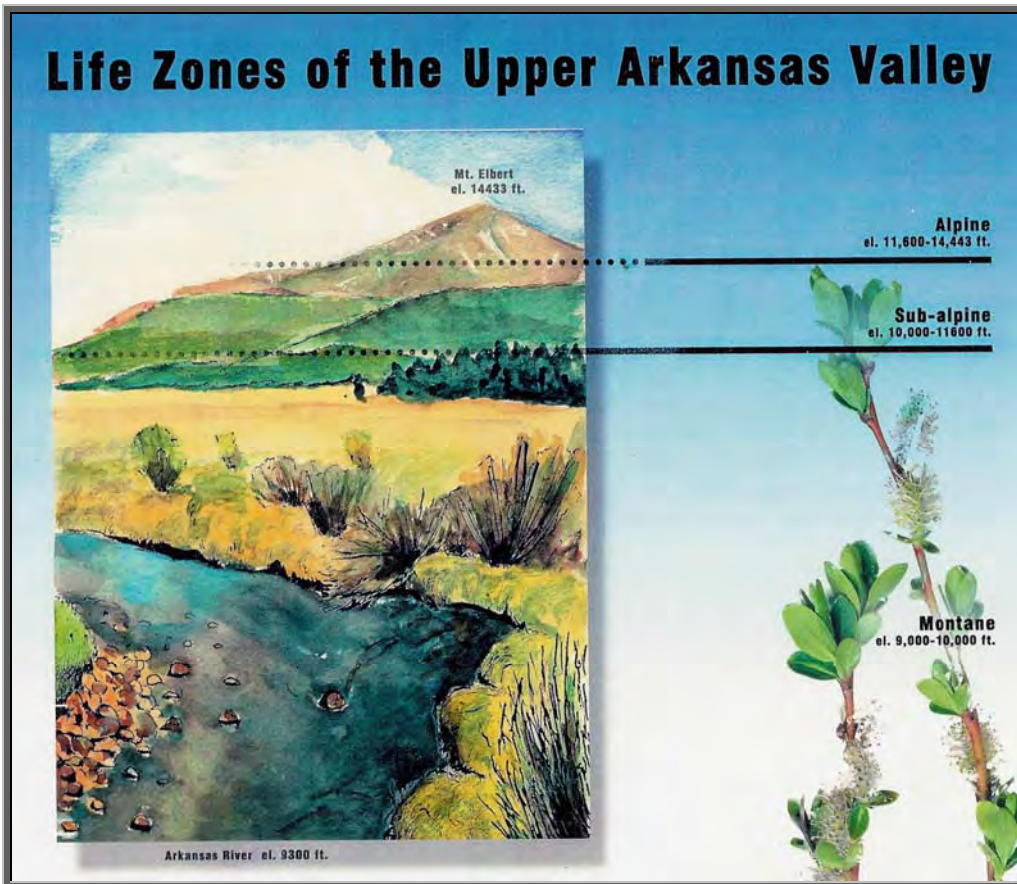
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Wildlife

Over 250 species of avian, terrestrial, and aquatic wildlife are known to inhabit the Upper Arkansas River basin of Colorado, for all, or part of their life cycle. For many of these species, the lowland/riparian habitat of the LCOSI Project Area represents a critical element in their continued health and survival.

Songbirds, shorebirds, and waterfowl passing through the Arkansas Valley Flyway nest, seek cover, and feed along the river bottoms and ponds of the LCOSI during their annual migrations. Resident and migratory big game and non-game species water along the river and its tributaries, migrate through the landscape linkage connecting the Sawatch and Mosquito Ranges, and feed on the vegetation supported by the Project Area's grasslands, wetlands, and riparian habitats. Ecotone species, such as deer and elk, benefit from the proximity of forage to thermal and hiding cover along the forest edge, and the life cycles of the Valley's rich aquatic biota are supported by the freestone environment of the Arkansas River, and the diversity of spawning and food production habitats located along its tributaries, wetlands, marshes, and ponds.



Species abundance, diversity, and areal distribution throughout the valley are greatest during the short summer months, when the high reaches of the Alpine and Sub-Alpine life zones are freed from the icy grip of winter. With over 75% of Lake County in public ownership, abundant summer habitat is available, and protected, to meet wildlife needs.

Spring and fall see the greatest level of wildlife movement through the valley, as migratory species arrive and depart with the changing of the seasons, and resident animals make the bi-annual transition between winter and summer ranges.

The LCOSI properties create a critical landscape linkage for migration north and south along the Arkansas River corridor, and east and west between Forest System lands of the Mosquito

and Sawatch ranges. The landmass also supports wildlife needs during the period of transition, including forage, cover, and calving habitat.

Winter in the high country is crux time, when the landmass capable of supporting wildlife needs shrinks significantly in response to the heavy snowfall in the Alpine and Sub-alpine life zones, concentrating animals in small pockets of remaining suitable habitat in the Montane life zone along the lowland/riparian corridor of the river. The vast majority of the Lake County Open Space is made up of former ranchland, selected by the early settlers for its ability to produce grasses and hay to feed livestock, sage covered hillsides providing native grasses and herbaceous forage, and adjacent forest canopy to provide thermal and hiding cover.

The Lake County Open Space Initiative has prioritized the acquisition and preservation of lowland/riparian habitats along the main stem of the Arkansas River and its tributaries, in large part, to retain traditional migratory routes and winter wildlife carrying capacities.

An inventory of all wildlife species known to inhabit the Upper Arkansas River Valley of Lake County is outside the scope of this report. The Colorado Division of Wildlife (CDOW) has provided information on species of interest that act as indicators of general environmental health, are considered to be rare or sensitive, or have significant economic impacts on the area. Listed species include Elk, Mule Deer, Bighorn Sheep, Black Bear, Mountain Lion, Lynx, and Bald Eagle.

Since the range and distribution of these species extends well beyond the boundaries of the LCOSI Project Area, CDOW *Wildlife Resource Inventory System (WRIS)* data has been selected to provide a map base that encompasses an area extending from the continental divide on the west, to the ridgeline of the Mosquito Range on the east, and from Twin to Turquoise Lake along its north south axis. This perspective more accurately depicts the significance of the LCOSI Project Area within the overall wildlife context of the Upper Arkansas Valley. *WRIS* Maps 1-8 illustrate the range and seasonal distribution of the CDOW species of interest.

Rocky Mountain Elk (*Cervus elaphus nelsoni*)



The North American Elk is Colorado's second largest ungulate, exceeded in size only by the Moose. The species was almost completely extirpated in Colorado by the start of the 20th Century, hunted to near extinction by professional meat hunters to feed the hungry mining camps.

Only a small band of approximately 500 to 1000 elk was believed to exist by 1910, hidden in the deep recesses of

the White River National Forest. Approximately 350 Elk from Yellowstone Park were transported by train to Colorado between 1912 and 1928, and through active resource management, the State population has grown to over 305,000 animals, more than any other state or Canadian Province. Elk are one of North America's most sought after big game animals, and the hunting and viewing of elk has had a significant economic impact on many rural mountain communities of the State, including Lake County.



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Overall Elk range in Lake County covers virtually its entire landmass, from the high peaks to the rural areas adjacent to the City of Leadville (WRIS Map 1). Winter Range is concentrated principally in the Montaine life zone of the Arkansas Valley bottom, south of Leadville. Winter concentration areas include much of the Hayden, Arkansas River, and Hallenbeck Ranches, as well as the north and west shores of Twin Lakes. Severe Winter Range, which represents critical forage areas during the worst of winters, is concentrated along the Arkansas River corridor and its tributaries. Most of the LCOSI Project Area is



located within the area designated as "Severe Winter" range. In March of 2001, over 700 elk were observed on the LCOSI ranches on a single day.

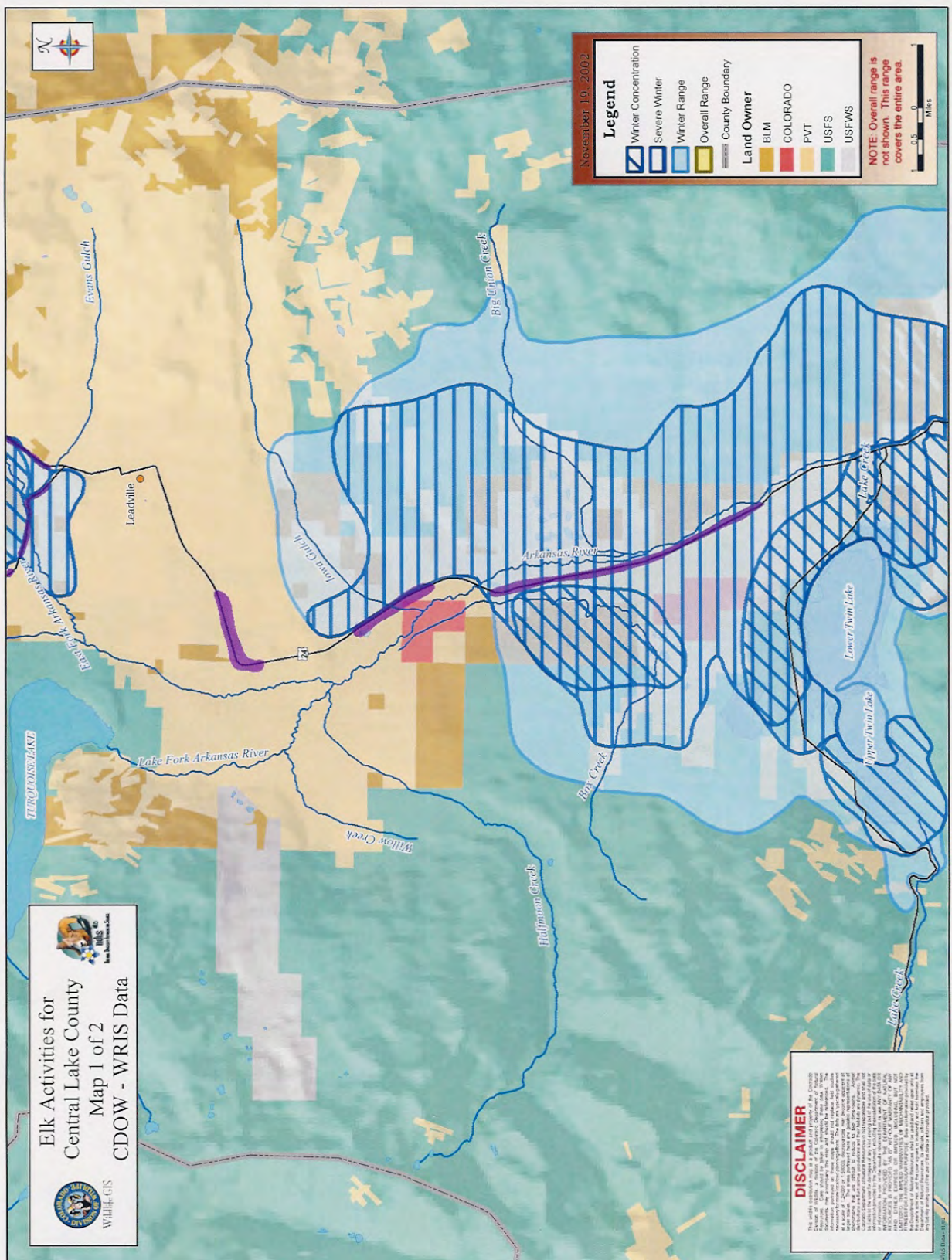
Elk feeding and bedded down on Hayden Ranch, January 2003

Elk consistently cross the alignment of U.S. Highway 24 when traveling between the Sawatch and Mosquito Ranges in the vicinity of Crystal Lakes, and along the whole length of the Hayden Ranch. Much of the interaction between cars and elk occurs during the fall and spring transition periods when the Elk are on the move, and during the winter months when the Elk are foraging down low in the river valley.

WRIS Map 2 delineates the historic migration routes used by Elk on their annual migrations through the Arkansas Valley. Many of the Elk that summer in Lake County use these routes to retreat to the lower elevations of Chaffee County for the winter. As illustrated, one of the primary north/south migration routes passes through the middle of the Hayden Ranch, from the east end of Twin Lakes to the Box Creek Drainage on the Hallenbeck Ranch.

Box Creek, west of the Hallenbeck Ranch, and Willow Creek to the north, as well as areas on Union Creek, Sawmill Gulch and Two Bit Gulch east of the project area, provide the necessary elements of available surface water, low ground cover, high spring forage values, and seclusion favored by cow elk during calving and lactation. Both the calving and rearing stages are critical periods in the reproductive life cycle of the species, and are periods when the cows and calves are most vulnerable and easily disrupted by human activity.

WRIS Map 2 also indicates the presence of a resident herd of elk that does not move from the willow bottoms of the Arkansas River, and can be found year round between the Crystal Lakes State Land Board parcel and Escondido Flats.

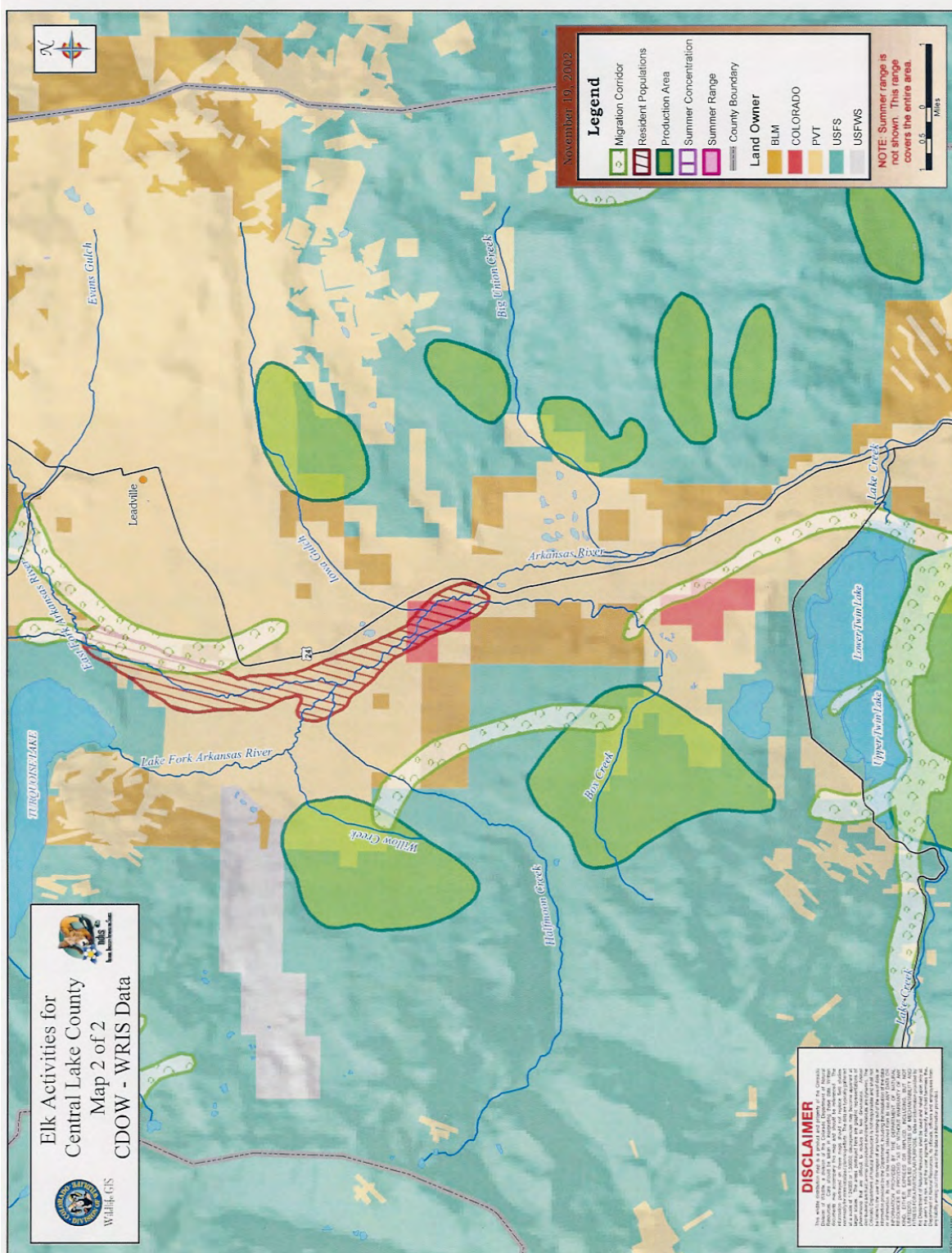


WRIS Map 1



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Mule Deer (*Odocoileus hemionus*)



The early naturalist, Ernest Thompson Seton, estimated the North American Mule Deer population to be about 10 million when the mountain-men, beaver trappers, and trailblazers followed in the footsteps of Lewis and Clark in the early 1800's. By 1905, Seton estimated that the North American Mule Deer Population had dropped by 95%, to about 500,000 head. Much of the population decline was a

result of exploitation in the form of unrestricted "market" hunting. Erwin Bauer's book, *"Deer in Their World"* states... *"The deer were wiped out within vast areas surrounding every gold camp from Sutter's Mill to Placerville in California. The same was true from Leadville to Silverton in Colorado, a century ago..."*

Under active management by the Colorado Division of Wildlife, Mule Deer populations recovered in the ensuing decades, and peaked during the late 1980's. Then, in the early 1990's, deer populations declined precipitously across all of the western United States. Population declines have alternately been attributed to fire suppression policies, habitat loss, the disastrous winter kill of 1992 / 93, infections such as chronic wasting disease, and competition for limited habit with larger and more aggressive herbivores, most specifically, elk. Deer numbers rebounded to 560,000 animals in Colorado in 2002, but that number is still well below CDOW's target population of 630,000.

WRIS mapping (WRIS Map 3) illustrates the overall range of the mule deer to include virtually all of Lake County, from the high peaks to the valley bottoms. In the winter, however, when heavy snows blanket the high peaks, the mule deer's range contracts severely, concentrating the bulk of the population along the lower elevations of the Project Area in the Montaine life zone.

Much of the LCOSI Project Area provides severe winter range habitat, which is necessary to sustain the population through the rigors of the harshest winters. As illustrated, most of the mule deer winter range overlaps the winter range of the elk, adding to the competition for limited available forage during severe conditions.

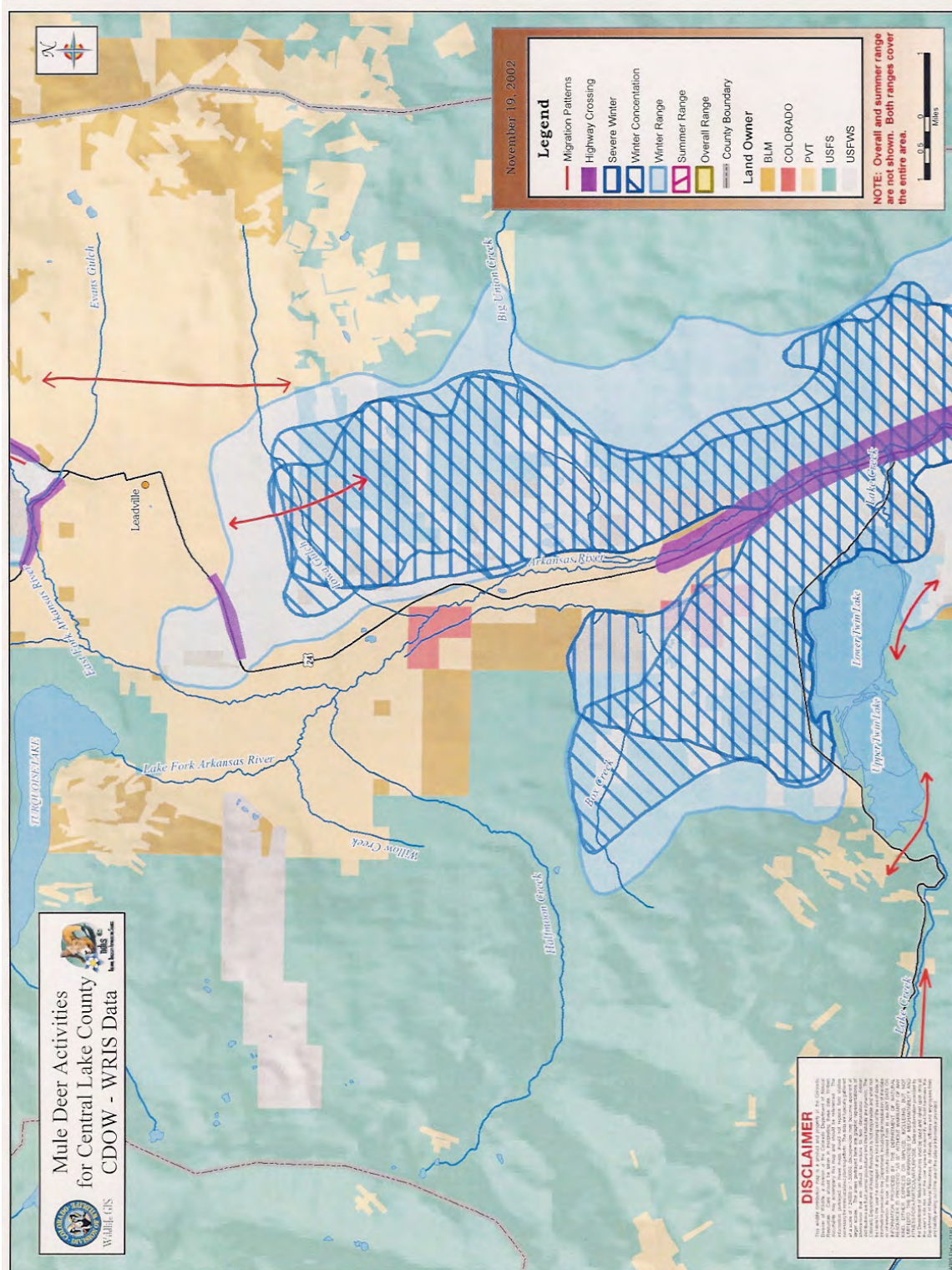
The LCOSI Project Area is also shown to be an important highway crossing area, where animals move freely back and forth between the flanks of the Sawatch and Mosquito ranges in diurnal and annual migrations. As would be expected, this also represents an area of conflict between vehicles and animals.

Mule deer are a highly sought after big game animal, and play a significant role in the Valley's roster of "watchable wildlife", adding to the economic stability of the County.



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WRIS Map 3

Rocky Mountain Bighorn Sheep (*Ovis Canadensis*)



Rocky Mountain Bighorn Sheep are found along the length and breadth of the Sawatch and Mosquito Ranges of Lake County. Most sheep range is located within close proximity to cliffs with avalanche chutes and talus slopes that can provide these sure-footed animals escape routes from predators. Prized for their meat, Bighorn were the target of early market hunters and suffered severe population declines during Leadville's mining heyday. Populations have rebounded with active management and treatment of debilitating parasites and diseases.

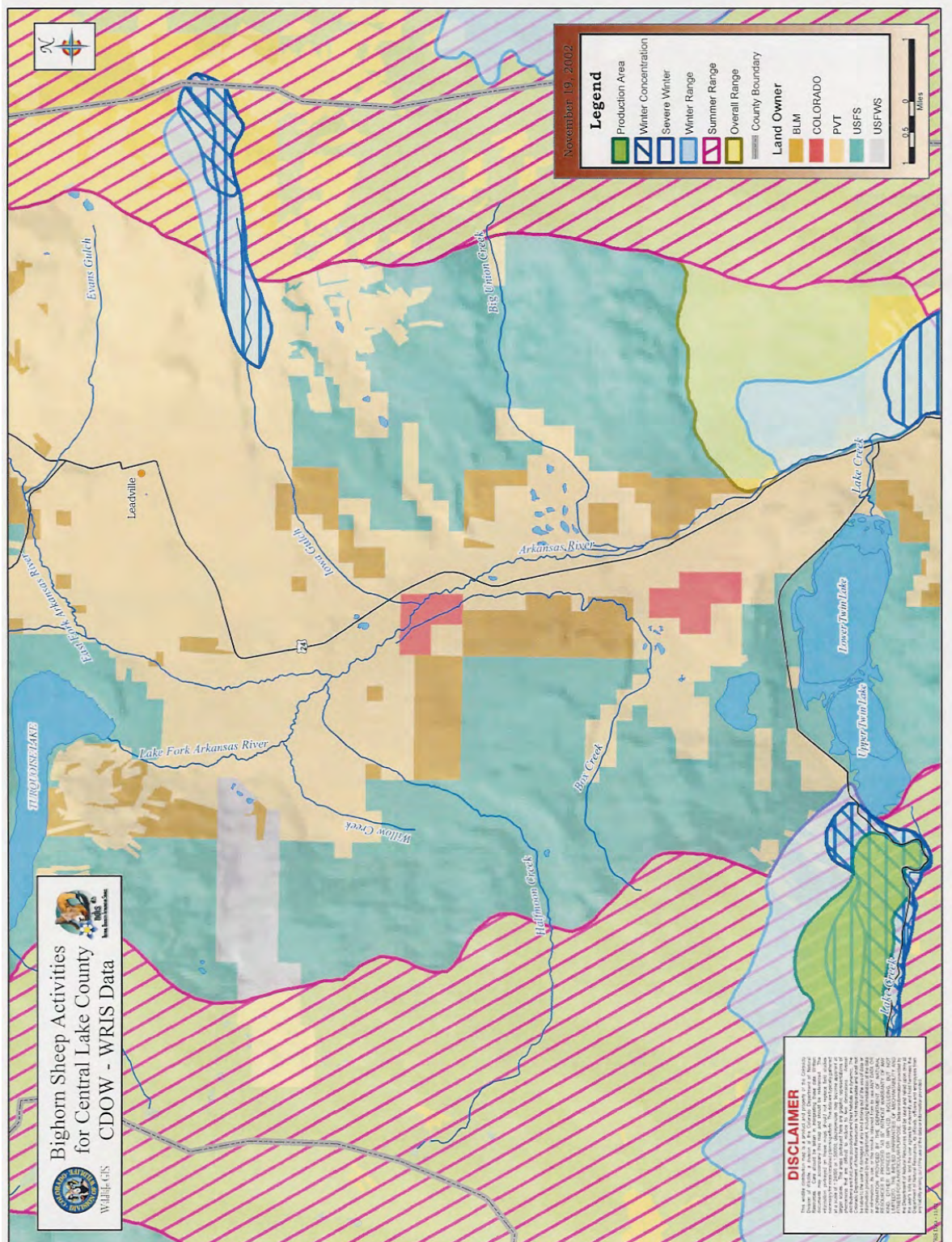
Bighorns tend to be grazing animals, feeding on cool season grasses, shrubs, and herbaceous plants in the sub-alpine and alpine life zones, coming down to the Montaine life zone primarily during the winter season to escape the cold and snow. Bighorn mortality is typically during the winter months from cold, predation or disease due to malnutrition, making winter range a critical element in the life cycle of the species.

Overall species range includes much of the high terrace area on the foothills of the Mosquito Range east of U.S. Highway 24, at the southern end of the project area. Bighorn winter range extends right down to the east side of the Arkansas River in the southeastern extents of the Project Area (WRIS Map 4), where cliff faces and rocky terrain provide protection and escape routes from predators, and a buffer from human activity.



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Black Bear (*Ursus americanus*)



Ursus americanus is a uniquely North American bear, and is generally nocturnal by nature. The Black bear is classed as a carnivore, although most of its diet consists of vegetation such as grasses, buds, leaves, nuts, roots, fruits and berries. They are also good fisherman, and feed on trout in high country streams and lakes, and are opportunistic feeders, feasting on carrion and human garbage when the opportunity arises.

It is from this habit of raiding garbage cans, dog food bowls and bird feeders that most conflicts with humans arise. As illustrated on WRIS Map5, the overall range of the Black Bear in Lake County extends from the high peaks to the valley bottoms, while areas of human conflict within the project area are centered around the Mount Massive Trout Club and the Panark subdivision.

Black bears in Colorado can range from 100 to over 400 pounds, but generally average about 150 pounds. Bear activity is typically heaviest in the spring, when animals first come out of hibernation, and in the fall when feeding activity becomes critical to build up the winter fat supplies necessary to sustain a prolonged state of hibernation.

Black bears tend to wander great distances in search of food, mates, and denning habitat. Some males have lifetime ranges of 500 to 620 square miles. With the exception of sows with cubs, black bears tend to be solitary animals. Their nocturnal habits and wariness around humans make them the “ghosts of the forest”, often seen as fleeting shadows at the edge of our range of vision, or as apparitions of our minds eye around the evening campfire.

Mountain Lion (*Felis concolor*)



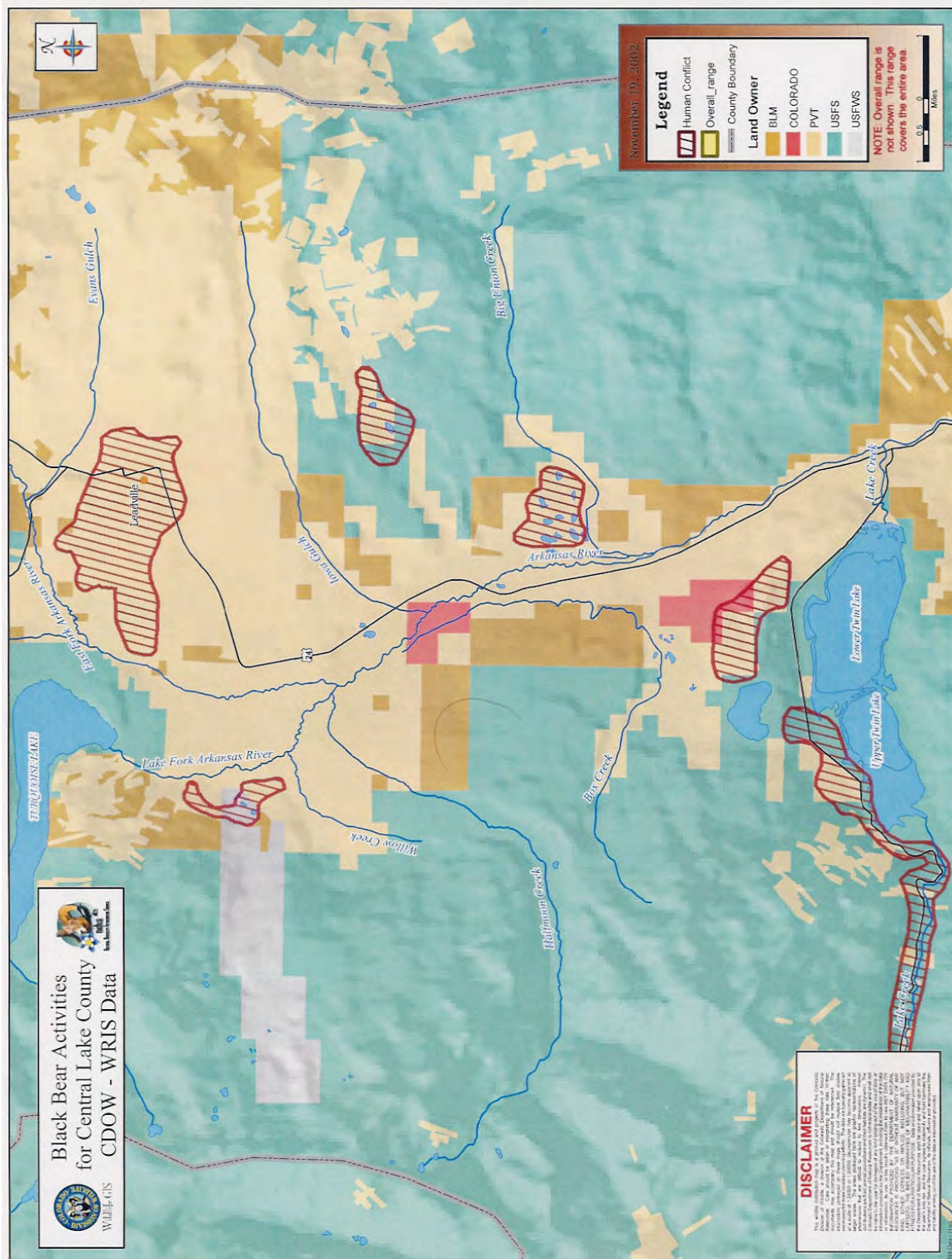
The Mountain Lion is the second largest cat in the America's, and has the largest range of any cat species in the new world. The Mountain Lion has many other names, including cougar, puma, catamount, and panther, and can grow to weights in excess of 220 pounds.

Over much of its Colorado range, the preferred food of the mountain lion consists primarily of mule deer. Other prey species can include antelope, bighorn sheep, and occasionally elk. Lions are also opportunistic feeders, and will sometimes feed on domestic livestock and pets, creating fear and aggression within the human population. All of Lake County is considered to part of the overall range of the species.

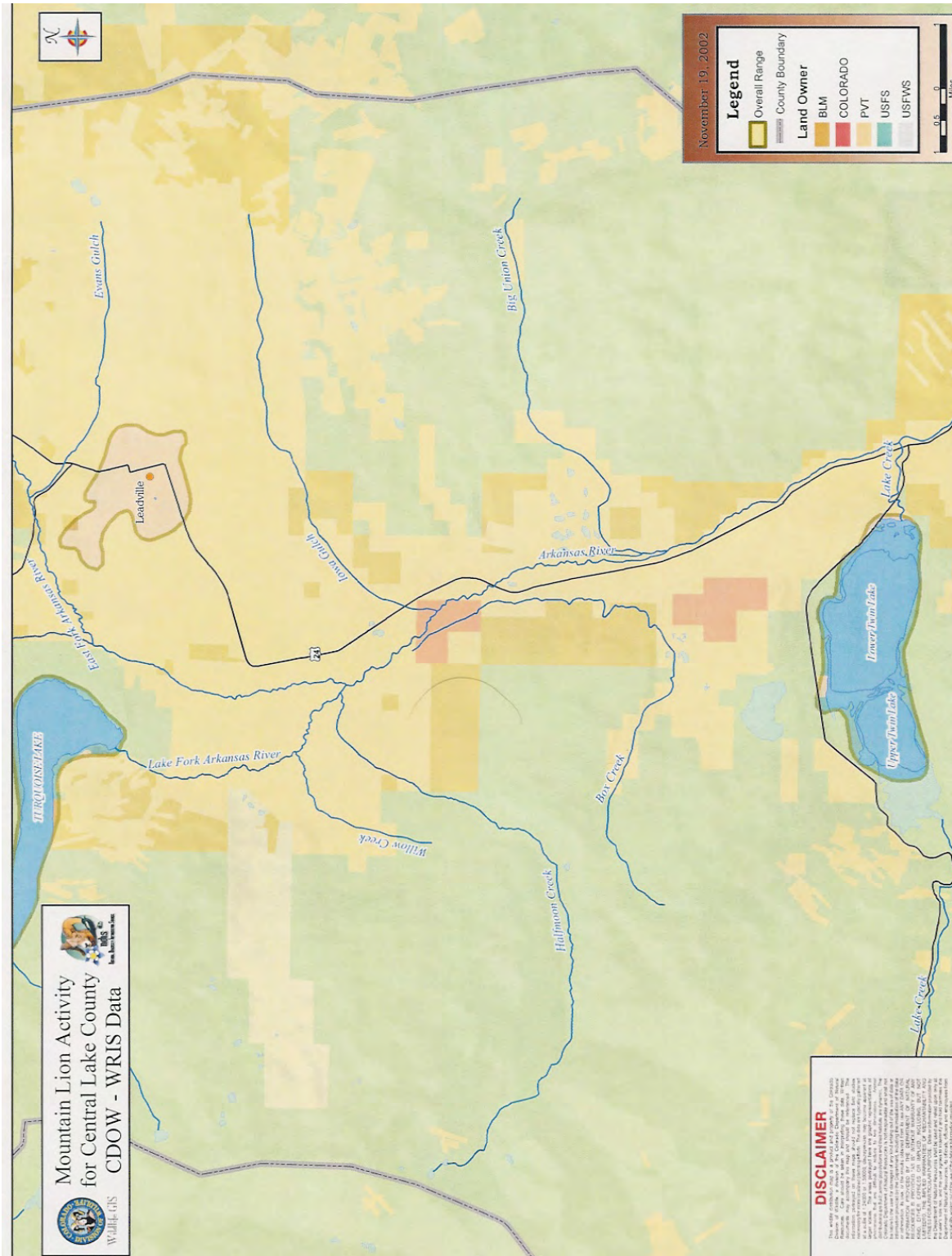


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WRIS Map 5



WRIS Map 6



Lake County Open Space Initiative Ecosystem Management Plan

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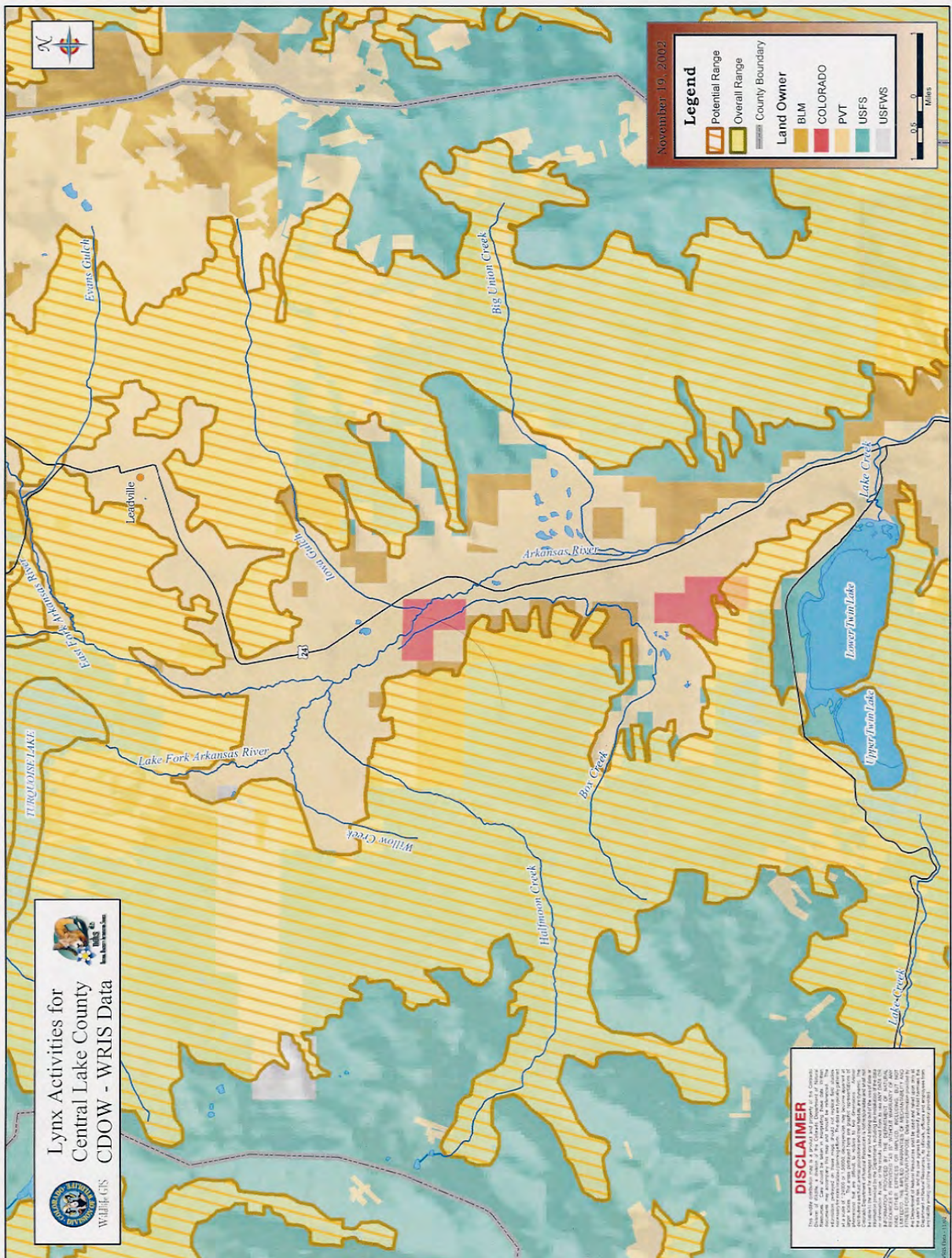
Lynx (*Lynx canadensis*)



Lynx occupy coniferous forests throughout northern North America and Eurasia. Preferred habitat is uneven aged stands of Spruce/Fir with a fairly open canopy and a well-developed understory, which favors populations of snowshoe hares, the lynx's primary prey. Studies in Colorado indicate that lynx prefer dense spruce-fir stands with rock outcrops and large boulders, which may facilitate stalking. Solitary and nocturnal, lynx home ranges have been estimated to be from 4 to 80 square miles.

Naturally occurring lynx are extremely rare in Colorado, apparently restricted to isolated areas in the central part of the state. Approximately 60 animals were released in the State in the late 1990's and early in the 21st century, in an attempt to re-establish the species. The lynx was listed as a threatened species under the Endangered Species Act in 2000.

Historically, lynx probably occurred throughout a somewhat wider area of the state, above the 9000-foot elevation. It is unlikely that they were ever common in Lake County in recent times, as Colorado represents the natural southern range limit of the species. Low densities of snowshoe hare, and the lack of favored spruce fir forest canopy present less than optimal habitat over most of the LCOSI project area. WRIS mapping (WRIS Map 7) indicates that the potential range of lynx in Lake County is concentrated in the forested terrain of the sub-alpine life zone east and west of the ranchlands along the Arkansas River. The forest canopy situated between the open ground of the river bottom and the barren ridges of the alpine life zones of the Sawatch and Mosquito ranges may represent a valuable landscape linkage through the Arkansas River Valley.



WRIS Map 7



Lake County Open Space Initiative Ecosystem Management Plan

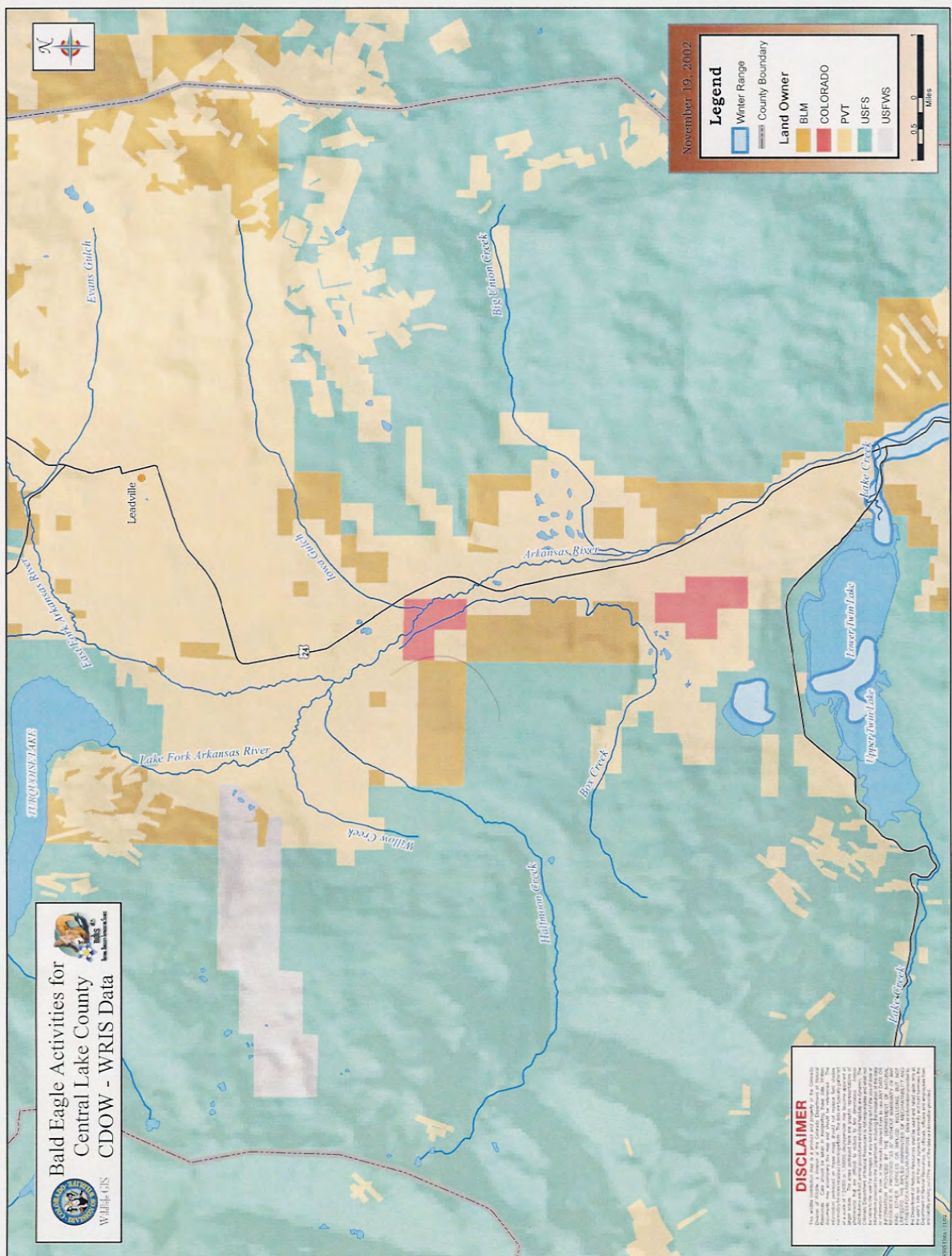
Section II Existing Condition

Bald Eagle (*Haliaeetus leucocephalus*)



In Colorado, bald eagles rarely breed, but do winter-over in significant numbers along its major river drainages. Within the LCOSI project area, eagles have been observed wintering in the vicinity of Twin Lakes and the Mount Elbert Forebay, where rapidly fluctuating surface levels and the movement of water between the lakes for power generation results in areas of open water throughout much of the winter. Similarly, the tail-waters of Lake Creek, below the Twin Lakes

Dam, and the Arkansas River south of its confluence with the Lake Creek, provide predictable open water habitats to support the hunting of fish, a primary prey of the bald eagle, throughout the long winter months (WRIS Map 8). As such, the bald eagle represents a flyover migrant or transient resident of the Upper Arkansas River Valley. The bald eagle is a USF&WS-listed species.



WRIS Map 8



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Other Species of State and Federal Interest

USF&WS listed species believed to exist in the high country of Colorado, that may represent transient, or migrant flyover species within the LCOSI project area could include:

- Mexican spotted owl
- Whooping Crane

USFS listed sensitive species possibly occurring in the Pike and San Isabel National forest, as transient or migrant flyover species, could include:

- Northern Goshawk
- Merlin
- Flammulated owl
- Boreal Owl
- Black Swift
- Three toed woodpecker
- Boreal Toad
- Olive sided flycatcher
- Purple martin
- Pygmy nuthatch
- Golden-crowned kinglet
- Fox sparrow
- Dwarf shrew
- American marten
- Wolverine

Species of Local Interest

Antelope (*Antilocapra americana*)



When the white man first stepped foot on the North American continent, there were as many as 30 million antelope grazing the prairies and parks of the American west. By the turn of the 20th century, it is estimated that only 13,000 remained, the victims of market hunting and habitat loss. Active management has brought the antelope in Colorado back to a population of 57,000.

In the years since the inception of LCOSI, a small band of antelope has moved into the valley, frequenting the open space of the Hayden and Hallenbeck Ranches. As many as 22 animals have been counted during the summer months. Populations decrease significantly over the course of the winter. It is believed that these animals are expanding their summer range from Park County to the east. Although antelope were known to have roamed the upper Arkansas River basin prior to the arrival of miners in the 1860's, they have been absent from the upper reaches of the Valley for much of the last century.

Brown Trout (*Salmo trutta*)



The Brown trout is an introduced species to the Arkansas River drainage, imported here from European stock in the later half of the 19th century to support an increased diversity of fishing opportunities. The Brown trout, along with the eastern Brookie, the Great Lakes Mackinaw, and the Rainbow trout from the Pacific Northwest, quickly out-competed the native Yellow-fin and Greenback Cutthroat trout for food sources and spawning habitat.

The result was the extinction of the Yellow-Fin Cutthroat, and the isolation of small populations of Greenback Cutthroats in out of the way drainages. Recent efforts have been made to re-introduce the Greenback to the Rock Creek drainage west of the Leadville National Fish Hatchery, and the Lake Fork drainage west of Turquoise Lake.

Brown trout have shown a remarkable tolerance to the heavy metals loading present in the Arkansas River, and the ability to perpetuate a self-sustaining population in the absence of stocking efforts. As a fall spawner, the eggs of the Brown trout are not subjected to the heavy spring runoff that significantly reduces the propagation rates of spring spawners, such as the Rainbow and Cutthroat. As such, they now form the predominant species of the Upper Arkansas River within the LCOSI Project Area, and a mainstay of the recreational fishery.

Golden Eagle (*Aquila chrysaetos*)



The Golden Eagle is found throughout much of the northern hemisphere, preferring mountainous areas where rugged terrain creates abundant thermal updrafts. Weighing about 15 pounds, the Golden Eagle can have a wingspan of 7 feet. Being a great hunter, the golden eagle seldom eats carrion. Its hunting territory extends up to 162 square miles, and it preys primarily on small mammals and birds.

Golden eagles mate at about four years of age, and often stay paired for life.

Three nesting pairs of golden eagles are known to live in the vicinity of the LCOSI Project Area, and can often be seen riding the thermals in search of squirrels, marmots, rabbits, grouse, and the odd housecat.



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

Great Horned Owl (*Bubo virginianus*)



The Great Horned Owl is a nocturnal predator weighing between two and four pounds, with a wingspan of as much as 5 feet. The name is derived from the tufts of feathers that appear to be horns, and which are sometimes referred to as “ear tufts”, even though they have nothing to do with hearing at all.

Great Horned owls are found throughout North America, from the northern tree line to Mexican border.

The species are year round residents of the Upper Arkansas River Valley, and are commonly found roosting in the rafters of barns and deserted buildings. Territories are maintained by the same pair for as many as 8 consecutive years, but these owls are solitary by nature, only staying with their mate during the nesting season. Average home ranges are typically about 1 square mile if prey is plentiful. Great horned owls may take prey 2 to 3 times heavier than themselves, including mice, voles, birds, muskrats, marmots, crows, squirrels, skunks, frogs and fish. Their extremely keen hearing is said to be so acute that they can hear a mouse chewing on a piece of grain while on the fly, while their large yellow eyes are ideally suited for nocturnal feeding.

At least two nesting pairs of Great Horned Owls are known to reside on the LCOSI Ranches, and have been observed in the same nesting and roosting locations for the past 5 consecutive years.

Beaver (*Castor Canadensis*)



Few animals have had such a profound influence on the exploration of the American West as the lowly beaver. When Europeans first began to penetrate the vast wilderness west of the Mississippi, it was to search out the prized pelt of North America's largest rodent. During the peak of the fur trade era, some 200,000 pelts a year were sold on the European market, most being used to make the then popular beaver hat. One of Lake County's most prominent citizens and

trailblazers, Kit Carson, gained much of his knowledge of the pathways and trails of early day Colorado while in search of *Castor canadensis*.

The Beaver is also a world class hydrologist and engineer. Where the water depth is not sufficient to store winter food and provide protection from predators or winter ice, the ubiquitous Beaver will construct dams and canals to meet their needs. With nothing more than mud, rocks, and sticks for building materials, Beavers are capable of impounding millions of gallons of water behind massive dams of up to 5.5 meters in height, sometimes completely altering the stream's geomorphology. The topography of many valleys have been altered by the construction of beaver dams, and the sediment that fills in behind them, forcing channels to braid and move across the breadth of the valley floor, completely altering the natural stream dynamics.

The work of beavers is a common site on the LCOSI Project Area, along the main stem of the Arkansas and its tributaries. Shore Pretty Drive is frequently flooded by beavers damming portions of Box Creek where it crosses under County Road 10, and irrigation ditches are a common target for the industrious architects of change.



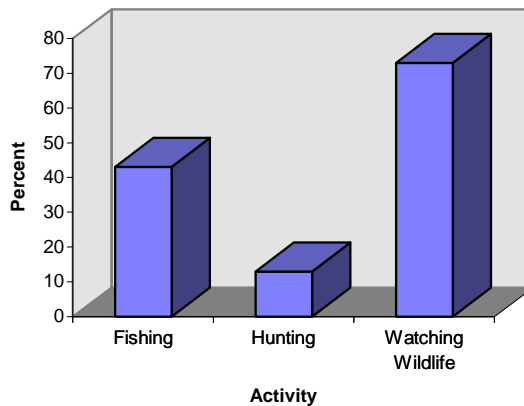
Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

Economic Impacts of Wildlife

A 2001 USF&WS survey revealed that 2.1 million Colorado residents and non-residents 16 years or older fished, hunted, or wildlife watched in Colorado. Of the total number, 915,000 fished, 281,000 hunted, and nearly 1.6 million participated in wildlife watching, including observing, feeding and photographing wildlife. (Sum exceeds total participants because many individuals engaged in more than one wildlife activity)

Graph 6 **Percent of Total Participation by Activity**

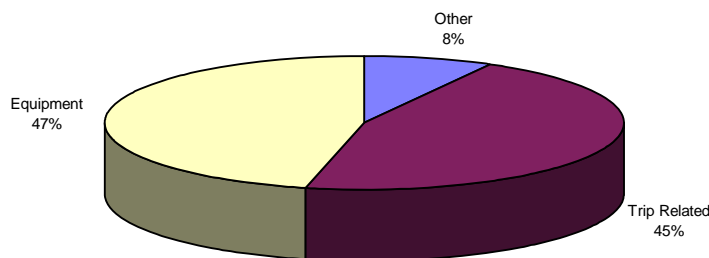


Wildlife Expenditures in Colorado

In 2001, State residents and non-residents spent \$2.0 billion on wildlife recreation in Colorado. Of that total, trip related expenditures were \$908 million and equipment purchases were \$924 million. The remaining \$168 million was spent on licenses, contributions, land ownership and leasing, and other items and services.

Chart 5

Wildlife-Associated Recreation Expenditures in Colorado



Trip related expenses are defined as including food, lodging, transportation and other activity related expenditures such as equipment rental, guide fees, and access fees. Equipment costs include equipment used directly in the pursuit of the

activity, such as guns, fishing rods and binoculars, as well as auxiliary equipment such as boats, tents, and ATV's used in support of the activity. Other expenses are defined

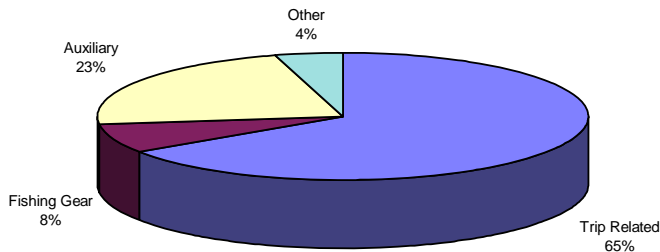
as including special equipment, magazines and books, memberships, dues contributions, etc.

Fishing Expenditures

Of the total \$646 million expended by fishermen in Colorado in 2001, approximately \$306 million were spent on trip related expenses, \$75 million on fishing equipment, \$222 million on auxiliary or special items, and \$43 million on other costs.

Chart 6

Fishing Expenditures in Colorado (\$646 million)



The number of anglers engaged in Colorado fishing during the survey period was 915,000, averaging 10 days of fishing per angler, and accounting for a total of 9,267,000 angler days. Average annual angler expenditures were \$698, with an average trip expenditure of \$33.00 per day. Eighty eight

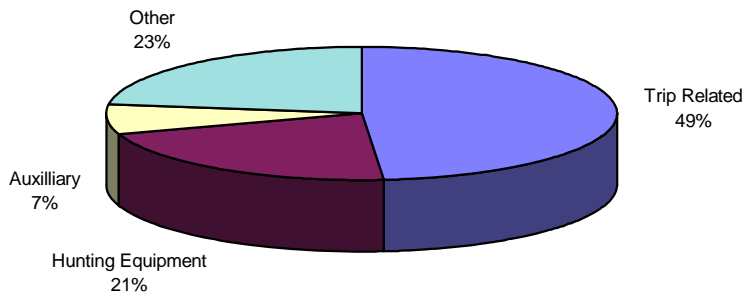
percent of those polled indicated that trout were their main quarry. Approximately 78% of fishermen come from urban settings, while the majority of fishing occurred in rural Colorado communities.

Hunting Expenditures

Of the \$383 million in hunting expenses, \$186 million were trip related, \$82 million were for hunting equipment, \$28 million were for auxiliary equipment, and \$87 million were for other costs.

Chart 7

Hunting Expenditures in Colorado (\$383 million)



The number of individuals engaged in Colorado hunting during the survey period was 281,000, averaging 9 days of in pursuit of their quarry, and accounting for a total of 2,610,000 hunter days. Average annual hunter expenditures were \$1,281, with an

average trip expenditure of \$71.00 per day. Approximately 80% of hunters come from urban settings, while the majority of hunting occurred in rural Colorado communities.

In Lake County, where over 1800 elk tags are sold to hunt in Game Management Units 48 and 49, assuming an average hunter stay of 5 days, and average trip expenditures for meals, fuel, lodging, and supplies, hunting can easily pump over a half million dollars into the local economy over the course of the fall elk season alone.



Lake County Open Space Initiative Ecosystem Management Plan

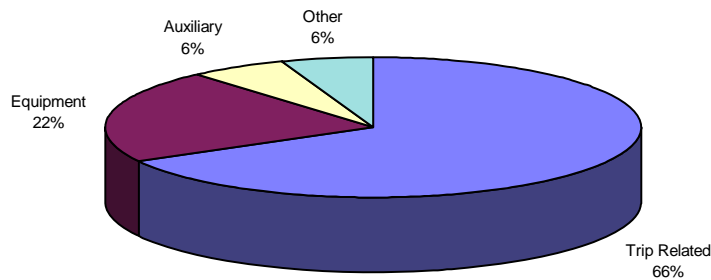
Section II Existing Condition

Wildlife Watching Expenditures

Watchable Wildlife in Colorado accounts for \$624 million in expenditures annually, of which \$417 million are for trip related expenses, \$136 million are for equipment, \$36 million are for auxiliary and special equipment, and \$35 million are for other expenditures.

Chart 8

Wildlife-Watching Expenditures in Colorado (\$624 million)



The number of individuals engaged in Colorado wildlife watching during the survey period was 1,552,000, of which 1,127,000 were from the State of Colorado, and 838,000 were visitors to the State. The average annual expenditure per participant was \$402.00. Trip related expenditures

totaled \$416,734,000.00, much of which was spent in the rural communities where wildlife is most abundant.

Lake County Open Space Initiative Ecosystem Management Plan



Section II Existing Condition

Recreation

Prior to the formation of LCOSI in 1998, the Hayden, Hallenbeck, and Arkansas River Ranches were all in private ownership, and public recreational access was limited to invited guests. The Box Creek and Crystal Lakes State Land Board parcels were under grazing and mineral leases, and like the private lands, were open to members of the public by invitation of the Lessee only. The isolated BLM parcels were in the public domain, and were commonly used for hunting, four wheel driving, mountain biking, snowmobiling and fishing. The Stork and Heron Placer was under County ownership, but because it was almost entirely encapsulated within the Hayden Ranch and State Land Board parcels, saw only limited public use. Little or no data on existing recreational usage on the individual properties had been collected or documented prior to 1998.

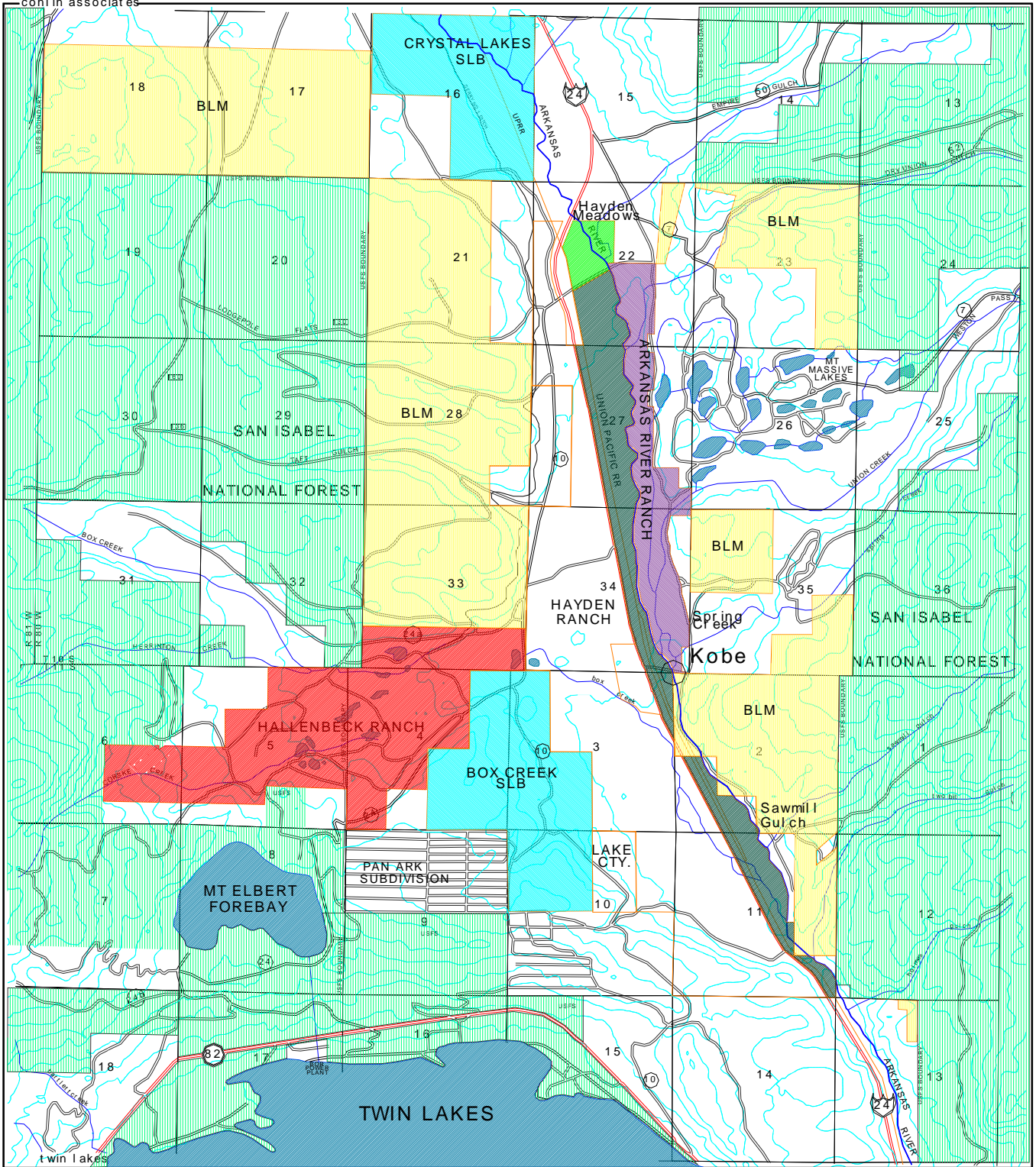
The Lake County Open Space Initiative has, within its mission statement, the goal of increasing public access to the assembled open space and surrounding public lands for the purpose of enhancing developed and dispersed outdoor recreation opportunities within the County. It is the intent of this Management Plan to balance the goal of increasing outdoor recreation with the companion goals of protecting wildlife and its habitat, preserving areas of cultural and historic significance, educating the public as to the intrinsic values inherent to the land, retaining the sense of open space, and conserving the scenic vistas and viewsheds that establish the unique character of the Upper Arkansas River Valley of Colorado.

Between January of 1998 and September of 2002, the following actions were taken to increase recreational access and opportunities, and as such, represent the existing condition.

Hayden Ranch Recreation Area

At a special meeting of LCOSI held on July 26, 1999, Lake County and the City of Aurora agreed to jointly open that portion of the Hayden Ranch between U.S. Highway 24 and the centerline of the Arkansas River to the public under a license agreement signed by both parties. The resultant Hayden Ranch Recreation Area provided public access to 5.5 miles of the west side of the Arkansas River, and approximately 400 acres of land between the highway and the river. The Bureau of Land Management also agreed to open and maintain its properties adjacent to the River, and State Parks agreed to allow public use of the Arkansas River Ranch. Lake County further agreed to pass a Resolution allowing for County enforcement of park regulations on Aurora lands.

The Park opened to the public one half hour before sunrise on July 31, 1999, and under an annual renewal of the agreement, remains open from April 1 through October 31 of each year. The seasonal closure from November through March is intended to protect elk winter range and seasonal movement corridors.



LAKE COUNTY OPEN SPACE INITIATIVE

Recreation Areas

- Hallenbeck Ranch
- Arkansas River Ranch
- Hayden Ranch
- Hayden Meadows



- State Land Board
- USFS
- BLM



resource mapping
existing condition
September 30, 2002

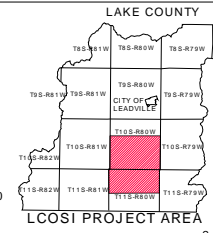
recreation

Map 9

ALL BOUNDARIES APPROXIMATE



CONTOUR INTERVAL 100'
COORDINATES - UTM-13



drawn by	date
m.conlin	11/17/98
revised	date
mike.conlin	11/26/02
mc	9/12/06

data source
micro map & cad
plss. dig. dem data
blm and ownership
status mapping
bear surveying

conlin associates
875 mt. view dr.
leadville, co. 80461
(719) 486-2772

MAP NO. 1

Lake County Open Space Initiative Ecosystem Management Plan



Section II Existing Condition

Hayden Meadows Recreation Area



Hayden Meadows Reservoir

In May of 1999, the Aurora City Council passed on first reading, the donation of 60.35 acres of the Hayden Ranch in Section 22, T 10S, R80 W, to Lake County. The land transfer was officially recorded in August of 1999.

Upon receipt of the land base, Lake County and the Open Space Initiative began the process of planning and constructing the Hayden Meadows Recreation Area. The purpose of the Hayden Meadows Recreation Area was to provide: a developed focal point and visitor services for the open space park; a northern access portal for the Arkansas Headwaters Recreation Area; a rest stop along the Top of the Rockies National Scenic and Historic Byway; a trailhead along the proposed Heart of the Rockies Heritage Trail; a water storage vessel and recreational amenity for Lake County; an EPA demonstration area to showcase and interpret their restoration efforts along the Arkansas River; public access to 5.5 miles of the Arkansas River; and an interpretive site highlighting the history, geology, geography, and restoration of the Upper Arkansas River Valley.

With technical and financial assistance from the LCOSI partners, the Great Outdoors Colorado Trust, the Transportation Equity Act for the 21st Century, CDOW's "Fishing is Fun" program, the U.S. EPA's Superfund Redevelopment Pilot Program, a Planning and Capacity Building Grant from the Colorado Department of Local Affairs, a Colorado State Trails Grant, and volunteer labor from the Buena Vista Correctional Facility and Volunteers for Outdoor Colorado, LCOSI secured over \$1.1 million for the planning, engineering, and construction of the Hayden Meadows Recreation Area.

The Hayden Meadows Recreation area includes: a stocked, 7 surface acre lake with a storage capacity of 50 acre feet of water; 2 handicap accessible fishing peninsulas; one quarter mile of river frontage; a 3900 linear foot, hard surface, ADA accessible interpretive trail with a wildlife observation platform, 5 wetland boardwalks, and 2 stream crossing bridges; a 35 acre wetland preserve; an 1800 linear foot elevated



natural surface fisherman access trail; an EPA demonstration area of river restoration techniques; interpretive signage kiosks; perimeter wire and interior buck and rail fencing to control surrounding cattle grazing and on-site vehicular access; a pedestrian bridge across the Arkansas River; and supporting infrastructure including access road, public rail crossing, parking area, restrooms, and electrical power drop.



The Sawatch Range Trail was completed with the help of over 140 Volunteers for Outdoor Colorado on National Trails Day, 2002. The Hayden Meadows Recreation Area was dedicated to the people of Lake County and the State of Colorado on June 8, 2002, to coincide with National Fishing week. The opening festivities featured a kids fishing day, Trout Unlimited and USF&WS fishing instruction for the kids, free rods and reels from the Division of Wildlife, a fundraiser for the local fire department, raptor demonstrations, balloon release, and dedication.

Arkansas River Ranch

Colorado State Parks closed escrow on the Arkansas River Ranch on March 31, 2000, which opened approximately 323 acres of land and 3.5 miles of the east side of the main stem of the Arkansas River to public use. The land extends from the old Highway bridge at Hayden Meadows, to the bridge across the Arkansas at County Road 55. An additional donation of 41 acres by Mr. Scott Sarbaugh in 2001 increased the size of the parcel to approximately 364 acres

The Arkansas River Ranch is operated jointly by Colorado State Parks and the Bureau of Land Management as part of the Arkansas Headwaters Recreation Area. Funding to acquire the Arkansas River Ranch came from Colorado State Parks, the National Fish and Wildlife Foundation, and the GOCO Wetlands Initiative program.

Hallenbeck Ranch Recreation Area

In July of 2000, an agreement between Lake County and the Colorado Division of Wildlife was signed that placed recreational management of the Hallenbeck Ranch under CDOW jurisdiction, allowing the property to be opened to the public on August 1, 2000. The 1200 acre ranch includes segments of Box Creek, Harrington Creek, and Corske Creek, as well as over a dozen small stock watering and dredge ponds with significant resident brook trout populations, and hundreds of acres of prime elk,

Lake County Open Space Initiative Ecosystem Management Plan



Section II Existing Condition

waterfowl, and small game hunting habitat. The property is closed to public access between December and April of each year to protect critical winter range.

Crystal Lakes

The enrollment of the Crystal Lakes parcel into the State Land Board's Stewardship Trust program in 1998, and the signing of the Recreational Access Agreement between CDOW and the Land Board secured $\frac{3}{4}$ mile of Arkansas River and 480 acres of prime waterfowl and big game habitat, allowing year round public access to fishing, hunting, and watchable wildlife opportunities on the tract.

Box Creek

LCOSI's enrollment of the Box Creek parcel into the State Land Board's Stewardship Trust program in November of 2000, and the signing of the Recreational Access Agreement between CDOW and the Land Board, secured 629 acres of critical winter range, excellent big game hunting, and spectacular watchable wildlife opportunities on the tract. Public access to the parcel for hunting and wildlife-based recreation is open between September 31 and February 28 of each year.

Kobe

BLM lands east of the Arkansas River, near the historic rail siding of Kobe on CR 55, have been improved to provide public parking, restrooms, and informational signage to direct visitors to the land and waters where public access is allowed. Mapping also provides a delineation of private lands encapsulated within the Open Space project area in order to discourage trespassing onto neighboring properties. The Kobe site is open to the public on a year round basis, and also provides direct access to the adjacent land and waters of Colorado State Park's Arkansas River Ranch.

County Road 55 at the Kobe site is one of only two legal public crossings over the Union Pacific Railroad's Tennessee Pass Line, separating U.S. Highway 24 from the Arkansas River, and is the only vehicular crossing to the east side of the river through the LCOSI project area. As such, it provides one of the few legal means of accessing hunting and outdoor recreational opportunities on the east side of the Arkansas River.

Sawmill Gulch

The Sawmill Gulch parking area has been planned to provide limited fisherman parking and access to BLM lands on the east side of the Arkansas River, south of County Road 55. The Sawmill Gulch site is adjacent to the Plamor 2a Subdivision, the original plat of which secured a public fisherman access easement along the east side of the river between a proposed roadway and the centerline of the river. The validity of the original plat is currently in question, and the proposed road was never constructed, leaving no observable western boundary to the easement. Until the easement issue on adjacent private lands is resolved, the Sawmill Gulch access point will remain undeveloped, in an effort to discourage trespass onto neighboring public lands.

Spring Creek

The Spring Creek parking area is located on the east side of the Arkansas River, approximately ¼ mile north of Kobe. The site provides limited parking for fishermen and outdoor recreationists utilizing the Arkansas River Ranch and BLM lands east of the river.

Blue Ribbon Anglers Access Highway

In a measure initiated by LCOSI coordinator Mike Conlin and sports journalist Bob Good, and sponsored by Representative Carl Miller and Senator Ken Chlouber, Joint Senate / House Resolution 00-14, was passed on May 4, 2000 which designates US 24 as Blue Ribbon Anglers Access Highway. The designation was intended to draw national attention to the high quality fishing opportunities accessible from U.S. Highway 24 between Kenosha Pass in Park County, and Dowd Junction in Eagle County. The highway provides access to the broad range of angling opportunities on the rivers, streams and lakes of the South Platte, Arkansas and Eagle River drainages. It is the only Colorado highway to achieve that prestigious designation, and serves to increase awareness of the opportunities available along the Arkansas River corridor as it passes through the Lake County Open Space project area.

Special Fishing Regulations

In May of 1999, the Colorado Wildlife Commission met to set emergency fishing regulations for the 5.5 mile reach of the main stem of the Arkansas River as it passed through the LCOSI properties. The emergency action was deemed necessary since the opening of the river to the public for the first time came out of sequence with the regular cycle for changing and publicizing regulations, and no regulations to protect the fishery were currently in place.

Public controversy had arisen between the "limited bag" and "catch and release" elements of the fishing public as to the appropriate level of harvest. LCOSI favored strict catch and release, flies and lures only fishing based on the limited biological data collection by CDOW, arguing that current information was insufficient to determine whether the river could incur even limited harvest and still maintain a self-sustaining fishery. Other elements of the public believed that they should have the right to use bait and to harvest as many fish as the State allowed for rivers of the Eastern Slope. Local consensus at the CDOW Angler Roundtable discussions had supported catch and release, flies and lures only, at least until further data could be collected to support or refute the viability of allowing limited harvest.

The emergency regulations passed by the Wildlife Commission allowed the taking of fish by flies and lures only, and allowed a bag limit of one fish under 12 inches of length on the main stem of the Arkansas River. Current bag and possession limits for rivers of the eastern slope would still apply to Box and Union Creeks (8 fish in possession). The regulations went into effect on July 1, 1999, and would remain in force until January 1, 2001 when the Commission met to set regulations for the following cycle. No change in the regulations was made at that time.

CDOW purchased, and with the help of LCOSI partners, installed fishing regulation signage along the 5.5 mile reach of the Arkansas River in May and June of 1999.

Lake County Open Space Initiative Ecosystem Management Plan



Section II Existing Condition

Present Recreational Use

Recreational use on the LCOSI properties has increased observably during the period starting in January 1998 and extending through September 31, 2002, as previously private or restricted lands were secured and opened to the public. It is known that limited recreational activity occurred on both public and private lands prior to LCOSI, but there was little incentive on the part of individual land stewards to quantify that level of activity in order to establish a baseline for comparison or monitoring.

With the consolidation of the properties under the stewardship of LCOSI and the increase of public access since 1998, the observation of recreational use within the project area has received more attention, but still remains largely empirical and un-quantified. Limited creel census work, angler assessments, and hunter counts conducted by the Division of Wildlife, random parking lot counts, commercial guide permits, various visitor contacts by LCOSI, State Parks and the BLM, and non-systematic observations by LCOSI partners over the past three years represent the "best available information" for extrapolating existing usage. Given the limitations on systematic data collection to date, the following uses and estimated levels of observed activity are provided.

Types of Use

Observed outdoor recreation use includes both private and guided walk & wade river fishing, shoreline and small craft pond fishing, hiking/walking, wildlife observation, sightseeing, mountain biking, private river boating, picnicking, camping, birding, hunting of waterfowl, big and small game hunting, artifact hunting, horseback riding, photography, snow shoeing, cross country skiing, four wheeling, heritage viewing, and snowmobiling.

Most recreational activity is observed during the warmer months between April 1 and September 30, with highest use in June, July, and August when children are out of school. The notable exceptions are hunting, snowmobiling, and cross country skiing, which are heaviest between September and March. Weekends and holidays also tend to see higher levels of use than weekdays.

Levels of Use

Estimated annual levels of use are delineated on Table I. As demonstrated, the highest passive recreational uses are sightseeing and watching wildlife from the Top of the Rockies National Scenic Byway and the County and Forest road systems that criss-cross the project area. Active recreation is dominated by hunting and fishing, with most hunting occurring on the west side of the Arkansas River on the BLM and State Land Board parcels and on the Hallenbeck Ranch. The majority of fishing taking place on or adjacent to the Hayden Meadows Recreation Area. In 2002, following the opening and stocking of the Hayden Meadows Reservoir, it is estimated that as many as 6,000 new fishing days were created at the Hayden Meadows Recreation Area.

Off-road motorized use on the LCOSI properties, primarily consisting of snowmobiling and four wheel driving, is self limiting due to competition from surrounding areas with better snow conditions and more challenging terrain. Most vehicular travel off of the

main road corridors is associated with other activities, such as wood gathering or hunting.

Boating activity is also limited due to surrounding competition on the lakes and rivers of the region. Virtually all river boating within the LCOSI project area is done on the stretch of the Arkansas extending downstream from the CR 55 bridge at Kobe. The stretch of water passing through LCOSI lacks the gradient, physical constraints, and volume of the world-class white water boating opportunities starting in the community of Granite, a short distance downstream,. The LCOSI stretch is principally used as a training ground for beginning boaters, providing the kind of safe, convenient and easily accessed "milk run" necessary for the perpetuation of the sport.

Still water boating is limited to the Hayden Meadows Recreation Area, which allows small-motorized craft, canoes, kayaks and float tubing. Limited float tubing has also been observed on the larger ponds of the Hallenbeck Ranch.

Human powered recreation, including walking, hiking, mountain biking, and cross country skiing take place across the length and breadth of the project area, with the highest concentrations witnessed on the properties bordering the Pike and San Isabel National Forest on the Sawatch Range side of the Arkansas River Valley. Here, proximity to the National Forest and established trail systems, favorable snow conditions, aesthetically pleasing forest cover, lack of development, solitude, and topographic relief are most conducive to their pursuits.

Table 2-A Existing Recreational Use

	Fishing – Pond	Fishing – River	Hunting	Watching Wildlife	Sightseeing
Hayden Meadows	5500	750	20	1000	1000
Hayden Ranch	0	1000	20	1000	1000
Ark River Ranch	0	750	20	100	100
Hallenbeck Ranch	400	0	250	1000	500
BLM East	0	200	50	100	100
BLM West	0	0	550	500	100
Crystal Lakes SLB	0	1000	120	100	100
Box Creek SLB	0	0	225	500	50
Stork & Heron	0	0	50	100	50

Table 2-B Existing Recreational Use

	Snow-mobiling	Four-Wheeling	Mountain Biking	X-C Skiing	Hiking
Hayden Meadows	0	0	5	0	1000
Hayden Ranch	0	0	0	0	0
Ark River Ranch	0	0	0	0	0
Hallenbeck Ranch	0	0	0	0	0
BLM East	50	0	0	0	0
BLM West	100	50	400	100	100
Crystal Lakes SLB	0	0	0	0	0
Box Creek SLB	0	0	0	0	0
Stork & Heron	0	0	0	0	0

Lake County Open Space Initiative Ecosystem Management Plan



Section II Existing Condition

Table 2-C Existing Recreational Use

	River Boating	Pond Boating	Horseback Riding	Camping	Cultural Interp
Hayden Meadows	5	20	5	0	100
Hayden Ranch	20	0	0	0	100
Ark River Ranch	20	0	0	0	0
Hallenbeck Ranch	0	0	50	0	50
BLM East	0	0	0	0	0
BLM West	0	0	50	100	0
Crystal Lakes SLB	0	0	0	0	0
Box Creek SLB	0	0	0	0	0
Stork & Heron	0	0	0	0	0

Recreational horseback riding appears to be limited due to changing local trends, lack of proximal population, and the perception of private land ownership that still shrouds the ranches. Most horseback riding is done in conjunction with ranching or hunting activities on the west side of the Arkansas River.

Camping within the LCOSI project area is limited by the lack of developed camping facilities. Most dispersed camping is done on the public lands west of the Arkansas River, and much of that is associated with activities such as hunting.

Heritage tourism is centered around the Hayden and Hallenbeck Ranches, where the historic ranch buildings and mine workings are highly visible from the Top of the Rockies National Scenic and Historic Byway, or from Shore Pretty Drive (CR 24.)

Present Operations and Maintenance

Maintenance and operations of the individual tracts of land that make up the LCOSI are currently handled through a variety of management and license agreements, or are managed by the jurisdictional owner of the property. Principal management agreements are described as follows:

It is anticipated that the operations and maintenance of the Hayden Meadows Recreation Area will be covered under a Management Agreement between Lake County and Colorado State Parks. Under this agreement Lake County will retain ownership of the site, and provide a cash contribution to Colorado State Parks to provide management services. Services will include an enforcement presence, daily maintenance of restroom facilities, and day-to-day operations of the facility.

The Hallenbeck Ranch Recreation Area is currently owned by Lake County, and is operated and maintained by the Colorado Division of Wildlife under a Management Agreement. CDOW maintains access points, signage, and parking areas, as well as providing an enforcement presence and a fish stocking program.

The Kobe site is managed by the BLM as part of the Arkansas Headwaters Recreation Area. They are responsible for maintenance and operations, restrooms, and signage on the site.

The Hayden Ranch Recreation Area is jointly managed by Lake County and the City of Aurora under an annual License Agreement. Cleanup of the river corridor of the Hayden Ranch has traditionally been carried out by volunteers during the annual AHRA River Green-up / Clean-up.



Lake County Open Space Initiative Ecosystem Management Plan

Section 2 Existing Condition

Soils and Vegetation

Soils of the Lake County Open Space Initiative range from the deep, well-drained mineral soils of the uplands, to the saturated, highly organic soils of the wetland and riparian zones surrounding the river, streams and surface water bodies of the valley bottom. With each variation in soil composition, a different set of constraints and strengths exists to either support or restrict the use and productivity of the land to support the desired end use.

Vegetation patterns closely follow soil and hydrologic conditions, and are therefore considered as a sub-set of the soils map within the context of this report (Resource Map 10).

Project Area soils and vegetative information were derived from the *Soil Survey of Chaffee-Lake Area, Colorado*, published in 1975 by the USDA Soil Conservation Service, in cooperation with the Colorado Agricultural Experiment Station. Additional information on engineering and environmental constraints associated with each identified soil type is provided within the text and mapping contained within that document. Due to the coarse scale of project mapping, the reader is directed to the USDA report for additional detail.

Soil Associations within the project area fall into three major associations depending on their location on the mountains, high terraces, or on the ancestral flood plains and bottomlands of the Arkansas River and its tributaries.

Mountain soils and vegetation

Soils of the mountains exist on sloping and very steep fans, terraces, ridges and side slopes of the mountains, and include rising areas of rock outcrops. They lie mainly at the higher elevations of Lake County. Within the LCOSI project area, vegetation consists primarily of lodgepole pine forests and the associated understory of grasses and forbs. Little agricultural use is made of the vegetation produced on these soils, but they do create a critical ecotone or "edge" effect for wildlife, due to the proximity of forage areas to the thermal and hiding cover of the forest edge.

Mountain soils of the LCOSI fall principally into the Troutville-Leadville association, described as gently sloping to steep, deep, gravelly soils at elevations of 8200 to 10,000 feet. These soils formed in glacial outwash and glacial till. The vegetation is predominantly lodgepole pine, interspersed with Engleman spruce and subalpine fir, with minimal cover of native grasses. The average annual precipitation is 16 to 25 inches, of which more than half falls as snow. The average annual soil temperature is 38 degrees F., while the average soil temperature in summer is 46 degrees F. The frost-free season ranges from 10 to 75 days, depending upon elevation and solar aspect.

About 70% of this association is Troutville soils (**TrE**), and 10% is Leadville soils (**LeE**). Granile (**GrE**), Pierian (**PIF**), Tomichi (**ToE**), and stecum soils and rock outcrop make up the remaining 20%.



Lake County Open Space Initiative Ecosystem Management Plan

Section 2 Existing Condition

Troutville series soils (**TrE**) are deep, well drained and slightly acid to neutral soils. They have a surface layer and subsoil of sandy loam that is modified by gravel, cobbles and stones. Their substratum is stones, gravel, cobble and sand. Permeability in these soils is moderately rapid, and the available water capacity is low. Effective rooting depth is 60 inches or more. Surface runoff is medium to rapid and the hazard of erosion is moderate.

Leadville Series soils (**LeE**) are found on mountain slopes of 3 to 35%, high terraces, and alluvial fans. They are deep, well drained, and medium acid to neutral. They have a surface layer of sandy loam and a subsoil of clay loam modified by cobbles and stones. Permeability in these soils is moderately slow, and available water capacity is moderate. Effective rooting depth is 60 inches or more. Permeability is moderately slow, and available water capacity is moderate. Surface runoff is medium to rapid, and the hazard of erosion is moderate.

Troutville and Leadville series soils are found mainly under a canopy of lodgepole forest. Lodgepole pine is an aggressive pioneer or successional species wherever fire, insect infestations, or other natural or manmade mortality causes have destroyed large areas of existing climax forests. Much of the forested area within the Project Area forest was extensively harvested in the late 19th century for charcoal production, fuel wood, and building materials.

Owing to the common point of germination following deforestation, much of the forest is even aged and single storied with a high density of trees per acre. Canopy can exceed 80%. In areas of high density, trees tend to be pole-sized, thin and spindly, with minimal foliage on the lower 85% of the trees. The area referred to as Lodgepole Flats along the western boundary of the Project Area has been the site of extensive vegetative manipulation by the USFS to decrease stand density and increase vegetative diversity.

Soils associated with the lodgepole forest tend to be nutrient poor. A dense needle layer commonly covers the soil surface producing a low pH that leaches nutrients below root zones, severely limiting understory growth. Common plants associated with lodgepole forests include: common juniper (*Juniperus communis*), wild rose (*Rosa woodsii*), buffaloberry (*Sheperdia canadensis*), kinnikinnik (*Arctostaphylos uva-ursi*), mountain-lover (*Paxistima myrsinties*), grouse wortleberry (*Vaccinium myrtillis*), Scoulers willow (*Salix scouleriana*), and heartleaf arnica (*Arnica cordifolia*)

Most of the forest cover associated with the Leadville / Troutville series soils lacks commercial value except as firewood. The soils are used mainly for very limited livestock grazing, food and shelter for wildlife, recreation and water supply.

Other mountain soils within the Project Area include rock land (**RcF**) and rock outcrops (**Ro**), consisting mainly of exposed granite and shallow soils on steep and very steep areas that have many sheer bluffs, crags and talus slopes. Vegetation is sparse, and is typified by grasses such as blue gramma (*Stipa*), mountain muhly (*Muhlenbergia*), and Indian ricegrass. Most of this soil type is used only for water supply, wildlife habitat, and recreation.

Soils and vegetation of the High Terrace

Soils of the High Terrace range from nearly level to steep terraces perched above the floodplain of the Arkansas River, and are commonly dissected by drainage ways. These soils occur primarily on the west side of the Arkansas River as it passes through the LCOSI properties, with small narrow terraces found along the east bank of the river as well. Vegetation on the high terraces is chiefly grass, and many areas, such as the Hayden Ranch, have been irrigated for agricultural production. In proximity to the thermal and hiding cover provided by the forests of the Mountain soils association, these soils support much of the forage base that supports winter grazing for the Valley's ungulate populations.

Most soils of the High Terrace belong to the Pierian-Poncha association. These soils were formed in glacial outwash material and alluvium. Vegetation is dominated by cool-season grasses, such as Arizona fescue (*Festuca arizonica*), needlegrass, and mountain muhly (*Muhlenberiga*). Elevations range from 8,200 to 9,600 feet. The average annual precipitation is 16 to 20 inches, much of that in the form of snow. The average annual soil temperature is 38 degrees F., and that average summer soil temperature is 53 degrees F., supporting a growing season of 25 to 60 days.

The vast majority (approximately 70%) of high terrace soils in Lake County are Pierian (**PgD** and **PIF**), with about 20% Poncha soils (**PoC**) making up much of the balance. The remainder is made up of Leadville (**LeE**) and Troutville (**TrE**) soils, Ouray sandy loam (**OrC**), Rock Outcrop (**Ro**), Badland (**Ba**), Rock land (**RcF** and **RgE**), Tomiche sandy loam (**ToE**), and Rough broken land (**Rv**).

Pierian soils are broken down into two categories, Pierian gravelly sandy loam (**PgD**) on slopes of 3 to 9%, and Pierian soils (**PIF**) on 20 to 45% slopes. Both are deep and well drained. They have a surface layer of slightly acid sandy loam that overlays stones, gravel, and cobble at a depth ranging from 8 to 16 inches. Both soils exhibit very rapid permeability, and a low available water capacity. Effective rooting depth is 60 inches or more.

Pierian gravelly sandy loam (**PgD**) is found on high terraces, and areas are typically oval in shape. Surface runoff is slow, and the hazard of erosion is slight.

Pierian soils (**PIF**) are located on slopes of 20 to 45% on glacial moraines in the southern part of Lake County. The areas are long and narrow and generally are more than 160 acres in size. These soils have a larger percentage of cobbles, boulders and stones on the surface than Pierian sandy gravelly loam (**PgD**), and their surface layer is stony sandy loam in places. Surface runoff is medium, and the hazard of erosion is also moderate.

Poncha (**PoC**) soils are nearly level to gently sloping on smooth terraces and are deep and well drained. They have a surface layer of neutral gravelly sandy loam that overlies sand, gravel, and cobbles ranging from 15 to 24". Permeability of these soils is moderately rapid, and available water capacity is low. Effective rooting depth is 60 inches or more. Surface runoff is slow, and the hazard of erosion is slight.

Vegetation on the soils of the high terrace consist primarily of cool season grasses, such as Arizona fescue (*Festuca arizonica*), squirreltail (*Elymus elymoides*), western wheatgrass (*Agropyrum smithii*), blue grama (*Stipa*), spike trisetum (*Trisetum spicatum*), and muhly (*Muhlenberiga*), as well as herbaceous plants such as fringed sage (*Artemisia frigida*), fire weed (*Chamerion angustifolium*), rabbitbrush (*Chrysanthamnus*) and larger sagebrush (*Artemisia*). Lands of the upper terrace are utilized primarily for livestock and wildlife grazing.

Additional soils of the high terrace include rough broken ground (**Rv**), and badland (**Ba**), located on moderately steep, to steep, strongly dissected side-slopes of terraces, and on long fingerlike protrusions extending into the valley floor. Rough broken land is made up of highly stratified sediments ranging from inches to many feet in depth, covered by gravel and cobble,



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and is primarily used for livestock grazing and wildlife habitat. Badlands consist of highly eroded, stratified sand, silt and clay sediments. Plant cover is thin, and is composed of cold season grasses, sage, rabbitbrush, and pinon pine. Badland is of little use because of the sparse vegetation.

Soils and vegetation of the terraces and bottomlands

These soils are nearly level and gently sloping terraces, floodplains, and swales adjacent to the Arkansas River and its tributaries. The soils are poorly drained. Vegetation consists mainly of sedges, willows, and grasses. Some of these soils have been developed as hay fields.

Within the LCOSI project area, most of these soils fall under the Newfork-Marsh-Rosane association. They are described as nearly level and gently sloping, deep, poorly drained marshes and soils subject to periodic flooding. These soils are formed in mixed alluvium, and vegetated with sedges, rushes, willows, and water resistant grasses. Elevations range from 8,200 to 10,500 feet. Average annual precipitation is 12 to 25 inches, and the average annual soil temperature is 36 degrees F. Average summer soil temperature is 46 degrees F., supporting a growing season of 15 to 80 days.

This association is dominated by Newfork (40%), Marsh (30%) and Rosane (25%) soils, with the balance being made up of Wet alluvial land (**Wa**), placer diggings (**Pn**) and peat (**Pe**).

Newfork soils (**NfB**) exist on nearly flat to gently sloping low terraces ranging from 1 to 3%. They have a shallow surface layer of gravelly sandy loam that is over gravel, sand, and cobbles to a depth of 10 to 18 inches. Plant cover is sedges, rushes, and water tolerant grasses. Surface runoff is slow, and the hazard of erosion is slight. Permeability in these soils is rapid, and the available water capacity is low. Effective rooting depth is 60 inches or more, and the water table is at a depth of 0 to 1 foot.

Marsh (**Mh**) is in the lowest positions and consists of extremely wet peat underlain by stratified soil materials. It is subject to frequent overflow, and the water table is at or near the surface throughout the year. Vegetation consists mainly of willows, sedges, rushes and cattails. This soil type provides little agricultural value, but wildlife make extensive use of the associated habitat for winter-feed and protection.

Rosane soils (**RtC**) are nearly level to gently sloping bottom lands (1 to 5%) and upland swales. They are usually long and narrow because they follow old river or stream channels. They have a 4 to 10 inch organic mat over a surface layer of loam or sandy loam that is 20 to 40 inches thick. They soils are subject to frequent overflow.

Newfork soils are used mainly for irrigated meadows that are cut for hay. Marsh has little agricultural value for grazing, and is used chiefly for wildlife habitat. Rosane soils are used mainly for flood-irrigated pasture that is used for cattle grazing.

Plants common to the riparian wetlands, meadows, and marshes of the bottomlands include: bluegrass (*Poa nemoralis*), white clover (*Trifolium repens*), plantain (*Plantago elongata*), foxtail barley (*Hordeum jubatum*), American sloughgrass (*Beckmannia syzachne*), elephant head (*podicularis groenlandica*), meadow foxtail (*Alopecurus pertensis*), dandelion (*Taraxacum*), horse tail (*Equisetum arvenus*), scouring rush horse tail (*Equisetum hyemale*), wheat sedge (*Carex atherodes*), common yarrow (*Archillea millefolium*), tufted hair grass (*Deschampsia caespitosa*), American vetch (*Vicia americana*), Greene's rabbitbrush (*Chrysanthamus greenei*), ring muhley, shrubby potentilla (*Dasiphora floribunda*), water sedge (*Carex aquatilis*) golden current (*Ribes aureum Pursh*), (*Muhlenberiga*), fringed willowherb (*Epilobium ciliatum*), and Rocky Mountain iris (*Iris missouriensis*).

Soils making up the balance of the terrace and bottomland environment include:

Peat soils (**Pe**) are limited within the Project Area, with the largest mapped concentration being on the east side of the Arkansas River at the northern end of the Hayden Ranch. They are generally found along the first bottoms but are sometimes found in swales on terraces. Peat soils are very poorly drained and have a high water table at the surface throughout most of the year. Peat consists mainly of fibrous matter derived from rushes, sedges, grasses, and other plants that have decayed in place. The cold climate prevents their total decay, resulting in a thickness of highly organic material that ranges from 1 foot to more than 5 feet in depth. The underlying material generally is stratified, grayish green sand and gravel. Plants specific to peat soils can include such species as Porters feathergrass and vivid sedge (*Carex vivida*).

Surface runoff is slow, and the hazard of erosion is slight. Most of the acreage within the project Area is used for livestock grazing and wildlife habitat.

Wet Alluvial land (**Wa**) is located within the first bottoms adjacent to the Arkansas River and its main tributaries. It consists of gravel and sand bars and of wet, stratified, medium textured soil materials. These areas are subject to overflow from the Arkansas and its tributaries, and have a fluctuating water table between the surface and two feet.

Within the project area, wet alluvial soils are associated with the main stem of the Arkansas River. Willows (*Salix*) and water-resistant grasses such as wheat sedge, water sedge (*Carex*) grow in thick stands. There is an absence of characteristic cottonwood trees because of the cold climate. Wet alluvial land is not suitable as range, but can be grazed to a limited extent. Its main utility is for wildlife winter-feed and protection.

Placer diggings and tailings (**Pn**) are found throughout Lake County, but the largest concentration within the Project Area is located on the Hallenbeck Ranch, west of C.R. 10. The placer diggings are associated with both the operations of the Derry Dredge, and dry placer operations scattered over the ranch and portions of the Box Creek State Land Board Parcel.

The original soils were disturbed, overturned, and redeposited while miners were washing alluvial and glacial deposits for the recovery of gold. Field operations left a very uneven, rough, scarred surface. Plant cover is sparse, and the areas are typically classified as wasteland.



Lake County Open Space Initiative Ecosystem Management Plan

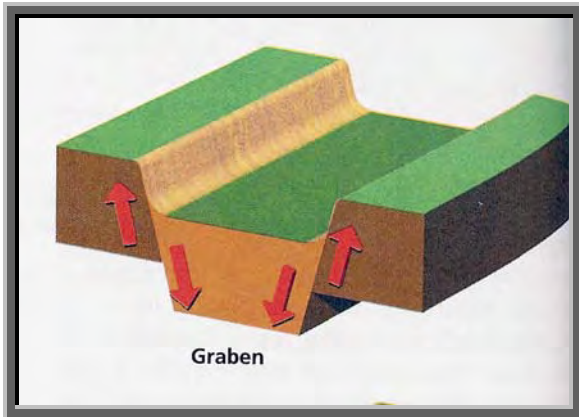
Section II Existing Condition

Geology

The LCOSI Project Area is flanked on the east and west sides by the Mosquito and Sawatch Ranges of the Rocky Mountain Cordillera. The Sawatch and Mosquito Ranges are characterized as a series of linear ridges trending north and northwest, and consisting of segments deformed during the Laramide orogeny some 60 to 70 million years ago. These Ranges have a Precambrian crystalline rock core flanked by layered sedimentary rocks, Paleozoic through Mesozoic in age (Fig1.) Most of the sedimentary rock within the LCOSI Project has long since eroded, and either been converted to soil or carried away by the actions of wind, water and ice.

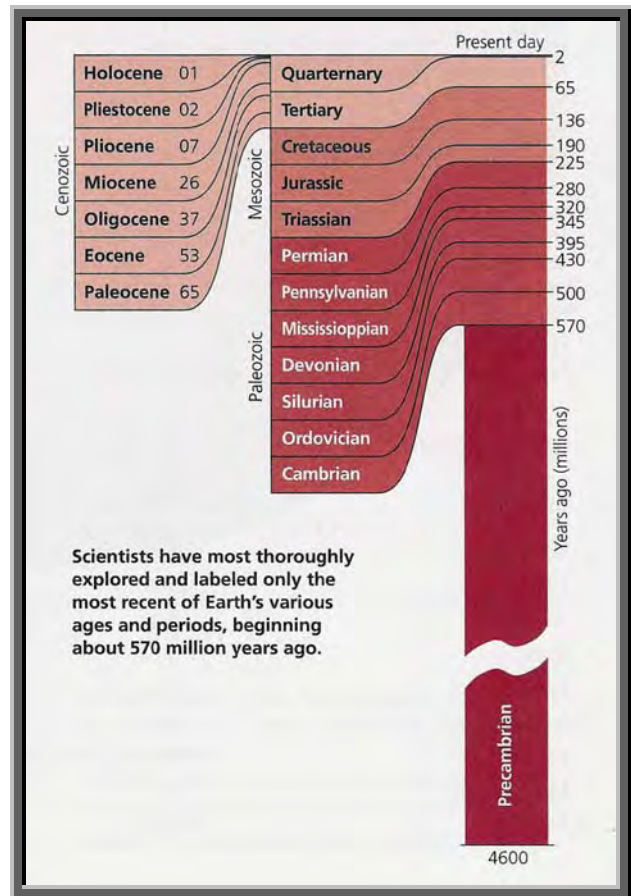
The Upper Arkansas Valley of Lake County formed as a graben or downthrown block situated between the fault zones of the Sawatch and Mosquito Ranges. A graben is defined as a linear valley that slipped down between two parallel faults(Fig 2.) The geology of the LCOSI project area is delineated on Planning Map 11.

Figure 2



The earliest bedrock formations within the Valley are composed of granites of the Cross Creek Association (Xg), formed during the early to middle proterozoic age of the Precambrian period some 1.7 billion years ago. Materials of the Precambrian granites are described as being medium to coarse grained, irregularly porphyritic, slightly to strongly foliated, granodiorite, quartz monzonite, and hybrid order facies. Weathered Cross Creek formations are most evident in the exposed rock areas seen at higher elevations west of the Arkansas River on the Sawatch Range, and extending from the highest elevations down to the Valley floor east of the River on the Mosquito Range.

Figure 1





Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

Within the LCOSI Project Area, the landscape we see today is the result of geomorphic processes acting on the structure of the bedrock to induce a progressive evolution of landscape stages. Over the course of geologic time, the bedrock of the Precambrian period has been alternately covered by the sediments of a vast inland sea, thrust up by violent tectonic movements in the earth's crust, been weathered down by erosion and mass wasting processes, and been modified by the crushing weight of glaciers, continually evolving to take on its current appearance. Much of the softening of the jagged topography that was present when the Rocky Mountains were first uplifted has resulted from the erosional and depositional interaction of the forces of gravity, wind, water, and ice, which have served to erode the bedrock and transport it down-slope to new locations, filling in depressions, creating soils, and generally smoothing the landform.

Although the evolution of any landform is a continuous process, the physical appearance of the landscape of the Upper Arkansas River Valley was significantly shaped by the actions of ice, erosion, and deposition during the Quaternary and Tertiary periods of the earth's formation.

Tertiary Period

The Tertiary Period extended from 65 million years ago, around the end of the age of the dinosaurs, until approximately 2 million years ago. Evidence of geologic deposition from the Miocene (7 to 26 million years ago) and Pliocene (2 to 7 million years ago) ages is evident in the Dry Union formation (Td) found on the upland terraces on both sides of the Arkansas River through the LCOSI Project Area.

Td Dry Union Formation (Pliocene and Miocene)

Predominately brown, sandy and pebbly silt containing lenses of gray to white sand, greenish and pinkish gray clay, brownish-gray gravels, and thin beds of light colored volcanic ash. Silt is not cemented and incoherent enough to fracture into angular blocks; sand and gravel are somewhat cemented and gravel may be cemented to hard conglomerite. Depth of the depositional materials may be more than 3000 feet within the Project Area. The Dry Union Formation dominates the high bluffs located above the ancestral river terrace on both the east and west sides of the Arkansas River.

Quaternary Period

The Quaternary Period is the most recent of the geologic era's, extending from the Pleistocene ice age (10,000 to 2 million years ago) through the current Holocene age. During the Pleistocene, huge glaciers, some of them miles thick, blanketed the North American continent, including much of the Rocky Mountain Cordillera. Within the LCOSI Project Area, evidence would suggest that the action of the Pleistocene glaciers dating to the Bull Lake age served to push the ancestral channel of the Arkansas River from the base of the Sawatch Range on the west side of the valley, all the way across the to its current location at the base of the Mosquito Range on the east side of the Valley. The glaciers also carved out Twin Lakes, created the U-shaped valleys of the tributary watersheds, and created the high terraces at the base of the Sawatch Range with the depositional materials left behind in the form of lateral and terminal moraines. The retreat of the glaciers and the resultant changes in hydrologic regime also precipitated landslides in deposited materials during the late Pleistocene and early Holocene, further modifying and shaping the valley landscape in evidence today.

Geologic features of the Pleistocene and Holocene Ages include:

Qgo Older Gravels and Alluvium (Pleistocene)

Terrace, outwash, and pediment gravels of the pre-Bull Lake age. Older Gravels and Alluvium make up much of BLM parcel 2

Qdo Older Glacial Drift (Pleistocene)

Blanket-like bodies without morainal form; the upper surface is weathered to gumbo to as much as 50 feet. Younger pre-Bull Lake till is mainly in nearly blanket-like remnants on canyon sides above the Bull Lake lateral moraines and the remnants have few or no boulders exposed at the surface. Concentrations of Older Glacial Drift are located on USFS lands west of BLM parcel 2, under the PanArk Subdivision, and along the western bluffs overlooking the Arkansas River south of the Hayden Ranch.

Qd Glacial Drift (Pleistocene)

Deposits of Bull Wash age typically form prominent high lateral moraines and massive terminal moraines, some of which are extensively dissected. Moraines of the first Pinedale glacial advance generally are coexistent with Bull Lake Moraines but smaller in volume; small moraines of the two later Pinedale advances are in canyon bottoms upstream from the older terminal moraines. Most of the lateral moraine north of Twin Lakes is classified as Glacial Drift (Qd), as is the outwash fan of Halfmoon Creek in BLM parcel 1.

Qg Alluvium and Gravel (Pleistocene and Holocene)

Holocene and Pleistocene alluvium in stream valleys and fans, terrace and glacial lake gravels. Locally grades into landslide debris (Ql) Virtually the entire valley floor under the Hayden, Hallenbeck, and Arkansas River Ranches is located on this depositional form.

Ql Landslide Debris (Pleistocene and Holocene)

Landslide, mass movement, talus, rock streams, and coarse fan deposits; glacial and post glacial in age. The dominant landslide debris area within the LCOSI Project Area is located in the Empire Gulch and Mount Massive Trout Club area, with several smaller occurrences on the slopes north of Twin Lakes, around Corske Creek at the western end of the Hallenbeck Ranch, and on the east facing slopes traversed by County Road 10, on the Box Creek State Land Board parcel.

Faulting

Most known faulting within the project area occurs to the east of the Arkansas River, trending in a northerly to northeasterly direction, and includes the Weston and Mike Faults east of the Project Area. Limited faulting also exists along the Sawatch Range to the west, also trending north to northeast. It is between these two north trending fault zones that the graben block has settled to form the rift valley of the Upper Arkansas River.

One exception to the north trending faults paralleling the Arkansas river is a fault that trends east to northeast, running diagonally across the valley floor from Halfmoon Creek to Iowa Gulch. None of the faults has a history of significant seismic activity.

Significant faulting and mineral replacement along the faults in Leadville, north of the project area, accounts in large part for the world class ore body located there. Most of Lake County lies within the Colorado Mineral Belt.



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Section II Existing Condition

Economic Geology

Placer gold mining occurred on a large scale in the Box Creek drainage as it passes through the Hallenbeck Ranch. At this location, a 600-ton dredge was assembled and operated between 1915 and 1924, gouging out the alluvium of the valley floor and processing it for its gold content. In 1924, the Derry Dredge accounted for 100% of Lake County's gold production.



Derry Dredge

CHS Photo

Limited placer and lode mining occurred elsewhere on the LCOSI Project Area, but for the most part, proved economically unviable. One small placer operation is still operational in the SW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 5, T11S, R80W, while a second non-operational placer is located on the Box Creek State Land Board parcel in the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 3, T11S, R80W.



Lake County Open Space Initiative Ecosystem Management Plan

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Utilities

Within the context of this report, the term utilities is used to describe that group of manmade features that convey, store, or transport people, materials, or energy. Utilities within the LCOSI project area include, but are not limited to: railways, roadways, parking lots, trails, trailheads, overhead or buried transmission lines, ditches, water storage vessels, and pipelines. Planning Map 11 delineates the major utilities, as they existed in September of 2002.

Roadways

Roads passing through the LCOSI project area include a US Highway, County roads, USFS system and non-system roads, private roads, and transmission line maintenance roads.

US Highway 24

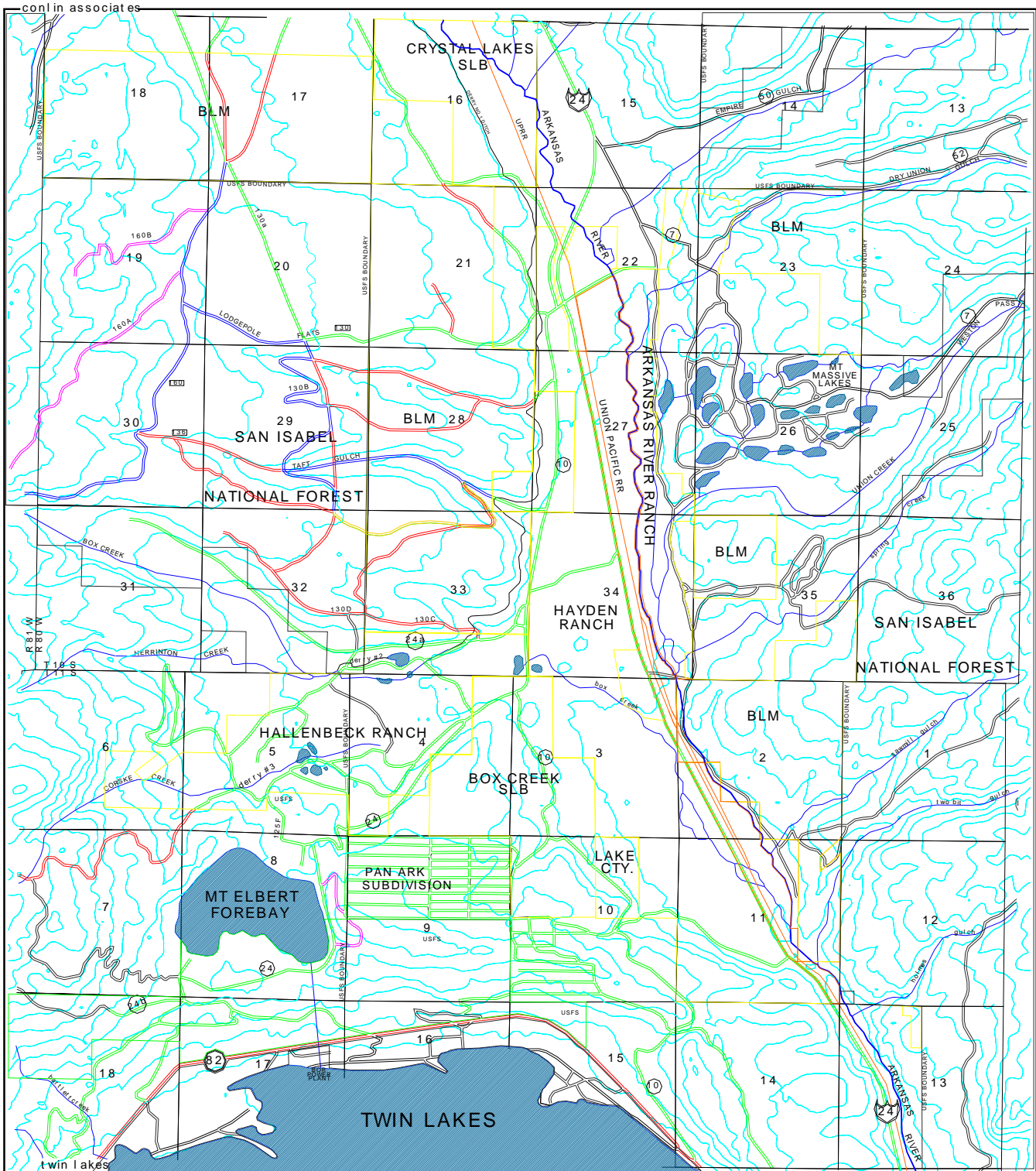
The primary transportation corridor passing through the project area is U.S. Highway 24. US Highway 24 is classified as a minor arterial road, a Critical Travel Corridor, and designated hazardous materials truck route within the Inter-Mountain Transportation Planning Region (ITPR) of Colorado. The Highway is also designated as the Top of the Rockies State and National Scenic and Historic Byway, and is an all season, paved, two lane rural road capable of accommodating automobile, heavy truck, and bus traffic.

The Colorado Department of Transportation (CDOT) roadway identifier for the section of US 24 that passes through the project area is 024A180.087. According to CDOT, it supports an Average Annual Daily Traffic (AADT) count of 3775 vehicles, including an average daily truck volume of 253. During the recording period from 1990 through 1992, there were eight recorded accidents along this road segment, none of which were fatal. The geometric deficiency rating of the roadway was 10 at the start of 1998. The geometric deficiency quantifies the difference between the existing lane and shoulder width and CDOT's design standard. A geometric deficiency of 10 indicates that the roadway and shoulder width is 10 feet narrower than the CDOT Standard for the roadway classification. In 1998, CDOT widened the paved roadway surface by approximately 2 feet per side and shoulder material was added where sufficient width existed, decreasing its geometric deficiency.

County Roads

The primary County Roads passing through the project area are delineated on Planning Map 11, and include:

County Road 10 is also referred to as Shore Pretty Drive from its intersection with US Highway 24 to its intersection with County Road 24 in Section 3, T11S, R80W. The segment of CR 10 between US 24 and CR 24 is classified as a paved local roadway. Beyond its intersection with CR 24, County Road 10 continues as a gravel road to connect with the Pan Ark subdivision. The roadway passes through and provides access to the west side of the Hayden Ranch, the isolated 160-acre parcel of the Hallenbeck Ranch, the Box Creek State Land Board parcel, and the Stork and Heron Placer.



LAKE COUNTY OPEN SPACE INITIATIVE

KEY

- NON-SYSTEM ROADS
CLOSED AND REMOVED —
- CLOSED
ADMINISTRATIVE USE ONLY —
- SEASONAL CLOSURE —
- OPEN YEAR ROUND —
- 100-MILE TRAIL BYPASS —

resource mapping
existing condition
September 30, 2002

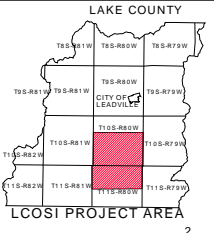
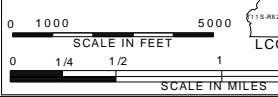
UTILITIES
ROADS

map 12

ALL BOUNDARIES APPROXIMATE



CONTOUR INTERVAL 100'
COORDINATES - UTM-13



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m conlin	11/17/98
revised	date
make conlin	11/26/02
data source	
mcr o map & cad	
pl ss, dig, dem data	
blm land ownership	
at us mapping	
bear surveying	
conlin associates	
875 mt. view dr.	
leadville, co. 80461	
(719) 456-2772	
MAP NO. 1	



Lake County Open Space Initiative Ecosystem Management Plan

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County Road 24, also referred to as Shore Pretty Drive and Forest Road 125, begins as a gravel road at its intersection with CR 10 in Section 3, and travels in a westerly direction along the southern boundary of the Hallenbeck Ranch to the Mount Elbert Forebay. From the Forebay to its intersection with State Highway 82, the roadway is classified as a two-lane paved local road.

County Road 24A is a single lane local natural surface road passing through the northern boundary of the Hallenbeck Ranch to access the Parsons Ranch in Sections 31 and 32, T10S, R80W. CR 24A is a principal access route to the north side of the LCOSI properties of the Hallenbeck Ranch.

County Road 55 is a two lane gravel road connecting US Highway 24 to the public and private properties on the east side of the Arkansas River at the area locally referred to as Kobe. The roadway includes a public crossing over the Union Pacific's Tennessee Pass line and a bridge over the Arkansas River. Portions of CR 55 follow the alignment of the historic Stage Road to Leadville, and provide access to the Arkansas River Ranch; BLM parcels 5 and 6, and the Sawmill Gulch and Spring Creek parking areas.

County Road 100A is a two-lane gravel road that provides access to the Hayden Meadows Recreation Area. The roadway follows the alignment of the abandoned Pikes Peak Coast to Coast Highway, which was originally built to span the nation from Atlantic City to San Francisco around 1913. The roadway includes a public crossing over the Union Pacific's Tennessee Pass Rail Line, and the original highway bridge over the Arkansas River.

Forest Service System Roads

Roadways passing through BLM lands and extending onto the Pike and San Isabel National Forest are classified as either System, or Non-system roads. System roads are those roads planned and constructed by the USFS and designated on their inventory of maintained roadways. Non-system roads are the un-planned and un-maintained roadways typically generated through repeated, unauthorized vehicular travel across public lands for the purpose of accessing or short-cutting distances to such destinations as fuel wood gathering areas, hunting opportunities, undeveloped camp sites, fishing holes, or mineral prospecting areas. Over time, these non-system roads become a part of the matrix of local use roads, but in the absence of planning or maintenance, often pose human health and environmental risks such as degradation of wildlife habitat and wetland / riparian zones, erosion and stream sediment loading, and impacts to water and air quality. It is Forest Service policy to close and restore non-system roads whenever possible, while maintaining critical access to private lands and public recreation areas.

Over the past several years, the USFS has been engaged in the study and preparation of the Box Creek Watershed Restoration Project, which includes all BLM and Forest System lands in the Box Creek watershed along the western perimeter of the LCOSI project area. The disposition of roadways affected by this document, under all but the no-action alternative of the Watershed Plan, are delineated on Planning Map 11. In light of the fact that LCOSI has no jurisdiction over roadways on federal lands, this

Master Plan will use the final determinations of the Box Creek Watershed Restoration Project as a starting point to plan and coordinate its roadway system planning.

USFS System and Non-System Roads

FS 130 is commonly referred to as the Lodgepole Flats road, and provides access through BLM parcel 2 to the Mount Elbert Conduit and fuel wood gathering and hunting areas on Forest Service lands in Sections 17, 19, 20, 29 and 30 of T10S, R80W. Under the Watershed Project, this road would be subject to seasonal closure, and would be gated to prevent vehicular travel during the snow and mud seasons.

FS 130A and FS 130B are roadways that were built in conjunction with the construction of the Mount Elbert Conduit in the late 1970's. As topography allows, FS 130A closely parallels the alignment of the pipeline through Sections 7, 18, 17, and 20, T10S, R80W, and allows for inspection and monitoring of the facility. FS 130B responds to the varied topographic relief caused when deep gullies intercept the glacial moraines in Section 29, T10S, R80W, by diverging from the pipeline alignment to maintain passable grades at gulch crossings. Under the Watershed Project, FS 130A would be open on a year round basis, while FS 130B would be gated and closed seasonally.

FS 130C and FS 130D are Forest System roads within Sections 32 and 33, T10S, R80W. FS 130C ascends a steep hillside (30%+) from CR 24A in the SE ¼ of Section 33, and has caused severe erosion of the alignment as vehicles seek alternate routes around deeply rutted sections, constantly widening and expanding the area of impact. In response to the environmental damage to the ecosystem, the Watershed Project proposes to close and restore this section of road, and its connecting segments of FS 130D. In light of its use as part of the Leadville Trail 100 Mountain Bike Race, an alternate route connecting FS 130B to Shore Pretty Drive (CR10) has been proposed through Section 32, 33, and 28, T10S, R80W, to link the Pipeline Road with Taft Gulch.

FS 136 connects Shore Pretty Drive (CR 10) with the Mount Elbert Conduit through Taft Draw in Sections 28 and 29, T10S, R80W. The existing roadway passes through the isolated 160-acre parcel of the Hallenbeck Ranch before entering BLM parcel 2 in the SE ¼ of Section 28. Under the Watershed Project, this road would be gated at the boundary between public and private lands and opened only on a seasonal basis.

FS 160A and 160B are Forest System roads in Sections 19 and 30, T10S, R80W. These roads provided access to the western most reaches of the Lodgepole Flats vegetative management area, and under the Watershed Plan would be gated and closed to all but administrative use on a year round basis.

FS 125 is also CR 24, Shore Pretty Drive, and as such would remain open to public use on a year round basis.

FS 125 F is located in the SE ¼ of Section 5, T11S, R80W, and provides public access to the parking lot and walkthrough above the Stone Barn in the southwest section of the Hallenbeck Ranch. The roadway also provides access to the popular fishing at the inlet structure of the Mount Elbert Forebay. Under the Plan, FS125F would remain open year-round.

All other roads on federal lands, as delineated on Planning Map 11, are classified as non-system roads, and under the Watershed Restoration Project, are scheduled to be closed and restored.

Ranch Roads

Internal roads within the boundaries of the Hayden, Hallenbeck and Arkansas River Ranches were all private prior to their respective sale dates. As such, they were open



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only to the owners or lessees of the properties or their invited guests. Since the inception of LCOSI in 1998, the private internal ranch roads have been open only for vehicular access to support administrative access, studies, and maintenance.

Rail System

The Union Pacific Railroad's Tennessee Pass Line is a Class I rail line that runs on a north south axis through the center of the LCOSI project area. It is situated between US Highway 24 and the Arkansas River in Sections 22, 27, and 34 of T10S, R80W, and Sections 2, 3, and 11 of T11S, R80W. As such, the rail easement represents a tract of private land that prohibits public trespass, effectively isolating the river from public access along US Highway 24. Two public crossings allow ingress across the tracks to the lands between the rail line and the river. Public rail crossings are located on CR55 in Kobe, and on CR100A at the Hayden Meadows Recreation Area.

The Union Pacific petitioned the Surface Transportation Board to abandon the Tennessee Pass Line in the early 1990's, but withdrew its petition in response to legislative pressure to keep the line open, and the STB mandate that the Union Pacific prove that the abandonment of the line would not result in undue congestion of the combined lines of the Union and Southern Pacific Lines as a result of their merger. The line remains deactivated in the interim until the Union Pacific determines its final disposition.

In the event that the Union Pacific is successful in abandoning the line, the State of Colorado has negotiated a deal whereby the Union Pacific would donate that section of the Tennessee Pass line between the Royal Gorge and Leadville to Colorado State Parks for conversion from Rails to Trails under the rail banking provisions of the National Trail System Act. The balance of the line from Leadville to Sage (near the mouth of Glenwood Canyon) would be sold to Colorado State Parks for continuation of the trail for a total distance of 173 miles. The resulting Heart of the Rockies Heritage Trail could potentially link the existing trail systems of Canon City, Salida, Buena Vista, Leadville, Vail, Avon/Beaver Creek, Eagle, Glenwood Springs, and the Roaring Fork Valley. With existing linkages over Vail Pass, the system would also connect to the Summit County Trail System, linking Frisco, Copper Mountain, Breckenridge, Keystone, Silverthorne and Dillon.

Mount Elbert Conduit

The Mount Elbert Conduit was built in the 1970's as part of the Fryingpan/Arkansas Project, to transfer waters diverted into Turquoise Lake from the western slope, to the Mount Elbert Forebay. From the Forebay, stored waters are then dropped to generators at the power plant at Twin Lakes to generate power to meet periods of peak demand. During off-peak periods, water is pumped back up the hill to the Forebay at a net power loss.

The Mount Elbert Conduit is a buried 90" pipeline that enters the LCOSI project area in BLM Parcel 1, passing through portions of Sections 17 and 18, and extending through Forest Service lands in Sections 20, 29, and 32, T10S, R80W, before re-entering the Hallenbeck Ranch in Section 5 of T11S, R80W. The pipeline and its adjunct maintenance roads are popular points of access to the National Forest, and are popular destinations amongst hunters, fuel wood gatherers, mountain bikers, and campers.

Trails

Sawatch Range Trail

The only developed trail system within the LCOSI project area is the Sawatch Range Interpretive Trail, located within the Hayden Meadows Recreation Area. The main loop of the Sawatch Range Trail is a 4' wide, ADA accessible, hardened surface trail some 3900 feet in length. The trail is constructed of four inches of compacted 3/8" minus crusher fines over a protective barrier of geotextile fabric, and includes two stream crossing bridges, five wetland boardwalks totaling approximately 150 feet in length, an elevated watchable wildlife viewing platform, two handicap accessible fishing stations with a vehicle accessible unloading area, a river restoration demonstration area, and two interpretive information kiosks. An 1800-foot internal trail within the perimeter of the Sawatch Range Trail encircles and provides ADA access to the reservoir on the elevated axis of the dam, and connects to the Sawatch trail at either terminus. The internal trail is surfaced with compacted crusher fines to a width of approximately 6 feet.

The eastern extension of the Sawatch Range Trail is a natural surface trail that crosses the Arkansas River on the old Pikes Peak Coast to Coast Highway bridge, and parallels the east side of the river for approximately 1800 feet in a northerly direction upstream from the bridge to the park boundary. The trail concentrates fisherman and recreational traffic onto a sustainable, elevated surface to avoid damage to sensitive wetland and riparian habitats, and is culverted at its three stream crossings to facilitate passage and limit stream bank erosion. The natural composition, bank instability, vegetation, and topography of the eastern bank of the Arkansas River are not conducive to providing safe ADA accessible fishing opportunities. As a result, ADA access is provided only as far as the bridge across the Arkansas.

Continental Divide Trail

The Colorado Main Range and Continental Divide Trails share a common corridor across the face of Mount Elbert on Forest System lands immediately to the west of the LCOSI project area. The Continental Divide Trail extends from Canada to Mexico along the spine of the Rocky Mountain Cordillera that forms the Continental Divide, separating waters flowing to the Atlantic and Pacific Oceans. Two trails ascending Mount Elbert, Colorado's highest peak, diverge from the Continental Divide Trail north and west of the project area. No direct trail access linking the LCOSI project Area and the Continental Divide Trail exists at this time. Internal roads on the three Lake County Ranches are currently open to non-motorized modes of transportation, including pedestrian, horseback, and bicycle travel.

Arkansas River Corridor

Non-motorized trail use paralleling the Arkansas River through Lake County has been contemplated for more than two decades. Four potential trail alignments have been reviewed through portions of the LCOSI Project Area.

Old Stage Road

The first potential route would utilize the corridor of the Old Stage Road to Leadville, following the historic route of the first passenger road up the Arkansas River Valley. The Old Stage Road has been explored by the USFS and the BLM as a possible mountain biking trail paralleling the east side of the Arkansas River as it passes through the Arkansas River Ranch and Parcel 6 of the BLM holdings. The Old Stage Road passes through a complex matrix of public and private land ownership as it ascends the Arkansas River Valley from Trout Creek Pass in Chaffee County to Leadville, Colorado. Many parts of the road traversed wetlands and steep hillsides supported by elaborate rock walls, or crossed steep ravines on bridges and trestles that have long since deteriorated and become impassible. Re-establishment of the right-of-way to adaptively re-use the alignment for its historic function as a transportation corridor has so far proven unsuccessful. Sections of the Trail within the



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LCOSI Project Area are still being reviewed for their feasibility as part of an internal trail system.

Six Passes / Pipeline Route

The *Six Passes to Leadville* effort in the late 1980's explored potential bicycle linkages from Leadville to surrounding Counties by means of the six mountain passes that traverse the otherwise impenetrable mountain ranges surrounding the Upper Arkansas River Valley. Integral to the planning was a trail linking Turquoise Lake and Hagerman Pass to Twin Lakes and Independence Pass. The trail would have used portions of the Mount Elbert Conduit and its maintenance roads to make the connection, but reached an impasse when it hit the private block of land represented by the Hayden, Hallenbeck and Parsons Ranches.

Interlaken Trail

Lake County and the USFS explored alternatives for a trail linking Twin and Turquoise Lakes along the west side of the Valley in the 1994 Design Narrative and Environmental Analysis of the Interlaken Trail corridor. The proposed trail would have linked existing low volume Forest System roadways, County Roads, and maintenance roads within BLM Parcels 1 and 2, the Pike and San Isabel National Forest, the Crystal Lakes State Land Board Parcel, and portions of the Hayden and Hallenbeck Ranches to create a hard surface trail across the foot of Mount Elbert between the two lakes. Trail planning was suspended as being redundant when the opportunity arose to join the State Parks effort to construct the Heart of the Rockies Heritage Trail along the parallel alignment of the Union Pacific's Tennessee Pass Line.

Heart of the Rockies

The Tennessee Pass line of the Union Pacific Railroad, which passes through the length of the LCOSI Project Area, has been explored by the BLM, Colorado State Parks, and the communities that lie along the corridor for potential conversion from a rail line to the Heart of the Rockies Heritage Trail. The Trail would extend approximately 173 miles from Canon City to the vicinity of Dotsero, Colorado. Planning for construction of the trail was suspended in 1997 when the Union Pacific Railroad withdrew from consideration its abandonment petition that had been placed before the Surface Transportation Board. In the event that the Railroad reinstates its abandonment petition, the line from the Royal Gorge to Leadville is scheduled for donation to the State of Colorado under the Rail banking provisions of the National Trails Act, for the purpose of interim use as a bicycle/pedestrian trail. The Hayden Meadows Recreation Area has been designed to provide a trailhead and rest area along the trail in the event that it is ever built.

Leadville Ranches

The internal road system of the Hallenbeck Ranch was made accessible to non-motorized trail use as a result of the Management Agreement between Lake County and the Colorado Division of Wildlife that opened the Hallenbeck Ranch Recreation Area to the public in August of 2000. Internal roads of the Hayden Ranch east of US Highway 24 were opened to the public for non-motorized trail use in August of 1999 with the signing of the License Agreement between Lake County and the City of

Aurora. Pedestrian use of the internal roadways of the Arkansas River Ranch was open to the public with the sale of the Ranch to Colorado State Parks in March of 2000.

Dispersed pedestrian use on the ranches to access fishing and hunting opportunities, cultural resources, or scenic viewpoints has resulted in a number of un-planned and un-maintained "social" trails.

Trailheads

Trailheads for developed and dispersed recreational trail use within the Lake County Open Space have been established to meet demonstrated need.

Hayden Meadows

A hard surface access road and parking lot, informational and interpretive signage, fence pass-throughs, and restroom facilities have been provided at the Hayden Meadows Recreation Area to serve not only the developed trails of Hayden Meadows, but also the network of dispersed river access trails emanating from the northern portal of the Arkansas River Ranch and Hayden Ranch Recreation Areas. The trailhead will also serve the proposed Heart of the Rockies Heritage Trail in the event that it is ever built. Direct handicap vehicle access has been provided to the fishing peninsulas of the Hayden Reservoir, and to the Pikes Peak Coast to Coast Highway bridge over the Arkansas River in Section 22, T10S, R80W.

Crystal Lakes State Land Board

The Colorado Division of Wildlife has provided informational signage, road access and parking facilities to act as jumping off points for dispersed recreational use of the Crystal Lakes Land Board parcel. Trailheads are located on both sides of the Arkansas River. The eastern access point utilizes the existing facilities at Crystal Lakes, while the western river access portal provides a natural surface access and parking lot above the Arkansas River in the NW ¼ of the NY ¼ of Section 16, T10S, R80W.

Hallenbeck Ranch Recreation Area

Parking areas, informational signage, and fence pass-throughs have been installed at two locations on the Hallenbeck Ranch Recreation Area to provide access for non-motorized trail use of the internal road system of the ranch. The first is on Forest System lands along County Road 24 A in the SE ¼ of the SE ¼ of Section 32, T10S, R80W, and accesses the northern side of the Ranch. The second is located on Forest System lands accessed by FR 125 F in the SW ¼ of the SE ¼ of Section 5, T11S, R80W, and accesses the southern side of the ranch.

Kobe

Limited parking, restrooms, and informational signage have been provided by the BLM at the Kobe site in the SE ¼ of the SE ¼ of Section 34, T10S, R80W. This trailhead provides support for dispersed fisherman and recreational use along the river corridor to the north in the Arkansas River Ranch, and to the south in BLM Parcel 6.

Transmission Lines

Overhead transmission lines consist principally of the high voltage electrical lines connecting the BOR's Mount Elbert Power Plant to the grid at the Malta Sub-Station, the Sangre de Cristo and Excel Energy high voltage transmission and low voltage service lines, and electrical and communication lines associated with the operations of the Union Pacific, Tennessee Pass Rail Line. Underground transmission lines consist principally of a Western Slope natural gas line, and a Qwest fiber optic cable that span the valley.



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Ditches

Water rights associated with the Hayden and Hallenbeck Ranches were traditionally delivered to their point of beneficial use by means of shallow gradient ditches. Rates of flow were controlled by head gates at the point of diversion, and measured through the use of parshall or cutthroat flumes. These ditches often originated miles up gradient from the point of use, diverting water from the Arkansas River, or its tributaries, and utilizing the force of gravity to convey it to the desired location.

The amount of flow that can be delivered to the point of beneficial use is determined by both physical and legal constraints. Physical constraints consist principally of the availability of adequate water volume at the point of diversion, the efficiency of the diversion structure, transmission losses due to ditch leakage, maintenance of sufficient gradient to sustain velocity and carry sediment loads, and water losses due to evaporation.

Legal constraints within the Upper Arkansas River Basin are primarily due to the fact that the Arkansas does not carry sufficient volumes of water to meet all of the demands placed on it as it winds its way downstream to the Mississippi River. In response, Colorado passed water laws in the latter half of the 19th century to prioritize use of the limited resource.

The system establishes priority dates and volumes of water that can be legally diverted from the River when the subject water right is "in priority." Under the "doctrine of prior appropriation," water rights chronologically appropriated first in time have priority over water rights filed later in time. Water rights with later appropriation dates are entitled to divert and use water only at times when the earlier, more "senior" rights are satisfied.

Under Colorado Law, water rights were adjudicated starting in the late 1800's, and were assigned relative priorities. The result was confusion over which date, appropriation or adjudication, took preference. Administration of these rights throughout an entire basin has been made easier through the calculation of what is referred to as an "administrative number," which takes into account both the appropriation and adjudication date. The more senior a water right, the lower the administrative number.

If, for example, the Water Commissioner determines that the sustainable amount of water diversion from the river cannot exceed the aggregate volume of all water rights filed before January 1, 1884, he will place a "call on the river" of January 1, 1884. Water users with administrative numbers lower than the threshold number are entitled to divert their allocated volume of water, while more junior water rights with higher administrative numbers are "called out" of priority. In this manner, the limited natural resource is not completely depleted, but rather, is apportioned out according to the supply on hand.

The principal ditches of the Hallenbeck Ranch are:

Derry No. 1

The Derry No 1 water right was decreed to allow the diversion of water from the main stem of the Arkansas, and from a small tributary of the Arkansas River referred to as Beaver Dam Creek in Sections 9 and 16, T10S, R80W. The aggregate amount of diversion from the two sources is 4 cubic feet per second, and the appropriation date is December 1, 1879. Its adjudication date is July 12, 1904, its administration number

is 10927.0, and its basin priority is 71A. The decreed use of the ditch is the irrigation of 200 acres of the Derry Ranch. Mining of the irrigated meadow has reduced the area of irrigation to approximately 66 acres in Section 33, T10S, R80W. The Derry No. 1 water right was purchased by Lake County in May of 1998 as part of the Hallenbeck Ranch acquisition.

When in priority, waters from the Derry No. 1 water right can be legally conveyed from their point of diversion to their point of beneficial use on Section 33, T10S, R80W of the Hallenbeck Ranch via the Derry Ditch No. 1. Diversions by the Derry No. 1 Ditch for the 1950 through 1996 period averaged 235.7 acre-feet of water. Lake County has been working sequentially to repair and improve the ability of the ditch to convey water since its purchase in 1998.

Derry No. 2

The Derry No.2 water right was decreed to allow the diversion of water from Box Creek through a headgate located in the SE ¼ of the SE 1/4 of Section 32, T10S, R80W. The decreed flow is 1 cubic foot per second, and the decreed use is for irrigation of 50 acres on the Hallenbeck Ranch. The appropriation date is October 1, 1895, the adjudication date is July 12, 1904, the basin priority is 192, and the administration number is 16710.0. The water right was purchased by Lake County as part of the Hallenbeck Ranch acquisition in May of 1998.

When in priority, the water right is conveyed through the Derry Ditch No.2 to a head stabilization pond located in the SW ¼ of the SW 1/4 of Section 33, T10S, R80W. From the outlet of the pond, the water is distributed by a series of lateral ditches to areas of beneficial use on the ranchlands south of the pond in Section 33, T10S, R80W and Section 4, T11S, R80W. The diversion records for the Derry No. 2 Ditch during the 1950 through 1996 period averaged 45 acre feet of water, including several years of zero diversion.

Derry No. 3

The Derry No.3 water right was decreed to allow diversion of waters from Corske Creek, beginning at its headgate on National Forest lands west of Section 7, T11S, R80W in Bartlett Gulch for the irrigation of 200 acres of land. The decreed flow is 2 cubic feet per second. The appropriation date is June 21, 1884, the appropriation date is July 12, 1904, the basin priority is 137A, and the administration number is 12591.0. The water right was purchased by Lake County as part of the Hallenbeck Ranch acquisition in May of 1998.

When in priority, the water right is conveyed from Bartlett Gulch to the headwaters of Cozart (Corske) Creek through the Derry No 3 Ditch to irrigate 200 acres of land in Sections 4 and 5, T11S, R80W on the Hallenbeck Ranch. Total diversions by the Derry No. 3 Ditch from Bartlett Gulch averaged 246.3 acre-feet for the 1950 through 1996 period.

The Derry No.1 Ditch diverts primarily from the Arkansas River, and has an additional diversion point on Beaver Dam Creek. The Derry No 2 and No. 3 Ditches are the most senior rights on Box Creek and Corske Creek respectively. As such, all of the Derry Ditch water rights are subject only to the Arkansas River main stem call.

Based on historic Arkansas River call records from 1970 through 1996, the average historic annual consumptive yield of the three ditches is estimated at 169 acre-feet per year, while the dry year consumptive yield is estimated at 93.6 acre-feet.

The principal ditches of the Hayden Ranch are:

The Upper River Ditch, appropriated on May 15, 1878; the Pioneer Ditch, appropriated on April 18, 1878; the Champ Ditch, appropriated on June 25, 1877; and the Wheel



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Ditch, appropriated on May 5, 1880. All were adjudicated in 1901. In aggregate, these four ditches irrigate approximately 900-acres, and have an estimated average annual consumptive use of 950-acre-feet of water. (Map 13)

A fifth ditch, the Section House, was appropriated much later on June 1, 1897, and initially decreed for irrigation of approximately 400 acres of the Hayden Ranch. However, perhaps due to the relatively junior priority, the available historic records show limited use of this water right. Accordingly, the consumptive use value of this water right is assumed to be zero.

The seniority of the Hayden Ranch water rights is generally superior to those of the Hallenbeck Ranch, resulting in relatively greater dry year yields.

In order to convert irrigation water into a year round municipal, commercial, and domestic water supply, it must be adjudicated to that new use through a Court approved decree. Because the consumptive use water attributable to the historic irrigation use is only available during the irrigation season, which typically runs from May through September, the water must be placed into storage if needed outside of the irrigation season.

Water Storage Facilities

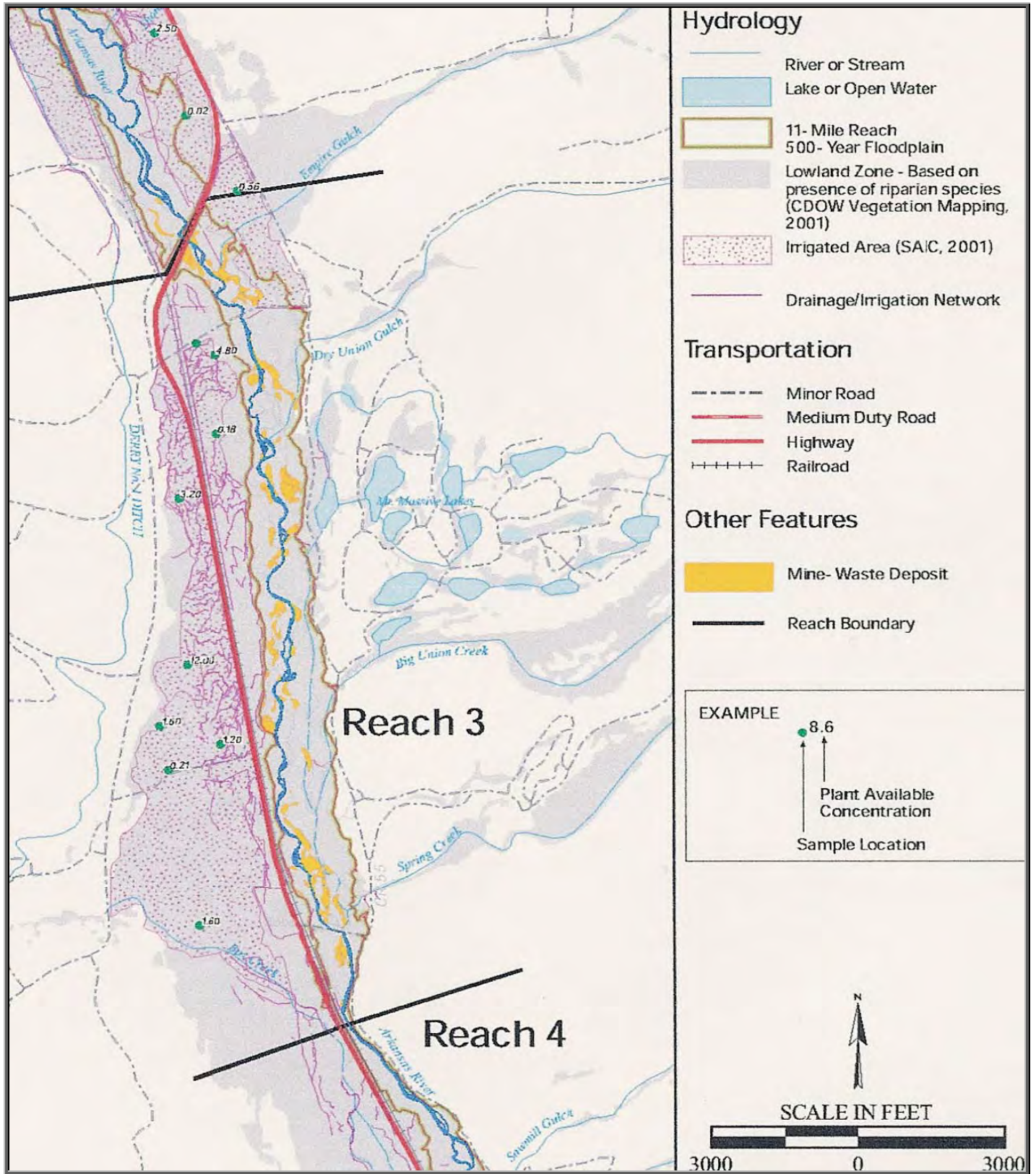
The Hayden Meadows Reservoir was constructed for the purpose of storing water to meet Lake County's future municipal and recreational needs. Located on the Hayden Meadows Recreation Area, the reservoir displaces 7 surface acres, and has a storage capacity of approximately 49.6 acre-feet of water. Water to fill the vessel is diverted from the Arkansas River approximately 1 mile north of the reservoir in the NW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 16, T10S, R80W, and is transferred to the reservoir via the Upper Ditch. The Upper Ditch was originally constructed in the late 1800's to deliver irrigation water to the north end of the Hayden Ranch.

Water to provide the first fill of the reservoir was donated by the City of Aurora, while flow through water to refresh the oxygen levels, make up evaporative loss, and import nutrients in support of the fish population has been provided by the Pueblo Board of Water Works.

Water rights to support the storage facility consist of an option from the City of Aurora to Lake County for 10% of the fully consumptive water that will result from the City's conversion of Hayden Ranch water rights to alternate uses. The petition to the State Water Court to quantify and allow the transaction has been jointly submitted by Lake County and the City, and is expected to yield a total volume of approximately 950-acre feet of yield. Lake County has initiated the preparation of a Water Augmentation Plan to allow the water stored at the Hayden Meadows site to be released back to the river to allow for augmentation of water uses elsewhere in the Upper Arkansas River Valley.

Although other dredge, head stabilization, and stock watering ponds exist within the LCOSI Project Area, none are currently adjudicated specifically for water storage.

Hayden Ranch
Ditches and Irrigated Areas



Map 13

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Hazardous Materials

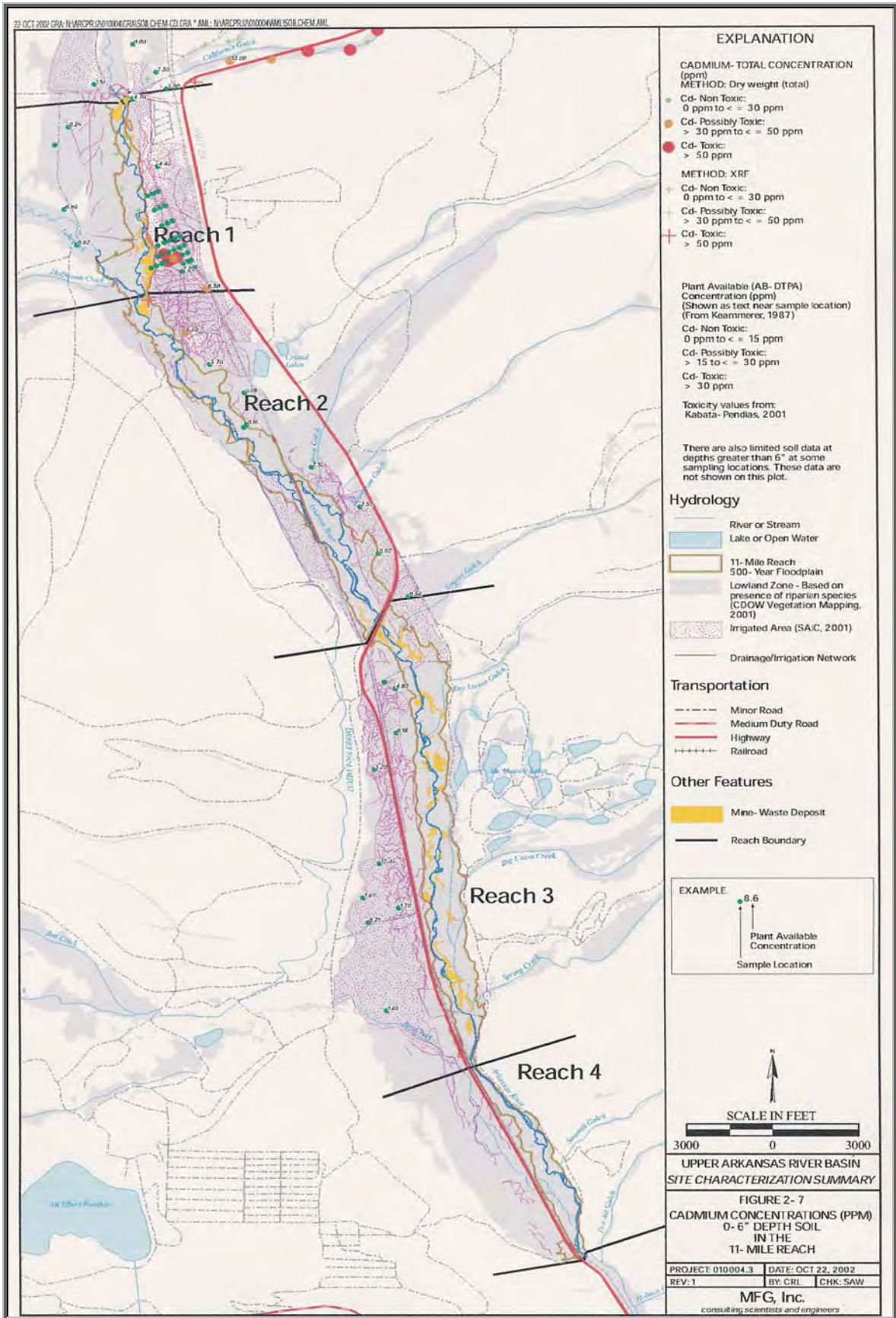
The Upper Arkansas River Valley is one of the most intensively studied areas in the State of Colorado. The exploitive nature of early day mining, coupled with the lack of technology and environmental knowledge, led to the contamination of surface waters and sediments, soils, and terrestrial and aquatic biological resources throughout much of Lake County. The level of contamination was sufficient to list over 16 square miles surrounding the community of Leadville as the *California Gulch Superfund Site*, the largest CERCLA site in the State.

Natural resource damages were not confined to the areas directly impacted by mining, however, as stream bourn contaminants were carried far downstream from the actual mining activities, and deposited as fluvial tailings along the banks of the Arkansas River. Current Natural Resource Damages can be traced to the original hydraulic placer mining activity of the late 1800's, with increasing levels of impact from hard rock mining that occurred over the first half of the 20th century. By far, the greatest ongoing impacts lie along the stretch of the Arkansas River extending from its junction with California Gulch, downstream for a distance of 11 miles to its junction with Twobit Gulch. The 500-year floodplain of this segment of the Arkansas has been delineated as the *11-Mile Reach of the Arkansas River* (See Map 14.) Over one half of the 11-Mile Reach lies within the boundaries of the LCOSI Project Area.

A comprehensive description of the nature and extent of contamination within the 11-Mile Reach is outside the scope of this report. That information has been summarized in the report entitled: *Site Characterization Report for the Upper Arkansas River Basin*, prepared in accordance with the parties to the Memorandum of Understanding and corresponding "Work Plan for the Upper Arkansas River Basin Consulting Team: 11-Mile Reach, Downstream Survey and Airshed Survey." The Site Characterization contains over 900 pages of site inventories, maps, evaluations, descriptions of natural resource impacts, identifications of potential contaminant pathways, and recommendations for remediation and restoration of damages. Due to its technical content and sheer volume, it is incorporated by reference in this document.

Deposits of mine waste in the floodplain are most prevalent within the relatively flat upper nine miles of the 11-mile reach, in the areas designated as Reaches 1 through 3. The LCOSI Project Area lies within Reaches 2, 3, and 4 (See Map 15). The areas relevant to the LCOSI Master Planning effort are located within Reach's 2 and 3. Reach 4, which lies downstream of County Road 55 at Kobe, is in an area of increased gradient and topographic constraints that serve to narrow the stream channel and increase its velocity. Only a few small deposits of mine-waste are present in Reach 4 due to the flushing effect and its more efficient channel. Reach 4 is therefore considered insignificant for the purpose of this Plan.

Fluvial tailings were typically deposited by peak flows that overtopped the stream bank and spread out over the adjacent flood plain, dropping out suspended materials as the flow velocity decreased. On average, fluvial deposits within the 11-Mile Reach extend approximately two feet below the current ground surface and are mostly isolated from contact with the surface water and groundwater except during flood events. Additionally, some surface soils within and outside of the floodplain of the 11-Mile Reach have been contaminated through irrigation.



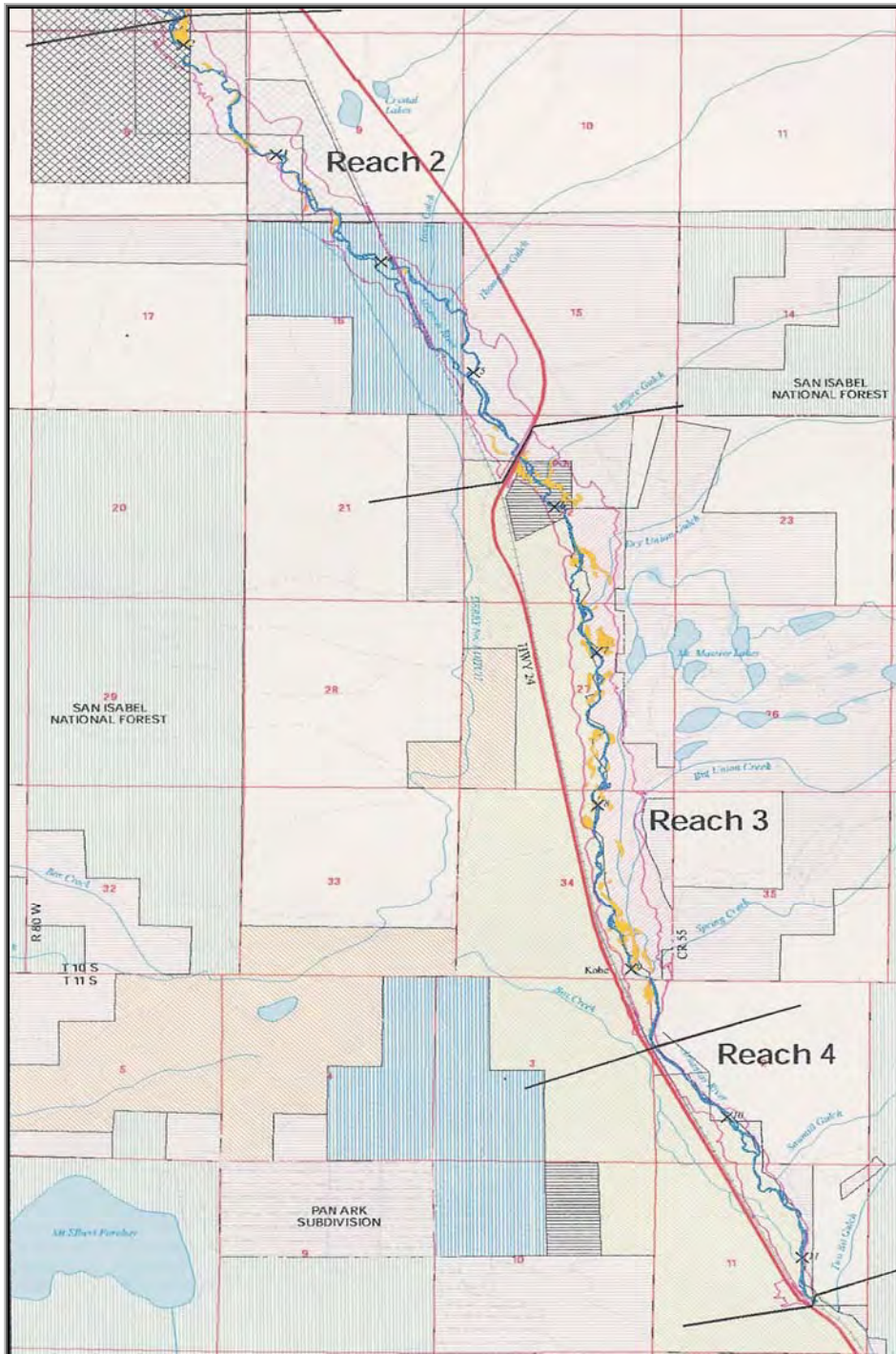
11-Mile Reach

Map 14

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11-Mile Reach Property Ownership

Map 15

The mine waste deposits have impacted soil function, inhibited or precluded riparian vegetation, and present a pathway for metals exposure to the terrestrial biota. The lack of vegetative cover on near stream deposits reduces the productivity of riparian food sources to the stream, and also reduces habitat suitability through loss of shade and bank erosion. Evidence of erosion of these deposits during periods of bankfull and overbank flow has been observed, but studies indicate that surface water concentrations were not measurably influenced by contact with the deposits. Metals loading from leaching of mine waste deposits, resulting in exceedance of groundwater criteria, is limited to groundwater within and immediately adjacent to the deposits. The lack of impact is due to the small size of the mine-waste deposits relative to the large volume of surface and groundwater flow during bankfull conditions, and the lack of physical contact during low flow regimes.

Concentrations of contaminants in the river, principally in the form of heavy metals such as zinc, lead, and cadmium, appear to be dependent upon a number of variables, including proximity to the point source, stream gradient and velocity, and dilution from imported western slope waters and tributary flows. The dilution effects of the augmented flows are significant, resulting in substantial reductions in heavy metals concentrations in the river. Water quality, and correspondingly, the condition of the aquatic communities continue to improve downstream as more tributaries bring additional clean flows into the Arkansas River.

Direct exposure to tailings deposits may be a concern for small mammals, such as mice or voles, or other species that have a home range small enough that they would spend a majority of their time in direct contact with a mine-waste deposit. However, no conclusive information was found describing this type of injury. Although information is limited, it is estimated that for larger species of predators and grazers, the small amount of time spent in contact with the deposits, given the large range of movement, would limit the potential for injury. This may not be true for domestic livestock, where confined grazing occurs. The study was not able to distinguish impacts, such as osteochondrosis, to elevated metals in the soils and vegetation from possible non-mining related nutrient imbalances.

Deposits in the first few miles below California Gulch appear to be older, coarser mine-wastes, with higher concentrations of metals on average than deposits in more downstream portions of the 11-Mile Reach. Upon entering Reach 2, the average metals concentration of floodplain mine-waste deposits drops and the flood plain broadens. The volume of tailings deposits per stream length also decreases in Reach 2 with distance from California Gulch, most likely as a result of increased flow capacity of the channel in this area, which would reduce the frequency of overbank conditions, and the dilution from tributary flows such as Halfmoon Creek. Planning Map 16 illustrates the extent of the 500-year floodplain in Reach 2 in green, and the fluvial deposits of mine-waste in yellow. The area affected is principally located along the main stem of the Arkansas as it passes through the Crystal Lakes State Land Board Parcel.

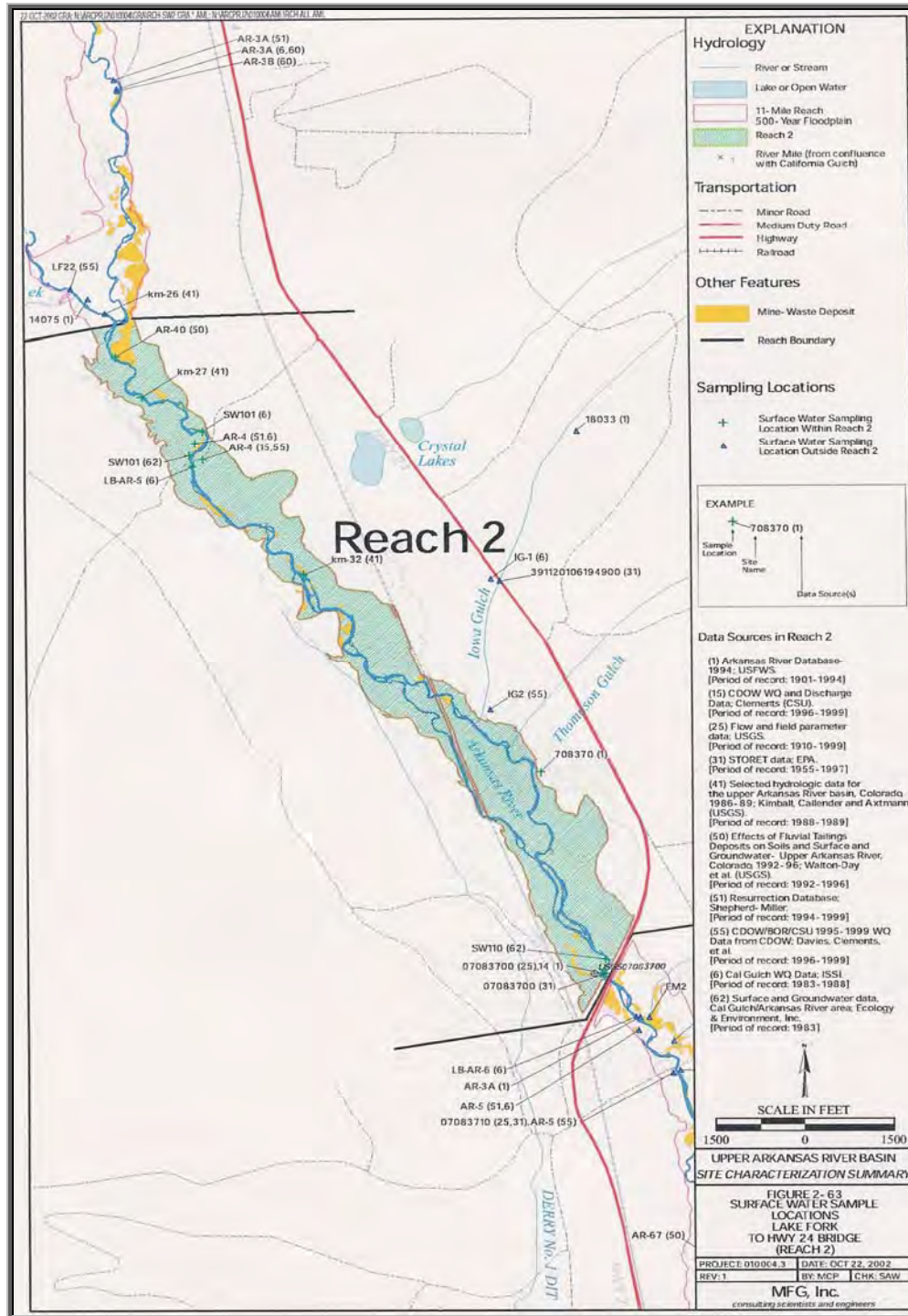
Lower average concentrations of metals in the floodplain deposits are also evident in Reach 3, however, the number of deposits increases, as the wide, shallow channel through the area is more prone to overbank flow. Reach 3 includes the floodplain of the Arkansas River through the Hayden and Arkansas River Ranches, from the highway overpass south to Kobe. Planning Map 17 illustrates the extent of the floodplain in Reach 3, indicated in green, and the locations of fluvial tailings deposits, indicated in yellow.

The fluvial tailings sites located on the Hayden Meadows Recreation Area between the U.S. Highway 24 overpass and the old highway bridge were remediated by the U.S. EPA during the summer of 2000. Soils were amended with lime to reduce acidity, and with various treatments of minerals, bio-solids, and organic materials to augment the growing medium, disturbed areas were revegetated, and stream banks were fortified by a variety of techniques to reduce stream-ank erosion. Additional remediation has occurred south of Hayden Meadows, and in the vicinity of Kobe.

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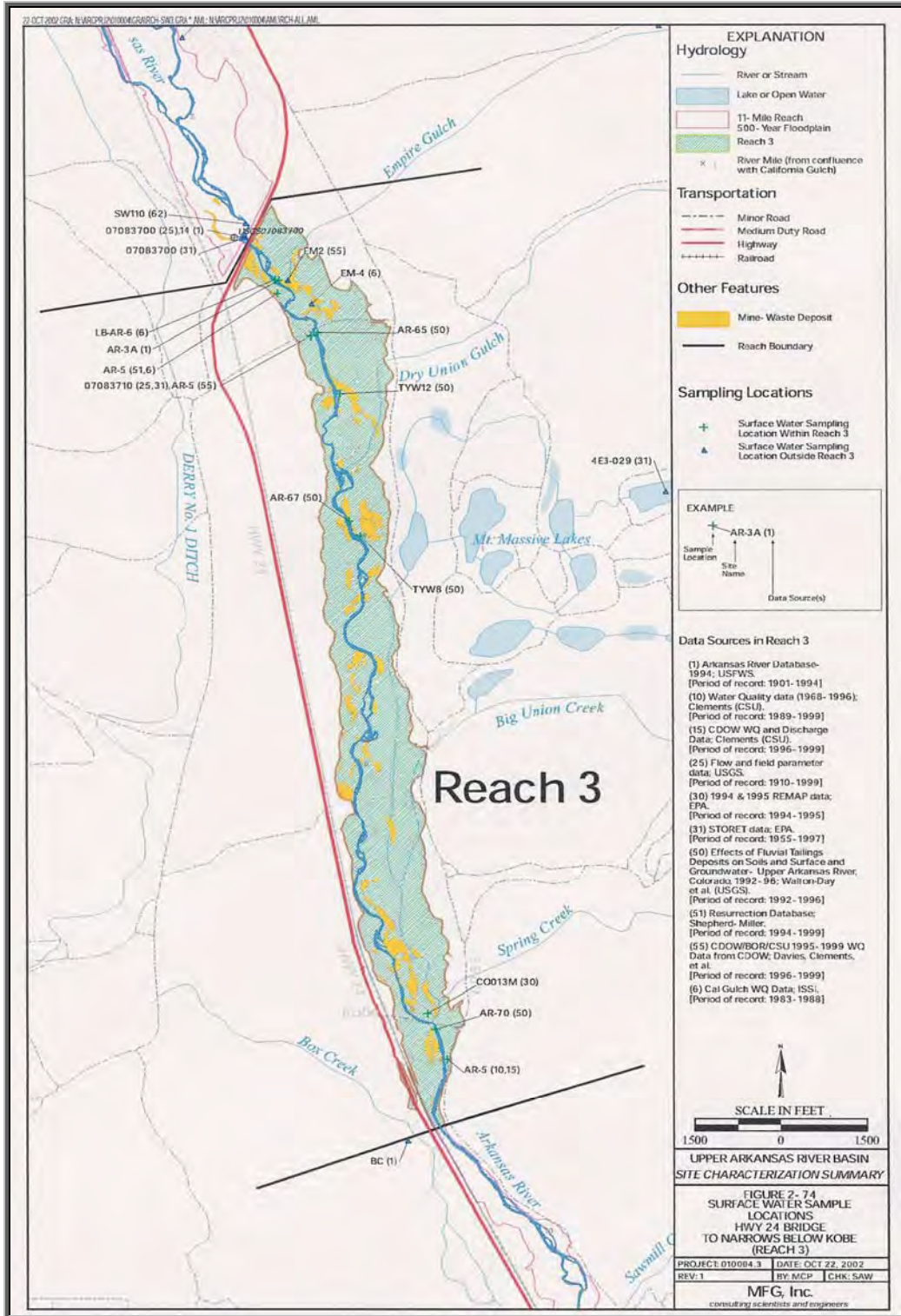


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Map 16

11- Mile Reach of the Arkansas River – Reach 3



Map 17

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Stream bank erosion control measures and revegetation along the main stem of the Arkansas River, Summer 2000.



Soil amendment, bank stabilization, and revegetation.

Haz-Mat Investigations

Additional Haz-Mat investigations that were performed within the LCOSI Project Area included:

- USF&WS performed an environmental assessment on the Hallenbeck Ranch to identify hazardous materials in 1999, and located two partially full containers of petroleum based grease.
- The City of Aurora contracted for a Haz-Mat investigation of the Hayden Ranch. Suspect materials were found in the Hayden Barns, and were subsequently removed and disposed of.
- USF&WS conducted an environmental assessment of Outlot-C of the Arkansas River Ranch for Colorado State Parks. No Haz-Mat materials were found.



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

Administration

The Lake County Open Space Initiative Ecosystem Management Plan is intended to consider the lands within the Project Area as being part of a single ecosystem, rather than a collection of discrete jurisdictional parcels determined by man-made property lines. It is in their unification that the lands of the LCOSI form the critical landscape linkage connecting the Sawatch and Mosquito Ranges, protect the viewshed's of Colorado's highest peaks, preserve historic wildlife migration routes, conserve the Valley's rich cultural heritage, and secure the legacy of open space for future generations.

By mutual consent, the partners to the LCOSI Memorandum of Understanding have agreed to participate in the preparation of the Plan, and to use the consensus recommendations contained therein to help guide future planning decisions on LCOSI lands under their jurisdiction. It is not the intended role of LCOSI to hold land, or to circumvent the management directives of its individual partners, but rather, to create the common thread that binds future decision making to the shared goals of its partnership and the benefit of the ecosystem as a whole.

Relationship to other Administrative Documents and Regulations

Current landowners within the LCOSI Project Area are illustrated on Planning Map 3, *Current Land Status*, and include: U.S. Forest Service; Lake County; Bureau of Land Management; City of Aurora; Colorado State Parks; and the Colorado State Land Board. Individual jurisdictions owning or managing lands within the LCOSI partnership are governed by their own implementing legislation and internal regulations. As they relate to administration of the LCOSI Project Area, these documents may include, but are not limited to:

U.S. Department of the Interior
Bureau of Land Management
Royal Gorge Field Office

- Royal Gorge Resource Management Plan of 1996
- Federal Land Policy and Management Act (FLPMA) of 1976
- Recreation and Public Purposes Act {R&PP} of 1926, as amended 43 U.S.C. 869 et. seq
- Land and Water Conservation Act of 1965, as amended

The State of Colorado
Department of Natural Resources
Colorado Division Wildlife

- Powers of Commission, CRS 33-1-105
- Duties of the Director of the Division, CRS 33-1-110
- Authority to Regulate Taking, Possession & Use of Wildlife, CRS 33-1-110

The State of Colorado
Department of Natural Resources
Colorado Division of Parks and Outdoor Recreation

- Colorado Statewide Comprehensive Outdoor Recreation Plan
- Arkansas River Recreational Authority, CRS 33-12.5
- Arkansas River Recreation Management Plan & Supplemental Environmental Assessment and Decision Record
- Powers of the Board, CRS33-10-107
- Powers and Duties of Director, CRS 33-10-109
- Legislative mandate to make Recreational facilities financially self supporting

U.S. Department of Agriculture
Forest Service
Pike & San Isabel National Forest
Leadville Ranger District

- The Organic Administration Act of June 4, 1897
- Section 4 {5} {c} of the Land and Water Conservation Act of 1965, as amended
- Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974
- Section 307{a} and {b} of the Federal Land Policy and Management Act {FLPMA} of 1976
- National Forest Management Act {NFMA} 36 C.F.R. 219 (1982)
- Pike and San Isabel National Forests Land & Resource Management Plan
- Final Environmental Impact Statement - Pike and San Isabel National Forests; Comanche and Cimarron National Grasslands
- Rocky Mountain Regional Plan

Lake County, Colorado
Board of County Commissioners
Planning and Zoning Commission

- Lake County Land Development Code, 1999 Edition
- Lake County Comprehensive Plan
- C.R.S. Article 20 of Title 29 – Local Government and Land Use Control Enabling Act
- C.R.S. Article 28 of Title 30 – County Planning, Zoning, Subdivision
- C.R.S. Article 65.1 of Title 24 – Areas of State Interest
- C.R.S. Article 67 of Title 24 – Planned Unit Development
- C.R.S. Article 68 of Title 24 – Vested Rights
- HB 1041

Colorado State Land Board

- Section 10(1)(b)(I) of Article IX of the Colorado Constitution
- CRS sections 36-1-107.5 and 36-1-131

City of Aurora

- Comprehensive Plan
- City Charter and Bylaws



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

Additional regulations that apply to all jurisdictions include, but are not limited to:

- National Environmental Policy Act of 1969 (NEPA)– 40 CFR 1500, PL91-190, 42 USC 4321 - 4347
- National Historic Preservation Act of 1966, as amended, 16 USC 470, PL 89-665
- National Clean Water Act of 1977, as amended, 33 USC 1251-1387, PL 95-217
- National Clean Air Act of 1970, as amended, PL 101-549
- Americans With Disabilities Act of 1990, as amended, PL 101-336
- Endangered Species Act of 1973, as amended, 7 USC 136, 16 USC 460 et seq

Inter-Agency Administration

A number of inter-agency agreements exist for the administration of land or activities within the LCOSI Project Area. These agreements include:

State Land Board, Recreational Access Agreements

The State Land Board has signed a Recreational Access Agreement with the Colorado Division of Wildlife to allow wildlife related recreation by the public on the Box Creek and Crystal Lakes State Land Board Parcels.

Hayden Meadows Recreation Area

Lake County and the Colorado Division of Parks and Outdoor Recreation have signed a cooperative Management Agreement for the operation and maintenance of the Hayden Meadows Recreation Area, wherein Lake County retains ownership of the facility and pays State Parks to operate and maintain it.

Hallenbeck Ranch Recreation Area

Lake County and the Colorado Division of Wildlife have entered into an agreement through which CDOW manages the Hallenbeck Ranch for wildlife related recreation.

Hayden Ranch Recreation Area

Lake County and the City of Aurora have entered into a license agreement for the joint operation of the Hayden Ranch Recreation Area, located on the Hayden Ranch east of U.S. Highway to the centerline of the Arkansas River.

Land Management

Subject lands within the Project Area fall under three primary jurisdictions: U.S. Forest System Lands, managed under the Pike and San Isabel National Forest Management Plan; U.S. Bureau of Land Management Lands, managed under the Royal Gorge Resource Area Management Plan; and Private Lands that fall under the jurisdiction of the Lake County Comprehensive Plan.

Forest System Lands

Lands under the jurisdiction of the U.S. Forest Service are illustrated on Planning Map 18. Lands within the Forest System are delineated as *Management Area Prescriptions*. Management Area Prescriptions contain management requirements specifying which activities will be implemented and how they will be implemented to achieve the emphasis of the management area. The management prescriptions set the baseline condition that must be maintained while achieving goals and objectives, and establish the environmental quality requirements, natural and depletable resource requirements, visual quality objectives, and mitigating measures that must be met by the various uses and activities on the Forest. Management Prescriptions include:

Management Area 2A – Semi Primitive Motorized Recreation

Management emphasis is for semi-primitive motorized recreation opportunities, such as snowmobiling, four wheel driving, and motorcycling, both on and off-roads and trails. Motorized travel may be seasonally prohibited or restricted to designated routes.

Management Area 4B – Wildlife Habitat – Indicator Species

Management emphasis is on the habitat needs of one or more indicator species. Permitted uses include motorized and non-motorized recreation and sustained forest yield. Investments in other compatible resource uses may occur but will be secondary to habitat requirements. Recreation and other human activities are regulated to favor the needs of the designated species.

Management Area 4D – Emphasis on Aspen management

Management emphasis is on maintaining and improving aspen sites to produce wildlife habitat, wood products, visual quality, and plant and animal diversity. Both commercial and non-commercial treatments are applied.

Management Area 5B – Winter Range in Forested Areas

Management emphasis is on forage and cover on forested winter range. Winter habitat for deer, elk, bighorn sheep, and mountain goats is emphasized. During the winter, the area is closed to motorized use and may be closed to all public use. Where conflicts occur, wildlife is favored.

Management Area 7D – Roundwood Production

Management emphasis is on production and utilization of small Roundwood of a size and quality suitable for products such as firewood, poles, posts, and props.

BLM Lands

BLM Lands within the project area are depicted on Planning Map 19. BLM lands are categorized as either:

Category I – Lands prioritized for disposal by any means.

Category II – Lands where retention in public ownership is the priority. Available for exchange under certain circumstances.

Category III – Lands available for disposal by exchange or other means.

The 1993 Royal Gorge Resource Management Plan lists all BLM parcels within the Project Area as Category II lands. Management direction was to exchange these parcels to the U.S. Forest Service or otherwise dispose of them to increase management efficiency. LCOSI was successful in temporarily changing the management direction to retention of the parcels for open space.

The BLM's Visual Resource Management (VRM) system focuses on man-caused changes to the natural landscape. When these changes do not repeat the basic line, form, color, and textural elements of the natural landscape, they contrast or stand out in undesirable ways. BLM lands within the Project Area are designated as VRM Class III, with the exception of BLM Parcel 3, which carries a VRM Class II designation. Definitions are as follows:

Class II

The objective of Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture in the predominant natural features of the characteristic landscape.

Class III

The object of Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract the attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of the predominant natural features of the characteristic landscape.

Private Lands

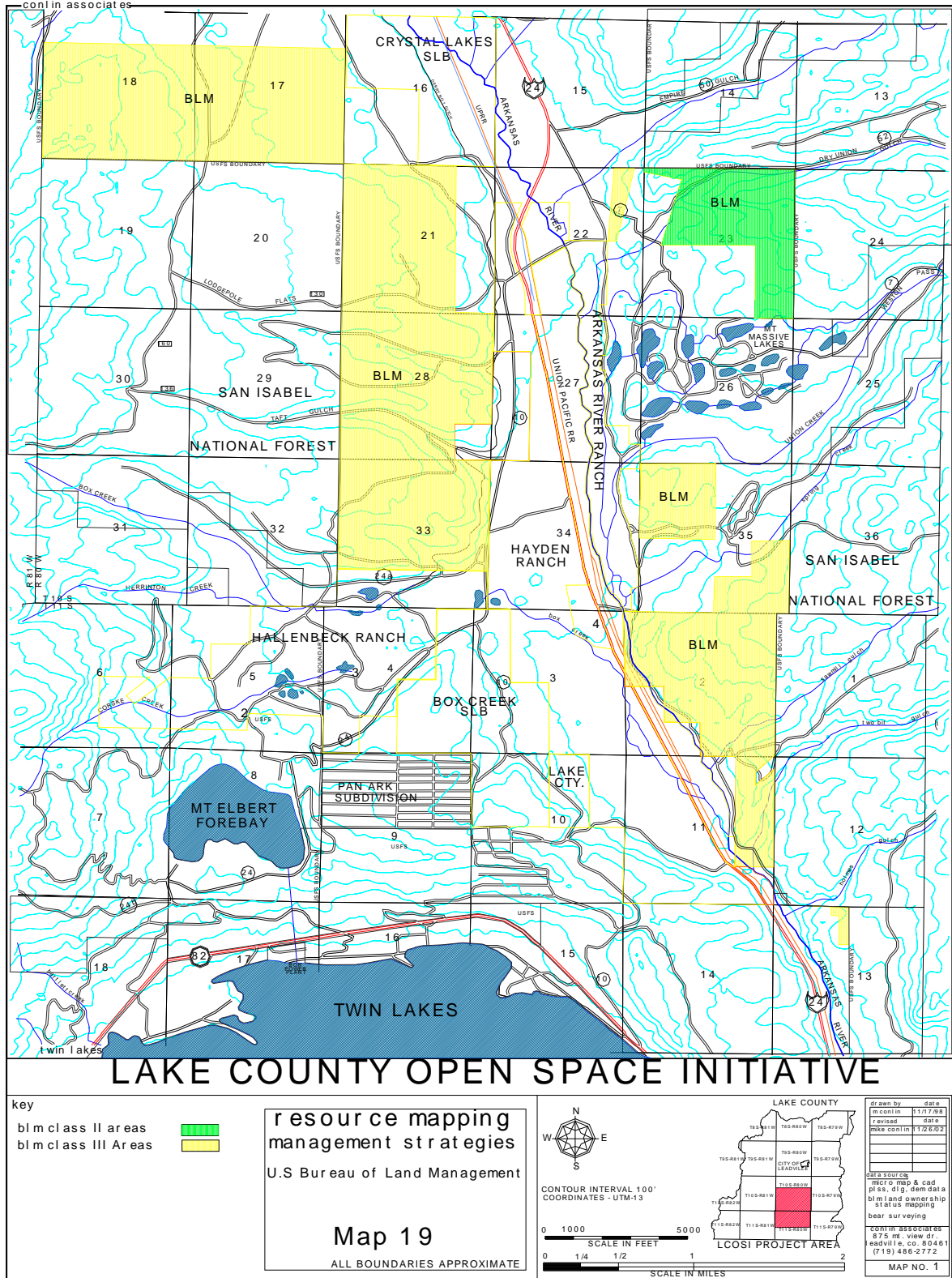
Subject Lands within the Project Area that were held in private ownership prior to September 31 of 2002 are delineated on Planning Map 20.

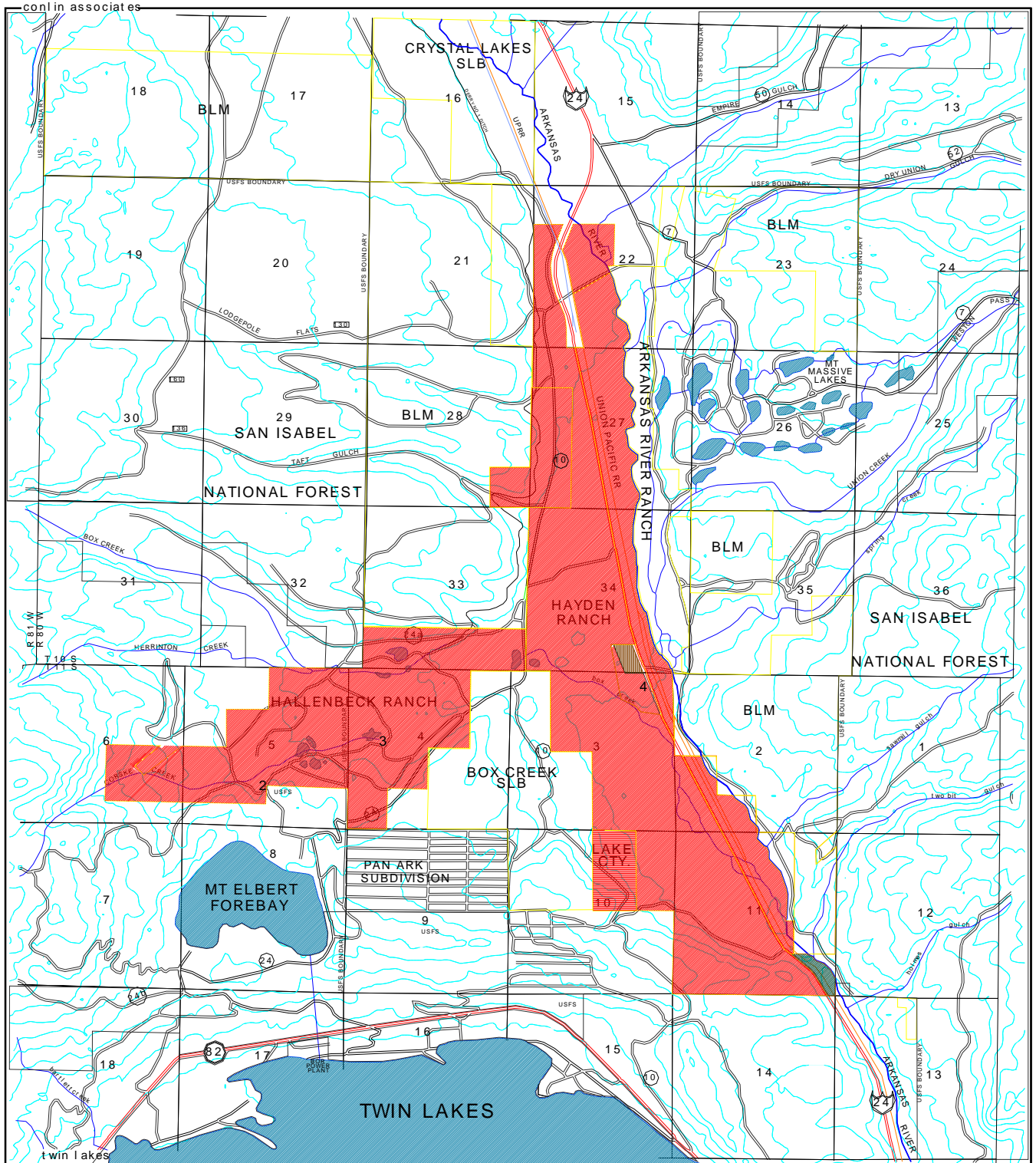
The Hayden Ranch, Hallenbeck Ranch, Hayden Meadows Recreation Area, and the Stork and Heron Placer were zoned as Agricultural Forestry (AF) or Recreational (RC) prior to May 21, 2001, when a joint application from the City of Aurora and Lake County was approved to change the zoning designation to Rural (RUR). The RUR zoning designation was added to the 2000 Lake County Comprehensive Plan to encourage the preservation of open space and the development of water rights.



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition





LAKE COUNTY OPEN SPACE INITIATIVE

key
zoning district
rur - rural



resource mapping
management strategies
lake county zoning
SUBJECT LANDS

MAP 20

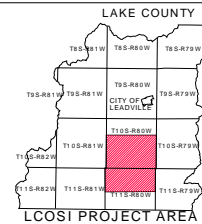
ALL BOUNDARIES APPROXIMATE



CONTOUR INTERVAL 100'
COORDINATES - UTM-13

0 1000 5000
SCALE IN FEET

0 1/4 1/2 1
SCALE IN MILES



drawn by	date
m conlin	11/17/06
revised	date
mke conlin	11/26/02
MC	9/12/06

data source
micro map & cad
pss, dtg, dem data
blm land ownership
status mapping
bear surveying

conlin associates
875 mt. view dr.
leadville, co. 80461
(719) 486-2772

MAP NO. 1

Lake County Open Space Initiative Ecosystem Management Plan



Section II Existing Condition

Scenic Quality



The Lake County Open Space Project Area occupies one of the most scenic alpine valleys in Colorado and the nation. Nestled in a high mountain valley, surrounded by the highest peaks in the American Rockies, astride the headwaters of one of America's great rivers, the LCOSI Project Area is blessed with the sense of "place" that epitomizes the rugged terrain and vast open spaces of the American West.

Sawatch Range, Twin Lakes, Hayden Ranch, Top of the Rockies Byway, and Arkansas River

Recognition of the scenic resource value, as well as strong public support for the retention of open space and scenic qualities of the Upper Arkansas River Valley, are well documented.

National Scenic and Historic Byway Designation

"America's Byways are roads to the heart and soul of America. Byways help create a sense of pride in America. They connect us to this country's beauty, history, and culture."

*Norman T. Mineta
U.S. Transportation Secretary*

In 1991, the U.S. Congress authorized a program to help states and communities preserve the intrinsic qualities of unique roadways and promote them for tourism and economic development. Under the National Scenic Byways Program, a part of the landmark *Intermodal Surface Transportation Efficiency Act of 1991* (ISTEA), the U.S. Secretary of Transportation has recognized certain roads as National Scenic and Historic Byways based on their unique archeological, cultural, historic, natural, recreational, and scenic qualities.

U.S. Highway 24, as it bisects the Lake County Open Space Project Area, received State recognition as part of the Top of the Rockies State Scenic and Historic Byway in September of 1993, when it became one of 21 elite road systems in the State of Colorado acknowledged for their outstanding scenic beauty and historical significance. The Top of the Rockies was nominated for, and awarded National Scenic and Historic Byway Status in 1997, one of only 52 Scenic Byways nationwide to achieve this honor. The Top of the Rockies Byway is considered to be the Key Observation Point (KOP) within the LCOSI Project Area, as it represents the most heavily traveled route and

provides the portal through which the majority of critical viewers would observe the Lake County Open Space.

The Top of the Rockies Byway (Byway) spans a total of 76 miles of roadways in Lake, Summit, and Eagle Counties, and is administered under an Intergovernmental Government Agreement (IGA), signed on March 29, 1995 by all participating entities. The *Top of the Rockies Scenic and Historic Byway: Corridor Management Plan* represents a tri-county grassroots effort to establish a framework to guide future planning and management decisions along the length of the Byway. As part of their establishment of goals and objectives, the Byway communities identified: "Preservation of the visual integrity of the Byway" as one of their top priorities.

Under ISTEA, *Scenic Quality* is listed as one of the six Intrinsic Qualities, and is defined as the "heightened visual experience derived from the view of natural and manmade elements of the visual environment. Natural appearing landscapes are those in which historic cultural changes (such as ranching) are accepted, and which appear to have evolved to their present state through natural processes. The characteristics of the landscape are strikingly distinct and offer a pleasing and most memorable experience¹."

Through a series of public planning workshops and bus tours, the Byway communities identified and inventoried *Critical Viewsheds* along the corridor that were deemed representative, unique, irreplaceable, or distinctively characteristic of the area². The scenic landscape visible from U.S. Highway 24, extending from Crystal Lakes to the south end of the Hayden Ranch was identified as a Critical Viewshed, and recommended for preservation of its scenic and historic resources.



Mount Massive as viewed from the Top of the Rockies National Scenic and Historic Byway

As viewed from this section of the Byway, background views include the highest peaks in the American Rockies, dominated by Colorado's two highest peaks, Mount Elbert and Mount Massive. The Sawatch, Mosquito, Collegiate Peaks, Holy Cross and Sangre de Cristo Mountain Ranges form the horizon line, representing the highest concentration of 14,000-foot peaks in the lower 48 states. Background views (one mile or more from the KOP) are principally located on U.S. Forest System and BLM lands.

¹ Federal Highway Administration, *Transportation Planning for Livable Communities*, 1993

² Conlin, M., *Top of the Rockies Scenic & Historic Byway: Corridor Management Plan*, 1996



Lake County Open Space Initiative Ecosystem Management Plan

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The ranchland and forests of the Montaine life zone dominate middle ground views from the Byway, and are principally located on private, BLM, and State Land Board parcels. Foreground views (immediately proximal to the KOP) include the upper reaches of the Arkansas River, Crystal Lakes, and the historic buildings of the Hayden Ranch, and are principally located on private lands, under the jurisdiction of the Lake County Comprehensive Land Use Plan.

Minimal foreground development along this stretch of the Byway serves to limit *visual intrusion*, defined as “man-made or man-created structures or activities that detract from the integrity of, or enjoyment derived from viewing an otherwise natural appearing landscape.” The principal exception is the proliferation of overhead utilities that criss-cross the valley. The potential for visual impact (defined as the “level of contrast between man-made structures or activities with the surrounding natural-appearing landscape”), in the foreground and middle ground viewsheds, is high, due to the flat terrain and lack of forest cover to mask or conceal human activity.

Public planning workshops and community surveys distributed in conjunction with the preparation of the Corridor Management Plan consistently identified the protection of critical viewsheds along the Byway as the top planning priority. Public support for the

preservation of Lake County's open space and viewsheds has been consistently demonstrated through public forums, community plans, and outreach efforts over the past two decades, including but not limited to:

- Lake County Land Use Guide – The 1988 Lake County Land Use Guide listed among its goals and objectives: *To preserve the scenic vistas, unique natural areas and other aesthetic, historical, and archeological sites within Lake County.*
- Silver 2000, and 2005 – Community visioning processes, held in 1990 and 1995 respectively, to identify Lake County's strengths and weaknesses, and create a vision for its future. Identified strengths included the County's open space and incredible scenic viewsheds. Goals included: Create an Advisory Open Space Council; and, include viewshed protection in local plans and regulations.
- LCOSI Community Survey – Conducted for LCOSI in 1998 by Colorado Mountain College. The Survey asked the question: "Would you support the concept of purchasing ranch lands along the Arkansas River watershed for the creation of parks and the preservation of open space?" Responses indicated a 91% approval rate.
- 2001 Community Survey – The Leadville Coalition conducted a community survey in the summer of 2001 to gather data to be used as part of an overall social and economic analysis of the community. There was agreement on the top priorities. "Attract new businesses to the community" received the highest rating (85%), followed very closely with "Protect scenic valleys, mountain views, and environmental assets" at 84%.



Arkansas River, Mount Elbert, and Mount Massive from the Hayden Meadows Recreation Area

Existing Viewshed Management

Existing Viewshed Management within the LCOSI Project Area is a function of land ownership and compliance with respective jurisdictional planning documents. Private lands within the foreground and middle ground views along the Arkansas River Valley fall under the jurisdiction of the Lake County Comprehensive Land Use Plan, while middle and background views are predominately controlled by federal agencies, and are subject to their respective Management Plans (Map 21).

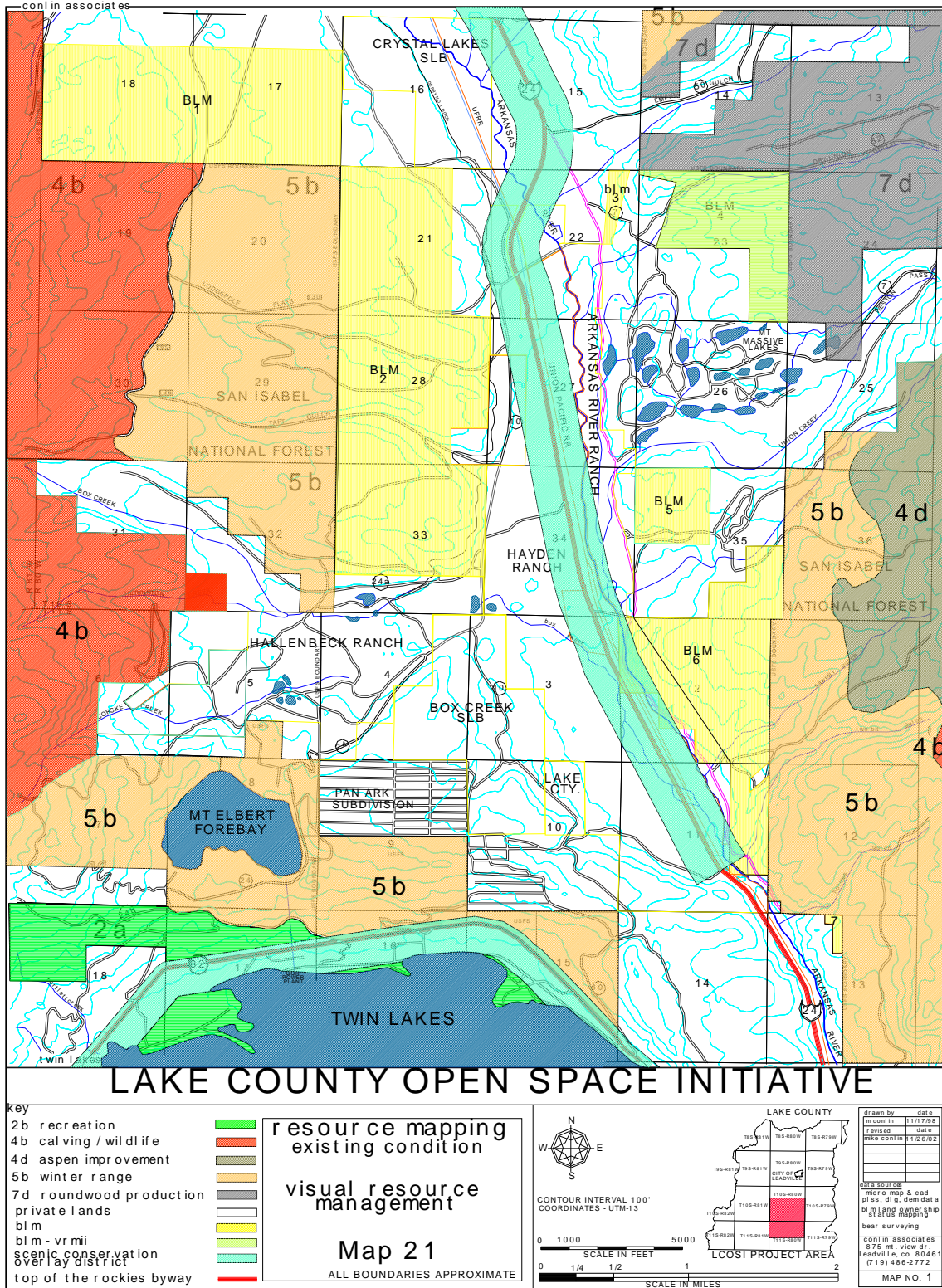
Private Lands

The Lake County Comprehensive Land Use Plan recognizes the significant scenic value and need to protect the viewshed on the section of U.S. Highway 24 as it passes through the Project Area between Crystal Lakes and the southern border of the Hayden Ranch. In its 1988 edition, the Comprehensive Plan established a Scenic Conservation Overlay (SCO) District that extends for 1000 feet on either side of the centerline of U.S. Highway 24 (Map 22).



Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition





Lake County Open Space Initiative Ecosystem Management Plan

Section II Existing Condition

The Scenic Conservation Overlay Zoning District is a supplemental district that overlays the standard district. Any use by right or conditional use permitted in the underlying district is also permitted in the SCO District, so long as that use conforms to the special conditions required in the SCO District. The private lands of the Hayden and Hallenbeck Ranches, Hayden Meadows, and the Stork and Heron Placer are zoned Rural (RUR), which encourages preservation of open space and development of water rights (Map 23).

All buildings and other structures, including towers, poles, silos, and other structural features located in an SCO district shall be sited, constructed, and finished in a manner that will cause the minimum possible intrusion on, or disruption of, the established scenic views. Buildings and other structures that fail to meet these conditions shall be prohibited in the district.

Structures, including roofs and roof appurtenances in the zoning district shall be limited to materials, textures, colors, and tones that blend harmoniously and inconspicuously with the indigenous landscape, and shall, to the greatest extent possible, be screened by natural slopes from highway view. Towers and antennae, unless wholly screened from highway view, are prohibited, as are buildings and other structures that block, impede, or otherwise obstruct or infringe on mountain, plains, and valley views.

All buildings constructed along a State or U.S. designated highway must maintain a setback from the right of way property line that abuts the roadway of at least one hundred (100) feet. Within the SCO District, this setback distance has been increased to two hundred (200) feet.

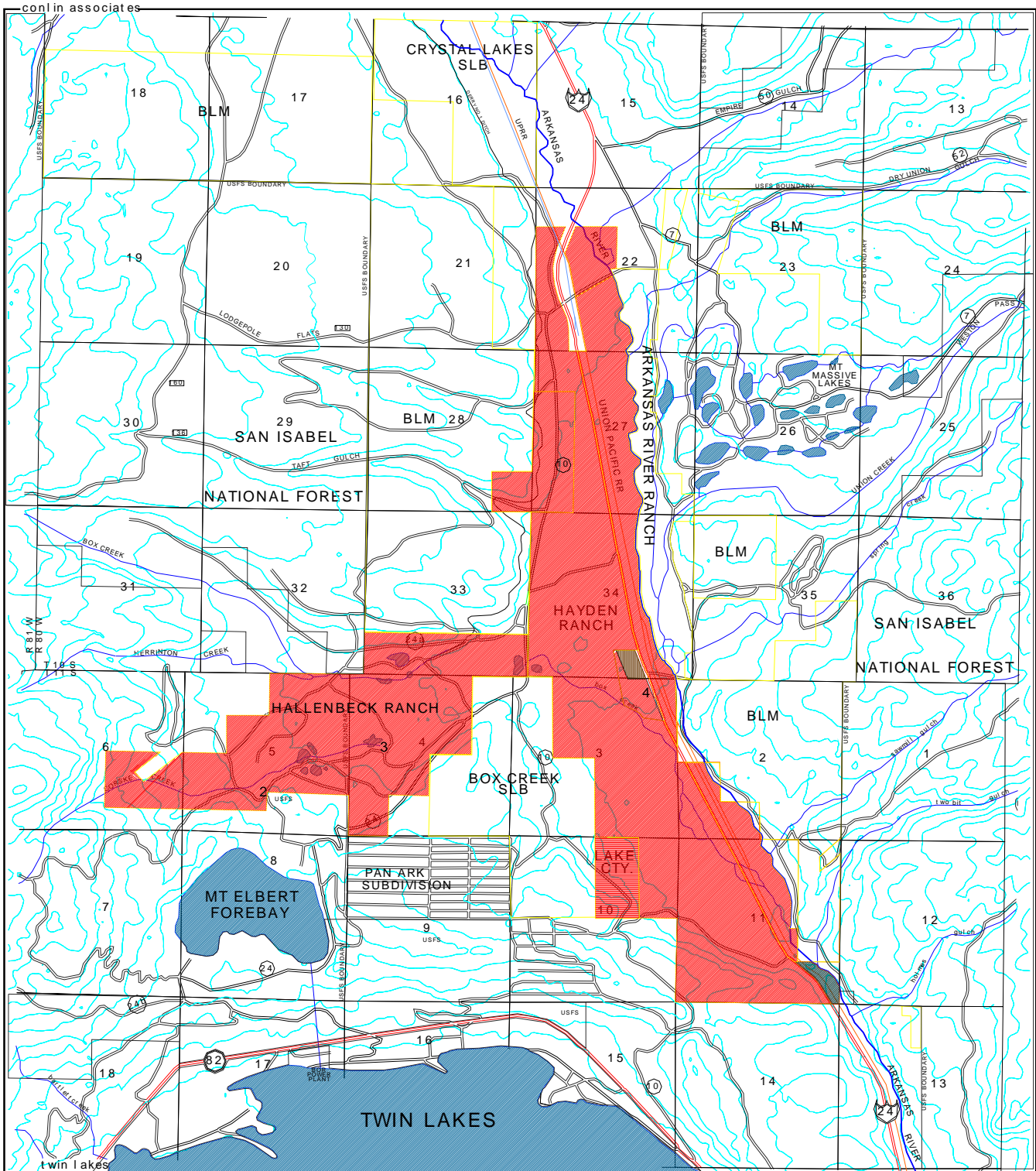
Federal Lands

As illustrated on Planning Map 21, middle and background views are predominately under the control of the U.S. Bureau of Land Management and the U.S. Forest Service, and fall under the jurisdiction of the Royal Gorge Resource Area Management Plan, or the Forest Management Plan for the Pike and San Isabel National Forest respectively.

U.S. Bureau of Land Management

The BLM recognizes that the maintenance of high quality visual resources on lands administered by them is important to local economies in areas with sensitive scenic values. The 1993 Royal Gorge Resource Area Management Plan assigned Visual Resource Management (VRM) classifications to BLM parcels 1-7 within the LCOSI Project Area, based upon conditions as they existed at that time (Map 19).

Prior to the designation of the Top of the Rockies as a National Scenic and Historic Byway in 1997, and the formation of LCOSI in 1998, BLM Parcels 1-7 were all identified as Category II lands, which could be disposed of through land exchange or other methods of land tenure adjustment to meet management objectives. Of these parcels, only Parcel 4 was classified as a VRM



LAKE COUNTY OPEN SPACE INITIATIVE

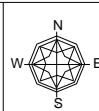
key
 zoning district
 rur - rural



resource mapping
 management strategies
 lake county zoning
 subject lands

Map 20

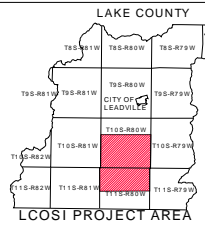
ALL BOUNDARIES APPROXIMATE



CONTOUR INTERVAL 100'
 COORDINATES - UTM-13

0 1000 5000
 SCALE IN FEET

0 1/4 1/2 1
 SCALE IN MILES



drawn by	date
m conlin	11/17/98
revised	date
lake conlin	11/26/02
data source	
mcr map & cad	
plss, dg, dem data	
blm land ownership	
state mapping	
bear surveying	
conlin associates	
875 mt. view dr.	
leadville, co. 80461	
(719) 466-2772	
MAP NO. 1	



Lake County Open Space Initiative Ecosystem Management Plan

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II area, where special considerations or conditions could be required in order to protect sensitive viewsheds and visual resources. These conditions could include such methods as: closure to mineral entry and mineral materials disposal, avoidance in major right-of-way corridor development, limited off-highway vehicle use, and retention in public ownership. Since the National Byway designation and the formation of LCOSI, Parcels 1-7 have all been reclassified for retention of their scenic and open space values.

The BLM's VRM system focuses on man-caused changes to the natural landscape. When these changes do not repeat the basic line, form, color, and textural elements of the natural landscape, they contrast or stand out in undesirable ways.

Scenic quality is determined based on an analysis of:

- The relative visual value of existing landscape components (landforms, vegetation, water, color etc.)
- The sensitivity level of the area based on the type of user who will view the area, the number of users, and the public interest in visual values of the area.
- The distance of man caused changes from travel corridors and Key Observation Points (KOP's)

Based on this analysis, four management classes have been established:

Class I

The objective of Class I is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and not attract attention.

Class II

The objective of Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture in the predominant natural features of the characteristic landscape.

Class III

The objective of Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract the attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of the predominant natural features of the characteristic landscape.

Class IV

The objective of Class IV is to provide for management activities requiring major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities can dominate the view and be the major focus of viewer attention. Every attempt should be made, however, to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

US Forest Service

Lands under the jurisdiction of the US Forest Service have been delineated as Management Area Prescriptions (Map 18). Management Area Prescriptions contain management requirements specifying which activities will be implemented and how they will be implemented to achieve the emphasis of the management area. The management prescriptions set the baseline condition that must be maintained while achieving goals and objectives, and establish the environmental quality requirements, natural and depletable resource requirements, visual quality objectives, and mitigating measures that must be met by the various uses and activities on the Forest.

Visual Quality is based upon the physical characteristics of the land and the sensitivity of the landscape as viewed by people. Visual Quality Objectives (VQO) reflect the acceptable levels of change to the existing landscape, and are measured in terms of contrast with the surrounding natural landscape. Natural appearing landscapes are those in which cultural changes are accepted and which appear to have evolved to their present state through natural processes. The five Visual Quality Objectives, each representing a different degree of acceptable alteration of the natural appearing landscape are:

Visual Quality Objectives

- *Preservation*: This visual quality objective allows ecological changes only. Management activities, except for very low visual-impact recreation facilities, are prohibited.
- *Retention*: This visual quality objective provides for management activities, which are not visually evident. Under retention activities may only repeat form, line, color, and texture which are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc., should not be evident.
- *Partial Retention*: Management activities are visually evident but subordinate to the characteristic landscape when managed according to the partial retention visual quality objective. Activities may repeat form, line, color, or texture common to the characteristic landscape but changes in their qualities of size, amount, intensity, direction, pattern, etc., remain visually subordinate to the characteristic landscape.
- *Modification*: Under the modification visual quality objective management activities may visually dominate the original characteristic landscape. However, activities of vegetative and land form alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area or character type.
- *Maximum Modification*: Management activities of vegetative and landform alterations may dominate the characteristic landscape. However, when viewed as background, the visual characteristics must be those of natural occurrences within the surrounding area or character type. When viewed as foreground or middle ground, they may not appear to completely borrow from naturally established form, line, color, or texture. Alterations may also be out of scale or



Lake County Open Space Initiative Ecosystem Management Plan

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contain detail which is incongruent with natural occurrences as seen in foreground or middle ground.

The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. The contrast can be measured by comparing the project features with the major features in the existing landscape. The basic design elements of form, line, color, and texture are used to make this comparison and to describe the visual contrast created by the project. Visual contrast can be affected by a number of variables, including but not limited to:

Visual Contrast: Variables

1) Distance. The contrast created by a project usually is less as viewing distance increases.

(2) Angle of Observation. The apparent size of a project is directly related to the angle between the viewer's line-of-sight and the slope upon which the project is to take place. As this angle nears 90 degrees (vertical and horizontal), the maximum area is viewable.

(3) Length of Time the Project Is In View. If the viewer has only a brief glimpse of the project, the contrast may not be of great concern. If, however, the project is subject to view for along period, as from an overlook, the contrast may be very significant.

(4) Relative Size or Scale. The contrast created by the project is directly related to its size and scale as compared to the surroundings in which it is place.

(5) Season of Use. Contrast ratings should consider the physical conditions that exist during the heaviest or most critical visitor use season, such as snow cover and tree defoliation during the winter, leaf color in the fall, and lush vegetation and flowering in the spring.

(6) Light Conditions. The amount of contrast can be substantially affected by the light conditions. The direction and angle of lighting can affect color intensity, reflection, shadow, from, texture, and many other visual aspects of the landscape. Light conditions during heavy periods must be a consideration in contrast ratings.

(7) Recovery Time. The amount of time required for successful revegetation should be considered. Few projects meet the VRM management objectives during construction activities. Recovery usually takes several years and goes through several phrases (e.g., bare ground to grasses, to shrubs, to trees, etc.). It may be necessary to conduct contrast ratings for each of the phases that extend over long time periods. Those conducting contrast rating should verify the probability and timing of vegetative recovery.

(8) Spatial Relationships. The spacial relationship within a landscape is a major factor in determining the degree of contrast.

(9) Atmospheric Conditions. The visibility of projects due to atmospheric conditions such as air pollution or natural haze should be considered.

(10) Motion. Movement such as waterfalls, vehicles, or plumes draws attention to a project.

The Management Prescriptions of Forest Lands surrounding the LCOSI Project Area are delineated on Planning Map 18. The Visual Quality Objectives for each of the surrounding management prescriptions are defined as follows:

Management Area 2A – Semi Primitive Motorized Recreation

VQO – Visual resources are managed so that management activities are not evident or remain visually subordinate. Past management activities such as historical changes caused by early mining, logging, and ranching may be present, which are not visually subordinate, but appear to have evolved through natural processes. Landscape rehabilitation is used to restore landscapes to a desired visual quality. Enhancement is aimed at increasing positive elements of the landscape to improve visual variety. Design and implement management activities to provide a visually appealing landscape. Enhance or provide more viewing opportunities and increase diversity in selected areas.

Management Area 4B – Wildlife Habitat – Indicator Species

VQO - Management activities may dominate in foreground and middle ground, but harmonize and blend with the natural setting. Design and implement management activities to blend with the natural landscape.

Management Area 4D – Emphasis on Aspen management

VQO - Management activities in foreground and middle ground are dominant but blend with natural setting.

Management Area 5B – Winter Range in Forested Areas



Mule Deer on forested winter range

VQO - Management activities are not evident, remain visually subordinate, or dominate in the foreground and middle ground, but harmonize and blend with the natural setting. Design and implement management activities that are visually subordinate or that are not visually evident.

Management Area 7D – Roundwood Production

VQO - Management Activities, although they may be visually dominant, harmonize and blend with the natural setting.



**Lake County Open Space Initiative
Ecosystem Management Plan**

**Section III
Anticipated Change**

Lake County Open Space Initiative Ecosystem Management Plan



Section III Anticipated Change

Anticipated Change

The actions of LCOS I will precipitate both primary and secondary changes to the existing condition of the Upper Arkansas River Valley. The primary changes will be the result of shifts in land and water ownership, and the subsequent changes in administration and management goals for the subject properties. The secondary changes will be the impacts that these changes in ownership and management will have on planning elements such as public access, recreation, wildlife, scenic quality, wetlands, and utilities.

Primary Changes

Land Ownership

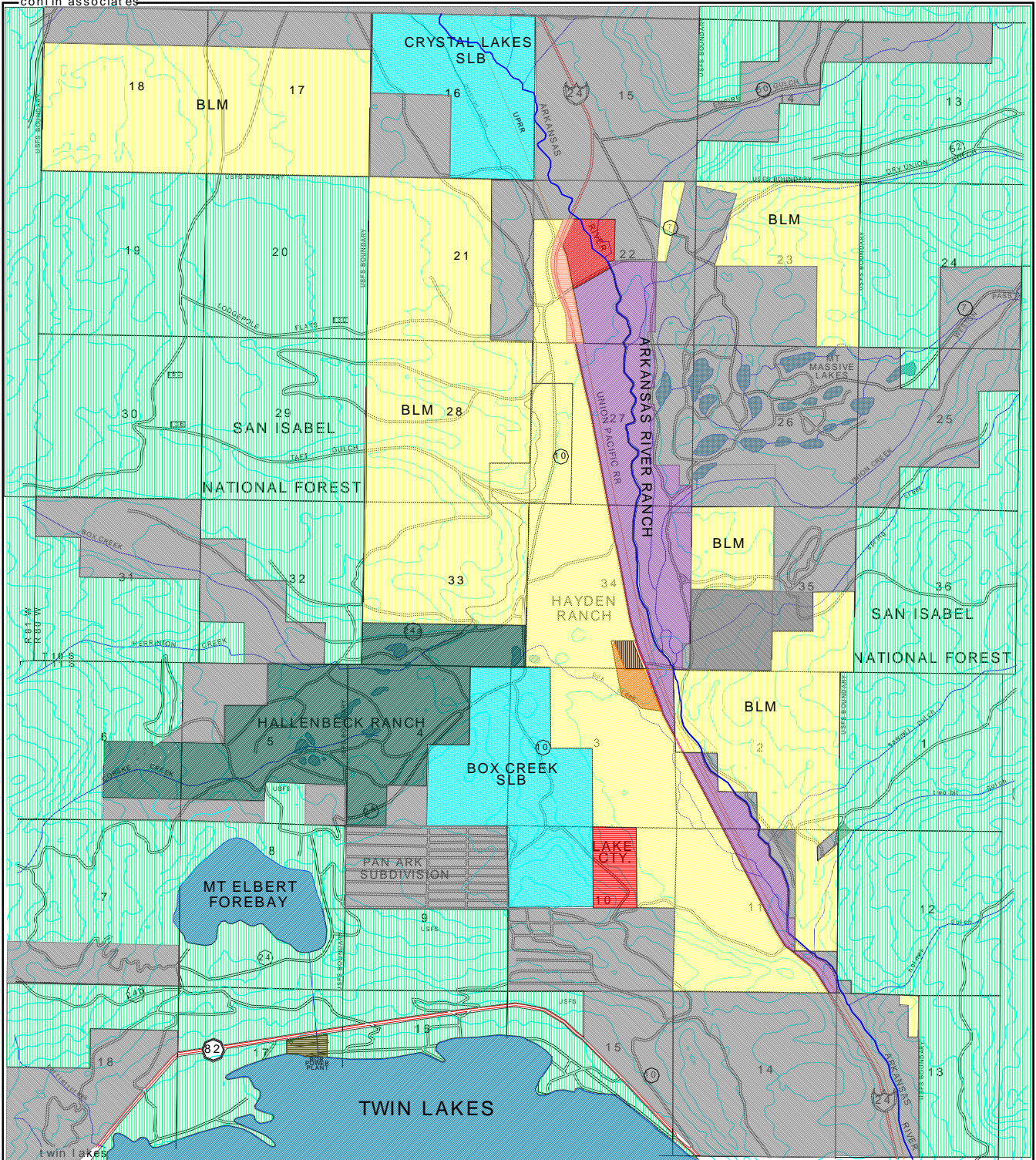
The anticipated changes in land ownership are delineated on Planning Map 24. As illustrated, the following changes are expected.

Hayden Ranch

The Hayden Ranch was originally established to produce hay to feed the livestock that provided the literal "horsepower" of the mining boom in nearby Leadville. With downturns in mining and the introduction of electricity and the internal combustion engine, the demand for livestock, and commensurately for hay, dropped significantly, forcing ranchers to adapt to the changing times.



Arkansas River, U.S. Highway 24, and Hayden Ranch



LAKE COUNTY OPEN SPACE INITIATIVE

LAND OWNERSHIP MATRIX

city of aurora	
lake county	
colo. state parks	
state land board	
bureau of land mgmt	
moosehaven	
colo. dot	
private	
SAN ISABEL NATIONAL FOREST	
cpi	

**LAND OWNERSHIP
anticipated change**

Map 24
ALL BOUNDARIES APPROXIMATE

LAKE COUNTY

CONTOUR INTERVAL 100'
COORDINATES - UTM-13

LCOSI PROJECT AREA

drawn by	date
m conlin	1/17/98
revised	date
mike conlin	1/26/02
MC	9/12/05

data source:
micro map & cad
plus dig. dem data
blm land ownership
st ut. mappings
bear surveying

conlin associates
875 m. view dr.
leadville, co. 80461
(719) 486-2772

MAP NO. 1

Lake County Open Space Initiative Ecosystem Management Plan



Section III Anticipated Change

With its sale to W.E. Callahan in 1933, the Hayden Ranch took on a new role as a working cattle ranch (See Section 2, *Land Status*, Hayden Ranch). With adequate hay production and grazing allocations, the ranch supported 500 head of cattle on a year round basis, feeding the calves straight through the winter and selling them as “long yearlings” in the spring. Following the sale of the ranch in 1947, the cattle operation was downsized from a year round, to a seasonal operation. The barns on the ranch homestead, which were originally constructed to store the huge quantities of hay necessary to feed livestock through the winter months, were allowed to fall into disrepair as the need for hay storage dwindled. The dwellings and outbuildings followed suit, as the manpower necessary to run the ranch was reduced in response to the decreased seasonal workload, leading to the existing condition of the Ranch today.

For the better part of the last century, therefore, the lands and associated water rights of the Hayden Ranch have been managed to maximize forage production for the grazing of cattle. With the sale of the Hayden Ranch, management direction will shift from private sector cattle production, to the public stewardship of the land for open space, wildlife, historic preservation, public education, smart growth, and outdoor recreation.

It is anticipated that the Hayden Ranch will be subdivided into four discrete parcels and sold by the City of Aurora. The end owners of the properties are expected to be:

Hayden Ranch: West Parcel

The BLM has secured Land and Water Conservation Funds in the amount of \$640,000.00 to acquire those portions of the Hayden Ranch west of U.S. Highway 24, exclusive of the 35.38 acres associated with the Hayden Homestead, and the 0.77 acres containing the Moosehaven sanitation system. BLM is bound by federal regulation to acquire properties at, or below fair market value, and will have the property appraised to determine its actual value. BLM will also complete an environmental assessment of the impacts of the acquisition as per the requirements of NEPA. Closing is expected sometime before the end of the summer of 2003.

The City of Aurora has agreed to, and has surveyed, the subdivision of the Ranch to create the West Parcel, and has agreed in principal to its sale subject to the determinations of the appraisal and conditions of sale. The City will retain all water rights associated with the ranch, as well as easements across the land sufficient to construct elements of the delivery and discharge systems of the proposed Box Creek Reservoir.

This transaction will convert approximately 1,411.81 acres of historically private land into public ownership as open space and wildlife habitat. Critical foreground views of the highest peaks of the Sawatch Range from U.S. Highway 24, the *Top of the Rockies National Scenic and Historic Byway*, will be

preserved in perpetuity, as will the big game migration routes, transitional habitats, and winter range found within its boundaries. Public access to, and use of the ranch is expected to increase, as will recreational opportunities.

The acquisition of the West Parcel will serve to consolidate scattered BLM parcels within the project area to improve management efficiency, eliminate conflicts, and enhance management capabilities.

Lands acquired by the BLM west of US Highway 24 will be managed under the Bureau of Land Management's *Royal Gorge Resource Area Management Plan*.

Hayden Ranch: River Parcel

That portion of the Hayden Ranch, east of the centerline of U.S. Highway 24 to the centerline of the Arkansas River, has been surveyed and subdivided for sale to Colorado State Parks. It is anticipated that funding for this purchase is will be provided by the U.S. Bureau of Reclamation as part of a remediation settlement for natural resource damages to waters of the State resulting from past discharges into the Arkansas River from the Bureau's Leadville Mine Drain Tunnel.



Colorado State Parks is the State Agency Partner in the Arkansas Headwaters Recreation Area, a Legislatively designated park following the River corridor for approximately 150 miles from Leadville to Lake Pueblo. The acquisition of the River Parcel will add approximately 369.76 acres of land and 5.5 miles of river frontage to the Arkansas River Ranch parcel, acquired by Parks in March of 2000, bringing Project Area lands under State Parks control to approximately 730 acres.

The Bureau of Land Management is the Federal Agency Partner in AHRA. BLM Parcels 5 and 6, located on the east side of the Arkansas River, are adjacent to the Arkansas River Ranch and the Hayden Ranch River Parcel. These parcels, totaling some 680-acres, will bring the contiguous AHRA landmass along the river corridor to approximately 1410 acres. Additionally, State Parks has an Intergovernmental Agreement with Lake County to manage and operate the 60.35-acre Hayden Meadows Recreation Area. This brings a total of approximately 1470 acres along the river corridor under the management of the AHRA. This land will be managed under the *Arkansas River Recreation Management Plan*.

Lake County Open Space Initiative Ecosystem Management Plan



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Prior to the formation of LCOSI, the AHRA in Lake County was a park without land. Virtually all properties adjacent to the river were held in private ownership, precluding public access. With the addition of almost 1500 acres of public access along the river, public recreational use is expected to increase significantly. The consolidation of the landmass as public open space will also serve to safeguard its value as a landscape linkage between the surrounding mountain ranges, conserve critical lowland/riparian habitat, and retain the scenic foreground views of the river bottom against the dramatic backdrop of the Mosquito Range.

No water rights will be transferred with the sale of the River Parcel. As with the sale of the West Parcel to BLM, the City of Aurora will retain all water rights associated with the ranch, as well as easements across the land sufficient to construct elements of the delivery and discharge systems of the proposed Box Creek Reservoir.

Hayden Ranch: Homestead Parcel

A 35.38-acre parcel of land underlying the historic Hayden Ranch buildings has been surveyed and subdivided from the property for the purpose of transferring title to Colorado Preservation Inc. (CPI.) CPI is a statewide nonprofit historic preservation organization founded in 1984 by citizens concerned about the preservation of Colorado's unique and irreplaceable heritage.

The transfer will include a Historic Conservation Easement and a Rehabilitation Agreement that binds future owners of the land to the preservation and rehabilitation of the historic structures. It is CPI's intent to complete the nomination process that will place the Hayden Homestead on the National



Register of Historic Places. Along with the donation of the land and structures by the City of Aurora, LCOSI partners also raised \$50,000.00 in matching funds to support a \$200,000.00 CPI grant request to the Colorado Historical Society Grant for immediate structural stabilization of the structures, and an additional \$5,000.00 as match funding for signage to interpret the site.

It is anticipated that the adaptive re-use of the structures will include their restoration as part of an innovative educational program that will be instituted by Colorado Mountain College in the fall of 2004. The program will establish a 2+2+2 degree program in historic preservation, which would provide an Associates degree through CMC, and continuing education agreements with four other State Institutions offering Bachelors and Masters Degrees in the field. The Hayden Homestead would be the hands on laboratory for learning and implementing preservation techniques, providing not only a valuable learning experience for students, but much needed stabilization and restoration of the ranch buildings.

It is expected that the restoration and interpretation of the Hayden Homestead will compliment the National Mining Museum, Top of the Rockies National Scenic and Historic Byway, and the Mineral Belt National Recreational Trail, in telling the story of the Upper Arkansas River Valley, while increasing heritage tourism in Lake County.

Hayden Ranch: Moosehaven Parcel

Directly to the north of the Hayden Homestead is an in holding of private land referred to as the Moosehaven Condominiums, and a small adjacent subdivision known as Dream Valley. Both entities share a wastewater system that occupies an easement across a portion of the Hayden Homestead parcel. The system does not lie within the easement delineated on the recorded legal description.

The City of Aurora has surveyed an easement that coincides with the physical infrastructure as it was built on the ground, and that provides additional width to accommodate repair and replacement. The easement is shown on the plat map of the Homestead parcel and contains 0.77 acres of land. In return for their donation of this easement to Moosehaven, the City of Aurora has retained the rights to two taps onto the system to accommodate future growth and the consolidation of wastewater systems on the Homestead parcel. Those taps will run with the land of the Homestead parcel.

Hallenbeck Ranch

The Derry (Hallenbeck) Ranch was originally homesteaded for the purpose of producing hay to feed the livestock needed to power the burgeoning mining industry. With downturns in silver mining and the replacement of livestock as the principal source of "horsepower" around the turn of the century, hay production on the Derry became un-profitable, and in 1908 the Ranch was sold to the Saguache Mining Company for the purpose of mining the gold reserves that lay just beneath the surface (See Section 2, *Land Status*, Hallenbeck Ranch). Subsequent placer mining continued almost unabated on the Ranch until its sale at sheriffs auction in 1952.

The Ranch was acquired in the early 1960's by a consortium of investors interested in private sector development of the land to support a proposed ski area on Mount Elbert, a project that never came to fruition. During the interim period leading up to its sale to Lake County in 1998, the Ranch was leased in conjunction with the Hayden Ranch for seasonal grazing of cattle.

Historically, the lands and associated water rights of the Hallenbeck Ranch have been managed to support private sector extraction of natural resources and to maximize forage production for the grazing of cattle. With the proposed sale of the Hallenbeck Ranch, management direction will shift from private

Lake County Open Space Initiative Ecosystem Management Plan



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sector commerce to public stewardship of the land for open space, wildlife, water resource development, and outdoor recreation.

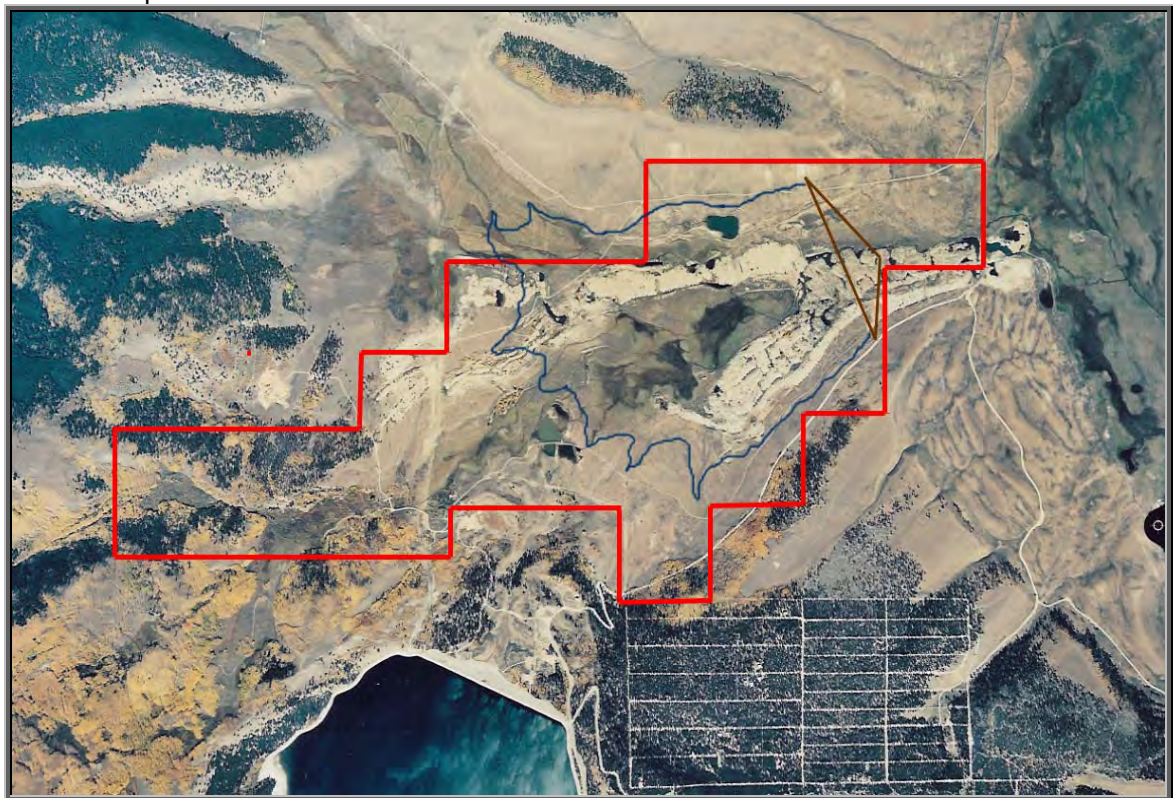
The Hallenbeck Ranch was purchased by Lake County in May of 1998, to preserve its open space values, secure its water rights, and to provide exchange parcels for a proposed USFS land swap at Lake County's Ski Cooper Ski Area.

The Ranch consists of two discrete and isolated parcels of land. Anticipated changes in ownership include:

Hallenbeck Ranch: Derry Homestead

The Derry Homestead parcel consists of 1,000± acres of land in the Box Creek drainage, west of the Hayden Ranch. The land was placed under a one-year option to the City of Aurora in January of 2001, with said option extended by mutual agreement until January of 2003. The City optioned the property for the expressed purpose of exploring the feasibility of constructing the Box Creek Reservoir on the site.

Proposed Location: Box Creek Reservoir¹



Approximate high water mark of proposed Box Creek Reservoir within Hallenbeck Ranch: el. 9380'

Approximate Ranch Boundary ———
Approximate High water elevation ———

¹ Feasibility Analysis: Box Creek Reservoir
Anticipated Change



Computer rendering of proposed Box Creek Reservoir, from south abutment

The conditions of the sale to Aurora are described in the Land Purchase Option Agreement, and include the provision that lands surplus to the operational needs of the reservoir would remain as public open space and be managed in coordination with the goals and objectives of LCOSI. Additional conditions include: establishment of a recreational mitigation fund equal to 1% of the construction cost; payment in lieu of taxes to Lake County; a first right of refusal granted to Lake County for re-acquisition of surplus lands; and a provision granting ownership of 20% of the operational storage capacity of the completed reservoir to Lake County. Lake County would retain the Derry #1, 2, and 3 water rights associated with the Ranch, and the right to continue the historic beneficial use of the water rights on the property.

If the reservoir were to be constructed to the specifications described in the preliminary feasibility assessment, anticipated changes would include: the conversion of approximately 380 acres of terrestrial habitat to aquatic habitat; increased water and land based recreational opportunities, supported by a mitigation budget; additional water storage capacity for Lake County to support future growth, or to lease out as a perpetual source of revenue; additional drought relief capacity for the State of Colorado; modifications to the Mount Elbert Viewshed; re-routing or elimination of existing transportation routes; loss of some historic resources; and additional water storage capacity high up in the Arkansas River drainage to support growth along the Front Range.

Before construction of the reservoir could occur, the proposal would be subject to all applicable Federal, State and Local permits and regulations, including but not limited to: The National Environmental Policy Act of 1969; National Historic Preservation Act of 1966; National Clean water Act of 1977; National Clean Air Act of 1970; Endangered Species Act of 1973; the Americans with Disabilities Act of 1990, and all subsequent amendments; as well as the Lake County Land Development Code, 1999 edition; Lake County's 1041 regulations; and the Lake County Comprehensive Plan.

Hallenbeck Ranch: Taft Gulch Parcel

The second piece of land associated with the Hallenbeck Ranch is an isolated parcel located in the vicinity of Taft Gulch in Sections 27 and 28, T10 S, R80 W,

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containing 160-acres more or less. This parcel of the Hallenbeck Ranch was not a part of the Land Purchase Option Agreement with the City of Aurora.

It is anticipated that this parcel of land will be sold by Lake County to the City of Longmont at its fair market value, and then exchanged to the Bureau of Land Management for federal properties underlying Longmont's wastewater facilities in Boulder County. The acquisition of the Taft Gulch Parcel will serve to consolidate BLM parcels within the project area to improve management efficiency, eliminate conflicts, and enhance management capabilities.

The placement of the parcel into BLM ownership for management as open space retains 160 acres of critical winter range, secures diurnal winter travel routes between forage and cover, and conserves the middle ground views of Mount Elbert and the Sawatch Range from the Top of the Rockies National Scenic and Historic Byway. Anticipated changes would include increased public recreational use of the area once it enters the public domain.

No water rights are associated with the Taft Gulch parcel of the Hallenbeck Ranch.

Water Ownership

Along with anticipated changes in land ownership will come changes in the ownership and utilization of associated water rights. Water rights are a real property, and as such, are considered to be a commodity, subject to trade or sale in much the same manner as land. Water rights within the LCOSI Project Area include the Derry # 1, 2, and 3 ditches on the Hallenbeck Ranch, and the Upper, Champ, Pioneer, Wheel and, Section House ditches on the Hayden Ranch (See Section 2, *Utilities*, for descriptions.)

Hayden Ranch Water Rights

The water rights of the Hayden Ranch date back as far as 1877, and consist of 5 ditches with a combined flow rate of 50 cfs. The ditches historically irrigated approximately 820 acres of agricultural ranchland. The combined annual consumptive use of these water rights, defined as that amount of water lost to the drainage basin through evapotranspiration or consumed by other biological and ecological processes, has been estimated at approximately 950 acre-feet.

The City of Aurora purchased the Hayden Ranch for the expressed purpose of securing and transferring its water rights for their own municipal use. In order to claim the consumptive use historically associated with plant evapotranspiration, the City will cease diverting water from the Arkansas River that traditionally irrigated the Hayden Ranch, thereby receiving credit for the water that would have been consumed by the plants.

Of the total consumptive use, as determined by the Court, the City of Aurora has optioned 10% to Lake County for their use. Lake County, in turn, has completed the construction of the Hayden Meadows Reservoir to store their

water rights, and has initiated an augmentation plan in water court to allow waters stored in the reservoir to be released back into the river to make up depletions caused by other municipal, commercial or domestic water uses elsewhere in the Upper Arkansas River drainage.

The action of not irrigating the Hayden Ranch will result in the eventual return of the land to its natural, pre-irrigated condition, and will be witnessed by the replacement of water dependent plant species with hardier native species that have lower water requirements and are more drought resistant. Many of the introduced species that were used to increase livestock forage production will fail over time in the absence of the artificially induced moisture regime that supported their hydrophytic demands. Plant diversity, density, and nutritional levels are expected to change in response to the decrease in water availability.

This change will be more pronounced in those areas that were most dependent upon irrigation to artificially support plant growth, typically in the northern half of the ranch. Areas benefiting from sub-irrigation, or riparian zones along naturally occurring water courses will witness little or no change in vegetative makeup, but may receive greater pressure from wildlife as the plant density and diversity are reduced elsewhere on formerly irrigated lands.

The absence of irrigation has the potential to alter the visual appearance of the hay meadows, reduce the binding effect of moisture on surface soils, modify the vegetative composition, and change the forage values available to support wildlife. It should be noted, however, that the change is from an artificially supported environment, back to the natural condition.

Derry Water Rights

The Derry #1, 2, & 3 water rights divert waters from the main stem of the Arkansas River, Box Creek, and Bartlett Gulch respectively, to irrigate the hay meadows of the Hallenbeck Ranch (See Section 2, *Utilities*, for descriptions.) The total adjudicated flow of the three ditches is 7 cfs, producing an estimated average annual yield of 169 acre-feet, and a firm dry year yield of 93.6 acre-feet. Lake County acquired these rights as part of the purchase of the Hallenbeck Ranch in 1998, and retained both the water rights and the right to put the water to beneficial use on the historically irrigated sections of the ranch as a condition of the sale of the Ranch to Aurora.

In the event that the Box Creek Reservoir were to be constructed to the specifications delineated in the preliminary feasibility analysis, the areas historically irrigated by the Derry #2 and 3 would be partially or completely inundated. The augmentation plan being prepared for Lake County would allow the storage of the Derry rights in the Box Creek reservoir, and allow their consumptive yield to be returned to the river and credited against stream depletions for commercial, municipal, or residential uses elsewhere in Lake County.

Anticipated changes resulting from the conversion of agricultural water rights to municipal and commercial uses would include increased growth potential for the community, a reduction of irrigated cropland (which will occur in any event if the Box Creek Reservoir is constructed), and a change in vegetative matrix, either from terrestrial to aquatic if the reservoir is constructed, or to dry-land species if the irrigation is dried up.



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External Actions

Secondary changes may occur in response to external actions that are not under the direct control of LCOSI.

Box Creek Watershed Restoration Project

The U.S. Forest Service has undertaken the Box Creek Watershed Restoration Project, which recommends actions to bring about the restoration of natural resource damages resulting from past human activities within the drainage basin feeding Box Creek. All of the Hallenbeck and Hayden Ranches, the Stork & Heron Placer, BLM parcels 1 and 2, and the Box Creek State Land Board parcels, as well as that portion of the Crystal Lakes State Land Board Parcel west of the Arkansas River, fall within the perimeter of the subject drainage basin.

Within the context of the Watershed Plan, BLM parcels 1 and 2 are considered to be part of the federal landmass subject to the recommendations contained therein. The Watershed plan makes recommendations regarding the closure of Forest system and non-system roads within BLM parcels 1, & 2, as well as roads connecting the Hayden and Hallenbeck Ranches to Forest Service lands to the west and south. (See Section 2, *Utilities*, Map 12)

These changes in access routes to the National Forest will indirectly impact the way people use the LCOSI Project Area, and will require coordination to ensure consistency across project boundaries.

11-Mile Reach

The 11-Mile Reach passes through the center of the LCOSI Project Area, and has been the subject of intensive study to identify, remediate, and restore natural resource impacts caused by past mining activities in the upstream reaches of California Gulch. Changes brought about by the actions of the partners to the 11-Mile Reach Memorandum of Understanding are outside of the control of LCOSI, but could influence or control planning decisions as they relate to the use of properties within the overlapping boundaries of the Project Area and the Reach.

LCOSI planning will require coordination with the MOU Partners and the Arkansas River Restoration Core Team to ensure consistency of planning across project boundaries.



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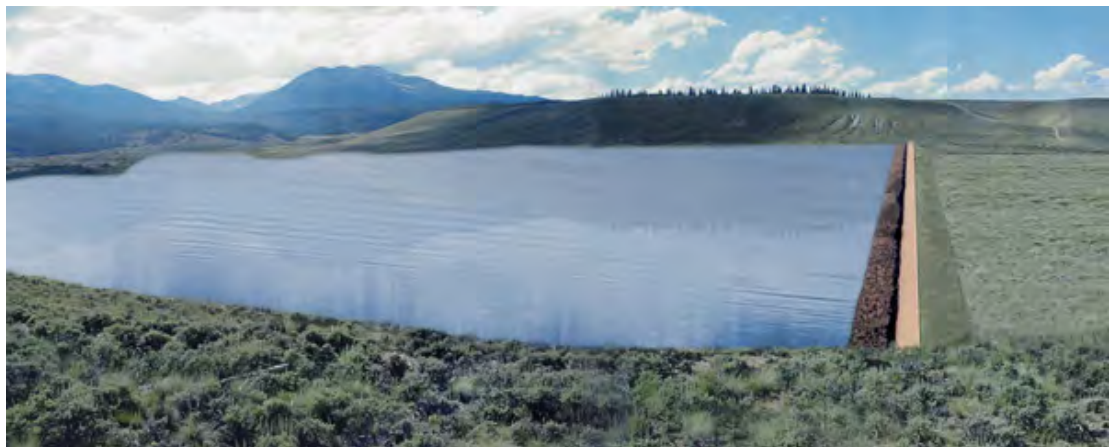
Secondary Changes

Secondary changes that are expected to occur as a consequence of LCOSI actions could include, but are not limited to:

Physical Setting

For the most part, little change to the existing physical setting of the LCOSI Project Area is anticipated. One of the principal goals of the Lake County Open Space Initiative is to preserve the existing rural setting and unique natural resources that set the Arkansas River Valley apart from the urbanized environment of many of Colorado's surrounding river valleys. It has been said that one of the greatest indications of success would be to hear a visitor returning to the Project Area 50 years from now, stating that, "This is just how I remember it."

The principal change to the physical setting would occur in the event that the Box Creek Reservoir is constructed by the City of Aurora. If the Reservoir were to be built, approximately 380 acres of existing terrestrial habitat would be converted to aquatic habitat, altering the physical appearance and function of that portion of the Project Area.



Computer rendering of the proposed Box Creek Reservoir

Socioeconomic Setting

Changes in Private Sector Development Potential

The conversion of parcels of formerly private land to public open space will reduce the amount of real estate physically available for private sector development. Private parcels affected by the anticipated change in ownership would include the Hayden, Hallenbeck, and Arkansas River Ranches, totaling 3375 acres more or less, or approximately 5.8% of all private lands in Lake County. Not all of this land is developable.



Wetland/Riparian & high water table Zones (highlighted in Red)

Of the private landmass contained within the three ranches, an estimated 65% (approximately 2200 acres) is located in wetland/riparian habitats, or in areas of naturally high groundwater. These hydrologic constraints impose severe environmental and regulatory limitations on the physical ability to bed-in infrastructure or to construct commercial, industrial, or residential facilities.

Of the remaining 1175± acres of upland terrain, slopes exceeding 25% make up approximately 1/3 of the landmass, and pose significant physical and regulatory constraints to the placement of infrastructure or the construction of buildings. This leaves a net balance of some 775 acres, or just over 1.3% of the private land in Lake County that would be lost to potential private development.

The balance of suitable building sites on the ranches exist in scattered, isolated pockets, separated by physical barriers to development that limit the consolidation of density and the efficient interconnection of

infrastructure, such as roads and consolidated wastewater systems.

This patchwork pattern of development parcels has historically contributed to low-density rural sprawl, which in turn has created a demand for County services in excess of tax revenues generated, fragmented critical wildlife habitat, and resulted in the loss of open space, the degradation of scenic viewsheds, the reduction of public access to recreation, and the severance of community ties to their cultural heritage. The preservation of the Ranches as open space will, therefore, serve to reduce or eliminate the adverse impacts of low-density sprawl.

Changes in Tax Structure

“Analysis of the economic consequences of residential development in rural areas has revealed that the outright purchase of open space lands can be less costly to taxpayers than allowing low density development. A review of 47 studies of the costs of development showed that, on average, (low density rural) residential property lost an average of 17 cents for each dollar of tax revenue, while agricultural land and open space provided an average surplus of



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69 cents.”¹ It is anticipated that the preservation of the ranches as open space will maintain the same positive ratio of *cost of services* to *generated tax revenue* as it did as agricultural land.

Property taxes on the three ranches have historically been based on their value as agricultural land, yielding only minimal returns to the County coffers. As the properties are acquired by governmental entities, they will be removed from the general property tax roles. In the place of property taxes, the governmental entities can sometimes make “Payment in lieu of Taxes” (PILT). PILT payments are typically equal to, or exceed, the agricultural rate paid by the private landowner, resulting in either no net loss or a slight increase in the anticipated tax revenues generated from the land.

Changes in recreational and heritage based tourism opportunities

Lake County is striving to make the difficult transition from an economy anchored in mineral extraction, to an economy that capitalizes on marketing its unique natural and historic resources. Efforts to increase recreational and heritage based tourism revenues within the County are supported by current and anticipated LCOSI actions, including:

- Construction of the Hayden Meadows Recreation Area, and the 7- acre Hayden Meadows Reservoir;
- Construction of the Sawatch Range Interpretive Trail;
- Opening of the Hayden and Hallenbeck Ranch Recreation Areas;
- Providing 5.5 miles of public access to the Arkansas River through the expansion of the Arkansas Headwaters Recreation Area in Lake County;
- Stabilization, Restoration, and Interpretation of the Hayden Homestead;
- Adaptive re-use of historic structures and the availability of 8600 acres of open space for use as a “living laboratory” for Colorado Mountain Colleges’ Natural Resource Management, Historic Preservation, and Outdoor Leadership degree programs;
- Increasing public access to hunting, fishing, and wildlife based recreation on over 4500 acres of previously restricted State Land Board and private ranch lands;
- Creation of an interpretive rest stop along the Top of the Rockies National Scenic and Historic Byway;
- The addition of water based recreational amenities in the event the Box Creek Reservoir is constructed;
- The addition of safe, accessible, watchable wildlife stations along U.S. Highway 24;

The change in public access and the addition of recreational amenities serve to increase the list of attractions that Lake County can use to compete for tourism dollars, new residents, and new businesses. A recent study of the

¹ M. Haggerty, “Economic Values of Wildlife and Open Space Amenities”, Department of Geography, University of Colorado, Boulder, 1999
Anticipated Change

factors considered by small businesses in choosing a new business location ranked the importance of open space, parks and recreation as the number one priority.²

It is anticipated that an increase in recreational and heritage tourism and resultant revenues will accompany the establishment of the Open Space Preserve, adding to Lake County's competitive stance and the list of reasons to visit and stay in the community. In turn, jobs supporting the tourist industry are expected to increase.

Increased quality of life

During its early discovery period, people were drawn to Lake County to exploit its vast mineral resources. They took what they could, left behind that which held little value, and moved on when the riches played out. Little or no thought was given to the environmental consequences of their actions, or the intrinsic value of their surroundings.

Today, Lake County is referred to as a "high amenity rural area". Many of its residents and visitors were drawn to the Upper Arkansas River Valley for its clear and abundant water, clean air, verdant forests, uncluttered vista's, cool summertime temperatures, year round outdoor recreational opportunities, rich cultural heritage, incredible scenery, extreme topographic relief, diverse wildlife, and small town atmosphere. Its amenities are said to be non-consumptive: one persons enjoyment of them does not diminish their availability for others to enjoy. As such, they represent a sustainable natural and economic resource.

The people of Lake County appreciate, and are highly protective of the unique environment that is their back yard. In a recent community poll, community members were almost unanimous in their agreement on the top priorities. "Attract new business to the community" received the highest rating (85%), followed closely by "Protect scenic valleys, mountain views, and environmental assets," only one percentage point behind at 84%. In a 1998 poll of Lake County residents performed by Colorado Mountain College, fully 91% of respondents said that they would support the purchase of ranchland in the Arkansas River Valley for the creation of parks and open space.

The value that Americans place on having open space near them is indicated by a national survey conducted in 2000 by the non-profit group, *Smart Growth America*. The survey showed that "83% of those polled supported the establishment of zones for green space, farming, and forests outside existing cities and suburbs that would be off limits to developers."³ In the 2001 election, Colorado voters gave overwhelming support to open space protection as they approved eight local referenda and one statewide ballot question that committed \$205 million in new funding for parks and open space.

As development pressures increase in surrounding river valley's, the preservation of 8600 acres of open space in Lake County will be one of the contrasting factors that enhances the quality of life in the community, which in turn influences corporate location and other decisions that affect a communities long term viability and health.

² J.L. Crompton, L.L. Love, and T.A. More, "An Empirical Study of the Role of Recreation and Open Space in Companies (Re) Location Decisions", *Journal of Park and Recreation Administration*, 15:1 1997

³ Local Government Commission, *Open Space*, 2001

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Increased Water Availability

With the option to purchase 10% of the consumptive water from the Hayden Ranch, the retention of the Derry Water Rights, the preparation of a blanket augmentation plan, and the storage capacity of the Hayden Meadows and proposed Box Creek Reservoirs, Lake County has secured water to support future growth and to attract new business to the community.

Land Status

According to the its Comprehensive Plan, Lake County encapsulates approximately 245,000 acres of land, of which 178,850 acres \pm (73%) are in state or federal ownership, and 66,150 acres \pm (27%) are in private ownership⁴. The conversion of approximately 3375 acres of private land to public open space will increase the percentage of state and federal ownership by 1.4% to 74.4%, while decreasing private ownership commensurately to 25.6%, or approximately 62,720 acres of land still available for development.

The configuration of ownership will also change, leaving formerly contiguous parcels of private lands as inholdings within the public land matrix. This is most evident in four general locations, as illustrated on Planning Map 17.

Moosehaven

The Moosehaven, Dream Valley, and Hayden Homestead parcels were formerly encapsulated within the private Hayden Ranch. With the transfer of the Hayden West and River parcels to BLM and State Parks, the Moosehaven area will be completely surrounded by State and Federal lands.

Parsons Ranch

Private lands north and west of the Hallenbeck Ranch in Sections 31 and 32, T10S, R80W, and in Sections 5 and 6, T11S, R80W, were formerly contiguous with the private lands of the Hallenbeck Ranch. With the purchase of the ranch by the City of Aurora, the subject lands will be completely surrounded by municipal and federal lands.

Jelen Properties

The 80 acre strip of land located in the south half of Sections 5 and 6, T11S, R80W were formerly contiguous with the private Hallenbeck Ranch. With the acquisition of the Hallenbeck Ranch by the City of Aurora, this parcel is now completely surrounded by federal and municipal lands.

Plamor 2a Subdivision

⁴ Lake County Comprehensive Plan
Anticipated Change

The Plamor 2a subdivision, and the two private triangles of land just to the north, once shared a common boundary with the private lands of the Hayden Ranch. With the State Parks acquisition of the River Parcel of the Ranch, these parcels are now encapsulated within State and BLM lands of the AHRA.

The change in the ownership will also serve to consolidate BLM ownership in a manner that facilitates management efficiency, eliminates conflicts, and protects lands with high resource values. In concert with State Parks acquisitions, the AHRA partnership will control lands on both sides of the 5-mile reach of the Arkansas River, where almost no public access formerly existed.

With the increase in State and Federal ownership, private lands available for future development will be commensurately decreased by 1.4 percent.

History

The principal historic elements of the LCOSI Project Area include the structures of the Hayden and Hallenbeck Homesteads, the waste rock piles resulting from dredging operations, the brick charcoal kiln on the Crystal Lakes State Land Board parcel, and the historic transportation corridors that criss-crossed the Valley (See Section 2, *History*). Anticipated changes resulting from LCOSI's direct actions could include the following.

Hallenbeck Ranch

In the event that the Box Creek Reservoir were to be constructed, the Derry Homestead would be within the proposed high water line, and would be inundated. As such, even if the building were to be relocated or reconstructed, they would lose their connection with their *place* of significance. Similarly, the dredge piles west of the proposed dam axis would be within the proposed high water line, and would likely be used as earth fill material in the construction of the dam. These piles would be lost as visual reminders of a bygone era. Waste rock piles east of the dam axis could be left and interpreted as a representation of the monumental disturbance of the dredging operation.

Hayden Ranch

It is anticipated that the Hayden Ranch Homestead would be transferred to CPI for stewardship until such time as an adaptive re-use and a permanent conservation owner could be secured. A Historic Conservation Easement and Rehabilitation Agreement would be placed on the property to bind future owners to the preservation of the structures and historic landscape that epitomizes the bucolic character of the site.

Stabilization of the barns, residences, and outbuildings of the homestead, would be initiated through a CPI grant request to the Colorado Historical Society. Rehabilitation and restoration would become an ongoing project of the Colorado Mountain College 2+2+2 degree program in Historic Preservation.

Other Historic Elements

Little physical change to the transportation elements of the Project Area would be anticipated, with the exception of internal ranch roads within the take line of the proposed Box Creek Reservoir, which would be



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inundated. No plans currently exist to restore the collapsed charcoal kiln on the Crystal Lakes State Land Board parcel.

In the event of any loss of cultural and historic resources, photographic records will be kept so that the lost resources can be interpreted for the educational benefit of future generations. It is anticipated that the increased public access to the open space will increase public contact with, and the possibility of vandalism to, the historic resources of the Project Area.

Water

Change in Use

With the change in ownership of the water rights associated with the Hayden and Hallenbeck Ranches will come an anticipated shift from agricultural to municipal usage. As a result, areas historically irrigated to increase forage production will begin the gradual evolution back to the native condition that existed prior to the establishment of the Ranches in the early 1860's. Depending upon how the water rights are exchanged, the cessation of irrigation could also result in greater volumes of water in the main stem of the Arkansas River below the historic diversion points.

Change in Hydrology

In the event that the Box Creek Reservoir is constructed, changes in stream flows in lower Box Creek and the main stem of the Arkansas River could occur as flows are diverted from, and released back into the river, to augment depletions elsewhere. This change in flow rates could alter the amount, timing, and duration of peak, minimum, and flushing flows, and the degree to which native flows affect the dilution of stream borne contaminants from California Gulch.

Change in Habitat

If the Box Creek Reservoir is built, approximately 1 mile of riverine riparian habitat along Corske Creek, and a similar distance along Box Creek, will be inundated by the impoundment, and will be replaced by approximately 3.25 miles of lacustrine riparian habitat along the shoreline of the newly formed lake. An estimated 2-miles of Riverine riparian habitat along the creeks in the area of the proposed reservoir were previously disturbed by dredge mining. Approximately 380 surface acres of terrestrial habitat will be inundated, and converted to aquatic habitat. In this conversion, certain species, such as fish and waterfowl, will be benefited, while other species, such as terrestrial herbivores and burrowers, will experience a decrease in forage availability and land based habitat.

Change in Administration

With the change in ownership will come changes in administration. The City of Aurora will administer 90% of the water rights formerly administered by the

private owners of the Hayden Ranch, while Lake County will administer the remaining 10% of the Hayden water and all of the Derry water rights. With the ownership of water rights will come additional obligations to maintain the physical diversion and delivery system, defend the legal water and ditch rights, and monitor, allocate, and account for water usage.

Change in Water Storage Capacity

In the event that the Box Creek Reservoir is constructed, additional water storage for municipal use, drought relief, and recreational activities will become available. Releases to the river from storage could be used to augment and prolong the river rafting season, enhance fish spawning success, increase flushing flows to clean out sediments, and support existing and future economic growth within the State.

Wetlands/Hydrology

Protection and Restoration

The protection of wetlands from development pressures, through their designation as open space, and their conservation through the management of human activity and grazing, will function to preserve and enhance the Project Area wetlands in existence today. Current efforts to restore the viability of wetlands along the 11-Mile Reach, revitalize the health of the Box Creek Drainage, and improve water quality and wetland habitat within the LCOSI Project Area will further interact to secure and enhance the future health and vitality of the critical lowland/riparian and wetland ecosystem.

Removal and Replacement

In the event the Box Creek Reservoir is constructed, wetlands disturbed or eliminated by dredge and fill operations will be replaced under the provisions of Section 404 of the Clean Water Act. There should be no net loss in wetland acreage as a result of reservoir construction, although the location of wetlands may change.

Changes in Flow Regimes

Changes in existing stream flow and groundwater recharge rates could occur from the action of filling and discharging waters from the proposed Box Creek Reservoir. These changes, either positive or negative, could alter the function of individual wetlands within the Project Area.

Changes in Use

Increased public access to the Arkansas River and wetlands within the Project Area could increase the potential for streambank erosion and subsequent bed load and sediment transfer, and for trampling of sensitive wetland species.

Wildlife

Increased Demand

Additional public access to the tributary streams, ponds, and main stem of the Arkansas River could result in new demand for stocking of certain waters to replenish formerly underutilized fishery resources. A general shortage of stockable fish, as a result of Whirling Disease (WD) and the temporary closure of the Leadville National Fish Hatchery in an effort to reduce contact with WD spores, could limit the number of fish available to meet the increased demand. Increased use by fishermen can also be managed through regulations if necessary to protect the fishery resource.

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The increase in land available for hunting could increase hunting demand because animals on formerly private ranches tend to be highly visible. Game Management Units 48 and 49 are both restricted units that require hunters to draw for a limited number of licenses, which may limit supply relative to demand. The addition of lands available for a set number of hunters should serve to spread them out over a larger area, decreasing densities and increasing the quality of the experience.

Increased Enforcement

It is anticipated that the increase in use of the ranches by the public, and the increase in patrolled area, may increase the need for enforcement presence within the Project Area.

Decreased Competition for Winter Forage

With the switch from cattle grazing for profit, to grazing for the purpose of increasing range health and forage values for wildlife, it is anticipated that the availability of winter forage and the carrying capacity of the rangelands will increase.

Increased Vulnerability

Increased public access to formerly private lands could put wildlife in closer contact with humans, especially during vulnerable periods such as calving, lactation, and winter foraging, when human disturbance can have its most negative effect.

Protection of Critical Habitats

It is anticipated that the protection of landscape linkages for wildlife migration will help to preserve traditional movement corridors. Migrating animals will continue to learn to use the Open Space through repetition and predictability.

As traditional winter range on the north shore of Twin Lakes continues to be developed, the Hayden, Hallenbeck, and Arkansas River Ranches are expected to see a continuation of the trend of increased elk use that has recently totaled as many as 700 elk grazing on the Project Area on a single winter day. In a scene that would have been almost unheard of five years ago, it is not uncommon today to see bands of elk numbering in the hundreds, bedded down in the middle of the day on the broad, open expanse of the Hayden Ranch, in plain sight of passing motorists on U.S. Highway 24 and County Road 10.

Critical calving areas west of the ranches in Box Creek are expected to see sustained use, but could be more vulnerable to human interaction if springtime recreational use increases on the Hallenbeck Ranch.

Change in Habitat

In the event the Box Creek Reservoir is constructed, some 380 acres of terrestrial habitat will be converted to aquatic habitat. While some wildlife species will be benefited by the increase in aquatic habitat, most specifically fish, shorebirds, aquatic mammals, and waterfowl, others will experience a loss of habitat for nesting, burrowing, forage, and shelter. It is not expected that

the change will be critical to any Threatened, Endangered, or State sensitive species of wildlife.

Increased watchable wildlife opportunities

As elk and other wildlife become acclimatized to the sanctuary provided by the Open Space, and the predictability of their human counterparts, it is expected that they will become more comfortable with the presence of wildlife watchers, photographers, and outdoor enthusiasts, increasing opportunities for watchable wildlife.

Recreation

Increased recreation opportunities

The opening of the LCOSI Project Area to public access is expected to expand the scope and range of recreational activities available in Lake County. From increased hunting and fishing, to wildlife watching, hiking, mountain biking, environmental education, camping, birding, cross country skiing, boating, ice skating, and four wheel driving, the Open Space Preserve provides a wealth of outdoor recreational opportunities, and a gateway to surrounding lands of the Pike and San Isabel National Forest.

Increased Usage

It is anticipated that recreational usage of the river will increase significantly as the AHRA takes over management and marketing of the Hayden Ranch parcel. Use of the ranches will increase more slowly as the public becomes aware of the boundaries and opportunities.

Increased Demand for Management and Infrastructure

As the recreational activities of the Open Space become more accessible, it is expected that visitation to the Recreation Area will continue to increase. Increased visitation will result in greater management responsibilities and demand for infrastructure, including: law enforcement, monitoring, road and trailhead maintenance, restroom facilities, signage, provisions for ADA accessibility, trail maintenance, erosion control, fish stocking, camp sites, boat launching areas, and picnic areas.

Increased Sources of Funding

The increase in overall use of this area, and the corresponding increased demand for management and infrastructure will result in the need for increased levels of support from the managing agencies.

In the event that Aurora chooses to construct the Box Creek Reservoir, their contract with Lake County calls for a 1% recreational mitigation fund set aside from the overall construction cost. This funding can be used to leverage additional grants for the construction of recreational amenities around the new lake. Amenities could include such items as boat docks and a marina, picnic areas, bicycle/pedestrian trails, and play areas.

Soils and Vegetation

Decreased availability of Water

With the conversion of some of the agricultural water rights to municipal uses, more water dependent species of vegetation will be replaced by drought resistant native species, changing the appearance, plant density and diversity, and nutritional values of ground cover on formerly irrigated lands. Additionally,



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the absence of soil binding moisture will make the soils more susceptible to wind throw and erosion. Disturbed soils or soils in transition are also typically more vulnerable to the invasion and spread of noxious weeds.

Changes in Grazing Practices

If the ranches are not managed to include grazing or fire as a range management tool, the danger exists that the vegetation will become decadent, losing its vitality and nutrient value.

On virtually all natural prairies, plains, and savannah ecosystems, hoofed grazing animals perform a number of vital functions, including breaking the soil mat to allow germination of seed stock, recycling organic matter that acts as fertilizer and distributes seed, reducing thatch that blocks sunlight and robs precious water, and cropping vegetation to force plant regeneration, increasing overall nutrient values. Properly used, livestock grazing can be a tool for improving range conditions and enhancing wildlife habitat. The switch from grazing for profit, to grazing for range health and wildlife management is expected to improve vegetative productivity.

Restoration of Natural Resource Impacts

Continuing work along the 11-Mile Reach to: stabilize stream banks; reduce erosion losses; amend soils to reduce pH and acid production; fortify nutrient poor soils with fertilizers and organic matter; and revegetate amended fluvial tailings deposits with native grasses, forbs, and willows, is expected to increase vegetative health, density, and diversity within the floodplain of the Arkansas River. Continued willow plantings along lower Box Creek will also serve to stabilize historic cattle crossings, reduce erosion, and provide shade for aquatic biota. Additional work is also being planned for the Box Creek Watershed, and will focus on reducing the sediment load that reaches the streams that feed the Hayden and Hallenbeck Ranches.

Geology

No major changes are anticipated in the underlying geology of the Project Area as a result of the actions of LCOSI.

Utilities

Changes in Trail Use

Due to the highly sensitive nature of wetlands, stream banks, riparian zones, and steep terrain, and in recognition of the vulnerability of wildlife during certain stages in their life cycle, much of the LCOSI Project Area will be open to non-motorized use only. Trailheads will be established to concentrate parking and services at logical jumping off points to access the Open Space Preserve, and to limit natural resource damages. Where applicable, trails will be marked

or constructed to concentrate use on sustainable surfaces, and to avoid environmentally sensitive areas.

Changes in Road Closures

Non-system and redundant roads on the Pike and San Isabel National Forest will be closed as part of the Box Creek Watershed Project. LCOSI transportation planning will coordinate with the Box Creek planning to ensure continuity of closures and retention of critical access corridors.

Road closure signs and gates will be required to inform the public as to which roads are closed, annually and seasonally, and which roads remain open to public use.

Retention of Private Access through the ranches

Existing roads through the ranches to isolated private lands beyond will be retained to ensure continued private access. Signage advising the public of the closure of private access roads to all but landowner and administrative use will be posted to discourage trespass.

Increased traffic on roadways

It is anticipated that traffic on those roads that remain open within the Project Area will increase to accommodate the concentration of existing use, as well as additional hikers, bikers, fuel wood gatherers, wildlife watchers and sportsmen. Periodic maintenance and improvement of existing roads and new trailhead parking areas will be required to handle the increased usage and protect the surrounding environment. Safe pullouts at wildlife viewing areas will be required to increase public safety and reduce traffic congestion.

Decrease in Transmission lines

The installation of overhead transmission lines on Project Lands will be discouraged in order to retain the viewsheds in their current condition.

Changes in Water Transmission

It is anticipated that if the Box Creek Reservoir is constructed, a conduit to deliver water to the impoundment, and to return it to the river, will be required. If this infrastructure is to be constructed, it is expected that it will be buried and re-contoured to blend harmoniously with its surroundings.

Hazardous Materials

Changes in Hazardous Materials Levels

The clean up of 11-Mile Reach and subsequent restoration of natural resource damages is expected to significantly reduce the presence and impact of contamination within the floodplain of the Arkansas River. Hazardous materials discovered in the course of investigations of the ranches have been removed from the site.

Scenic Quality

Changes in Background Views

Construction of the Box Creek Dam would alter the existing background views of Mount Elbert from the Top of the Rockies National Scenic and Historic Byway. A distance of two miles separates the dam face from the highway, which will serve to reduce the visual impact of the structure, blending it into the background.

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The high abutments north and south of the dam site shield it from view from the passing motorist until they are directly east of the Valley. At highway speeds, the dam would be in view for less than one minute.

The dam and lake would also be visible from County Roads 10, 24 and 24A. County Roads 24 and 24A would travel along the south and north shores of the lake respectively. Further, the reservoir could cover the existing piles of dredged mining waste currently covering the valley floor.

Preservation of foreground and middle-ground views

The preservation of the lands of the Project Area as open space will serve to limit or eliminate structural development within the foreground and middle-ground view corridors, retaining the spectacular views of Colorado's highest peaks.

Administration

Changes in Administration

Administration of the Hayden, Hallenbeck, and Arkansas River Ranches will be transferred from the private sector to the respective agencies and organizations that will take over ownership. Administration, including such issues as law enforcement, fire suppression policy, liability, and public safety will become the primary responsibility of the acquiring entity. Agencies, organizations, or governmental entities expected to take ownership include:

Hayden Ranch – West Parcel.....	BLM
Hayden Ranch – River Parcel.....	State Parks
Hayden Ranch – Homestead Parcel.....	CPI
Hallenbeck Ranch – Taft Gulch Parcel.....	BLM
Hallenbeck Ranch – Derry Homestead Parcel.....	Aurora
Arkansas River Ranch.....	State Parks

Agreements currently in place for interagency management, including the CDOW Recreational Access Agreements on the State Land Board parcels, CDOW's Recreational Management Agreement on the Hallenbeck Ranch, and State Parks Cooperative Management Agreement with Lake County for the Hayden Meadows Recreation Area will remain unchanged. Similarly, parcels that will not change hands, such as the BLM parcels 1-6, will remain under the current administration.

Public Education

The LCOSI Project area will support public education through both active and passive means.

Implementation of Active Educational Programs

The LCOSI Project Area will be used as a living laboratory for the study of such subjects as natural history, geography, hydrology, natural resource damage

assessment and restoration, historic preservation, stream geomorphology, resource management, water quality monitoring, terrestrial and aquatic biology, soils and geology, and archeology. Active educational programs will include classes offered by Colorado Mountain College through their Natural Resource Management Institute, and the Outdoor Leadership and Historic Preservation Programs. Short courses or site visits will also be offered by agencies and organizations on specific issues, such as the "Healing of the Arkansas River."

Other existing programs, such as Ranch Day, and the work/study program offered to Intermediate School students through Build a Generation, will be expanded upon to actively reach out into the community in an effort to increase public awareness and appreciation of the unique ecosystem we share in the Upper Arkansas River Valley.

Implementation of Passive Educational techniques

Passive public education is primarily provided through interpretive and informational signage, exhibits, and displays at trailheads, along trails, at specific overlooks and historic landmarks, in rest areas, and at recreational attractions. The interpretives are intended to draw the casual sightseer or recreationist into learning the story of the Valley, and increasing the public awareness and appreciation of the natural and manmade environment that surrounds them.

The River Restoration demonstration plots, Sawatch Range Interpretive Trail, Hayden Meadows information kiosks, and informational signage currently in place at Kobe, the Hallenbeck Ranch, and Hayden Meadows will be expanded to include interpretation of the Hayden Homestead, and the construction of wildlife watching pullouts at selected vantage points along the Top of the Rockies Byway, in order to increase the level of educational interaction with the viewing public.

Extractive Industry

Changes in the availability of natural products

As the property is transferred from private to public hands, the extraction of natural products, such as fuel wood, aggregate, minerals, and forage will be allowed to continue only as tools to more effectively manage natural resources. For example, fuel wood gathering may be permitted if it is used as a tool to control the spread of disease or insect infestations, and cattle grazing may be used as a means of improving range conditions and enhancing wildlife forage values.



**Lake County Open Space Initiative
Ecosystem Management Plan**

**Section IV
Management Strategies**



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Section IV Management Strategies

Introduction

The ultimate goal of the *Lake County Open Space Initiative: Ecosystem Management Plan*, is to establish management strategies that: provide cohesive ecosystem management of the Project Area, regardless of jurisdictional ownership; protect and conserve the area's natural and manmade resources; mitigate negative impacts and natural resource damages; and provide tangible public benefits for future generations.

Through a series of workshops, the LCOSI Partnership established a format for identification and documentation of management strategies that includes the delineation of: Management Emphasis Areas; Management Objectives; Underlying Principles; and Proposed Management Actions. The format was deemed acceptable for incorporation by reference into the future management planning actions of the individual jurisdictional agencies involved.

Within the context of this plan, the following definitions apply:

Management Emphasis

Management Emphasis Areas describe **where** activities may take place. Within the Project Area, categories of Management Emphasis have been delineated to guide planning decisions and prioritize activities that will be implemented or allowed on the land. Management Emphasis Areas represent the highest and best use of elements of the physical landscape to achieve the project vision, and set the baseline conditions to meet the goals and objectives of the Plan.

Management Objectives

Management Objectives describe **what** the management strategy is intended to accomplish. Management Objectives are based on the mutually defined Goals and Objectives listed in Section 1 of the Plan.

Underlying Principles

The Underlying Principles describe **why** the action is being taken. Underlying Principles provide the justification for protection, enhancement, and interpretation of existing natural and manmade resources, as identified in Section 2 of the Plan, and provide the rationale for responding to anticipated changes brought about by LCOSI's actions, as defined in Section 3 of the Plan.

Proposed Management Actions

Proposed Management Actions suggest **how** the strategy may be implemented. The Proposed Management Actions recognize that the *Lake County Open Space Initiative: Ecosystem Management Plan* is not a decision document, and cannot supersede the implementing legislation or the existing management plans of the partnering jurisdictional agencies. The Proposed Management Actions provide guidance for future planning decisions by the individual jurisdictions, to insure conformity with the consensus based Goals and Objectives of LCOSI.

Management Emphasis

Management Emphasis Areas (MEA's) have been established to categorize and prioritize allowable land uses and activities on subject lands of the Lake County Open Space Initiative. Within the context of this Plan, the term *subject lands* refers to parcels of real property that have been secured by partners of the Lake County Open Space Initiative through land tenure agreements including, but not limited to: fee simple ownership; conservation easements; stewardship trust agreements; recreational access agreements; or cooperative management agreements, through which jurisdiction over surface activities has been conveyed. No element of this plan, expressed or implied, shall be construed as applying to adjacent or surrounding private lands.

Subject lands within the LCOSI Project Area should be managed to support multiple uses that are compatible with the Vision, Goals, and Objectives contained within the body of this Plan, and with surrounding Land Use Management Plans. Management Emphasis Areas do not exclude other compatible uses from occurring, but do establish precedence when conflicts arise. Uses that are not compatible with the goals and objectives of the Plan should not be permitted.

Unless subject to specific closures or restrictions, all subject lands within the LCOSI Project Area should be considered as open to public activities that are compatible with the stewardship and protection of the land and water resources for open space, wildlife, historic preservation, public education, smart growth, and outdoor recreation. Specific regulations and rules of conduct may apply within individual parcels, as mandated by the jurisdictional Policies and Management Plans of the managing partner.

Management Emphasis Categories

For the purpose of achieving ecosystem management goals, subject lands within the LCOSI Project Area are viewed, within the context of this Plan, as a single landmass, regardless of jurisdictional ownership. Within the project area, categories of Management Emphasis have been established to guide planning decisions and prioritize activities that will be implemented on the land. These areas of management emphasis are illustrated on Planning Map 25, and include: Wildlife Winter Range; Wildlife Habitat for Indicator Species; Recreation; Water Development; Agriculture; Historic Preservation; Aspen Improvement; and Roundwood Production.

Wildlife Winter Range

Management emphasis is on forage production for improvement of winter range on forested and non-forested lands. Winter habitat for deer, elk, antelope, and bighorn sheep is emphasized. Mechanized, motorized and non-motorized recreation may be allowed during non-winter months, but the Management Emphasis Area may be closed to motorized use, and may be closed to all public use, during the winter months. Where conflicts arise, wildlife is favored. Unless specifically prohibited, fishing and hunting are permitted uses, subject to Division of Wildlife regulations. Seasonal closures may apply to meet management goals.

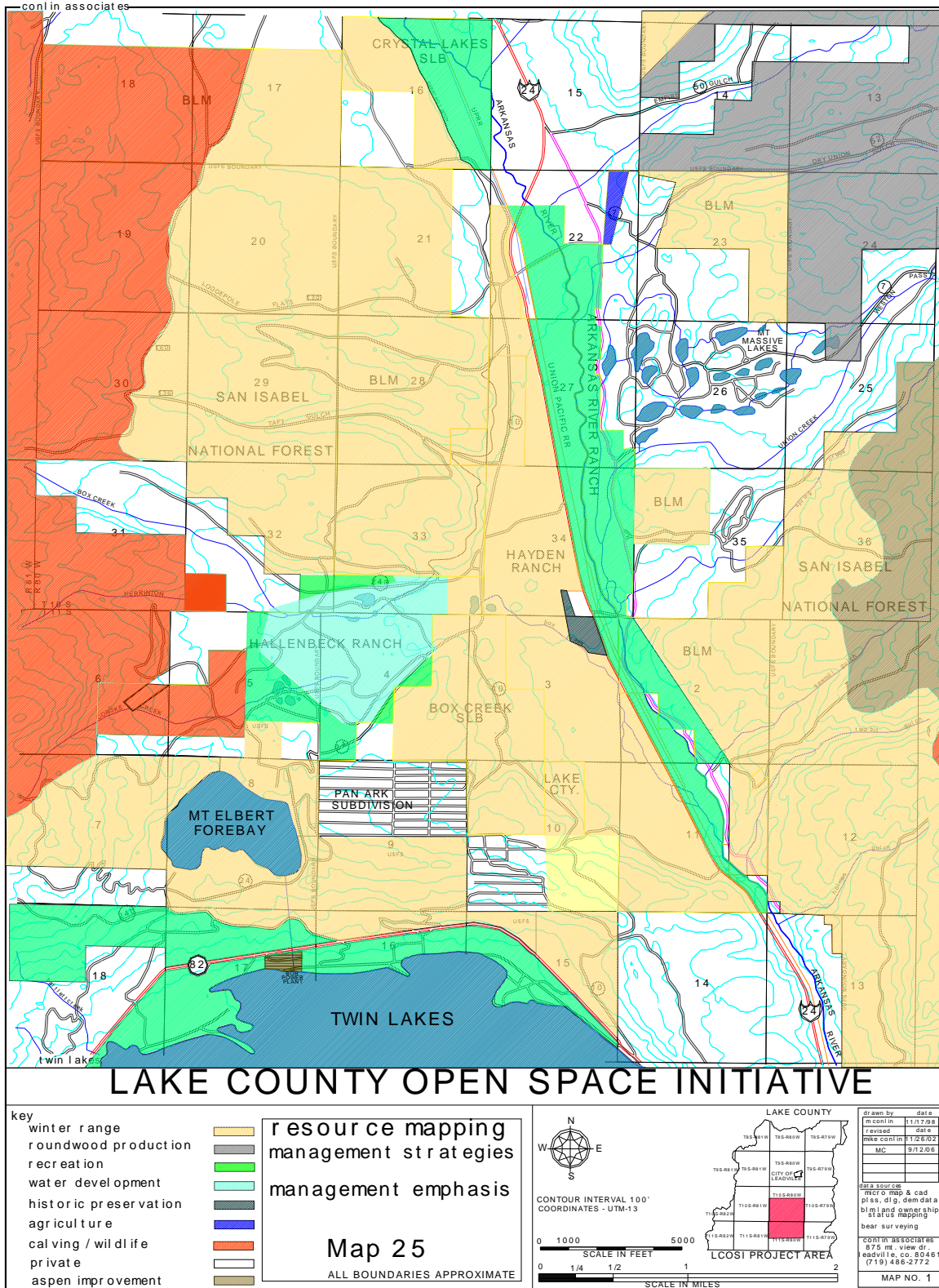
Motorized vehicle use is discouraged off of designated Forest System, BLM, and County roads in forest, range, and riparian ecosystems to protect soils, vegetation, water quality, and special wildlife habitat. Camping should be permitted in designated areas only.

Vegetative management to enhance forage production and promote healthy range and forest conditions may include grazing, timber cutting, fertilization, soil amendment, seeding, irrigation, spraying, mechanical chopping, or fire. Forest Service guidelines for silvicultural management, unless otherwise specified, will be used to enhance

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forage production for wildlife, control disease and infestation, and meet minimum standards for thermal and hiding cover. Fuel conditions and access should be maintained to permit fire suppression. Fencing and structural range improvements should be eliminated or designed to benefit both wildlife and livestock. Fuelwood cutting for wildlife habitat improvement should be permitted.

The Visual Quality Objective is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes should repeat the basic elements of form, line, color and texture in the predominant natural features of the characteristic landscape.

Wildlife Habitat: Indicator Species

Management emphasis is on the habitat needs of one or more indicator species. Emphasis is on thermal and hiding cover, forage production, and calving and fawning habitat for elk, antelope, and deer. Fencing and structural range improvements should be eliminated or designed to benefit both wildlife and livestock. Fuel woodcutting for wildlife habitat improvement should be permitted.

Encouraged uses include mechanized, motorized and non-motorized recreation, water rights management, and sustained forest yield. Other compatible uses should be allowed, but should be secondary to habitat requirements. Recreation and other human activities should be regulated to favor the needs of the designated species. Seasonal closures may be imposed to meet management objectives. Human activities may be reduced where unacceptable changes to the biophysical resources occur.

Motorized vehicle use should be prohibited off of designated Forest System, BLM, and County roads in forest, range, and riparian ecosystems to protect soils, vegetation, water quality, and special wildlife habitat. Camping should be permitted in designated areas only.

Vegetative management to enhance forage production and promote healthy range and forest conditions may include grazing, timber cutting, fertilization, soil amendment, seeding, irrigation, spraying, mechanical chopping, or fire. Forest Service guidelines for silvicultural management, unless otherwise specified, should be used to enhance forage production for wildlife, control disease and infestation, and meet minimum standards for thermal and hiding cover. Fuel conditions and access should be maintained to permit fire suppression.

The Visual Quality Objective should be to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes should repeat the basic elements of form, line, color and texture in the predominant natural features of the characteristic landscape.

Recreation

Management emphasis is on providing developed and dispersed recreational opportunities in a roaded, natural, and rural setting. Mechanized and motorized use may be prohibited, seasonally closed, or restricted to designated routes to meet management goals. Motorized and non-motorized activities such as driving for pleasure, viewing scenery, picnicking, fishing, hunting, boating, wildlife viewing, mountain biking, cross country skiing and hiking are possible. Seasonal closures may be applied to protect wildlife populations and prevent unacceptable stress on nesting waterfowl, spawning fish, and big-game species during the primary use season.

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Vegetative management to enhance forage production and promote healthy range and forest conditions may include grazing, timber cutting, fertilization, soil amendment, seeding, irrigation, spraying, mechanical chopping, or fire. If grazing is used as a vegetative management tool, fencing and structural range improvements should be designed to benefit wildlife and livestock. If grazing is not used as a vegetative management tool, fences should be eliminated. Fuel conditions and access should be maintained to permit fire suppression.

Visual resources should be managed so that management activities maintain or improve the quality of recreational opportunities. Management activities are not evident, remain visually subordinate, or may dominate, but harmonize and blend with the natural setting. Landscape rehabilitation and river restoration may be used to restore damaged landscapes to a desirable visual quality. Design and implement activities should provide a visually appealing landscape. Enhance or provide more viewing opportunities.

Water Development

Management emphasis is on the development and storage of water rights for municipal purposes, drought protection, habitat diversity, and increased recreational opportunities. Permitted uses may include motorized and non-motorized modes of travel, developed and dispersed recreation, water storage and conveyance, aquatic wildlife habitat, hunting, fishing, boating, and other water sports. Other compatible resources may occur, but should be secondary to water storage requirements.

The Visual Quality Objective is to accommodate management activities requiring major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities can dominate the view and be the major focus of viewer attention. Every attempt should be made, however, to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements of form, line, color and texture in the predominant natural features of the characteristic landscape.

Agricultural

Management emphasis is on forage for domestic livestock production in association with adjacent or surrounding ranching operations. Permitted uses may include grazing allotments and wildlife habitat. Vegetative management to enhance forage production and promote healthy range conditions may include grazing, fertilization, seeding, soil amendments, irrigation, or fire. Lands may be exchanged to adjacent landowners to meet management goals.

The Visual Quality Objective is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes should repeat the basic elements of form, line, color and texture in the predominant natural features of the characteristic landscape.

Historic Preservation

Management emphasis is on the inventory, recordation, evaluation, stabilization, restoration, preservation, and adaptive use of historic structures and artifacts for public education, interpretation, and enjoyment. Public access may be restricted to designated areas to protect human health and resource values. Recreation and other compatible uses may occur, but should be secondary to historic preservation requirements.

The Visual Quality Objective is to retain and restore the historic character of the structures and landscape. The level of change to the structures and characteristic landscape should be moderate. Management activities may attract the attention and may dominate the view of the casual observer. Changes should repeat the basic elements of the predominant natural features of the characteristic landscape.

Aspen Improvement

Management emphasis is on maintaining and improving aspen sites to produce wildlife habitat, wood products, visual quality, and plant and animal diversity. Both commercial and non-commercial treatments may be applied. Even age management should be achieved in accordance with standard USFS silvicultural practices.

The Visual Quality Objective is to allow for management activities in the foreground and middle ground that are dominant but blend with natural setting.

Roundwood Production

Management emphasis is on production and utilization of small Roundwood of a size and quality suitable for products such as firewood, poles, posts, and props. The harvest method by forest cover type should be in accordance with standard USFS silvicultural practices.

The Visual Quality Objective is allow for management activities that, although they may be visually dominant, harmonize and blend with the natural setting.



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Management Strategies

Management Strategies are grouped by resource or management activity, and assembled to provide: Management Objective (s) (**what** the strategy is intended to accomplish); the Underlying Principle (**why** the management strategy is needed); and Proposed Management Action(s) (**how** the proposed strategy is will be implemented).

Land Tenure Adjustments

Planning Map 26 delineates parcels of land that have been proposed for land tenure adjustment to protect critical habitats, enhance management efficiency, secure public access, or consolidate project boundaries. Land tenure adjustments, including but not limited to: fee simple purchase; land exchange; conservation easements; recreational access agreements; and cooperative management agreements may be explored with willing landowners in an effort to meet project goals.

Management Objective:

To secure a recreational and operational access to properties adjacent to, and west of, the Hayden Meadows Recreation Area (Map 26)

Underlying Principle:

CDOT Lands between U.S. Highway 24 and the Union Pacific Rail line are surplus to the CDOT right-of-way needs, and contain an existing borrow pond that could provide additional public fishing opportunities.

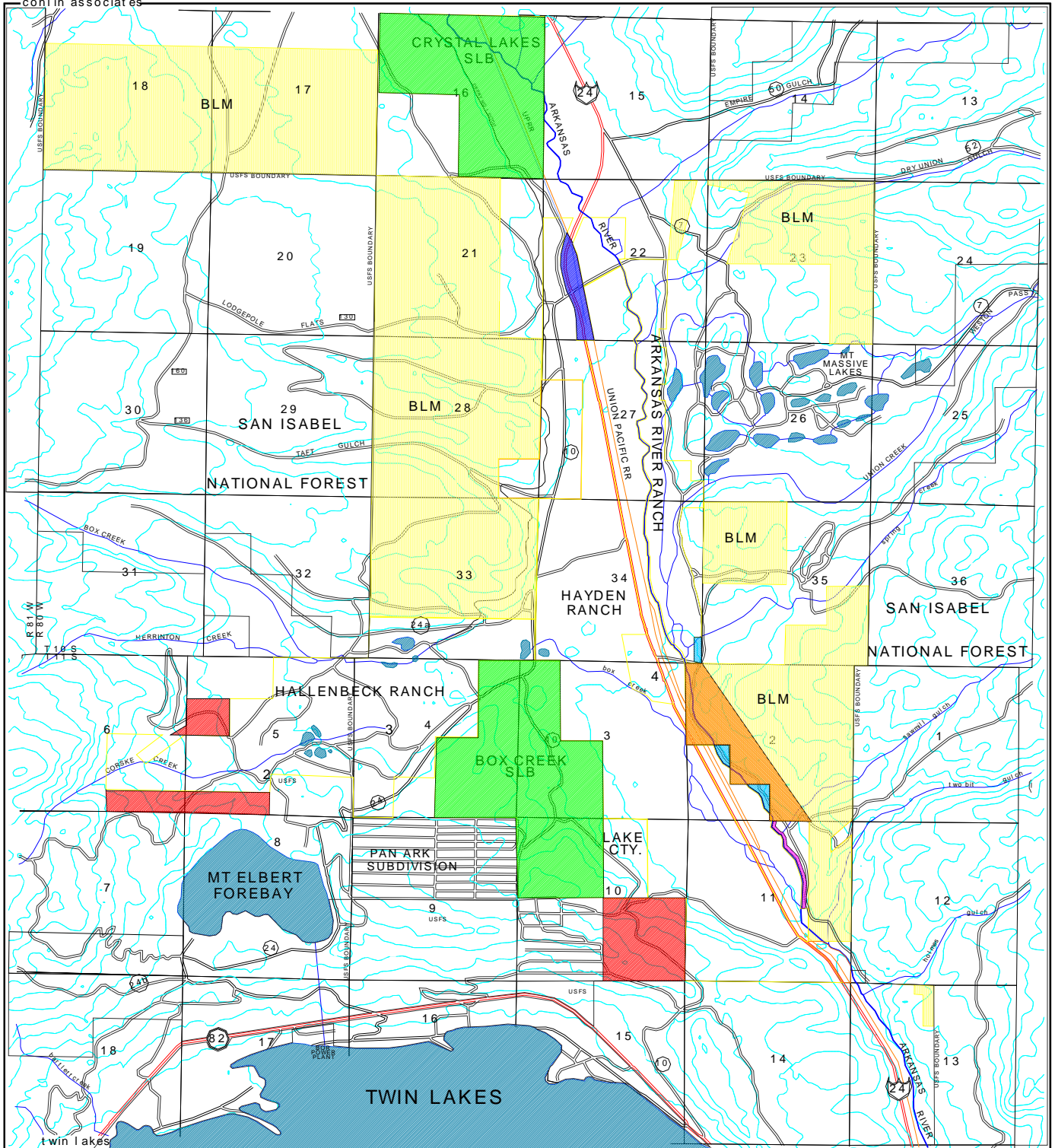
The pond is part of the water delivery system from the Arkansas River to the Hayden Meadows Reservoir, via the Upper River Ditch, which may require periodic maintenance to ensure proper operations of the Hayden Reservoir.

The CDOT parcel physically separates the Hayden Meadows Recreation Area from U.S. Highway 24, and is encapsulated within the LCOSI Project Area.

Proposed Management Action:

1) Negotiate a Recreational Access Agreement between Lake County and CDOT to allow administrative, maintenance, and public access onto the parcel of land separating the Hayden Meadows Recreation Area from U.S. Highway 24.

2) Re-negotiate the Cooperative Management Agreement between Lake County and Colorado State Parks to add the CDOT parcel to the landmass managed and maintained by State Parks.



LAKE COUNTY OPEN SPACE INITIATIVE

- key**
- secure for recreational access
 - recreational access agreements (CDOT)
 - plat verification plamor 2a
 - fisherman access
 - secure for habitat protection
 - permanent blm amendment to rma to retain
 - purchase out of slb
 - stewardship trust
 - rp&p lease to ahra

resource mapping management strategies

- land tenure adjustments

Map 26
ALL BOUNDARIES APPROXIMATE

LAKE COUNTY

CONTOUR INTERVAL 100'
COORDINATES - UTM-13

SCALE IN FEET
0 1000 5000

SCALE IN MILES
0 1/4 1/2 1

LCOSI PROJECT AREA

drawn by	date
m conlin	11/17/98
revised	date
mike conlin	11/26/02
MC	9/12/06

data source

micro map & cad
piss, dig, dem data
blm land ownership
status mapping
bear surveying

conlin associates
875 mt. view dr.
leadville, co. 80461
(719) 486-2772

MAP NO. 1



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Management Objective:

To consolidate State Parks and BLM land management within the Arkansas Headwaters Recreation Area.

Underlying Principle:

BLM Parcel 6, in Section 2, Township 11 South, Range 80 West (BLM Parcel 6) controls much of the public access to the east side of the Arkansas River between Spring Creek and Sawmill Gulch (Map 26). A formal agreement between State Parks and BLM is necessary to consolidate lands along both sides of the River under the single jurisdiction of the Arkansas Headwaters Recreation Area.

Proposed Management Action:

Initiate a lease agreement between BLM and Colorado State Parks to place surface control of the identified portion of BLM Parcel 6 under AHRA jurisdiction.

Management Objective:

To secure permanent open space protection for the Box Creek and Crystal Lakes State Land Board parcels.

Underlying Principle

The Colorado State Land Board's Stewardship Trust Program provides only temporary protection for lands enrolled in the program, buying open space proponents the time to secure the property for ecosystem management under a more permanent land tenure agreement.

The two State Land Board Parcels help control middle and background views of Colorado's two highest peaks from the Top of the Rockies National Scenic and Historic Byway, and add over 1100 acres of wildlife habitat and outdoor recreational opportunity to the project area.

Proposed Management Action

- 1) Work with organizations such as the Land Trust of the Upper Arkansas, Trout Unlimited, the Rocky Mountain Elk Foundation, or the Trust for Public Lands to identify and secure funding for outright purchase of the land to preserve its high resource value.
- 2) Explore the benefits of transferring the Crystal Lakes parcel into the State Parks Trust for permanent protection.

Management Objective:

To consolidate public recreational access along the Arkansas River Corridor through the LCOSI Project Area.

Underlying Principle:

1) Planning Map ___ identifies three parcels of private land east of the Arkansas River that will become isolated inholdings, surrounded by public lands, following completion of LCOSI acquisitions.

The three parcels break the continuity of public access along the western bank of the Arkansas River corridor. Surface control of these parcels would consolidate boundaries, make public access more contiguous and understandable, and facilitate AHRA management along the river corridor.

2) The original Plat for the Plamor 2a Subdivision contains a public fisherman access easement along the west bank of the Arkansas River. Current owners contest the easement's validity.

Proposed Management Action:

1) Explore landowner's willingness to consider fee simple purchase, land exchange, conservation easements, recreational access agreements or other land tenure agreements that would allow contiguous public access along the river corridor.

2) Work with Lake County to verify the original plat conditions of the Plamor 2a Subdivision and permanently secure a public access easement along the river.

Management Objective:

To secure private inholdings and adjacent parcels of land in order to protect critical resource values, increase management efficiency, and consolidate project boundaries.

Underlying Principle

The change in ownership patterns following the formation of LCOSI has isolated parcels of private land, creating inholdings within the public ownership matrix of the project area.

Three parcels of land west of the Arkansas River (Map ___) have been encapsulated, in whole or in part, by the LCOSI Project Area. These parcels are considered to include important wildlife winter range, calving areas, and transition range critical to indicator species. The potential for private development of these parcels is viewed as being detrimental to the goals of the Open Space Initiative, and as negatively impacting the ability to effectively manage surrounding Project Area lands.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Proposed Management Action

Landowners may be approached to determine their willingness to consider fee simple purchase, land exchange, conservation easements or other land tenure agreements that would preserve the resource and habitat values of the identified parcels.

Management Objective:

To place BLM Parcels 1-6 into permanent retention status for protection as open space.

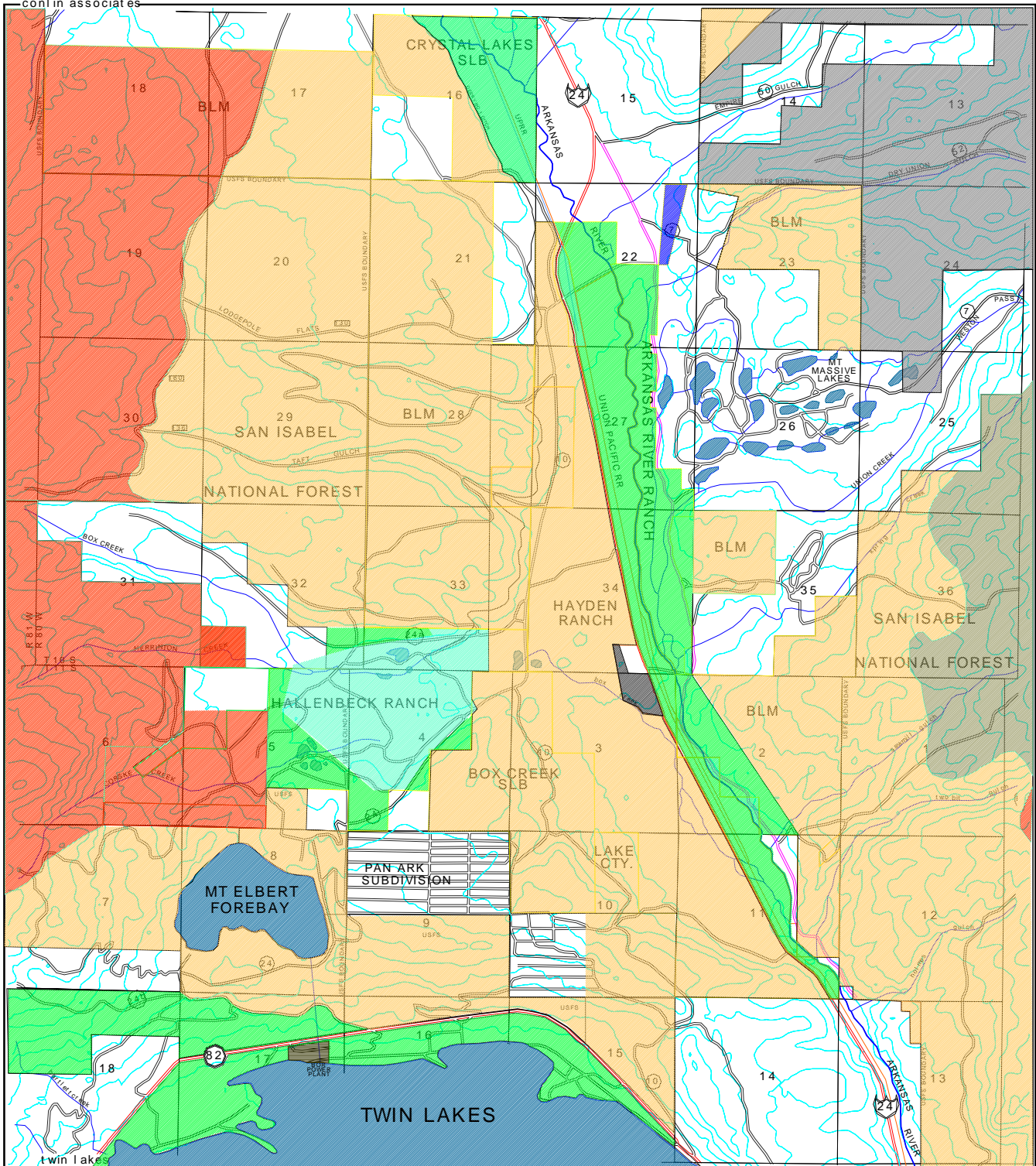
Underlying Principle

Parcels 1-6 have been administratively changed from a category prioritizing them for disposal by exchange or other means, to a category prioritizing retention as open space. The administrative decision to protect the parcels needs to become part of the permanent record.

Proposed Management Action

Maintain the Resource Management Plan in the event that the Hayden Ranch is acquired to reflect acquisition within this land tenure category area, providing de-facto retention for these lands

If the Proposed Management Actions for Land Tenure Adjustment are accomplished, the Management Emphasis Map will be administered as illustrated on Planning Map 27. Land uses and human activities should be allowed in compliance with the identified standards applied to the category of management emphasis.



LAKE COUNTY OPEN SPACE INITIATIVE

- key
- winter range
 - roundwood production
 - recreation
 - water development
 - historic preservation
 - agriculture
 - calving / wildlife
 - private
 - aspen improvement

	resource mapping
	management strategies
	management emphasis
	post land tenure adjustment

Map27
ALL BOUNDARIES APPROXIMATE

LAKE COUNTY

CONTOUR INTERVAL 100'
COORDINATES - UTM-13

SCALE IN FEET SCALE IN MILES

drawn by	date
m conlin	11/17/98
revised	date
mike conlin	11/26/02
data source	
micro map & cad	
plss, dig, dem data	
blm land ownership	
at us mapping	
bear surveying	
conlin associates	
875 mt. view dr.	
leadville, co. 80461	
(719) 456-2772	
MAP NO. 1	



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Wildlife

Management Objective

To protect Threatened, Endangered, and Sensitive Species and their habitat.

Underlying Principle

Threatened and endangered species are those species recognized by the U.S. Fish and Wildlife Service and listed under the guidelines of the Endangered Species Act of 1973. Sensitive species include animals that are candidate species being considered for T&E listing, and/or are of special concern to the State of Colorado.

The Endangered Species Act mandates that federal agencies avoid actions that would further jeopardize listed and sensitive species and to enhance their survival wherever possible

The LCOSI Project Area is not identified as critical habitat for any know resident T&E or Sensitive species, but may be an important part of a larger landscape linkage used by transient or migratory flyover species, including the Canada Lynx and the Bald Eagle.

The Lynx is listed as a threatened species, and has been reintroduced into Colorado. The cat may use the Upper Arkansas River Valley, from the forest edge to timberline, as a migratory linkage between areas providing greater prey base and more suitable denning sites. Care should be taken to preserve the habitat integrity of this landscape linkage. The USFS, BLM, and USF&WS have agreed to implement the objectives, standards, and guidelines of the Canada Lynx Conservation Assessment and Strategy (LCAS).

Proposed Management Actions

Establish Management Emphasis Areas that prioritize wildlife values for indicator and special status species within the forested landscape linkage along the western margin of the LCOSI Project Area.

Protect habitat for federal and state Threatened, Endangered and other special status species. Maintain healthy native plant and animal communities to support an adequate forage and prey base.

Follow the guidelines of the LCAS to provide cohesive ecosystem management with surrounding federal lands.

Renew the CDOW Hallenbeck Ranch Wildlife Recreation Lease with the City of Aurora

Management Objective

To maintain and enhance critical wildlife habitat

Underlying Principle

Population demands and development pressures in Colorado increasingly compete for the finite amount of land and water necessary to support the State's wildlife populations. The Open Space Initiative secures critical elements of the ecosystem as open space for wildlife, historic preservation, public education, outdoor recreation, and smart growth and development.

The LCOSI Project area provides a landscape linkage across the Arkansas River Valley, securing migratory routes and flyways, while providing critical winter and transition range, as well as the habitat conditions required for calving, spawning, nesting, and fawning.

Proposed Management Actions

- Secure critical habitats from future development.
- Establish Management Emphasis Areas in the montane life zone that prioritize sustainable, healthy plant and animal communities, and resolve conflicts to the benefit of wildlife habitat needs.
- Preserve and enhance critical lowland riparian and wetland habitats (See Riparian and Wetland Management Strategies)
- Increase edge effect and plant diversity by creating openings in the uniform lodgepole forest canopy, employing mechanical treatments and prescribed burns.
- Enhance forage values through methods including, but not limited to, controlled grazing, timber harvest, fertilization, soil amendment, seeding, irrigation, spraying, mechanical chopping, or fire.
- Implement seasonal closures to reduce harassment and stress arising from human activities during critical periods in the life cycles of the wildlife population, such as migration, spawning, calving, nesting, fawning and winter foraging.
- Modify obstructions to migration, such as fences, to be wildlife friendly.
- Provide signage informing the public of the critical nature of the ecosystem to the life cycles of resident and migratory wildlife, and how to avoid disturbing them.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Management Objective

To enhance big game winter range

Underlying Principle

At no time is the limiting factor of big game habitat more evident than during the long winter months common to the Upper Arkansas Valley, when heavy snows on the surrounding peaks concentrate resident animals in the lower montane life zone of the valley bottom, shrinking the suitable habitat to a mere fraction of its summer scope and carrying capacity.

The LCOSI Project Area contains some of the most important winter range in the Upper Arkansas River Valley, including: a substantial forage base in close proximity to thermal and hiding cover; meadow systems containing high nutrient plant communities; wetlands providing both grazing and browsing opportunities; open water for drinking; and elevations, wind, orographic conditions, and exposures conducive to limiting snow cover over the food source, allowing for the maintenance of energy input / output ratios required to survive the long winter.

The winter habitat of the Project Area is considered to be critical to the sustainability and survival of the Lake County big game herds.

Proposed Management Actions

Protect critical winter range from future development.

Establish Management Emphasis Areas that prioritize sustainable, healthy plant communities, and resolve conflicts to the benefit of winter wildlife habitat needs.

Preserve and enhance critical lowland riparian and wetland habitats (See Riparian and Wetland Management Strategies)

Increase edge effect and plant diversity by creating openings in the uniform lodgepole forest canopy, employing mechanical treatments and prescribed burns.

Enhance forage values through methods including, but not limited to, controlled grazing, timber harvest, fertilization, soil amendment, seeding, irrigation, spraying, mechanical chopping, or fire.

Implement seasonal closures to reduce harassment and stress arising from human activities during the winter months.

Modify obstructions to winter travel, such as fences, to be wildlife friendly.

Prohibit dogs running at large at all times

Prohibit off-road recreational vehicle use, and restrict passenger vehicular use to designated road corridors during the winter season.

Provide signage informing the public of the critical nature of the ecosystem to wintering big game animals, and how to avoid disturbing wildlife.

Management Objective

To protect and enhance habitat for migratory birds and waterfowl.

Underlying Principle

The Arkansas River Valley is a recognized flyway for migratory birds, as well as a nesting area for shore birds and waterfowl. The most critical period of occupation is during the spring migration and nesting season. The most critical habitats are standing water bodies, streams, wetlands and riparian zones.

Proposed Management Actions

Protect nesting areas from livestock trampling through fencing and rotational grazing that is timed to avoid nest sites during the spring nesting season.

Prohibit dogs and other domestic pets from running at large at all times.

Reduce disturbance in nesting areas by planning and locating travel corridors, structures, developed recreation facilities, and human activities away from nesting areas.

Where avoidance is not possible, provide convenient, well-marked, sustainable travel surfaces to encourage predictable human movement patterns to which the animals can more easily adapt.

Provide signage informing the public of the critical nature of the ecosystem to avian fauna, and how to avoid disturbing nesting, feeding and resting wildlife.

Implement seasonal closures if conflicts arise with human activities.

Revegetation in wetland / riparian areas should consider seed mixes that include forage species for shorebirds and waterfowl.

Increase the number and size of water bodies within the project area.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Management Objective

To enhance vegetative diversity and reduce dependency on irrigation.

Underlying Principle

The Hayden Ranch, containing approximately 900 acres of formerly irrigated rangeland, was purchased in 1998 by the City of Aurora for its water rights. When these water rights are removed from the land, a shift in species composition is anticipated, with the gradual return to a native vegetative matrix resembling the pre-irrigated condition. The native species composition will typically be more drought resistant than the irrigation dependent species, but may demonstrate a decrease in biomass volume and nutrient value.

During the transition period, the land may be more susceptible to the invasion of noxious weeds. Noxious weeds have little forage value, often out-compete or crowd out native species, can be toxic to animals and humans, can reduce forage production, and can increase erosion and top soil loss. Noxious weeds thrive in areas of transitional or disturbed ground and overgrazed pastures.

Proposed Management Actions

Allow the use of controlled cattle grazing (See Extractive Industry: Management Strategies) to break up the soil and increase water availability, add organic nutrients, break down plant matter, and aid in seed germination.

Allow prescribed burns to reduce decadent vegetative cover.

Identify and secure additional sources of water for intermittent irrigation.

Enhance forage values through methods including, but not limited to, timber harvest, fertilization, soil amendment, seeding, spraying, or mechanical chopping.

Protect against the establishment or spread of noxious weeds through spraying, planting competitive vegetation, or the selective introduction of "bugs" into infested areas.

Immediately revegetate disturbed areas with native species.

Management Objective

To provide watchable wildlife opportunities

Underlying Principle

The critical viewer of wildlife within the LCOSI Project Area will be the tourist traveling the Top of the Rockies National Scenic and Historic Byway. Local wildlife watchers know where to look to find the animals, and will typically travel the back roads to isolated viewing areas. Tourists, on the other hand, travel U.S. Highway 24 at posted speeds of 65 miles per hour, and unless directed to look out for wildlife, may speed right past herds of 300 or more elk grazing in plain view, without even noticing them.

Once wildlife is sighted, finding a suitable pullout to stop and watch at 65 miles per hour can pose significant risks to both the viewer and passing motorists. Also, if not instructed on the proper etiquette of wildlife viewing, many tourists unfamiliar with the behavior patterns of the subject animals disrupt the creatures with abrupt movements and loud noises, causing them to take flight. This not only places the animals under undue stress, but also removes them from view for other visitors.

Predictable behavior on the part of the wildlife watchers allows wildlife to adapt to human presence and demonstrate more natural behavior.

Proposed Management Actions

Plan and locate watchable wildlife pullouts where they provide predictable vantage points from which to view the animals, but do not disturb their activities.

Where possible, plan and locate pullouts to coincide with spectacular scenic backdrops and photographic vantage points.

Where possible, utilize topographic, structural, or vegetative screening to reduce the impacts of human presence.

Plan and locate watchable wildlife pullouts that allow safe ingress and egress to U.S. Highway 24, and that allow stopped vehicles to completely exit the roadway surface and its operational shoulders.

Sign pullouts from the highway to encourage travelers to utilize them as opposed to randomly pulling off onto the limited shoulders wherever wildlife is spotted (e.g. *Watchable Wildlife Viewing Station ¼ mile*, and *No stopping or standing along roadway*).

Install appropriate signage along the highway to prepare travelers for the possibility of vehicles entering and exiting the roadway at designated pullouts.

Provide informational signage to educate wildlife watchers on the etiquette of watching wildlife without causing undue stress.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Management Objective

To restore impacted habitats.

Underlying Principle

1) Early day mining practices included the discharge of mining wastes containing heavy metals and other pollutants directly into stream courses and tributaries of the Arkansas River. During periods of high water, these materials were deposited as “fluvial tailings” outside the banks of the river, where they continue to contribute to recontamination of the river, soil sterility, absence of vegetation, and resultant bank erosion and sedimentation.

Under a Memorandum of Understanding, the mining companies determined to be potentially responsible parties to the river’s contamination, the U.S. Justice Department, the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, and the State of Colorado have initiated the study and cleanup of an eleven mile reach of the Arkansas River, that includes that section of river passing through the LCOSI Project Area. The desired outcome of the action is the restoration of natural resource impacts within the reach.

2) Early mining activities also dramatically altered the landscape of the Box Creek Valley, predominately on the Hallenbeck and Hayden Ranches. The areas of historic dredge mining have resulted in a loss of vegetation and wildlife habitat, and have significantly reduced the riparian habitats along Box Creek.

3) Unauthorized vehicular use of federal lands has resulted in the establishment of numerous primitive double track roads. These tracks were neither planned, nor are they maintained as part of the USFS or BLM road system. Stream and wetland crossings and steep hillsides show the impacts of unauthorized off-road use, and contribute to wildlife fragmentation, erosion, sediment loading, and aesthetic scarring.

The Boxcreek Vegetation and Travel Management Environmental Assessment proposes the closure and rehabilitation of non-system roads, both on, and surrounding the LCOSI Project Area.

Proposed Management Actions

Work with the M.O.U. Parties to provide access to contaminated sites.

Cooperatively plan and locate haul roads and staging areas to allow for their adaptive reuse as trails, trailheads, parking areas, and roadways, or to ensure their restoration and rehabilitation upon completion of the cleanup effort.

Through this Plan, identify the Management Emphasis within areas of identified natural resource impact in order to establish the appropriate level and method of mitigation, remediation or restoration.

Actively promote and help interpret the cleanup and restoration of the Upper Arkansas River Valley.

Coordinate road closures and rehabilitation of non-system roads with the Boxcreek Vegetation and Travel Management Plan

Management Objective

To maximize the acreage available for hunting and fishing

Underlying Principle

Hunting and fishing are major recreational and economic elements of the Upper Arkansas River Valley.

Hunting is a major tool in controlling herd size and composition, and balancing wildlife populations to the available habitat.

Proposed Management Actions

Allow hunting on all lands of the LCOSI Project Area, except areas of high human activity, areas proximal to human habitation, and along travel corridors where the discharge of firearms poses a potential human health risk, subject to pertinent Colorado Division of Wildlife regulations and Colorado Revised Statutes.

Do not allow hunting in specified areas during the period of use by grazing domestic livestock.

Allow fishing on all waters of the LCOSI Project Area, subject to pertinent Colorado Division of Wildlife regulations.

Increase or enhance stream and stillwater fisheries quality and quantity.

Increase stocking efforts on formerly private waters as deemed necessary.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Recreation

Management Objective

Improve pedestrian access to the Arkansas Headwaters Recreation Area

Underlying Principle

Increased recreational participation along the Arkansas River corridor is resulting in maize of “social trails” through the wetland/riparian habitats in the high traffic areas around vehicular access points to the river.

Physically challenged individuals are limited in their ability to access the River by the difficulty of negotiating hummocky wetlands and willow thickets.

Wildlife adapts to human presence better when movement patterns are predictable.

Consolidation of movement corridors and stream crossings limits stream bank erosion and environmental damage in sensitive soil types.

Proposed Management Action

Consolidate pedestrian travel in high traffic areas onto hardened, sustainable trail surfaces.

Increase accessibility along selected reaches of the river.

Work with the EPA and the Arkansas River Restoration Team to make adaptive reuse of haul roads, built to remediate fluvial tailings sites, as sustainable trails paralleling the river.

Management Objective

To provide a wide spectrum of recreational activities

Underlying Principle

Recreation is an important element of the local economy, as well as the financial stability and tourism draw of the State of Colorado.

The LCOSI Project Area contains lands suitable for a broad spectrum of developed and dispersed outdoor recreation, ranging from hunting and fishing, to wildlife watching, horseback riding, sightseeing, hiking, bicycling, boating, camping, ice and snow sports, and back country driving.

The key challenge is to balance recreational activities with the other goals of LCOSI, including the retention of open space and viewsheds, preservation of wildlife habitat, conservation of historic elements, public education, and the promotion of smart growth and development.

Proposed Management Action

Unless otherwise specified, or subject to seasonal closure, allow dispersed forms of non-motorized recreation to occur on all properties of the LCOSI.

Concentrate developed recreational infrastructure, activities, and access points around areas of surface or flowing water, in areas designated for Recreational Management Emphasis.

Restrict mechanized and motorized forms of recreation to designated roads and trails.

Establish seasonal closures to protect resource values, such as critical wildlife needs, seasonal soil conditions, or sensitive vegetation stages.

Accommodate and provide access for a broad spectrum of recreational activities, to include boat launching, trailheads, parking, designated camping areas, picnic areas, watchable wildlife vantage points, and pedestrian, mechanized and motorized travel routes.

Provide signage to direct participants to areas appropriate for their desired activity, and inform them of the rules and regulations that apply.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Management Objective

To limit motorized recreational activities where critical wildlife habitats exist, or during sensitive or vulnerable periods of the species life cycle.

Underlying Principle

Motorized recreation has been shown to be disruptive to the behavioral patterns of wildlife, most notably during periods of high stress and vulnerability such as winter foraging and calving. When vehicular travel is confined to established roadways, it becomes predictable over time and wildlife will usually adapt to its presence. Off-road or over the snow recreational use does not follow predictable patterns, however, and can trigger the flight reflex in animals already stressed to the limits by environmental conditions.

The result can be the expenditure of limited energy reserves needed for survival, avoidance of critical habitat where disturbance has occurred, or the desertion of calves, fawns, or nests during the highly vulnerable reproductive phase of the life cycle.

Proposed Management Action

Establish Management Emphasis Areas where the needs of wildlife take precedence over other activities.

Limit or restrict human activities that interfere with or displace wildlife during critical periods in their life cycle, such as winter foraging, calving, fawning, nesting, or spawning, through the use of seasonal closures.

Limit motorized recreation to predictable, designated routes, and to areas that can sustain viable plant and animal communities in the presence of motorized use. Avoid wetlands, riparian zones, areas of high topographic relief, and areas of sensitive soils and vegetation.

Consolidate motorized stream, riparian, and wetland crossings to limit stream bank erosion, sediment yield, compaction, and vegetative loss

Management Objective

To maintain public vehicular access to recreational amenities, private lands, and high use areas.

Underlying Principle

Human activities such as recreation, camping, hunting, fishing and fuel woodcutting are part of the fabric of high country life, and the heritage of the Upper Arkansas River Valley. Subject lands of the LCOSI include areas such as the Lodgepole Flats fuel wood area, which provide much of the County's firewood and vehicle accessed backcountry recreation.

The maintenance of public vehicular access to recreational and high use areas, such as hunting and fuel woodcutting areas, is important to the local community.

Some private lands will be isolated or "landlocked" from direct access to public thoroughfares by the acquisitions and actions of LCOSI. The only means of legal access will be through subject properties.

Proposed Management Action

Retain historic landowner access to private properties isolated by the acquisitions or actions of LCOSI, including but not limited to the Parsons Ranch, Glacier Placer, the northwest entrance to the Pan Ark Subdivision, Plamor 2a Subdivision, and private properties along the Arkansas River. Do not create any new rights-of-way or access roads.

Retain year round public access to the Lodgepole Flats area via Forest Road 130.

Retain seasonal access through the LCOSI Project Area to the Mount Elbert Pipeline Road via Forest Road 136 in Taft Gulch.

Retain public access on all County Roads within the Project Area.

Close non-essential internal ranch roads to all but administrative and non-motorized use.

Close and rehabilitate non-system roads on subject properties

Close and rehabilitate connectors to roads on adjacent federal lands that will be closed as part of the Boxcreek Vegetation and Travel Management Plan.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Management Objective

To limit and control commercial guide, concessionaire, and outfitter use of the Open Space

Underlying Principle

Guides and outfitters provide a valuable service in introducing visitors to the resources and recreational opportunities of the LCOSI, and in passing on the conservation ethic for its responsible use. A limited amount of guide / outfitter activity is seen as being beneficial to meeting the goals and objectives of the Initiative.

Too much commercial activity on the subject properties is seen as diminishing the recreational experience, and potentially exceeding the comfortable carrying capacity of the land.

Proposed Management Action

Limit the number of wade/walk permits and outfitter licenses authorized on the subject properties if necessary to maintain the quality of the recreational experience for the general public.

Management Objective

To limit mechanized trail use to designated trail corridors

Underlying Principle

Mechanized recreational vehicles, most specifically mountain bikes, provide great recreation, and a low impact, non-polluting method of transportation. When restricted to designated routes, their presence can become predictable to wildlife, limiting their impacts.

When used in wetlands, or on sensitive soils, the mountain bike's narrow tire tracks can channelize water, altering its natural course, and destroy sensitive vegetation. On steep terrain, spinning tires can break down the natural soil mat and increase windthrow and erosion hazards.

Proposed Management Action

Plan and locate mountain biking and mechanized trails away from wetlands, riparian zones, and areas of sensitive soils.

Where avoidance is not possible, concentrate use on hardened sustainable surfaces, boardwalks, or bridges.

Utilize bridges, armored banks, or culverts to prevent erosion at sensitive stream crossings.

Provide directional and informational signage at concentration areas and trailheads.

Close mechanized trails seasonally, as necessary, to protect critical wildlife habitats.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Historic

Management Objective

Identify and implement appropriate levels of preservation and recordation of historic features of the Project Area.

Underlying Principle

The lands and structures of the Hayden and Hallenbeck Ranches provide a tangible link to the ranching and mining heritage of the Upper Arkansas River Valley. The buildings represent an irreplaceable, representative, and uniquely characteristic resource. The structures possess integrity of design, location, setting, material, workmanship, and association.

Proposed Management Actions

Complete an inventory of historic sites, structures, and artifacts located on subject properties

Complete Historic Structure Assessments (HSA) of all eligible structures.

Produce HABS/HAER documentation on sites as appropriate for future understanding, study, and research.

Place eligible and contributing structures on the State and National Registers of Historic Places.

Preserve, stabilize, and rehabilitate buildings where the structural integrity warrants the investment of time and funding.

Where the structural integrity of buildings is compromised beyond the point that stabilization and rehabilitation are physically and financially practicable, produce archival quality photographs to record, document, and interpret the condition and features of the of the buildings.

Consolidate artifacts found on site to a common repository for display and interpretation.

Identify potential partners with the interest and expertise in historic preservation to act as potential owners, stewards, or trustees of the cultural properties.

Identify and pursue adaptive uses for the structures, to include historic preservation as an element of public education.

Place historic preservation easements and rehabilitation agreements on any transfer of ownership to ensure the perpetuation of LCOSI goals and objectives.

Management Objective

To ensure long term preservation, maintenance, rehabilitation, **and adaptive use of the historic ranch structures of the Hayden Ranch.**

Underlying Principle

None of the current Partners to LCOSI have the funding, manpower, or expertise to stabilize or rehabilitate the historic ranch structures. New partners with the expertise and motivation to preserve the structures should be sought out to act as stewards of the land and buildings.

Any transfer of ownership should include a Historic Preservation Easement that places conditions on the transaction prioritizing preservation of the structures, and a Rehabilitation Agreement that mandates maintenance and rehabilitation of the historic character of the property.

Proposed Management Action

Implement Historic Preservation Easements and Rehabilitation Agreements as conditions of any sale or donation of historic structures.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Management Objective

To implement Interpretation and Public Education programs that increase public awareness and appreciation for the historic and cultural resources of the Valley.

Underlying Principle

The ranches, natural resources, and mining artifacts of the LCOSI Project Area are unique, representative, and irreplaceable Colorado treasures, to be shared with residents of, and visitors to, the Upper Arkansas River Valley.

The conveyance of the historic preservation ethic, and the enjoyment of the viewing experience can be greatly enhanced through signage and displays that explain what the viewer is seeing, and how it fits into the overall historic context. Interpretation has been described as the art of translating the language of nature and the voices of history into stories and experiences that everyone can understand and enjoy. The goal should be to educate the viewer and stir an appreciation for the past.

Historic sites are only as interpretable as they are accessible to the public. To the extent possible, given the limitations of human health risks and threats of vandalism, historic sites should be clearly visible and physically accessible to the viewing public.

Proposed Management Actions

Identify and inventory sites and structures of historic significance. Prioritize sites where interpretation is physically and financially feasible.

Interpret and preserve the integrity of location, design, setting, materials, workmanship, feeling, and historical association.

Wherever possible, make the sites interactive in order to physically involve the viewer in the sense of place and history. Examples could include gold panning, a petting zoo, or hands on demonstrations of the making of native crafts or tools.

Plan, locate and, design interpretives that prioritize ADA accessibility and interaction. Obstructions to mobility should be removed from access and viewing areas.

Interpretive signage should not be located in such a manner as to require or encourage trespass onto private property.

Use concise, easily understood language in interpretive narratives.

Construct interpretives of materials of sufficient strength and quality to withstand premature weathering or deterioration by wind, moisture, insect damage, rot, rust, snow load, UV deterioration, and other natural forces.

To the highest extent possible, interpretive signage should be resistant to the effects of vandalism and willful destruction.

Signage and interpretive displays should follow the standards and guidelines established in the *Lake County Interpretive Sign Guidelines*.

Where human health risks or the dangers of vandalism are high, provide visual access without allowing actual physical contact to protect sensitive historic or cultural resources.

Where in-situ preservation and interpretation is not possible, photograph historic elements and collect artifacts for off-site display and interpretation.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Vegetation

Management Objective

To maintain healthy, diverse vegetative communities

Underlying Principle

Vegetative monocultures, such as dense, homogenous stands of lodgepole pine, are visually stagnant, subject to the spread of disease and infestation, minimally productive, and vulnerable to intense catastrophic fires.

Healthy vegetative communities provide a complex mosaic of clearings and forest canopy, allowing successional growth of a diverse variety of species that provide wildlife forage, hiding and thermal cover, are more resilient to disease and infestation, are aesthetically pleasing, and reduce the accumulation of fuel and fuel ladders necessary to support high intensity, stand-replacing crown fires.

At high elevations with limited growing seasons and cold harsh winters, the biological breakdown of plant matter is highly inefficient, leading to the buildup of thatch and decadent organic detritus that reduces sunlight and water availability to underlying plants. The result is less plant vigor and reduced forage value.

Historically, range health has been enhanced by periodic low intensity fires and the trampling action of grazing animal's hooves, which serves to break down the vegetative mat, aerate the soil, increase water availability, spread and germinate seed, and reduce decadence and thatch production.

Rangeland that has been overgrazed has a high susceptibility to the invasion of noxious weeds. Noxious weeds have little forage value, often out-compete or crowd out native species, can be toxic to animals and humans, can reduce forage production, and can increase erosion and top soil loss.

Proposed Management Actions

Utilize controlled burns as a management tool to reduce homogenous monocultures and decadence.

Utilize controlled rotational grazing as a management tool to improve range health.

Utilize mechanical management techniques to enhance forage production and promote healthy range and forest conditions, including timber cutting, fertilization, soil amendment, seeding, transplanting, irrigation, spraying, or mechanical chopping.

Protect against the establishment or spread of noxious weeds through spraying, planting competitive vegetation, or the selective introduction of "bugs" into infested areas.

Management Objective

To maintain the agricultural presence for wildlife, cultural, scenic and historic values

Underlying Principle

Agriculture has been a visual element of the Upper Arkansas River Valley for over a century. It's supporting architecture, fence lines, pasturelands, and grazing animals are uniquely characteristic of the spirit of Colorado's high mountain ranches.

Proposed Management Action

Allow the continuation of agriculture for the purpose of retaining the sense of place and the bucolic setting of the valley.

Utilize rotational grazing as a tool for wildlife forage enhancement.

Preserve the structures and artifacts of the ranching heritage.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Transportation / Utilities

Management Objective

Maintain access and rights-of-way to private lands and public recreational amenities.

Underlying Principle

It is not the intention of the LCOSI to isolate private landowners from traditional access to their properties, nor is the intent to prevent historic public access to surrounding federal lands, fuelwood cutting areas, or dispersed recreation sites.

Conversely, it is not the intent of the LCOSI to open historically private ranch roads to public access where critical habitats or sensitive resources could be adversely impacted, or to create or maintain roadways that are redundant to existing BLM or Forest System access corridors.

Proposed Management Action

Implement right-of-way agreements with landowners to ensure continued legal access to private lands impacted by the acquisitions and actions of LCOSI.

Retain historic public access through the Subject Properties to surrounding federal lands.

Close redundant or unnecessary access corridors. (See Map 28)

Management Objective

To coordinate activities with adjacent landowners and existing uses.

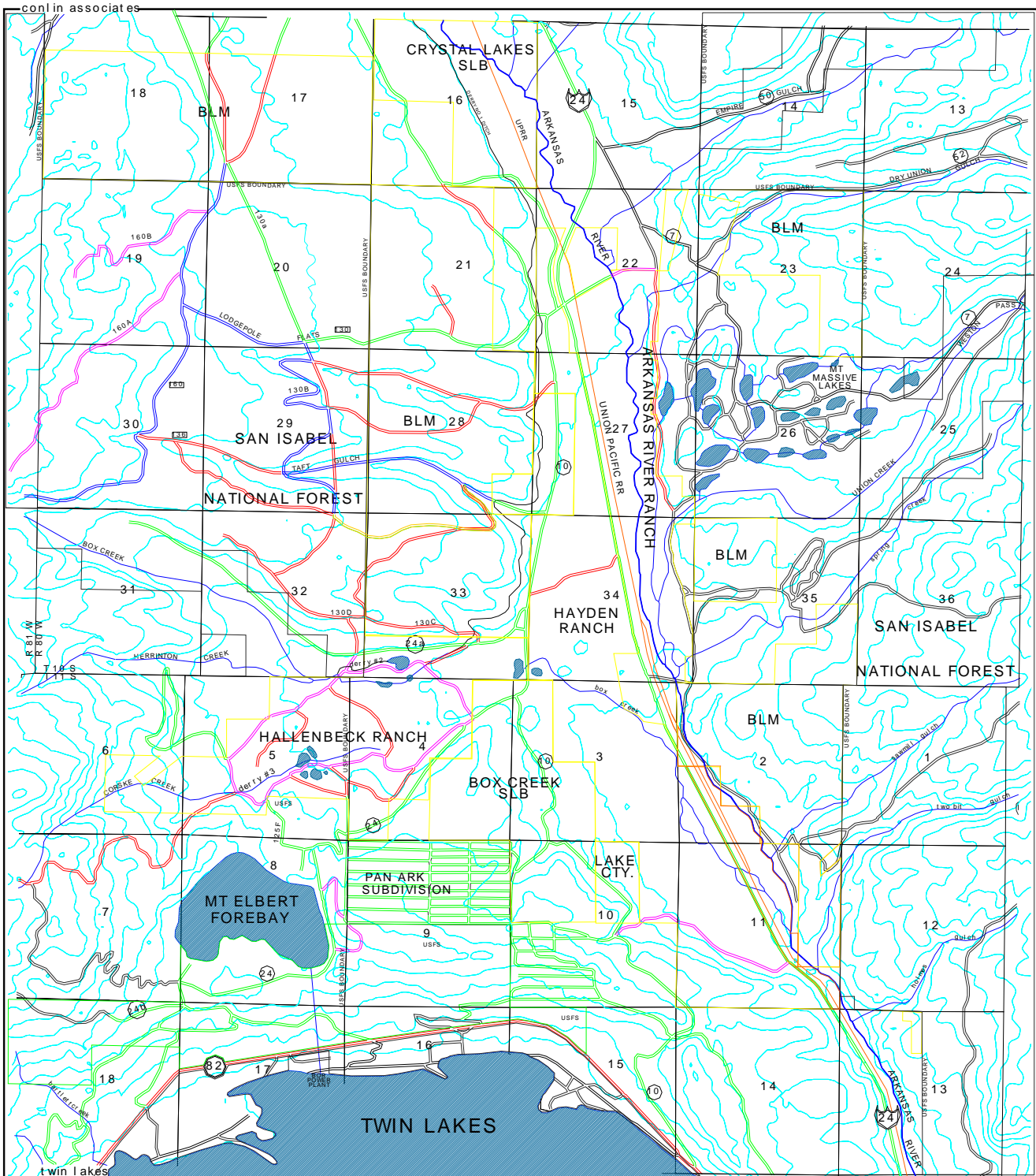
Underlying Principle

Actions on surrounding state, federal and private lands can have an impact on the effectiveness of LCOSI management strategies. Likewise, actions on subject lands of the LCOSI can impact management and operations of surrounding lands.

Proposed Management Action

Coordinate management strategies to be compatible with USFS and BLM Management Plans.

Work with adjacent private landowners to achieve LCOSI Management Goals and Objectives.



LAKE COUNTY OPEN SPACE INITIATIVE

KEY

NON-SYSTEM ROADS CLOSED AND REMOVED	—	resource mapping
CLOSED ADMINISTRATIVE USE ONLY	—	Management Strategies
SEASONAL CLOSURE	—	UTILITIES
OPEN YEAR ROUND	—	ROADS
100-MILE TRAIL BYPASS	—	Map 28
		ALL BOUNDARIES APPROXIMATE

LAKE COUNTY

LCOST PROJECT AREA

drawn by: m conlin
date: 11/7/98
revised: —
date: 11/26/02

data source: micro map & cad
plss, dig, dem data
blm land ownership
status mapping
bear surveying

CONTOUR INTERVAL 100'
COORDINATES - UTM-13

0 1000 5000
SCALE IN FEET

0 1/4 1/2 1
SCALE IN MILES

MAP NO. 1



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Management Objective

Work with appropriate partners to limit or eliminate overhead and above-ground placement of utilities within the scenic viewshed.

Underlying Principle

The Lake County Land Use Guide, National Scenic Byways Regulations, the Pike and San Isabel National Forest Management Plan, and the Royal Gorge Resource Area Management Plan all set standards for viewshed protection that discourage or prohibit the construction of overhead or above ground utilities in sensitive scenic viewsheds.

Proposed Management Action

Work with jurisdictional entities to prohibit the construction of new overhead or above ground utilities on subject properties of the LCOSI.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Extractive Industry

Management Objective:

To limit or eliminate the negative impacts of mining within the Lake County Open Space Initiative Project Area.

Underlying Principle

Mineral operations, whether locatable, leaseable, or energy related, have the potential to negatively impact the goals and objectives of LCOSI. The physical act of mining serves to disrupt wildlife habitat, negatively impact viewsheds, decrease water and air quality, increase noise pollution, and reduce the serenity and visual integrity of the rural setting. Mining is considered to be an incompatible use within the Lake County Open Space.

Federal lands reserved under Public Domain are open to mineral entry for locatable minerals. Application for locatable mining operations is a non-discretionary decision and is addressed with an authorized Plan of Operations. (See Map 29)

Acquired lands were once in non-federal ownership and were acquired through exchange, donation, or purchase. These lands are not open to locatable mineral entry, and decisions for mineral operations are discretionary in nature.

Leaseable minerals, such as sand/gravel operations, are discretionary activity on both reserved and acquired lands.

Energy operations, such as oil/gas, are discretionary in nature.

Permitted mining is currently an allowable use on State Land Board properties.

Proposed Management Action

In order to prevent the loss of scenic values, open space, water quality, aquatic and terrestrial habitat, the following Management Actions are proposed:

- 1) That reserved federal lands in the LCOSI project area be withdrawn from mineral entry, as appropriate.
- 2) That discretionary activities on acquired lands be resolved to the benefit of wildlife and open space.
- 3) That any Plans of Operation for mineral activity within the Project Area mitigate for, and promote, the goals and objectives of LCOSI.
- 4) State Land Board parcels be purchased out of the Stewardship Trust Program and protected from mining activity.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Management Objective

To utilize extractive industries as a tool to improve forest health and wildlife forage values

Underlying Principle

Forested areas within the LCOSI Project area are principally vegetated by dense, even aged stands of lodgepole pine, resulting from wholesale forest removal during the peak of the mining era. The densely packed stands add to fuel wood loading and have a high potential for catastrophic stand replacement fire in an ecosystem that historically experienced frequent, low intensity fires. The stands are highly susceptible to dwarf mistletoe and insect infestations.

Dense, even aged lodgepole forests also reduce the level of sunlight that reaches the understory, and leach valuable nutrients from the soil. Commensurately, understory growth is almost non-existent, leading to low forage values for wildlife.

Vegetative diversity, forage production, and habitat values can be enhanced by selective mechanical clearing of the uniform forest canopy, creating clearings where successional growth can occur. The clearings create a desirable ecotone or "edge effect", where forage is in close proximity to thermal and hiding cover, and disrupt pathways of disease and infestation, while adding to vegetative diversity and enhancing forest health.

Proposed Management Action

Where forest health and increased forage production are the prioritized goal, allow selective commercial or private harvest of fuel wood, post and pole, or small diameter timber within the dominant lodgepole communities.

Use selective harvest, thinning, prescribed fire, and tree planting as tools for restoring forest health and increasing forage values.

Protect old growth stands, legacy trees, and downed logs that provide important wildlife habitat.

Protect healthy stands of young regenerating forest, high quality wildlife habitat, and large mature stands of aspen.

Coordinate with the proposed actions of the Box Creek Vegetation and Travel Management Plan to ensure cohesive ecosystemic management across jurisdictional lines.

Management Objective

To maintain range health and increase forage value through controlled livestock grazing.

Underlying Principle

The high altitude, limited availability and irregular frequency of precipitation, and cold climate witnessed in the Upper Arkansas River Valley result in highly "brittle" range conditions, in which the biological decay of plant matter is highly inefficient. In the absence of biological decay, rangeland can become decadent, and overall health and forage production can decrease. The historical breaking down of plant matter was achieved through fire, the action of the hooves of the large herbivores wandering the open range, and through the harvesting of hay to feed livestock.

In the natural order of things, predators would move wildlife around on the open range, and in the course of this continual movement, the animals would return nutrients to the soil in the form of fecal matter, and would break up the soil with their hooves, reducing thatch and vegetative decadence and improving seed germination, plant diversity, water availability, and healthy range conditions.

With the reduction of natural predators, the introduction of fencing, and the replacement of wildlife with domestic livestock, changes to traditional range conditions have occurred which have increased erosion and watershed impacts while depleting forage for wildlife.

Traditional livestock grazing practices prioritized maximizing meat production and profit, and the range was treated as a depletable resource. Trampling and overgrazing lead to inadequate recovery periods to ensure root growth, and inadequate plant litter accumulation to cover bare soils, and rangeland health decreased.

Controlled grazing of livestock, including frequent rotation over the available range, with the goal emulating the historic wildlife grazing function and improving forage, range, soil, and water conditions, has been shown to be a valuable tool in rangeland management.

Additionally, the presence of grazing animals has been part of the visual landscape and defining character of the Upper Arkansas River Valley for over a century.

Proposed Management Action

Allow controlled grazing where it meets the management goals of improving range health and increasing wildlife forage values.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

River Restoration

Management Objective

To promote the restoration of the Arkansas River

Underlying Principle

The U.S. EPA and the MOU Parties are currently studying and implementing means of restoring areas of natural resource impacts along the 11-mile reach of the Arkansas River, which encapsulates that section of the River passing through the subject properties of the LCOSI.

LCOSI land managers do not have the expertise or funding capability to implement natural resource mitigation on the subject properties, but share in the benefits of restored habitat, reduction in the bioavailability of hazardous materials, and a healthier and cleaner river ecosystem.

Proposed Management Action

Cooperate and coordinate with the EPA and MOU Parties to provide access to the 6 miles of the Arkansas River passing through the LCOSI Project Area, to facilitate cleanup and healing of the river.

Coordinate the planning and location of access corridors necessary for cleanup of fluvial tailings to allow for their adaptive re-use as trails, or their rehabilitation back to the natural state.

Provide access for monitoring of remediation effectiveness.

Coordinate informational and interpretive signage.

Management Objective

To implement Off-Channel restoration of Box and Big Union Creeks

Underlying Principle

Over a century of irrigation and cattle grazing have resulted in the alteration of natural stream courses, changes in streamside vegetative composition, and the erosion of stream banks on the tributary streams to the Arkansas as they pass through the Project Area. Water quality, habitat values, and aesthetics may be improved by the return of the ecosystem to a more natural condition.

Proposed Management Action

Limit or eliminate livestock grazing in sensitive wetland and riparian habitats along Box and Union Creeks.

Where grazing is allowed, consolidate livestock watering areas and stream crossings to areas that can sustain the activity, and armor existing soil conditions at crossings to limit trampling, erosion, and sediment yield.

Increase herbaceous and woody plant communities along stream banks to provide shade and hiding cover, and to stabilize soils.

Re-establish the natural meander of stream courses straightened to facilitate irrigation and water delivery. Construct in-stream pools to provide holding water and increase habitat diversity.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Scenic Conservation

Management Objective

To maintain, preserve and enhance the existing scenic vistas and viewing opportunities

Underlying Principle

The Arkansas River Valley is nestled in one of the highest concentrations of 14,000-foot peaks in the contiguous United States, including the highest peaks in the American Rockies, and 4 of Colorado's 5 highest peaks. The LCOSI Project area straddles the headwaters of one of the Nation's great rivers, and its vast sense of open space epitomizes the character of the American West.

Proposed Management Actions

Preserve the open space and viewsheds of the Project Area through fee simple ownership, conservation easements, recreational access agreements, stewardship trusts, cooperative management agreements, and Management Plan amendments.

Utilize this management plan as a guide to provide continuity and direction for actions and activities within the project area, regardless of jurisdictional boundaries.

Management Objective

Maintain and enhance visitor safety.

Underlying Principle

Regardless of any actions taken by LCOSI to maintain visitor safety, the fact remains that dangers inherent to climate, altitude, high topographic relief, still and moving water, and the presence of wildlife exist, and are a part of the attraction and sense of adventure that draw people to the mountains of Colorado. The saying, "This ain't Disney world, the alligators are real" holds a special relevance within the rural alpine setting of the Upper Arkansas Valley. Attempts at sanitizing the natural environment in the name of public safety defeats the purpose and function of the creation of a natural, open space environment.

In certain areas, such as traffic control, public education, informational signage, and access barriers around human health risks, the level of public safety can, and will be enhanced.

Proposed Management Actions

Create safe pullouts off of highways and County roads to allow for the safe enjoyment of wildlife watching, heritage tourism, outdoor photography, or scenic viewing.

Provide clear, concise visual cueing through directional and informational signage that encourages safe use of the Project Area.

Provide information on the inherent natural dangers of the high altitude, semi-primitive rural environment of the Upper Arkansas River Valley.

Provide warnings of potential human health risks, including but not limited to: hazardous materials; potential for contact with unpredictable wildlife or the diseases that they might carry (e.g. hantavirus); or the presence of unstable manmade structures.

Management Objective

To interpret the natural and manmade resources located along the Top of the Rockies Byway.

Underlying Principle

The Top of the Rockies National Scenic and Historic Byway is one of 52 designated roadways in the nation recognized for their outstanding scenic beauty and historical significance. As such, the Byway can be a destination unto itself, offering the traveler access to the "road less traveled," and the spectacular scenery, recreational opportunities, rich history, cultural diversity and natural treasures unique to the Colorado High Country.

Interpretation of features that are representative, unique, irreplaceable, or distinctly characteristic of the area can increase the enjoyment and appreciation of the LCOSI Project Area.

Proposed Management Actions

Utilize the Hayden Meadows Recreation Area and the Sawatch Range Trail as vehicles for interpreting the history of LCOSI, the healing of the Arkansas River, mountain transportation, and the natural history of the Upper Arkansas River Valley.

Utilize the Hayden Homestead as a vehicle for interpreting the mining and ranching history of Lake County.

Utilize watchable wildlife pullouts as a vehicle for interpreting the life cycles of resident and migratory species, and the ethic of wildlife watching.



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Water Resources

Management Objective

To maintain the beneficial use of water rights associated with the historic ranches

Underlying Principal

Water is among the most basic of human needs, and is an absolute necessity for supporting life. A dependable water supply is also the virtual lifeblood of sustainable community development. In an over-appropriated river system such as the Arkansas, water is a finite resource set against ever-increasing demand.

Competition for existing supply will continue to increase as the state's population grows. As with any article of trade, increased demand balanced against a limited supply will continue to drive up the value, making water rights a rare and highly sought after commodity.

In Colorado, a premise of "use it or lose it" is applied to the utilization of water rights. Lack of beneficial use, coupled with an "intent to abandon" water rights, can lead to their formal abandonment, and the forfeiture of any future right to put the water to beneficial use. It is incumbent upon existing water rights owners to protect and maintain the physical and legal viability of their water rights.

In a highly competitive marketplace, the legal right to use water will be increasingly challenged by those who would benefit from its abandonment. It is critical that the water rights acquired through purchase of the Hayden and Hallenbeck Ranches be actively and vigorously defended and maintained.

Proposed Management Action

Work collectively to protect existing water rights against abandonment or litigation.

Maintain existing ditches and water conveyance structures at operational levels.

Repair and rehabilitate non-functioning ditches to operational levels.

Put legally available water rights to their intended beneficial use.

Prepare a blanket augmentation plan to allow for new uses of existing agricultural water rights, to include municipal, commercial, recreational, wildlife, and residential uses.

Increase water storage capacity to provide drought protection and allow year round use and augmentation of otherwise seasonal agricultural water rights.

Management Objective

To ensure favorable flows for fisheries and the maintenance of aquatic health

Underlying Principal

Depletion of water or reduction of flow rates within an aquatic ecosystem can reduce dissolved oxygen, increase sediment loading, increase water temperatures, dry up or silt spawning and weed production areas, decrease forage production, and expose lake and stream beds to wind and other erosional forces. All of these forces can lead to deterioration of aquatic health.

Proposed Management Action

Determine the minimum stream flows and lake levels necessary to support viable and healthy aquatic populations.

Maintain minimum stream flows and lake levels necessary to maintain fisheries and aquatic health to the best extent possible.

Management Objective

To Maintain and improve water quality

Underlying Principal

With the clean-up of point sources of pollution in the California Gulch Superfund site, water quality along the main stem of the Arkansas River has shown a remarkable recovery. The cleanup of fluvial tailings within the LCOSI Project Area has also increased water quality by reducing the amount of recontamination during periods of high flow and peak runoff. The result has been the return of a healthy aquatic biomass, from the bottom of the food chain right up to the self-sustaining population of Brown trout. The Arkansas has once again risen to the status of being one of the best trout streams in Colorado.

Improved stream health and water quality in turn increase recreational use, aesthetics and scenic quality, vegetative diversity and wildlife habitat values, which in turn, return economic and quality of life benefits to Lake County



Lake County Open Space Initiative Ecosystem Management Plan

Section IV Management Strategies

Proposed Management Action

Work cooperatively with the EPA and MOU Parties to complete the cleanup of fluvial tailings along the 11-mile reach of the Arkansas River.

Continue to cooperate with efforts by others to improve water quality of the Arkansas upstream of the project area.

Preserve critical wetland / riparian areas for their ability to capture heavy metals contamination, reduce flood damage, and function as nature's water filters.

Consolidate and limit vehicular stream crossings, cattle fords, trails, and other sources of stream bank and streambed erosion to reduce sedimentation and turbidity in tributary streams and wetlands.

Discourage, limit, or mitigate recreational activities that contribute to erosion, loss of streamside vegetation, increased sediment yield, or recontamination of the watercourse.

Plan and locate roads, trailheads, trails and parking lots to create buffers between vehicular use and live water courses to limit the introduction of petroleum products into the waterway.

Discourage the use of chemicals or agricultural treatments that enter and contaminate the tributaries, lakes, or rivers of the Project Area.

Plan and locate sanitary facilities to isolate them from entering and contaminating ground and surface waters.

Management Objective

To increase water storage capacity for water management, drought relief, wildlife, recreation, and economic development.

Underlying Principal

The summer of 2002, one of the worst droughts in recorded history, clearly demonstrated the importance of water storage capacity in Colorado and the Upper Arkansas basin. Without water held in storage, agriculture, recreation, tourism, and residential growth would have collapsed. Without storage, most of the taps on Colorado's front range would have been dry by

early summer, and much of the state would not have had a supply of essential drinking water.

The sight of reservoirs at less than 50% of capacity, dry parched earth, burned vegetation, and once raging rivers relegated to mere trickles was a strong reminder that here in Colorado we live in an arid environment, that, without water management and storage, could not support its own population, quality of life, or economy.

The dynamics of water storage favor high elevation sites, located gravitationally above the areas of intended use, and in a climate where long winters cap the reservoirs with ice, limiting evaporative loss. The Upper Arkansas River Valley has long been favored for its value as a site for water storage high in the system, where it has its highest utility.

Proposed Management Actions

Work with the project proponent in the planning and development of water storage within the identified management emphasis areas to ensure that the project is planned, constructed, and maintained in compliance with the goals, objectives and management strategies of LCOSI

Ensure that LCOSI Partners benefit from its use as a storage facility



Lake County Open Space Initiative Ecosystem Management Plan

Section 4 Management Strategies

Wetland and Riparian Zones

Management Objective

To protect and enhance wetland habitat

Underlying Principle

The Lake County Open Space Initiative has targeted wetland habitats in its acquisition and preservation strategy because of their relative scarcity and high resource value. Wetlands include swamps, marshes, bogs and similar areas, and provide critical habitat for many important species of fish and wildlife. Wetlands also export plant particles called detritus that serve as food for aquatic organisms in adjacent waters. Wetlands absorb peak floodwaters, reducing damage to downstream properties, and improve water quality by means of a number of natural processes that remove pollutants from waters flowing through them. Additionally, wetlands provide aesthetic, recreational, scientific and educational values.

Wetlands and also contain sensitive soils and vegetative species that are highly vulnerable to resource damage and the impacts of human activity.

Proposed Management Actions

- 1) Minimize disturbances and manage recreational uses in wetland areas to protect vegetation, fragile soils, springs, seeps, bogs, and wetlands.
- 2) Plan and locate routes, trails, and developments away from wetland areas and highly erosive soils.
- 3) Plan and locate parking areas and other sources of automotive contaminants away from wetlands.
- 4) When avoidance is not possible, concentrate heavy travel areas adjacent to and through wetlands to sustainable hard surface roads and trails.
- 5) Manage watercraft types and uses to protect wetland systems and water quality from impacts.
- 6) Reduce and consolidate wetland crossings to protect fragile soils and to reduce sedimentation and associated soil compaction.
- 7) Protect sensitive wetlands from livestock grazing.
- 8) Remediate or restore damaged wetlands immediately following disturbance.
- 9) Replace, construct, or reconstruct lost wetlands, preferably within the same drainage, to prevent any net wetland loss.

Management Objective

To protect and enhance riparian habitat

Underlying Principle

The Lake County Open Space Initiative has targeted lowland riparian habitat in its acquisition and preservation strategy because of its relative scarcity and high resource value. Riparian zones include both running and standing waters and adjacent terrestrial habitats that are directly affected by the presence of permanent water, and provide critical habitat for many important species of fish and wildlife. Riparian vegetation captures sediment and its root structures help to stabilize soils. Stable soils, in turn, store and release water slowly, helping to minimize the affects of flooding, reduce sedimentation, and protect water quality. Riparian areas also provide aesthetic, recreational, scientific and educational values.

Riparian zones contain sensitive soils and vegetative species that are highly vulnerable to resource damage and the impacts of human activity.

Proposed Management Actions

Management actions are much the same as for wetlands:

- 1) Minimize disturbances and manage recreational uses in riparian areas to protect vegetation, fragile soils, springs, and wetlands.
- 2) Plan and locate routes, trails, and developments away from riparian areas and highly erosive soils.
- 3) Plan and locate parking areas and other sources of automotive contaminants away from live streams and water bodies.
- 4) When avoidance is not possible, concentrate heavy travel areas adjacent to and through riparian zones to sustainable hard surface roads and trails.
- 5) Manage watercraft types and uses to protect riparian systems and water quality from impacts.
- 6) Reduce and consolidate stream crossings to protect stream banks and fragile soils and to reduce sedimentation and associated soil compaction.
- 7) Provide for unimpeded movement of fish and aquatic fauna at stream crossings
- 8) Protect sensitive riparian zones from livestock grazing.
- 9) Remediate or restore damaged riparian zones immediately following disturbance.



**Lake County Open Space Initiative
Ecosystem Management Plan**

**Section V
Public Comment**

Lake County Open Space Initiative Ecosystem Management Plan



Section V Response to Public Comment

Background

Planning for the LCOSI Ecosystem Management Plan began in May of 1998, with the setting of goals and objectives for preparation of a consensus based document that recognized the independent jurisdictions and authorities of the individual partnering entities, while viewing the subject landmass as an integral part of the overall ecosystem, rather than a patchwork of manmade jurisdictional boundaries. A visioning exercise was held on July 28th of 1998, to establish the overall vision and mission of the initiative.

An all day planning session was held on August 30th, 2000 for the purpose of establishing the plan's format, and identifying the deliverables for a Capacity Building Grant that was being presented to Great Outdoors Colorado. The grant was submitted on September 14, 2000, requesting \$75,000.00 in GOCO funds, with a partner cash match of \$15,000.00, and a local in-kind match from LCOSI Partners of \$54,380.00. The funding request was considered to be sufficient to deliver both draft and final versions of the Ecosystem Management Plan. Lake County agreed to be LCOSI's local government sponsor for the grant, and to act as grant administrator. As such, the County agreed to pay the front-end costs, and submit expense records to GOCO for reimbursement upon project completion.

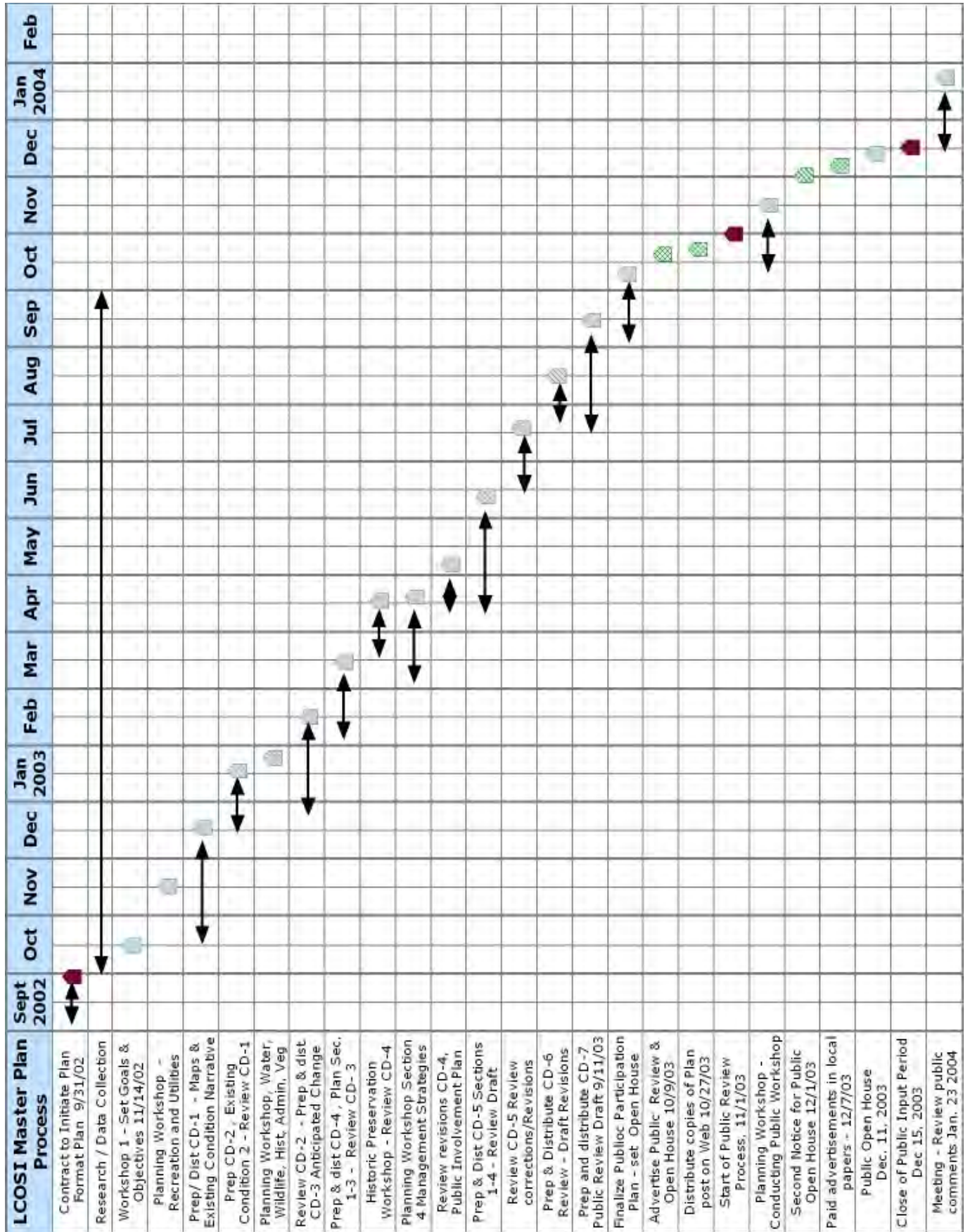
A draft outline of the proposed management plan was submitted to the LCOSI partnership for review and comment on January 11, 2001, and was revised and accepted on February 8, 2001. On March 8, 2001, however, it was reported that, although the LCOSI grant request had scored very well, a shortfall of \$46,000,000.00 in lottery proceeds had lead to severe cuts and a reduction in the number of the projects that would be funded. Among the projects dropped for lack of funding was the LCOSI request. The GOCO Board strongly supported resubmission of the application in the next grant cycle, when additional revenues from the new Powerball Lottery would become available.

The GOCO Capacity Building Grant was revised to respond to scoring shortfalls identified in the original version, and submitted to the LCOSI Partnership for review at their August 9, 2001 meeting. LCOSI authorization was granted to resubmit the application, with Lake County once again agreeing to act as the grant administrator. The grant was submitted to GOCO on September 21, 2001.

At the February 14th 2002 LCOSI meeting, it was announced that GOCO had awarded \$35,000.00 of the \$75,000.00 requested for the LCOSI Capacity Building Grant. The reduced award represented a shortfall in anticipated GOCO receipts, and required a revision of the project budget and scope of work to fit within the available funding. It was decided that the reduced funding was insufficient to provide a final version of the plan, and that the plan would be developed to the draft stage, and distributed for public review and comment, as the deliverable under the reduced grant. Contract negotiations based on the revised scope of work were approved by GOCO and forwarded for signature in August of 2002. The contract was signed by Lake County as the local government sponsor on September 31, 2002, with the provision that the draft plan be delivered to GOCO by October of 2003.

The Gant Chart that follows, (Chart 8) tracks the sequence of 18 public planning workshops and 7 critical milestones that occurred over a period of a year and a half, beginning in September of 2002, and leading to: the completion and delivery of the Draft Ecosystem Management Plan on September 11, 2003; the close of the public comment period on December 15, 2003; and the review of the public participation process on January 23, 2004.

Chart 8
 Planning and Public Participation Process



Lake County Open Space Initiative Ecosystem Management Plan



Section V Response to Public Comment

Process

The Lake County Open Space Initiative: Ecosystem Management Plan is a consensus document, prepared with the input, cooperation, review, and oversight of the Partners to the Initiative. All meetings and planning workshops were open to the public and the press, and public notices were posted at the Lake County Courthouse. Meeting minutes were distributed monthly to all partnering entities and placed on record in the library at the Timberline Campus of Colorado Mountain College for public inspection.

The Planning Process officially began on September 31, 2002, with the signing of a contract allowing Lake County to expend Great Outdoor Colorado Capacity Building Grant Funds for Conlin Associates' preparation of the LCOSI Ecosystem Management Plan.

On October 14, 2002, the LCOSI Partnership met for a full day planning session to outline the goals and objectives of the plan, and to establish task lists, timelines, and protocols for public involvement in the planning process. It was determined that the Plan would consist of 7 Sections, including: 1) a description of the plan, its purpose and need, goals and objectives, and a description of the planning process; 2) a description of the existing condition to better understand the current land and resource status and track changes that occur over time; 3) exploration of anticipated changes to the land base and resources within the foreseeable future; 4) management strategies to deal with anticipated changes; 5) documentation of participants and source information; and 6) appendices. The seventh and final section of the plan, documenting and responding to public comment, would be deferred until such time as funding could be procured.

Conlin Associates was tasked with: facilitating monthly workshops to gather input from participants and the public; preparing draft documents in response to that input; distributing those documents for partner review; and modifying the draft document in response to suggested revisions.

Between October of 2002, and August of 2003, Conlin Associates facilitated 13 public input workshops to gather data on resource values such as water, wildlife, and vegetation from partnering agency specialists, and produced and distributed six CD-ROM disks to the partnership, containing the various draft sections of the plan. Each CD was reviewed by the partnership between meetings, and discussed at a public planning workshop, where suggested changes were explored and revised until partner consensus was reached. As each new section was discussed, revised, and accepted, it was added to the overall document.

On August 14, 2003, following a one-month internal review period, CD-6 was distributed, which contained the entire **Internal Review Draft**. Final suggestions for changes or revisions to the internal review document were projected onto a screen with the aid of a digital projector, and in an all day workshop, each suggested change was discussed to the point of resolution by consensus of the partnership.

The revised document was compiled as CD ROM – 7, the **Public Review Draft**, which was distributed on September 11, 2003, along with bound, printed copies, to partnering LCOSI entities, local libraries, GOCO, and the offices of the Lake County Board of Commissioners, BLM, USFS, State Parks, and the City of Aurora for public review. A digital version was also posted on the internet.

Press releases supported by paid advertisements in local newspapers, and notification on the local television station were used to inform the public of the availability of the draft document for review and comment, along with instructions for making public comment, and an invitation to a public open house to discuss concerns or issues with the plan.

The formal public review period ran for 45 days, from November 1 through December 15, 2003. A public open house to gather verbal input relative to the plan was held on December 11, 2003, with 14 members of the LCOSI partnership in attendance to answer questions and document verbal comments, as well as Spanish interpreters to remove potential language barriers.

A Power Point presentation, large scale planning maps and graphics, and copies of the document were on hand to help explain the intent and content of the plan. The open house was three hours in duration, and drew only limited attendance.

Written and verbal responses from the public review process were compiled and projected onto a video screen at the January 23, 2004 LCOSI meeting, and responses to the issues were discussed and documented by the partnership. Respondents in attendance were allowed to challenge planning elements or expand on their written comments. With completion of this review, the requirements of the GOCO grant were satisfied.

In order to fund the process and produce a final document, including the Response to Public Comment, the LCOSI partnership made the decision to reduce its monthly meeting schedule to every other month, and to allow the facilitation cost savings to accrue until such time as sufficient funds were available to complete the project.

The decision to proceed with the completion of Section 5, **Response to Public Comment** was made at the November 10, 2005 LCOSI meeting, when it was determined that sufficient funds had accrued to initiate and complete the process. The first draft of the Section was distributed to LCOSI partners for review on CD at the next regularly scheduled meeting on January 19, 2006, with additional distribution to members not in attendance via e-mail. At the March 9, 2006 meeting, the document was projected onto a screen with the aid of a digital projector, and the document was reviewed paragraph by paragraph, with suggested revisions annotated and recorded. The revised draft was distributed by CD and e-mail to partners, and reviewed at the May 11, 2006 LCOSI meeting. The final version of the Public Response section was distributed via e-mail to partners for final review. In the absence of any additional corrections or revisions, the Section was adopted as final by consensus at the July 13, 2006 regularly scheduled meeting. Corrections, additions and revisions to the Public Review Draft narrative and maps were made subsequent to final adoption.

The resulting document contained herein is the **Final Lake County Open Space Initiative Ecosystem Management Plan**.

Lake County Open Space Initiative Ecosystem Management Plan



Section V Response to Public Comment

Comments and Responses

The following comments were received either verbally or in written form during the formal public review period, extending from November 1, 2003, through December 15, 2003. Responses are based on the LCOSI review and response to public comment at its regularly scheduled meeting on January 23, 2004.

Comments are included in their entirety to ensure accuracy. Compound comments are answered in the sequence in which they were asked.

Comment - 1:

The LCOSI Project boundary encroaches on the East Twin Lakes Development area – it is not acceptable and no opportunity was presented for the East Twin Lakes Community to assist in establishing a negotiable boundary.

Response - 1:

Regarding: "East Twin Lakes Development Area":

The "East Twin Lakes Development area" is not geographically defined in the comment, nor is it a legally defined subdivision of record with the Lake County Clerk and Recorder. As such, there is no officially established boundary upon which to encroach. Subject lands of the LCOSI are described in the narrative (Section II, Land Status, pp II-23 – 37), and visually delineated on Project Area maps (Section II, Map 3, pp II-24), and are clearly differentiated from adjacent private boundaries and surrounding lands. No physical or jurisdictional encroachment onto adjacent private lands is expressed or implied.

Regarding: "LCOSI Project boundary":

The mapping unit boundaries used to illustrate the subject properties of the Lake County Open Space (Section II, Existing Condition, Land Status pp II-23 – 37) do extend beyond the subject lands.

Section 1 Glossary of Terms (Section I, pp I-18)

Project Area – *The area encompassing the individual properties administered by the LCOSI partners, as well as external reference such as surrounding land ownership patterns, water bodies, roadways etc. Includes all or part of Sections 13 – 16, Township 10 South, Range 80 West, and Sections 1 – 18, Township 11 South, Range 80 West of the Sixth Principal Meridian, Lake County, Colorado.*

The fact that the Project Area also encompasses private properties outside of the control of LCOSI partners is a matter of practical fact, and is necessary in order to encapsulate the irregular configuration of the subject lands within a uniform map unit, provide external reference, and illustrate the relationship of the subject lands to surrounding land uses. The plan does not apply to, nor does it impose any jurisdiction over private lands by virtue of their inclusion within the defined Project Area.

Section IV Subject Lands (pp IV-2)

*Within the context of this Plan, **subject lands** refers to parcels of real property that have been secured by partners to the Lake County Open Space Initiative through land tenure agreements including, but not limited to: fee simple ownership; conservation easements; stewardship trust agreements, recreational access agreements; or cooperative management agreements, through which jurisdiction over surface activities has been conveyed. No element of this plan, expressed or implied, shall be construed as applying to adjacent or surrounding private lands.*

Regarding “no opportunity to assist”:

As delineated in Chart 8 of this document, there were 13 planning workshops that the “East Twin Lakes Community” could have attended and provided public input, prior to the release of the Public Review Draft. All meeting dates were posted at the Lake County Courthouse and periodic newspaper articles tracked the progress of the effort. Ample opportunity to participate in the process was provided.

Regarding “negotiable boundary”:

The term “negotiable boundary” is not defined in the comment. The inclusion of surrounding private lands within the map unit depicting the LCOSI Project Area is not a decision subject to negotiation. Private land ownership does not convey upon the owner the right to preclude inclusion of said properties on public maps. The term “negotiable boundary” does not apply.

Comment - 2:

Whether there is or is not a Box Creek Reservoir are alternatives that will influence the location of a negotiable boundary.

Response - 2:

As previously stated (Response – 2), the map unit encapsulating the subject lands of the LCOSI Project Area is not a “negotiable boundary.” Whether or not the Box Creek Reservoir is constructed, the Project Area, as defined in Section I of the Plan, will remain the same.

As of the writing of this document, the Box Creek Reservoir has not been formally proposed to any of the jurisdictional agencies from whom a permit will be required, and no assurance is given that it will ever be proposed or built. While many uncertainties still remain as to its eventual construction at this point in time, it has been disclosed as a potential future action (Section III, Anticipated Change, pp III-7-8) in order to explore its potential to change the character and utilization of lands within the Project Area, and to precipitate a management direction in the event that it is constructed (Section IV, Management Strategies, pp IV-47- 48.) Any further discussion of the potential Box Creek reservoir is outside the scope of this Plan.

Comment - 3:

The proposed boundary includes Bureau of Reclamation property that was under tight security in defense of terrorist attack previously. Is this fact an indication that the inclusion of Bureau property will allow the closing of all activity to the public and private sector throughout the LCOSI project at the whims of the Bureau?

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Response - 3:

As clearly illustrated on project maps, and delineated in the Land Status descriptions of subject lands (Existing Condition: Section II – pp 23 et seq.), Bureau of Reclamation lands at Twin Lakes and the Mount Elbert Forebay, while encapsulated for external reference within the Project Area, are not delineated as subject lands, and as such are not a part of, nor are they subject to this Plan.

The LCOSI partnership has no control over the Bureau's actions in response to the defense of American soil, nor does the Bureau have jurisdiction over lands not under their control. There is no indication, expressed or implied within this Plan, that the Bureau can or will close public or private activity on subject lands of the LCOSI.

Comment - 4:

Why is it necessary to included (sic.) many subdivisions, lands of different zoning to include multi-family zoning, and Twin Lakes in the Project Boundary? Is it a ploy to stop developed recreation and commercial and residential development on both private and public lands? Is it a ploy to change zoning by default? Is it the advance wave of environmentalism that will eventually lead to the entire Valley being controlled for open space on either side of the transportation corridors (U.S. Highway 24 & Colo. State Highway 82)?

Response - 4:

Regarding "Project Boundary":

The inclusion of surrounding lands in the Project Area boundary, regardless of their ownership or zoning, was necessary to: encapsulate the irregular configuration of the subject lands within a uniform boundary; incorporate sufficient outside reference to allow the reader to associate the subject lands with identifiable surrounding landmarks, including water bodies and towns such as Twin Lakes, and roadways such as Highways 24 and 82; and to illustrate the relationship of the use and management of subject lands to that of surrounding public and private land uses. The Plan does not impose zoning restrictions or land use regulations on surrounding private lands (Refer to Response - 1).

Regarding "ploy" to stop development on public and private lands:

The Open Space Initiative is not a "ploy". It is a completely transparent public process to conserve subject lands and natural resources from development so that they can be enjoyed as publicly accessible open space by future generations of wild and human inhabitants of the Valley. As previously stated (Refer to Response – 1), the plan applies only to those subject lands under the control of participating entities and agencies, and does not impose any development restrictions on adjacent or surrounding private lands. The guiding principals of the plan include increasing public recreational opportunities on lands previously inaccessible because of trespass issues, and promoting smart growth and development.

Regarding “ploy to change zoning by default”:

The management of LCOSI lands as open space does not, nor is it intended to affect or alter the zoning of surrounding private lands. Public lands are not subject to County Zoning.

Regarding “advance wave of environmentalism”:

The LCOSI effort represents increased public awareness that the conservation of critical and finite intrinsic resources, such as mountain viewsheds, wildlife habitat and migration corridors, cultural heritage areas, outdoor recreation, water quality, and winter range have value to the surrounding community, separate from the monetary gain that can be derived from their development by a limited group of individuals. In a 1998 Survey of the residents of Lake County, fully 9 out of every 10 respondents supported the acquisition of the subject lands for conservation of open space. The Leadville Coalition’s 2001 Community Survey also indicated that 84% of respondents strongly supported protection of our environment and viewsheds.

Regarding “entire valley being controlled for open space”:

The Plan is specific as to the subject lands that are included within the present Project Area, as well as lands that may be targeted for possible acquisition at some point in the future. If those targeted lands become available for sale, any individual or entity has an equal right in a free market economy to make an offer to purchase them, and the right to subsequent land uses of their choice, as permitted by applicable land use codes and regulations. The LCOSI Ecosystem Management Plan does not suggest management strategies for real properties that are not under the control of partners to the Initiative.

The stated intent of the Initiative is to support smart growth and economic development (Section I, Vision Statement, ppl-2), which requires a delicate balance between preservation and development. It is not the intent of the Initiative to tie up the “entire valley” in open space, or to stifle economic growth, but rather to preserve and enhance sufficient, strategically located blocks of open space to protect the landmark viewsheds, critical wildlife habitats, unique cultural resources, and outstanding recreational opportunities that support the recreational, heritage, and eco-tourism base of Lake County’s economy.

Comment - 5:

The land zoned by Lake County as rural area, and still owned by Lake County or private entities should be the only land under the County’s jurisdiction that is available for open space, provided the public has access and sufficient time to evaluate site-specific studies conducted by professionals.

Response - 5:

Regarding “land under Lake County’s Jurisdiction”:

Lake County has jurisdiction over the privately owned lands within the unincorporated boundaries of the County, pursuant to the powers conferred by the laws of the State of Colorado, including but not limited to Colorado Revised Statutes (CRS): Article 28 Of Title 20 (Planning, Zoning, Subdivision); Article 65.1 of Title 24 (Areas of State Interest); Article 67 of Title 24 (Planned Unit Development); Article 68 of Title 24 (Vested Rights); Article 20 of Title 29 (Local Government and Land Use Control Enabling Act), and Article 11 of Title 30.

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State, Federal, municipal, and quasi-municipal lands within the County borders are not subject to Lake County zoning. The decision to place municipal, quasi-municipal, State, or Federal lands into open space is guided by the implementing legislation and statutory regulations of the individual agency or authority, and is independent of local jurisdiction.

Private landowners, regardless of the zoning of their lands, have the right to preserve their property as open space.

Lake County, unless otherwise constrained by its Land Use Regulations, can choose to place any of its fee simple property into open space, regardless of zoning. The County goes as far as *requiring* a minimum of 25% open space set-aside for all Planned Unit Developments in all applicable zoning categories within the unincorporated portions of Lake County.

The preservation of open space is not legally limited to County land zoned rural area.

Regarding "access and sufficient time":

The preparation of the Lake County Open Space Initiative Ecosystem Management Plan occurred over a 17-month period, during which time, 13 planning sessions were open to the public and attended by the local press (Refer to Chart 8). Minutes of the meetings were provided to partnering agencies and placed on record at the public library at Colorado Mountain College. A 45-day review period was advertised and established to allow for public review of the draft document, and an open house was conducted to address public comments and concerns. Decisions were made by consensus, in the public forum. Sufficient time was, therefore, allotted to the public participation element of the Plan.

Regarding "studies conducted by professionals":

The Plan is a collaborative document, compiled from input provided by professional foresters, historians, water experts, public lands specialists, wildlife biologists, certified haz-mat specialists, parks and open space managers, and recreation specialists from both the public agency and private sector.

Comment - 6:

Why does the Hayden Ranch history not include historic mining into the 1950's?

Response - 6:

Publicly available information sources did not contain reference to any historically significant occurrence of mining on the Hayden Ranch, during this period of its history. The historic context of the Hayden Ranch was its role in hay production and cattle ranching around the turn of the century, as documented in Section II, Land Status, pp II-23 - 27. The majority of mining activity in the immediate area took place on the Box Creek State Land Board parcel, or on the Hallenbeck Ranch located west of the Hayden Ranch. Limited physical evidence exists of historic placer mining activity along the main channel of the Arkansas River on the southeastern boundary of the Hayden

Ranch, but was not considered to be significant or relevant to the establishment of management strategies for future use of the Ranch.

Comment - 7:

If Box Creek Reservoir, the Reservoir surface does not constitute replacement of wet lands and the ecosystem that is destroyed by the water storage – an explanation of impacts and reliable data to be review (sic) is requested.

Response - 7:

The Box Creek Reservoir has not been formally proposed as of the date of this response (March 2006). Any data generated in the event that it is proposed will be subject to public disclosure under the provisions of NEPA (National Environmental Policy Act of 1969: PL 91-190). The inclusion of any “reliable data” on its impacts would be purely speculative, as it has not been designed, engineered, or even proposed at this time and is, therefore, outside the scope of this Plan.

Comment - 8:

Pictures of the Twin Lakes backdrop, aerial photo's, and pictures of wildlife from other locations do not constitute protection of scenic vista's that may or may not exist at some future date on the specific site that may be in question. Thus many of the photographs in the Draft appear to be nothing more than public deception.

Response - 8:

Regarding: the use of aerial photographs and inclusion of the Twin Lakes backdrop:
Photographs used to describe the setting of the Project Area within the Upper Arkansas River Valley are intentionally broad in scope, as they help define the spatial relationship of the LCOSI subject lands within the overall ecosystem in which they exist. The resource values of any isolated parcel of land cannot be fully understood without an understanding how it fits into the surrounding land and watershed matrix.

Aerial photography was used in response to need to display vast expanses of land contained within the 13.5 square miles of the subject lands, which cannot be viewed in their entirety from any one on-ground location. In photographing the subject lands from the air, the backdrop of Twin Lakes is a natural and inextricable element of the photograph. It would be inaccurate and unrealistic to manipulate a photograph to remove the backdrop because it contains views that are not specific or exclusive to the subject lands. There is no representation, expressed or implied within the Plan that the photographs are exclusively of subject lands. Rather, air photos contained in the Scenic Quality section of the Plan specifically identify project elements within the surrounding viewshed to show the interrelationship of subject lands with their surroundings.

Regarding: “pictures of wildlife from other locations”:
Wildlife species presented in the photographs in Section II – Wildlife, pp II-75 thru II-93, are representative of the species composition that may be found during all or a part of their life cycle in the Upper Arkansas River Basin of Colorado.

“Over 250 species of avian, terrestrial, and aquatic life are known to inhabit the Upper Arkansas River basin of Colorado, for all or part of their life cycle.” (pp II-75)

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An inventory of all wildlife species known to inhabit the Upper Arkansas River Valley of Lake County is outside the scope of this report.

Since the range and distribution of these species extends well beyond the boundaries of the LCOSI Project Area, CDOW Wildlife Resource Inventory System (WRIS) data has been selected to provide a map base that encompasses an area extending from the Continental Divide on the west, to the Mosquito Range to the east, and from Twin Lakes to Turquoise Lake along its north south axis. This perspective more accurately depicts the significance of the LCOSI Project Area within the overall context of the Upper Arkansas Valley. (pp 11-76)

Nowhere in the plan is it represented that all of the photographs of wildlife were taken on project lands, nor was that considered to be a requisite for illustrating the general attributes or appearance of the species being described. Where possible, available photographs from within the Upper Arkansas River Basin were used to represent wildlife known to exist in the ecosystem encompassing the LCOSI Project Area. When photographs from the Upper Arkansas River Basin were unavailable, as in the case of the lynx for example, where there have been no verified photographs taken in several decades, representative stock photographs were used to visually depict the species being described.

It would be impractical, if not impossible within the timeframe and budget of the Plan, to attempt to produce original photographs of every species of animal that is known to inhabit subject lands of the Open Space. The photographs meet the intent of the Plan by accurately representing the animals being described.

Regarding: Pictures of the Twin Lakes backdrop, aerial photo's, and pictures of wildlife from other locations do not constitute protection of scenic vista's that may or may not exist at some future date on the specific site that may be in question.

Correct. As previously described, photographs are not represented as being specific to vistas that "may or may not exist at some future date on the specific site that may be in question." The photographs portrayed demonstrate the foreground, middle ground and background elements of the viewshed in which the project area is situated, as is typical of viewshed analysis protocol.

Comment - 9:

Why is there no meaningful history of the extensive mining that has taken place on the Hallenbeck mining properties, now called a ranch?

Response - 9:

The Hallenbeck property was acquired as a Cash Entry, not a Mineral Entry Patent, by Samuel and Calaincourt Derry in May of 1878. Until Calaincourt Derry's death in 1908, the primary use of the property was for hay production and ranching. In 1908, the

Saguache Gold Mining Company bought the property and began small-scale placer mining. In deference to its earliest period of use, it is herein referred to as a ranch.

A brief history, commensurate in length with the narrative descriptions of other described subject properties, is found in Section II Land Status, pp II-27 – II-31, and referenced further in Section II, History pp II-43 - 44. The purpose of Section II, Existing Condition, is to provide a brief overview, not an exhaustive history of the resource elements present on the subject land. The overview contained in the referenced text provides a chain of ownership, prominent characters and significant events in its history, methods of mining, peak production figures, the current status of the land and its structures, and its designation as a National Historic Landmark District. By partner consensus, this level of discussion was deemed appropriate for the purposes of this Plan.

Comment - 10:

How will the open space in conjunction with federal government land affect multiple use? Will mining be allowed? Will the existing mining claims be allowed to be mined?

Response - 10:

Regarding: Multiple Use

The LCOSI Ecosystem Management Plan provides a planning umbrella over subject lands within the Project Area, providing governmental land managers guidance as to how surrounding lands will be managed to meet the mutually established goals and objectives of the Initiative. The Plan does not supersede, nor does it replace direction and regulation promulgated in implementing legislature or statutory mandates. If uses of surrounding federal land, such as mining, were allowed under the Multiple Use Doctrine prior to the Plan, nothing in the LCOSI Ecosystem Management Plan would preclude the operation of valid mining claims.

On the mining of LCOSI subject lands, Section IV, Extractive Industry, pp IV-37 states that the Management Objective is:

"To limit or eliminate the negative impacts of mining within the Lake County Open Space Initiative Project Area."

Proposed Management Actions include:

- 1) *That reserved federal lands in the LCOSI project area be withdrawn from mineral entry, as appropriate.*
- 2) *That discretionary activities on acquired lands be resolved to the benefit of wildlife and open space*
- 3) *That any Plans of Operation for mineral activity within the project area mitigate for, and promote, the goals and objectives of LCOSI*
- 4) *State Land Board parcels be purchased out of the Stewardship Trust Program and protected from mining activity.*

Regarding: Will mining be allowed?

The LCOSI Project Area is made up of subject lands that are under the authority of federal, state, and local partners; surrounding or adjacent private lands are not "subject lands." (Section 1 Glossary of Terms, 11 I-18, Section IV, Subject Lands, pp IV-2).

As previously stated, LCOSI has no jurisdiction over any of these authorities, but provides a consensus-generated model for the management of the subject lands that



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transcends manmade boundaries to the benefit of ecosystem needs. As such, the authority to allow mining to occur will depend upon the rules and regulations of the respective landowners.

Regarding: "Will the existing mining claims be allowed to be mined?"

Patented mining claims are private property, over which LCOSI has no control or authority. Mining of patented claims may continue, subject to applicable governmental and environmental regulations.

The LCOSI partnership has targeted several mining claims within the Project Area that they believe are in potential conflict with the goals and objectives of the Initiative (Section IV Land Tenure Adjustments, pp IV-7 – 11). If the opportunity arises to acquire these properties through fee simple purchase or exchange from a willing seller, the partnership may elect to acquire the claims for inclusion as subject lands in the open space. LCOSI has no powers of eminent domain, nor does it have any regulatory authority to close down valid mining operations.

There are currently no active patented mining operations on subject lands. The mineral estate remains intact on privately held subject lands, and owners of these lands and mineral rights have the discretionary right to authorize or deny mining operations on their private lands, subject to local, state and federal regulations,

Under the Stewardship Trust Program, the State Land Board reserves the right to lease its properties for mining. Subject lands under the control of the State Land Board at Crystal Lakes and Box Creek may still be permitted to allow mining.

Comment - 11:

Will the private sector be able to store water in the proposed Box Creek Reservoir?

Response - 11:

The Box Creek Reservoir is not a LCOSI project, and has not been formally proposed to any agency from whom a permit will be required as of the date of this writing. If Box Creek is proposed at some point in the future, the entity or consortium of entities that build the facility will have the authority to negotiate storage allocations. The question is, therefore, outside the scope of this Plan.

Comment - 12:

Will Lake County give the private sector the opportunity to obtain long term leases of County's Box Creek Storage water rights for private enterprises needing long term water commitments for development within the County.

Response - 12:

As previously stated (Refer to Response – 11), the Box Creek Reservoir has not been formally proposed, and is not a LCOSI project. LCOSI cannot negotiate for the Board of Commissioners of Lake County. The LCOSI partnership does not have the authority to allocate or lease storage capacity in the event that it is ever built. The question is, therefore, outside the scope of this Plan.

Comment - 13:

Box Creek storage in advance of any commitment to lease, sell or loan to Aurora or other out of County use? If yes how would the program waters be distributed with equal fairness to all property owners? Is there any provisions on the drawing board to insure (sic) that the County will not use its water rights to suppress development and economic competition from private competitors. Are there any provisions on the table, so to speak, to prevent out of County water users from legal harassment each time a local wants to apply for an augmentation program or change in use for in-county water rights.

Response - 13:

As previously stated (Response – 11), the Box Creek Reservoir has not been formally proposed to any of the agencies from whom a permit will be required, and is not a LCOSI project. The partnership does not have the authority to set conditions on storage allocations or water rights negotiations in the event that it is ever built. The question is, therefore, outside the scope of this Plan.

Comment - 14:

Why id (sic) there no mention of the mining history and names of mining properties within or adjacent to the so called Hallenbeck Ranch?

Response - 14:

A brief mining history of the Hallenbeck Ranch has been provided (See Response to Comment 9, Section II, Existing Condition, Hallenbeck Ranch, pp II-27 – 31, and Section II, Existing Condition, History, pp II- 42 - 44.) A detailed history of individual claims that made up the current property is outside the scope and purpose of this plan.

LCOSI Partners do not have any surface control over properties outside of the identified subject lands. Lands outside of the subject lands are not described unless there is a management concern that affects the subject lands. A discussion of the history of non-project land is, therefore, outside the scope of this plan.

Comment - 15:

Overall I think the Lake County Open Space Initiative Ecosystem Management Plan is well written and thought out. Like most plans of this nature it is long on objectives and short on detailed specifics on how the objectives will be met.



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Response - 15:

Unlike most management plans that are generated by the agency or municipality that has jurisdictional authority over the lands to be managed, LCOSI does not hold fee simple title to any of the subject lands within the Project Area. The Initiative includes multiple public and quasi-public landowners, each working under their own legally mandated management or land use plans. This Plan cannot supersede, over-ride, or replace existing management plans. Its intent is to provide a coordinated planning umbrella to guide future management decisions by the partnering land authorities. As such, it cannot impose specific actions upon partnering agencies, and can only suggest that future land use decisions take into account the goals, objectives, and management strategies that resulted from the consensus planning effort.

Comment - 16:

The Pueblo Water Works Columbine Ditch is not located on Map 5 nor discussed in the text. This diversion moves water from the Eagle Drainage to the Arkansas Drainage via Chalk Creek near Fremont Pass.

Response - 16:

The commenter is correct in this observation, and thanked for pointing out the omission. Map 5 was an existing graphic that very effectively illustrated most of the major water diversions from the western to the eastern slope, but did not include the Columbine Ditch. The map cannot be altered at this point in time, but the text has been corrected to reflect the inclusion of the Columbine Ditch.

Comment - 17:

The Lake County assessed valuation numbers in the plan are different from those recently supplied by Howard Tritz (Lake County Assessor). The numbers we have been using in our current grant writing are as follows:

High of \$258 million in 1981
Low of \$44 million in 1996
Rebound to \$79 million in 2002
Further drop to \$77.5 million in 2003

Response - 17:

The Plan utilized numbers representing the best available information at the time of writing of the Existing Condition Section of the document (November 2002), as provided by Lake County, and does not reflect figures generated subsequent to that time. The November 2002 valuation numbers (Section II, Existing Condition, Setting, pp II-12) have been revised to present best available information as of March 2006.

Comment - 18:

What will be the disposition of the Hallenbeck Ranch Buildings in the event that the Box Creek Reservoir is built? Will they be flooded, removed to another location, burned or the lumber salvaged for use in future restoration projects?

Response - 18:

The Box Creek Reservoir has not been formally proposed as of this date, and is not a LCOSI project. The disposition of real property will be at the discretion of the land owner or owners, and if affected by the construction of a reservoir, will be subject to full public disclosure under the National Environmental Policy Act. As such, any further discussion is outside the scope of this plan.

Comment - 19:

In the event that Box Creek Reservoir is built what is LCOSI's position on the created fishery? Currently, the stream and ponds support a small population of brook trout. Has any thought been given to generating a Greenback Cutthroat trout fishery in the new reservoir?

Response - 19:

As previously stated, the Box Creek Reservoir has not been formally proposed at this time, and LCOSI cannot speculate regarding what a future proposal might contain. It is therefore premature to propose a stocking regime on a body of water that does not exist. As such, it is outside the scope of this plan.

Comment - 20:

Although it is some distance in the future has any thought been given to the Box Creek Reservoir design to maximize the biological carrying capacity of the new reservoir? By that I mean, the location of the water release. Both Twin Lakes and Turquoise Reservoir's biologic carrying capacity are reduced by top water releases. A bottom release may be preferable to maximize the biological productivity of Box Creek Reservoir if and when it is built.

Response - 20:

The Box Creek Reservoir has not been formally proposed, nor is it a LCOSI project. As such, no design or engineering documentation have been provided to LCOSI upon which to make comment. A response is, therefore, outside of the scope of this plan.

Comment - 21:

One of the goals of the plan is to protect the winter range of elk and deer. Has any analysis been done to determine the change (reduction?) in carrying capacity of the winter range on the Hayden and Hallenbeck Ranches once the irrigation stops and the land dries out and the natural vegetation returns?



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Response - 21:

No specific study was performed on the anticipated change in carrying capacity. Discussions of the predictable results of reduced water availability on the Ranches were held, and outside experts including Dr. Eugene Siemer, former CSU Professor and Consulting Agronomist, and Byron Shelton, Adjunct Professor of Agronomics at Colorado Mountain College were invited to present their expert opinions. Management strategies contained within this Plan were established based on their input and the expertise of staff representing the Natural Resource Conservation Service, Colorado Division of Wildlife, U.S. Fish & Wildlife Service, U.S. Forest Service, Colorado State Parks, U.S. Bureau of Land Management, Lake County Soil Conservation District, and the Arkansas Valley Range Project.

"It should be noted that, according to the Division of Wildlife, elk use of the Hayden Ranch was minimal (relatively) during the past several decades despite the fact that irrigation was ongoing. Cattle and sheep grazing practices during that period were not well designed. Although there may be other contributing factors, the increase in elk use documented in recent non-irrigated years on the ranch can be attributed, in part, on the fact that cattle grazing practices have changed. For the vast majority of winter range in the Upper Arkansas drainage, quality (carrying capacity) is not dependent on irrigation. Most important natural winter ranges are not irrigated. This does not preclude the use of a well designed cattle grazing plan to enhance habitat and optimize use by both cattle and wildlife or the use of irrigation in the future." (Tom Martin, CDOW Wildlife Conservation Officer, March 8, 2006)

Comment - 22:

The goal to maximize the hunting and fishing is admirable. Although the plan discusses limiting the number of commercial fishing guides, I am however, concerned about the number of professional fishing guides using the Arkansas River in the LCOSI area. With increased float traffic on the lower river the LCOSI section of the Arkansas is about the only place that an angler may fish without encountering large amounts of traffic. Has LCOSI or AHRA, which controls the number of permits, considered studying the numbers of commercial guides using this portion of the river to determine if the use is appropriate and how it compares to the rest of the river?

Response - 22:

The management Objective (Section IV, Management Strategies, Recreation, pp IV-25) states:

"To limit and control commercial guide, concessionaire, and outfitter use of the Open Space."

The underlying principle states:

"Guides and outfitters provide a valuable service in introducing visitors to the resources and recreational opportunities of the LCOSI, and in passing on the conservation ethic for its responsible use. A limited amount of guide/outfitter activity is seen as being beneficial to meeting the goals and objectives of the Initiative.

Too much commercial activity on the subject properties is seen as diminishing the recreational experience, and potentially exceeding the comfortable carrying capacity of the land."

The proposed Management Action is to:

"Limit the number of walk/wade permits and outfitter licenses authorized on the subject properties if necessary to maintain the quality of the recreational experience for the general public."

AHRA is the current managing partner of the river parcel on the east side of the Arkansas River (Section II, Existing Condition, Arkansas River Ranch, pp II-31 - 32) and is the anticipated manager of the LCOSI river corridor within the context of this plan (Section III Anticipated Change, Hayden Ranch River Parcel, pp III-4). The allocation of guide permits along this section of the Arkansas will, therefore, fall under their jurisdiction. Partners to the Open Space Initiative have committed to using this Ecosystem Management Plan as guidance in future planning decisions.

Comment - 23:

Although restoration of the 11 Mile Reach is beyond the scope of the LCOSI Plan, I would have liked to see more discussion of the existing status and need for this work. The Arkansas River is one of the prize pieces of LCOSI and I believe, deserves fuller treatment of its current condition in terms of habitat and biological carrying capacity. I realize that the Site Characterization is completed and evaluation of restoration work is on going, but a more detailed discussion in the plan would have been helpful.

Response - 23:

The 11 Mile Reach of the Arkansas is an ongoing study, and at the time of the writing of this document, had only completed the Site Characterization phase. The Site Characterization acts much as the Existing Condition section of this plan, in that it describes the resources, threats, and issues as they are known to exist today, to allow a better understanding of the current resource base, and to allow for the tracking of change over time. The Site Characterization does not provide management direction or action plans to which LCOSI can respond or provide input. Where possible, such as in the area of Hazardous Materials (Section II Existing Condition, pp II-132 – 140), site-specific data derived from the Site Characterization has been incorporated into this Plan. The Site Characterization is incorporated by reference in Section V, Source Materials, pp V-3.

Habitat assessments or biological carrying capacities are not currently defined, nor have any actions been proposed for remediation / restoration of impacted natural resources along the LCOSI reach of the study area. It is, therefore, outside of the scope and timing of this Plan to respond.



Lake County Open Space Initiative Ecosystem Management Plan

Section V Response to Public Comment

Comment - 24:

I would hope that setting aside more than 8600 acres of ground, some of it would have access for hunters. People in this area enjoy hunting and fishing! Land that is set aside in an area ought to be used in the way the people want it in that location, not isolated from groups.

Response - 24:

The stated Management Objective is to:

"Maximize the acreage available for hunting and fishing."

Proposed Management Actions (Section IV, Management Strategies, pp IV-20) include:

Allow hunting on all subject lands of the LCOSI Project Area, except areas of high human activity, areas proximal to human habitation, and along travel corridors where the discharge of firearms poses a potential human health risk, subject to the pertinent Colorado Division of Wildlife regulations and Colorado Revised Statutes.

Do not allow hunting in specified areas during the period of use by grazing domestic livestock.

Allow fishing on all waters of the LCOSI Project Area, subject to pertinent Colorado Division of Wildlife regulations.

Increase or enhance stream and stillwater fisheries quality and quantity.

Increase stocking efforts on formerly private waters as deemed necessary.

Recreational management strategies were based on public input from such sources as CDOW Anglers Roundtables, LCOSI planning workshops, and agency surveys of public desires for the use of public lands. Hunting and fishing were consistently supported resource uses, as reflected by the management direction of this Plan.

Comment - 25:

Mapping of the Hallenbeck Ranch is incorrect.

Response – 25:

The commenter is correct in this observation, and thanked for pointing out the error. Land line surveys and a title search of the properties in the NE ¼ of the SE ¼ of Section 6, T 11S, R 80W performed subsequent to the writing of this plan, confirm that a portion of the Glacier Placer, initially mapped as adjacent private lands, are actually part of the land transferred in the sale of the Hallenbeck Ranch, and are

therefore considered to be subject properties within the context of this plan. The change is reflected in the project mapping of the final version of the Plan.

Comment – 26:

The Early Inhabitants section of the Existing Condition is poorly written and inaccurate. The discussion should have been based on a more regional historic context.

Response – 26:

The early history section of the Plan (Section II Existing Condition, History, pp 39 – 41) was excerpted directly from the *History of Leadville, Lake County, Colorado*, written by Lake County residents Don and Jean Griswold, (Colorado Historical Society / University Press, 1996,) as noted in the footnote (pp II-39). The two-volume Griswold document is the locally accepted source of historic documentation on Lake County, and was selected by the LCOSI Partners for that reason.

Comment – 27

Recent research (March 2006) into land ownership in Section 10, Township 11 S, Range 80 W, would indicated that the SE ¼ of the Section was acquired by Lake County in lieu of back taxes.

Response – 27

The commenter is thanked for this new information. Appropriate corrections to the property ownership mapping have been made



**Lake County Open Space Initiative
Ecosystem Management Plan**

**Section VI
Documentation**

Lake County Open Space Initiative Ecosystem Management Plan



Source Material

Source materials included, but were not limited to:

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Lake County Open Space Initiative Ecosystem Management Plan



Source Material

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Lake County Open Space Initiative Ecosystem Management Plan

List of Preparers

The Lake County Open Space Initiative Ecosystem Management Plan is the culmination of over 5 years of cooperative planning by a diverse and varied group of individuals dedicated to the preservation and stewardship of land and water resources in Lake County for open space, wildlife, historic preservation, education, outdoor recreation, and smart growth and development.

Beginning with the establishment of vision and mission statements in early 1998, through the formulation of planning goals and objectives, acquisition of lands, fund raising, and construction of the Hayden Meadows project in the intervening years leading up to the formal initiation of the Ecosystem Management Planning process in September of 2002, numerous individuals have provided input and expertise into its preparation and review. The LCOSI Partnership would like to recognize and extend our appreciation to the following individuals for their role in establishing this document.

Project Coordinator:	Mike Conlin	Pete Juba
Lake County Board of Commissioners	Earl Boeve Jim Morrison Jim Martin Charlie O'Leary Bill Hollenback Ken Olson	Doug Kemper Gerry Knapp Jeff Clark Jim Rakke
Colorado State Parks (AHRA)	Steve Reese Dave Spencer Rob White Casey Swanson	US Forest Service Rick Newton Cathy Hardy Linda Fox Meggen Kabele Al Kane Kathy Hardy
Bureau of Land Management (AHRA)	Dave Taliaferro Dave Hallock John Nahomenok Roy Massinton Levi Deike	Colorado Division of Wildlife Tom Martin Tom Spezze Greg Policky Jim Zorn Dave Lovell John Koshak
US Fish & Wildlife Service	Laura Coppock Andrew Archuletta John Seals	Colorado Mountain College David Borofsky Gary Smith Jessica Clement Karmen King Kent Clement Brad Kieding
Pueblo Board of Water Works	Bud O'Hara	

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Chet Gaede

Top of the Rockies Byway
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Natural Resource Conservation Service
Tim Ouellette
John Nelson

Bureau of Reclamation
Will Tully

Colorado Wild
Ben Doon

Outward Bound West
Henry Florschutz

Colorado Preservation Inc.
Mark Rodman

Lake County Planning
Dan Larkin
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Leadville Chamber of Commerce
Gloria Cheshire
Ed Solder
Don Thoren

Presenters
Byron Shelton
Gene Siemers
Woody Beardsley

Landowners
Greg Brunjak
Scott Sarbaugh
Don Stephens
Tom Abood
Edith Seppi
Jim Moyer

EPA
Mike Holmes
Mike Zimmerman

ASARCO
Sam McGeorge
Tom Cherrier

LCCCA
Ted Mullings

Greater Arkansas River Nature Association
Charlie Goff
Becky Goff

Press
Roger Peterson
Jenn Wiant
Frank Shiro



**Lake County Open Space Initiative
Ecosystem Management Plan**

**Section VII
Appendices**

**Memorandum of Understanding
Between
Colorado Mountain College
and
Lake County Open Space Initiative Partners**

This agreement is made effective on January 1st, 2001 between Colorado Mountain College, hereinafter referred to as CMC and the partnership of the Lake County Open Space Initiative, hereinafter referred to as LCOSI.

The partners of LCOSI include, but are not limited to:

Arkansas Headwaters Recreation Area
Arkansas River Restoration Core Team
Arkansas River Watershed Council
ASARCO Mining Co.
City of Aurora
City of Leadville
Greater Arkansas River Nature Association
Greater Leadville Area Chamber of Commerce
Colorado Division of Wildlife
Colorado Mountain College
Colorado Mountain College Natural Resource Management Institute
Colorado Outward Bound School
Colorado State Parks
Colorado Wild
Lake County Board of Commissioners
Lake County Soil Conservation District
Leadville Coalition
Pueblo Board of Water Works
Top of the Rockies National Scenic & Historic Byway Committee
U.S. Bureau of Land Management
U.S. Bureau of Reclamation
U.S. Natural Resource Conservation Service
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Forest Service

A. Purpose

CMC and LCOSI have established this agreement to accomplish the following objectives:

- to provide a formal structure for perpetuation and administration of the LCOSI partnership
- to provide a repository for disbursement of existing and future planning and operational funds and grants

- to retain and encourage the voluntary nature of the LCOSI partnership
- to retain the autonomous decision making authority of LCOSI
- to assume the tasks and associated costs of administering planning and capital improvement grants
- to facilitate and encourage collaborative, multi-jurisdictional planning and decision-making
- to perpetuate the LCOSI goal of protection and stewardship of Lake County's land and water resources for open space, wildlife, historic preservation, and outdoor recreation
- to perpetuate the LCOSI goals of smart growth and economic diversification
- to continue preparation and implementation of the LCOSI Master Plan
- to implement the strategies that have been developed for the protection enhancement, and long-term management of wildlife, recreational, educational, and cultural resources within Lake County
- to strengthen the partnership as it moves toward its role in recreation management, education and interpretation
- to provide state-of-the-art educational opportunities for LCOSI partners and the citizens of Lake County
- to more easily access the faculty and student skills of CMC in order to carry out the goals and objectives of the partnership
- to help fulfill CMC's goal for building Lake County partnerships

B. Scope of Services

1. CMC will provide the following services to the LCOSI partnership:
 - a management and administrative structure
 - a depository for funds to be used as decided upon by LCOSI, including an accounting of all revenues and expenditures
 - a contact person, an employee of CMC, designated by CMC and approved by LCOSI, whose responsibility it will be to assist in reaching the goals of the partnership
 - to contract consultants and other services at the direction of the LCOSI partnership
 - development of a non-profit Foundation for LCOSI, the exact nature to be decided upon by the partnership
 - availability of CMC's tax free status in order to buy appropriate materials and supplies
 - access to and use of our educational facilities, academic faculty, training activities, and student workers in order to carry out the goals and objectives of LCOSI
 - access to and use of our "grants" organization and CMC Foundation 501c3 status

2. LCOSI will provide the following to CMC:
 - a volunteer organization that will work toward the established goals of LCOSI, of which CMC is a member in good standing

- the willingness to develop new ideas, work out solutions to common issues, and evaluate the new structure on a quarterly basis

B. Time of Performance

This agreement shall be effective on the 1st day of January, 2001 and shall be in effect until the 31st day of December, 2005, with automatic renewals every five years, or until terminated by either party.

C. Compensation and Method of Payment

There is no direct compensation for CMC for this agreement. All of the funds that CMC agrees to manage will be used entirely for the goals and objectives of LCOSI, unless otherwise agreed upon in writing by all the partners of LCOSI.

The intent of LCOSI is to become self-sufficient through the search for grants and other sources of funding. It is also LCOSI's intent to prepare an annual budget.

D. Liability

Each member of LCOSI and CMC agrees to be responsible and assume liability for its own wrongful or negligent acts or omissions, or those of its officers, agents, or employees to the full extent required by law.

F. MOU Renewal

This MOU shall automatically be renewed on or before sixty (60) days prior to the end of the current Understanding. Notice of non-renewal by any or all partners shall be made ninety (90) days prior to the end of the current Understanding. Addition or deletion of partners will not nullify this agreement.

G. MOU Partners

It is understood that as LCOSI evolves, the partners involved in LCOSI will naturally change. New partners will be able to join this MOU, and will be able to sign the MOU after this MOU was signed by the current partners. Current and new partners will be able to sign this MOU with Colorado Mountain College on separate signature sheets.

H. Termination

This MOU may be terminated by a majority of the partnership of LCOSI or by CMC upon written notice delivered to all the partners at least thirty (30) days prior to the intended dates of termination. By such termination, no party may nullify obligations already incurred for performance or failure to perform prior to the date of termination.

I. Changes/Amendments/Assignment

This MOU constitutes the entire agreement between the partners. All amendments and/or changes shall be by written instrument executed by the partners hereto. The partners hereto have caused this MOU to be executed as of the date set forth herein by their duly authorized representatives. The rights and responsibilities of the partners under this MOU shall not be assignable without the written approval of the appropriate partners.

J. Nondiscrimination

The partners shall comply with all federal, state, and local statutes relating to nondiscrimination and all applicable requirements of all other federal, state, and local laws, executive orders, regulations, policies, statutes, and ordinances that directly affect, or are applicable to, the outcome of this MOU.

K. Breach of Contract

If a dispute arises between the partners under this contract over payment of goods or services, the dispute will be settled under State of Colorado law.

L. Participation in Similar Activities

This MOU in no way restricts any or all of the partners or CMC from participating in similar activities or strategies with other public or private agencies, organizations or individuals.

As a duly authorized representative of one of the LCOSI partners, I am able and willing to sign this MOU to bind my organization to its intent.

By _____
Signature

By _____

Title _____

Title _____

Partner Name _____

Colorado Mountain College

**LAND PURCHASE OPTION AGREEMENT BETWEEN THE LAKE COUNTY,
COLORADO BOARD OF COMMISSIONERS AND THE CITY OF AURORA,
COLORADO, ACTING BY AND THROUGH ITS UTILITY ENTERPRISE**

THIS LAND PURCHASE OPTION AGREEMENT (“Agreement”) is entered into this _____ day of _____, 2000 by and between the City of Aurora, Colorado, a Colorado municipal corporation of the Counties of Adams, Arapahoe and Douglas acting by and through its Utility Enterprise, whose address is 1470 South Havana Street, Suite 400, Aurora, Colorado 80012 (“Aurora”), and the Board of County Commissioners of Lake County, Colorado, whose address is Lake County Courthouse, Fifth and Harrison, Post Office Box 964, Leadville, Colorado 80461 (“Lake County”).

WITNESSETH:

WHEREAS, Lake County is the owner of certain real property located in Lake County, Colorado known as the Hallenbeck Ranch which property is more thoroughly described in Exhibit A attached hereto and incorporated herein by this reference (“Land”); and

WHEREAS, Lake County has determined that the Land is excess to its needs, and Lake County is willing to sell the Land including any and all oil and gas interests, easements, rights-of-way and covenants, but specifically excluding any and all water rights which exclusion specifically refers to but is not limited to the Derry No. 1, Derry No. 2 and Derry No. 3 Ditches, and subject to the provisions of Paragraph 5. herein after addressing Mineral Interests and Paragraph 6. herein after addressing the Derry Ditches Water Rights and Irrigated Property; and

WHEREAS, Lake County further represents that it can convey clear and marketable title to the Land; and

WHEREAS, Aurora is the Utility Enterprise of a municipal corporation of the State of Colorado that *inter alia* provides water and wastewater services to the inhabitants of the City of Aurora and others; and

WHEREAS, Aurora has identified the need for additional water storage facilities in the Arkansas River basin and the Land constitutes a significant portion of a potential water storage facility; and

WHEREAS, Lake County and Aurora have jointly participated in a local land-use planning partnership known as the Lake County Open Space Initiative (“LCOSI”) and are committed to the development of a water storage facility that generally incorporates when compatible the goals and objectives set forth in Exhibit B attached hereto and incorporated herein by this reference (“Goals & Objectives”); and

WHEREAS, Lake County and Aurora wish to develop any potential water storage facility in a manner that when consistent with their individual needs also enhances the economy of Lake County; and

WHEREAS, Lake County desires to extend an option to purchase the Land and Aurora desires to obtain an option to buy the Land subject to the provisions of this Agreement.

NOW, THEREFORE, in consideration of the foregoing recitals, the mutual covenants, payments and agreements contained herein and other good and valuable consideration, the adequacy, sufficiency and receipt of which is hereby acknowledged, the parties hereto agree as follows:

1. Purchase Option Lake County hereby conveys to Aurora the first and sole option to purchase all right, title and interest in the Land, to be delivered free and clear of all liens and encumbrances but subject to the provisions of this Agreement, for an initial option period beginning at the time of execution of this Agreement and ending, unless earlier terminated by Aurora, on 11:59 PM (four months later) . During this time Lake County will not allow the Land to be sold to any other party. Aurora may exercise this option prior to the expiration of the initial option period, or prior to the expiration of any of the hereinafter described extensions, by providing Lake County written notice of Aurora's desire to purchase the land. Upon such exercise the parties agree to execute within ninety (90) days a purchase agreement that will include the terms hereof and any other terms they may mutually agree upon prior to said execution including but not limited to the inclusion of other mutually acceptable entities in the development of any potential water storage facility. Closing of the purchase agreement shall then follow within a commercially reasonable period of time.

2. Option Extensions and Price Aurora, at its sole discretion, may extend the Option for up to two (2) additional four (4) month periods, for a total of one (1) year from the date of execution hereof, by making the payments in the manner hereinafter described. The price for the initial option period and each of the extension periods will be Twenty-five Thousand Dollars (US) (\$25,000.00) per period, totaling Seventy-five Thousand Dollars (\$75,000.00) if Aurora elects to renew for the entire year. Aurora will pay the initial option payment upon execution of this Agreement. The second and third option periods shall automatically renew upon Aurora's payment of the necessary payment any time before the expiration of the preceding option period. The option payments shall be non-refundable to Aurora, but will be fully credited toward the purchase price of the Land. In addition to the forgoing method of extending the option, if Lake County endeavors to extract mineral interests as described in Paragraph 5. herein below, the option will be automatically extended without any further payment due from Aurora [provided that Aurora pays the full Seventy-five Thousand Dollars (\$75,000.00) referenced above] for a period of time equal to the time Lake County is extracting the mineral interests, which period of time is limited to three (3) years by Paragraph 5.

3. Aurora Termination Aurora may terminate this Agreement at any time during the initial option period or any extension, for any reason, upon written notification to Lake County.

4. Land Access During the initial option period and any extensions, Lake County will afford Aurora access to the Land for the purpose of conducting investigations and studies related to Aurora's purchase of the Land and any potential water storage facility. Within a reasonable time of any entry upon the Land that in anyway alters the Land Aurora shall to the extent practicable restore the Land to its prior condition.

5. Mineral Interests No later than one hundred eighty (180) days following the execution of this Agreement, Lake County will notify Aurora whether or not Lake County wishes to extract any or all of the mineral interests existing upon or in the Land, including existing gravel piles that are remnants of previous mining operations. Aurora will then have one hundred eighty (180) days following the notification to conduct whatever analyses it deems necessary and will then notify Lake

County whether Aurora in good faith believes that it will require for the construction of the water storage facility, any or all of the mineral interests existing upon or in the Land, including existing gravel piles that are remnants of previous mining operations. Lake County would then be free to extract, for a period of no longer than three (3) years after Aurora's notification, all of the mineral interests, if any, not required by Aurora. As described in Paragraph 2. herein above, if Lake County does endeavor to extract any of the mineral interests Aurora's option to purchase the land will be automatically extended to match the time used by Lake County which time is limited to three (3) years after Aurora's notification. Lake County, not Aurora will receive any revenues resulting from any extraction of mineral interests. If any mineral interests are removed by Lake County, it will be responsible for any necessary site reclamation or other environmental reparation resulting from such removal. The extraction of any mineral interests by Lake County in excess of the amounts that Aurora in good faith believes it will require for the construction of the water storage facility will not change the purchase price of the Land.

6. Derry Ditches Water Rights and Irrigated Property. Lake County owns and beneficially uses the Derry No. 1, Derry No. 2 and Derry No. 3 Ditch Water Rights ("3-DDWRs") for irrigation purposes of that portion of the Land capable of being so irrigated by these ditches ("Irrigable Property"). Aurora agrees not to interfere with this irrigation during the option period or any extension. If Aurora elects to exercise its option, any purchase agreement will provide that Lake County may retain an easement for the continued operation, maintenance and repair of the 3-DDWRs including headgates, ditches, laterals, ponds and return flow facilities that form a part of these ditches, and that Lake County may also retain an easement to cultivate and harvest hay crops upon the Irrigable Property for so long as such easements would not interfere with the development of any potential water storage facilities as determined in Aurora's good faith discretion. Aurora will further agree to give Lake County a minimum of one (1) year's notice of the need for any of the Land that will be the subject of these easements. Aurora will further covenant that if Lake County initiates any water Court proceedings to change the 3-DDWRs or use said water rights in a plan for augmentation, then Aurora will cooperate in said proceedings by allowing restrictive covenants upon the Irrigable Property that prevent its irrigation by the 3-DDWRs. Prior to any closing Lake County will survey and delineate the Irrigable Property based upon the limits of the 3-DDWRs and the maximum extent of irrigation.

7. Purchase Price The purchase price of the Land will be calculated as One Million Two Hundred Seventeen Thousand Three Hundred Thirty Dollars (\$1,217,330.00) (US) plus five percent (5%) simple interest computed annually on that amount from May 28, 1998 to the date of closing. All option payments shall be fully credited toward the purchase price of the Land.

8. Setoff Lake County and Aurora are parties to that certain *Water Rights and Land Purchase and Sale Agreement with Options*, dated April 15, 1998, and recorded in the Lake County, Colorado Clerk and Recorder's Office at Book 532, Page 836 ("Hayden Ranch Agreement"), wherein Lake County has an option to purchase certain water rights. Lake County, at its discretion, may allow Aurora to setoff a portion of the purchase price of the Land by the cost to Lake County to exercise its water rights option.

9. Lake County's Warranty Regarding Title, and Deed Lake County hereby warrants and represents there are no deeds of trust, mortgages, liens, outstanding tax payments or other encumbrances that would impair Lake County's ability to deliver the Land to Aurora upon purchase.

Lake County further agrees to keep the Land free from any such encumbrances during the initial option period and any extensions. As part of any purchase contract for the Land Lake County will agree to supply Aurora a title insurance policy insuring title to the Land in an amount equal to the purchase price. Upon Closing Lake County will transfer the Land to Aurora by General Warranty Deed subject to the exceptions listed in the title insurance policy.

10. Environmental Disclosures and Representations Lake County has disclosed to Aurora that historical mining operations occurred upon the Land. However, Lake County represents that to the best of its actual knowledge the Land does not contain any hazardous or toxic materials nor is the Land the subject of any local, State or federal mandated cleanup activities or requirements.

11. Lake County First Right of Repurchase For a period of twenty (20) years following Aurora's acquisition of title to the Land, if Aurora elects to dispose of any portion of the Land, Lake County shall have the first right to purchase any of the Land offered for sale by Aurora. During said twenty (20) year period Lake County may request, not more frequently than once per calendar year, that Aurora determine if it wishes to dispose of any portion of the Land. Any decision to dispose of any portion of the Land will be at Aurora's sole discretion. The parties will deem non-response by Aurora to any Lake County request a denial. Following Aurora's written notification of Lake County of any election to dispose of any of the Land, Lake County will then have sixty (60) days to notify Aurora, in writing, of any exercise of the right to repurchase, or the said right to repurchase will be deemed to be waived. Closing of any repurchase will then follow within a commercially reasonable period of time. Lake County's failure to exercise the forgoing first right of repurchase regarding one prospective sale by Aurora is not a waiver regarding any subsequent prospective sales by Aurora in the event a prospective sale does not close. The price for any Land purchased by Lake County shall be the same price per acre as paid by Aurora pursuant to this Agreement including any setoff that may be used pursuant to Paragraph 8. herein above, adjusted by any change in the Consumer Price Index for all Items, U. S. City Average for All Urban Consumers for the West Region, published by the United States Department of Labor, Bureau of Labor Statistics ("CPI"), or successor index should publication of the CPI cease, following the date of this Agreement. Lake County may not assign the first right to repurchase absent the consent of Aurora, which consent Aurora may grant or decline in its sole discretion. Regarding any of the Land that is not repurchased by Lake County and that Aurora elects to otherwise dispose of during the twenty (20) year period following acquisition of title, Aurora will record covenants running with the Land that reflect the Goals & Objectives. Lake County will be given the opportunity to approve such covenants, which approval it will not unreasonably withhold, prior to recording. Any such covenants will be drafted so as to allow enforcement thereof by either Aurora or Lake County.

12. Payment in Lieu of Taxes In order to provide some compensation to Lake County for the non-taxable status of the Land after Aurora acquires title, Aurora agrees that its governing body (i.e. the City Council) has approved and, it will pay to the Lake County Treasurer on April 1st of each year commencing April 1st following the year Aurora acquires title, an amount equal to the product of nine hundred ninety-six and forty-four one-hundredths (996.44) (the number of acres of the Land) multiplied by the most current per acre Lake County mill levy for agricultural property at this location that would apply to non-exempt property. These Aurora payments will continue for up to thirty (30) years as long as Aurora owns the Land. The total Aurora payment will be reduced for any acreage subsequently conveyed to Lake County or others.

13. Relationship of Goals & Objectives to Reservoir Design Aurora intends to develop the design of, and construct and operate the contemplated water storage facility generally in accordance with the compatible enumerated Goals & Objectives and acting in good faith will seek to coordinate the said development and operation thereof with Lake County and the LCOSI partners. Commercially reasonable and cost-effective modifications to the project that result from this coordination may be included in the final designs and permit applications submitted for approval at Aurora's discretion.

14. Management of Retained Land All of the Land retained by Aurora, but not inundated by the water storage facility, shall be managed in coordination with Lake County and the LCOSI partners pursuant to the compatible Goals & Objectives. Possible, but not required, management alternatives include, but are not limited to any of the following: dedicated open-space areas, seasonal closures of the Land surrounding any water storage facility, management of the Land surrounding any water storage facility by Lake County, and inclusion of the Land surrounding any water storage facility into the Arkansas Headwaters Recreation Area.

15. Mitigation Fund Should Aurora construct a water storage facility upon the Land, Aurora will pay to the Lake County Treasurer, within one (1) year from completion of the facility (completion being defined as the issuance by the Colorado State Engineer of his Approval to Fill), one percent of the capital costs (capital costs defined as all design, engineering and construction costs and specifically excluding and costs of the Land or other necessary land) of any reservoir constructed, excluding inflow and out flow structures, to a mitigation fund to be owned and managed by Lake County. Lake County will use this fund exclusively for the development and maintenance of amenities associated with the water storage facility. Such amenities may include, but are not limited to, boat ramps or other boating facilities, campgrounds, picnic grounds, trails or trailheads, educational facilities, open-space areas or other recreational facilities. Lake County may also use this fund to provide cash-match for grants, to hire contractors or employees related to the water storage facility or to offset any additional costs incurred by Lake County as a result of the water storage facility. Lake County will not however be responsible for management of any of said amenities developed from the mitigation fund and may seek such management from any party acceptable to Aurora which acceptance Aurora will not unreasonably withhold.

16. Minimum Pool Aurora will establish a minimum pool in any water storage facility completed upon the Land to facilitate recreational and environmental performance. The size of this minimum pool will be twenty percent (20%) of the total capacity of the water storage facility. Aurora will have the right to withdraw water from and refill this minimum pool during drought conditions. Drought conditions will exist anytime Aurora's total system-wide reservoir storage is below forty percent (40%) of capacity. Aurora will, consistent with its overall system wide water operations, refill the minimum pool following a drought as soon as reasonable considering the system wide demands and supplies.

17. Lake County Storage Space Aurora will grant Lake County permanent use of operational storage space in any water storage facility it completes upon the Land equal to twenty percent (20%) of Aurora's total operational space. Operational space will be the capacity of the water storage facility below the spillway and above the minimum pool described herein. Lake County may use this space in its discretion for the benefit of Lake County. Such uses may include, but are not limited to storage of any water it may derive from the Hayden Ranch Agreement or any

other water supplies, assistance with flow management, releases for replacement and exchange purposes, lease of the storage space to other entities or persons, use for wildlife or wetland purposes, and to increase the recreational pool. This storage space may not be sold by Lake County without the permission of Aurora, which Aurora may grant or withhold at its discretion. As part of the operation agreement arrangements for any water storage facility, Lake County will provide that Aurora will have the first right to lease back up to fifty percent (50%) of the Lake County storage space. The lease rate for this lease back to Aurora will be Fifteen Dollars (\$15.00) per acre-foot adjusted by any change in the CPI. At Lake County's discretion, it may lease any or all of the remaining fifty percent (50%) to Aurora at the same rate. If either party believes that this rate is no longer appropriate, the parties agree to enter into good faith discussions to review and potentially modify this rate every ten years from the date of this agreement. Aurora will operate and maintain the entire water storage facility, including Lake County's portion of the operation storage capacity, at no cost to Lake County. Water stored in Lake County's storage space will be subject to evaporation and/or seepage assessments, as determined by the Division Engineer, in proportion to the total water storage facility storage and Lake County will be responsible therefor. Aurora will cooperate with Lake County to develop sufficient means of delivering water into and out of its storage space in any water storage facility built upon the Land. Lake County will reimburse Aurora for any costs associated with the operational use of such inflow and outflow facilities.

18. Reservoir Facilities Permits and Easements To the extent permitted by law, and so long as not inconsistent with its regulatory rights and responsibilities as provided by state and local law, Lake County will agree to: 1) cooperate with Aurora as necessary to facilitate the development of a water storage facility upon the Land; 2) appear at Aurora's expense, as a co-applicant with Aurora in any action or proceeding related to the development of a water storage facility upon the Land; and, 3) cooperate with Aurora in connection with the obtaining of any and all necessary permits, easements or water right changes in any way related to the development of a water storage facility upon the Land. Nothing stated in this paragraph will be interpreted or construed as: 1) an abrogation or diminution of Lake County's "1041" powers provided by state law and local regulation; 2) obligating Lake County to approve a "1041" permit for Aurora with respect to the development of any potential water storage facility upon the Land; or, 3) limiting or restricting in any manner Lake County's lawful power to require Aurora to perform mitigation necessary in connection with the possible issuance of a "1041" permit with respect to the development of a potential water storage facility upon the Land.

19. Commissions Aurora and Lake County represent to one another that neither party has engaged the services of any real estate agent that will lead to a claim for fees or commissions resulting from this transaction. In the event a claim is made the party to whom the claim is made will be solely responsible for its disposition.

20. Notice Any notice, demands or other communications required or desired to be given under any provision of this Agreement shall be given in writing, delivered personally or sent by certified or registered mail, return receipt requested, postage pre-paid, addressed as follows:

To Lake County:

Board of County Commissioners

Lake County Courthouse
Fifth & Harrison
P.O. Box 964
Leadville, Colorado 80461

To Aurora:

Director of Utilities
1470 South Havana Street
Suite 400
Aurora, Colorado 80012

or at any other such address, as either party may hereinafter, from time to time designate by written notice to the other party given in accordance with this paragraph. Notice shall be effective upon receipt

21. Headings for Convenience Only Paragraph headings and titles contained in this Agreement are intended for convenience and reference only and are not intended to define, limit, or describe the scope or intent of any provision of this Agreement.

22. Recordation Following execution of this Agreement by both parties hereto Aurora will record this Agreement in the Lake County Clerk and Recorder's office in Leadville, Colorado.

23. Amendment This Agreement may be modified, amended, changed or terminated in whole or in any part only by an agreement in writing duly authorized and executed by Aurora and Lake County with the same formality as this Agreement.

24. Waiver The waiver of any breach of any provision of this Agreement by either Aurora or Lake County shall not constitute a continuing waiver of any subsequent breach of said party, either for breach of the same or for breach of any other provision of this Agreement.

25. Entire Agreement This Agreement represents the entire agreement of the parties, and supersedes all previous written or oral agreements, negotiations, representations and understandings of the parties. Neither Aurora nor Lake County has relied upon any fact or representation not expressly set forth herein.

26. Non-Severability Each paragraph of this Agreement is intertwined with the others and is not severable unless by mutual consent of Aurora and Lake County.

27. Effect of Invalidity If any portion of this Agreement is held invalid or unenforceable for any reason by a court of competent jurisdiction as to either party or as to both parties, the entire Agreement will terminate.

28. Governing Law This Agreement and its application shall be construed in accordance with the laws of the State of Colorado.

- 29. Multiple Originals** This Agreement may be simultaneously executed in any number of counterparts, each of which shall be deemed original but all of which constitute one and the same Agreement.
- 30. Survival of Representations** Each and every covenant, promise, payment or option contained in this Agreement shall not merge in any deed or other instrument conveying any interest in the Land or any water rights, but shall survive each deed and transfer, nevertheless, and be binding and obligatory upon each of the parties.
- 31. No Attorney's Fees** In the event of any litigation, mediation, arbitration or other dispute resolution process arising out of this Agreement, the parties agree that each shall be responsible for their own costs and attorneys fees associated with any such activities.
- 32. Specific Performance Available** In the event of litigation concerning this Agreement the remedy of specific performance will be available to either Aurora or Lake County.
- 33. Intent of Agreement** This Agreement is intended to describe the rights and responsibilities of and between Aurora and Lake County and is not intended to, and shall not be deemed to, confer rights upon any persons or entities not signatories hereto, nor to limit, impair, or enlarge in any way the powers, regulatory authority and responsibilities of Aurora or Lake County, or any other governmental entity not a party hereto.
- 34. Joint Draft** This Agreement was drafted jointly by the parties hereto with each having the advice of legal counsel and an equal opportunity to contribute to its content.
- 35. Non-Business Days** If the date for any action under this Agreement falls on a Saturday, Sunday or a day that is a "holiday" as such term is defined in CRCP 6, then the relevant date shall be extended automatically until the next business day.
- 36. Non-Assignability** Neither the Aurora nor Lake County may assign its rights or delegate its duties under this Agreement without the prior written consent of the other party.
- 37. Successors and Assigns** This Agreement and the rights and obligations created hereby shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns in the event assignment is allowed.
- 38. Sole Obligation of the Utility Enterprise** The parties agree that any and all obligations of Aurora under this Agreement are the sole obligations of the City of Aurora Utility Enterprise, and as such, shall not constitute a general obligation or other indebtedness of the City of Aurora or a multiple fiscal year direct or indirect debt or other financial obligation whatsoever of the City of Aurora within the meaning of any constitutional, statutory, or charter limitation. The parties also agree that, in the event of a default by Aurora on any of its obligations under this Agreement, Lake County shall not have any recourse against any of the properties or revenues of the City of Aurora, except that in order to satisfy any non-appealable judgment against Aurora, Lake County shall have recourse against the net revenues of the Aurora Water System that are available therefor in the City of Aurora Utility Enterprise Water Fund, or any successor enterprise fund, after payment of all expenses related to the operation and maintenance of said Aurora Water System.

39. Eminent Domain If, prior to any closing, any entity with the power of eminent domain initiates or gives notice that it intends to initiate condemnation proceedings with respect to any interest in the Land that is the subject of this Agreement, then Lake County shall notify Aurora thereof in writing within five (5) days after learning of such condemnation proceeding or notice and, on request, shall provide Aurora with copies of all correspondences, pleadings or other documentation regarding the proposed condemnation. The parties will jointly defend and oppose any condemnation proceeding to the extent permitted by law, each at its own expense, upon the grounds (among others) that the property already is committed to public use pursuant to this Agreement. If, nonetheless, prior to any closing, any of the Land is acquired by a third party having the power of eminent domain, Lake County and Aurora shall share in any award or settlement of compensation paid, including diminished value to any remainder not taken. Such compensation shall be divided between Lake County and Aurora on an equitable basis so as to leave each Party as nearly as possible in the same position it would have been in had the eminent domain proceeding not occurred; provided that Aurora's share shall not exceed the sum of the amounts theretofore paid by Aurora to Lake County pursuant to Paragraph 2. herein above. If the condemnation renders development of the potential water storage facility and performance of this Agreement substantially impossible, then, within thirty (30) days after the entry of a final unappealable judgment in such eminent domain proceedings, either party may elect to terminate by giving written notice to the other. In the event of such a termination notice, this Agreement shall terminate and will be of no other force and effect, with no further duties owed by either party to the other under the Agreement. This Paragraph 39. shall neither give to Lake County or Aurora any rights of condemnation beyond those each would have in the absence of this Agreement, nor restrict any exercise by either Lake County or Aurora of such rights.

IN WITNESS WHEREOF, the parties have set their hands and seals this day and year first above written.

AURORA:

City of Aurora, Colorado,
Acting by and through its
Utility Enterprise

Paul E. Tauer, Mayor

ATTEST:

Lisa Hudson, Acting City Clerk

SEAL

APPROVED AS TO FORM FOR AURORA,
Acting by and through its Utility Enterprise

Special Counsel

LAKE COUNTY:

Board of County Commissioners of
Lake County, Colorado

James E. Morrison, Jr., Chair,
Board of County Commissioners

ATTEST:

Patricia Berger, County Clerk and
Recorder;
Ex Officio Clerk of said Board

SEAL

STATE OF COLORADO)
) ss
COUNTY OF ARAPAHOE)

The foregoing instrument was subscribed and sworn before me this _____ day of _____, 2000, by Paul E. Tauer, Mayor and Lisa Hudson, Acting City Clerk of the City of Aurora, Colorado, acting by and through its Utility Enterprise.

Witness my hand and official seal.

Notary Public

My commission expires: _____

SEAL

STATE OF COLORADO)
) ss
COUNTY OF LAKE

The foregoing instrument was subscribed and sworn before me this _____ day of _____, 2000, by James E. Morrison, Jr., Chair, Board of County Commissioners, and Patricia Berger, County Clerk and Recorder; Ex Officio Clerk of said Board for Lake County, Colorado.

Witness my hand and official seal.

Notary Public

My commission expires: _____

SEAL

EXHIBIT A

Legal Description – Section 33

A tract of land being the South 1/2 of the South 1/2 of Section 33, T10S, R80W, 6th P.M., Lake County, Colorado and being more particularly described as follows:

Beginning at the Southeast corner of said Section 33, being a B.L.M. Brass Cap thence N 00°55'05" W a distance of 1314.07 feet to the South 1/16 corner between Sections 33 and 34.

Thence S 88°21'01" W a distance of 1323.73 feet to the Southeast 1/16 corner.

Thence S 88°21'01" W a distance of 1323.84 feet to the Center South 1/16 corner.

Thence S 88°20'59" W a distance of 1319.86 feet to the Southwest 1/16 corner.

Thence S 88°20'59" W a distance of 1319.97 feet to the South 1/16 corner between Sections 32 and 33.

Thence S 00°06'06" E a distance of 1266.72 feet to the Southwest corner of said Section 33.

Thence N 88°51'39" E a distance of 1325.21 feet to the West 1/16 corner.

Thence N 88°51'39" E a distance of 1325.21 feet to the South 1/4 corner of said Section 33.

Thence N 88°52'12" E a distance of 1327.32 feet to the East 1/16 corner.

Thence N 88°52'12" E a distance 1327.32 feet to the point of beginning.

Legal Description – Section 4

A tract of land being the Northwest 1/4 of the Northeast 1/4, the Northwest 1/4; the Southwest 1/4 of the Northeast 1/4 (also known as the F.B. Placer) and the West 1/2 of the Southwest 1/4 (being a portion of the Percheron Placer) and the Northeast 1/4 of the Southwest 1/4 (also known as the Granite Placer) located entirely in Section 4, T11S, R80W, 6th P.M., Lake County, Colorado and being more particularly described as follows:

Beginning at the Southwest corner of said Section 4, being a B.L.M. Brass Cap thence N 01°09' 14" W a distance of 1330.03 feet to the South 1/16 corner between Sections 5 and 4.

Thence N 01°06'55" W a distance of 1330.00 feet to the West 1/4 corner of said Section 4.

Thence N 02°03'19" W a distance of 1341.30 feet to the N 1/16 corner between Sections 5 and 4.

Thence N 02°03'19" W a distance of 1193.59 feet to the Northwest corner of said Section 4.

Thence N 89°06'39" E along the section line between Sections 32, T10S, R80W and Section 4, T11S, R80W, a distance of 441.88 feet to the section corner common to Sections 32 and 33.

Thence N 88°51'39" E continuing along said section line a distance of 2650.42 feet to the South ¼ corner of Section 33, T10S, R80W.

Thence N 88°52'12" E continuing along said section line a distance of 878.25 feet to the East 1/16 corner of said Section 4.

Thence S 01°24'17" E a distance of 1176.67 feet to the Northeast 1/16 corner.

Thence S 01°24'17" E a distance of 1351.27 feet to the Center West 1/16 corner.

Thence S 88°47'39" W a distance of 1309.46 feet to the Center 1/4 corner.

Thence S 01°42'47" E a distance of 1312.82 feet to the Center South 1/16 corner.

Thence S 88°25'17" W a distance of 1322.80 feet to the Southwest 1/16 corner.

Thence S 01°25'19" E a distance of 1321.41 feet to the West 1/16 corner between Sections 4 and 9.

Thence S 88°03'05" W a distance of 1329.52 feet to the point of beginning.

Legal Description – Section 5

A tract of land being the Northeast 1/4, the Southeast 1/4 of the Northwest 1/4 (also known as the Perley Placer), the Northwest 1/4 of the Southwest 1/4 (also known as the Mt. Elbert Placer), the North 1/2 of the South 1/2 of the Southwest 1/4, and the Northeast 1/4 of the Southwest 1/4, and the Northwest 1/4 of the Southeast 1/4 (also known as the Aspen Placer) and the Northeast 1/4 of the Southeast 1/4 (being a portion of the Percheron Placer) all located in Section 5, T11S, R80W, 6th P.M., Lake County, Colorado and being more particularly described as follows:

Beginning at the West 1/4 corner of said Section 5, A B.L.M. Brass Cap thence N 89°41'15" E a distance of 1334.41 feet to the center West 1/16 corner.

Thence N 00°56'18" W a distance of 1324.80 feet to the Northwest 1/16 corner.

Thence N 89°26'37" E a distance of 1328.85 feet to the Center North 1/16.

Thence N 01°10'32" W a distance of 1176.95 feet to the North 1/4 corner.

Thence N 89°06'39" E a distance of 2647.80 feet to the Northeast corner of said Section 5.

Thence S 02°03'19" E a distance of 1193.59 feet to the North 1/16 corner between Sections 5 and 4.

Thence S 02°03'19" E a distance of 1341.30 feet to the East 1/4 corner of said Section 5.

Thence S 01°06'55" E a distance of 1330.00 feet to the South 1/16 corner between Sections 5 and 4.

Thence S 89°22'17" W a distance of 1342.51 feet to the Southeast 1/16 corner.

Thence S 89°22'17" W a distance 1343.83 feet to the Center South 1/16 corner.

Thence S 01°12'34" E a distance of 675.49 feet to the Center South South 1/64 corner.

Thence N 89°31'34" W a distance of 1335.75 feet to the Center South Southwest 1/64 corner.

Thence N 89°31'35" W a distance of 1336.19 feet to the South-South 1/64 corner between Sections 6 and 5.

Thence N 01°05'34" W a distance of 661.16 feet to the South 1/16 corner between Sections 6 and 5.

Thence N 01°05'34" W a distance of 1322.33 feet to the point of beginning.

Legal Description – Section 6

A tract of land being Lot 10 and Lot 11 and the North 1/2 of the South 1/2 of the Southeast 1/4 (also known as the Derry Placer and a Portion of the Glacier Placer M.S. 3866) of Section 6, T11S, R80W, 6th P.M., Lake County, Colorado and being more particularly described as follows:

Beginning at the East 1/4 corner of said Section 6, a B.L.M. Brass Cap thence S 01°05'34" E a distance of 1322.33 feet to the South 1/16 corner between Sections 6 and 5.

Thence S 01°05'34" E a distance of 661.16 feet to the South-South 1/64 corner between Sections 6 and 5.

Thence S 87°50'06" W a distance of 1332.12 feet to the Center-South-Southeast 1/64 corner.

Thence S 87°50'06" W a distance of 1332.12 feet to the Center-South-South 1/64 corner.

Thence N 00°18'27" W a distance of 673.74 feet to the Center South 1/16 corner.

Thence N 00°18'27" W a distance of 1347.48 feet to the Center 1/4 corner.

Thence N 88°38'22" E a distance of 1318.04 feet to the Center East 1/16 corner said corner also being the Northwest corner of Lot 9.

Thence S 00°41'47" E along the East 1/16 line and also being the West line of said Lot 9 a distance of 135.08 feet to the South corner of said Lot 9 and also being on line 4-5 of the Glacier Placer M.S. No. 3866.

Thence N 66°01'33" E along the said line 4-5 a distance of 351.28 feet to the Northeast corner of said Lot 9 and at the intersection with the East-West centerline of said Section 6.

Thence N 88°38'22" E a distance of 995.34 feet to the point of beginning.

EXHIBIT B

Lake County Open Space Initiative (“LCOSI”) has adopted the following Vision Statement:

The acquisition and stewardship of land and water resources in Lake County by a partnership of federal, state, and local agencies and organizations for the purpose of: protecting and enhancing critical wildlife habitat; conserving open space; restoring impacted habitats; securing public access; increasing recreational opportunities; preserving cultural, agricultural, scenic and historic resources; and enhancing smart growth and development opportunities in Lake County.

The Goals and Objectives determined by LCOSI are set forth as follows according to the resource involved.

Resource

Goals and Objectives

Wildlife

To Protect Threatened, Endangered and Sensitive Species and their habitats
To enhance, restore, and protect wetland and riparian habitats
To Maintain Wildlife Habitat

To enhance Hayden and Hallenbeck Ranches for big game forage
To enhance habitat for migratory birds and waterfowl
To enhance vegetative diversity

To provide watchable wildlife opportunities

To restore damaged habitats

To maximize acreage available for hunting and fishing

Historic & Cultural

Preservation and recordation

Develop Historic Preservation Plan

Interpretation and Public Education
Save Hayden/Hallenbeck Ranch Buildings
Preserve Archeological Sites

Marketing Plan

Transportation & Utilities

Identify and categorize existing system of roads/trails

Identify and categorize existing utility system

Identify and categorize structural development

Identify and categorize ponds and natural features

Designate open and closed roads and trails

Coordinate activities with adjacent

landowners and existing uses

Agricultural

Maintain healthy, diverse vegetative communities

Maintain Land Health

Maintain agricultural presence for wildlife, cultural, scenic and historic values

Recreation

Identify and provide for a wide spectrum of recreational opportunities

Three ranches will be limited to non-motorized recreational use

Do not take away existing legal motorized use

Mechanized use on designated trails only

No new trails or trailheads onto Mount Elbert

No camping on Hayden or Arkansas River Ranches

No commercial rafting on Arkansas

Limit private boaters to 10 craft per day

Control outfitter/guide use with wade/walk permits

Monitor use

River Restoration

Coordinate and cooperate with MOU Parties on cleanup of the main stem of the Arkansas River off channel restoration of Box and Union Creeks

Minimize liability to LCOSI partners
Minimize new impacts to the river

Extractive Industries

Use extractive industries only as a tool for maintaining natural resource values and master plan goals

Water Resources

Maintain water rights, operations, and beneficial use of associated water rights

Increase water storage capacity for wildlife, recreation, and economic development purposes

Cooperate and coordinate with MOU Parties and water owners to ensure favorable flows for fisheries
Maintain or improve water quality

Allow for the opportunity to enhance or create new wetlands

Scenic

Maintain or Improve existing Scenic Vistas

Maintain or Improve Visitor Safety

Coordinate and cooperate with the Top of the Rockies Byway Committee to interpret and sign U.S. 24 through LCOSI