Appendix A: Baseline Conditions Document

East Boulder Creek: Today

Introduction

In preparation for the site management planning process for the East Boulder Creek (EBC) Site, staff gathered existing information about the area and the county's properties that make up the site. Several county open space properties encompass the area: Alexander Dawson, Bailey-Kenosha Ponds, Doniphan, Wheeler, and Wise. The total acreage of the combined properties is 1,337 acres. The county acquired most of the properties during the 1990s, and Wheeler Ranch was bought in 2017. While forming one site for management planning, the individual properties form two groups: a NE cluster of Bailey-Kenosha, Doniphan, and Wheeler and a SW cluster of Alexander Dawson and the Wise property. This document will refer to individual properties when appropriate for accuracy.

Site Summary

Land Use History

Since time immemorial Indigenous people have lived in Colorado with their own unique cultures, relationships, and histories. Eastern Colorado was home to a variety of Indigenous tribes that include the Apache, Arapaho, Cheyenne, Comanche, Crow, Kiowa, Sioux, Pawnee, and Ute. Their presence on the land is known today through Indigenous oral tradition, recorded history, photos, writings and mapping of explorers, non-Native stories, and archaeological investigation. Between the 1860s and early 1880s Indigenous people in eastern Colorado and the central mountains were forcibly removed by the United States government from their traditional homelands identified as belonging to them in the 1851 Treaty of Fort Laramie. In addition to the forced removal from their traditional homelands to unfamiliar and inferior lands far away, Indigenous people also suffered great trauma with the suppression of their language, history, beliefs, and culture through numerous measures and laws well into the 20th century.

The traumatic measures and laws established by the United States government that resulted in the forced removal of Indigenous people from their traditional homelands simultaneously set the stage for the great westward expansion. Domestic and foreign migrants, as well as railroad companies and states, utilized the various federal land acts to claim for themselves what was once Indigenous land. For the part of the county where the EBC site lies, these people developed their lands for agriculture to support the mining communities in the county (including the Boulder-Weld Coalfield which lies just to the south).

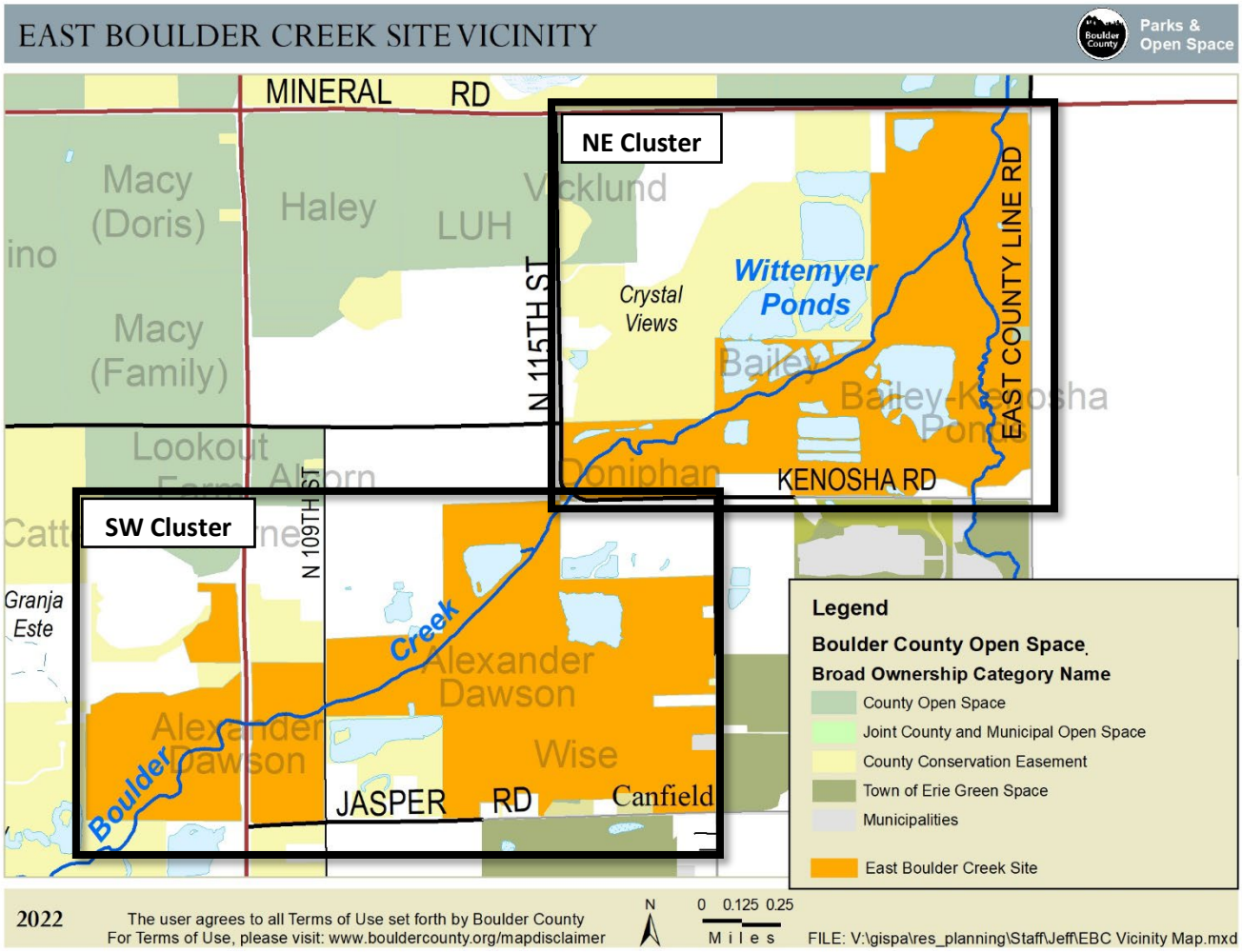
Agriculture led to some of the first major landscape changes to the site. For example, several of the first ditches in the area traverse the property and continue to irrigate farmlands to this day. During the 1970s, as residential development boomed along the Front Range, the aggregate resources of the site were exploited, and Boulder Creek was straightened. Mining on parts of EBC continued into the 2000s. The post-mining land uses had to contend with open water bodies, disrupted irrigation patterns, and disturbed soils.

Recent Land Use

While the area has been Agriculturally zoned in the county for decades, land just to the south has been residentially developed in the Town of Erie since annexation in the late 1990s. Increasing pressure for potentially expanding the town north was one of the drivers for acquiring the EBC open space properties

in the past. At this time, according to the Town of Erie's 2015 Comprehensive Plan Land Use Map, the EBC is within Erie's influence area as public open space. Unincorporated Weld County private lands border East County Line Road.

The Alexander Dawson property has a Conservation Easement on it from a 2000 funding agreement with Great Outdoors Colorado (GOCO) that named the City of Boulder as the easement holder and stipulated constraints on the property's development include limitations on new structures, trails, etc. Improvements are allowed but must be reviewed by City of Boulder and GOCO.



Adjacent Land Use Context

NE Cluster of the site:

- **South:** Kenosha Road forms the southern boundary of this property group and at the east side of this southern boundary there is a 500-800 foot buffer of Town of Erie open space parcels between the road and residential lots in the Kenosha Farms subdivision in Erie. West along Kenosha Road, large lot residential lots adjoin the road. Kenosha Road averaged 1,070 vehicles per day in 2020 (Average Annual Daily Trips—AADT—per the 2023 Boulder County Motor Vehicle Traffic Count Map).

- **East:** East County Line Road/Weld County Road 1 (boundary of Boulder and Weld Counties) borders this cluster of properties on the east. Rural residential and agricultural private properties lie along the east side of the road as well as 140 acres of land owned by the City and County of Broomfield. East County Line Road has become a busy north-south roadway in this intercounty region with 5318 AADT as measured just north of Mineral Road in 2020.
- **North:** Mineral Road/State Highway 52 is a very busy roadway (15,000 AADT in 2021), especially during peak hours of the weekday commute with heavy volumes heading west into Boulder County in the mornings and east back into Weld in the evenings. North of Mineral Road is more Boulder County Open Space—the Canino 7M Ranch. North of the Doniphan and Bailey-Kenosha Properties is the City of Boulder's Wittemeyer Ponds property which the City of Boulder uses for its water storage program.
- **West:** While N. 115th Street forms the west boundary of Doniphan, the agriculturally-managed Boulder Creek Farms properties and more rural residential lots border most of the property cluster.

SW Cluster of the site:

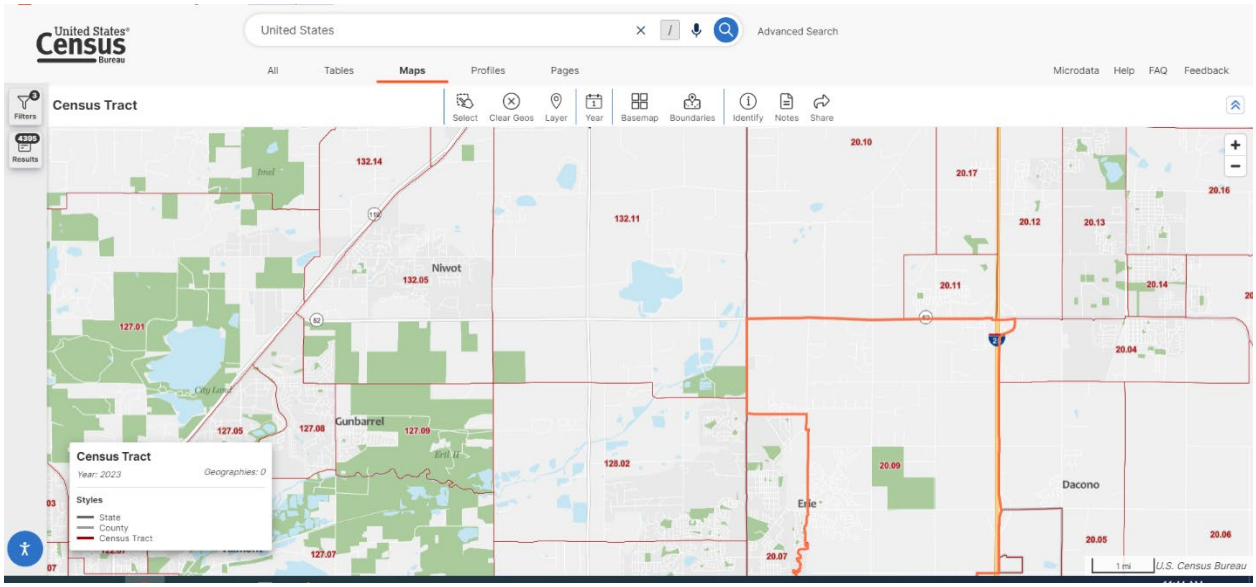
The Alexander Dawson and Wise property group is dissected in the west by two north-south roadways, N 109th Street (a county road with very low traffic volumes of 90 AADT in 2020) and US 287 which is one of the busiest roads in the county (27,000 AADT in 2021).

- **South:** Jasper Road (1720 AADT in 2020) and rural residential lots form the southern boundary of the property group. Several open space properties lie just south of Jasper Road in the Town of Erie.
- **East:** North 119th Street forms the east boundary of the property group along with several large, rural residential lots. Just east of 119th Street is property incorporated in the Town of Erie include several open space parcels.
- **North:** Rural residential and agricultural properties border Alexander Dawson as well as the private K-12 Dawson School on a 107-acre campus.
- **West:** To the west of Alexander Dawson is the City of Boulder's Farm in Boulder Valley open space property, which also has a Boulder County conservation easement. It is currently closed to the public.

Census data

There are five census tracts within one mile of the East Boulder Creek Site boundary. Per the 2020 Census, there was a total of 28,310 people living in these tracts. Consistent with the county's focus on racial equity and the department's Cultural Responsiveness and Inclusion Strategic Plan, staff examined the racial and ethnic demographics of the tracts using the terms from the 2020 census. The summary table below combine the data from the tracts in order to better understand and serve to the neighboring community.

Race and Ethnicity	Population	Percentage
American Indian and Alaska Native	148	< 1
Asian	1117	4
Black or African American	196	1
Hispanic or Latino	4629	16
Native Hawaiian or other Pacific Islander	18	< 1
Not Hispanic or Latino	20976	74
Some other Race	1577	6
Two or More Races	3218	11
White	22036	78



Land Management Opportunities

1. Long stretch of East Boulder Valley managed by BCPOS. While some restoration and recovery has been conducted, there is the potential for more. There are approximately 13 ponds and five miles of perennial streams.
2. Due to the site's position in the East Boulder Valley at the confluence with Coal Creek it is within the Mile High Flood District (MHFD) and is thereby subject to floodwater management and study. Currently, changes and improvements have been planned and funded for Coal Creek just upstream of Kenosha Road in Erie and MHFD is partnering with Boulder County to examine potential stream channel improvements on the site. The county and MHFD are also working on a section of Boulder Creek in association with the Howell Ditch on the Doniphan property.

Land Management Challenges

1. Despite its location at the confluence of two permanent streams, the site lacks irrigation water on Bailey-Kenosha and Doniphan. Alexander Dawson and Wheeler Ranch have more water available through irrigation rights.

2. Not only is the site constrained of available water, but the streams themselves have water quality issues, both being on the EPA's 303(d) impairment list for a number qualities (Aquatic Life, Recreational Use) and for a number of pollutants.

3. Mining and reclamation have impacted the site's soils and while recovering, the area is notably a formerly mined landscape with existing oil and gas facilities and activity.

4. The PPA (Project Partnership Agreement) that BCPOS signed with the U.S. Army Corps of Engineers stipulates that the project area cannot be developed.

5. Access to the property for both agricultural tenants and BCPOS staff for management activities remains difficult in some places due to impacts from the 2013 flood, fencing, and restoration projects.

Existing Management Plan Review

The Board of County Commissioners approved the Lower Boulder Creek and Coal Creek Open Space Master Plan in 1998 which covered much of the East Boulder Creek site and many of the general themes of the plan remain valid. Proposed actions related to 1. protection of environmental resources, 2. locations for public access opportunities, 3. agricultural management, and 4. restoration areas remain valid. However, there are important updates. BCPOS partnered with USACE to restore the floodplain of Boulder Creek on Alexander Dawson east and downstream of 109th Street. Additionally, aggregate mining concluded on the Bailey-Kenosha property and the subsequent reclamation resulted in the creation of a wetland area. (However, due to water rights constraints, a portion of the Kenosha ponds and wetlands were filled and modified because the county did not have adequate augmentation water to offset the exposed groundwater in the initial pond.) The department has primarily worked to continue restoration efforts on the properties from either mining or long-term ground disturbance patterns. The full plan and appendices are available on the public web: https://assets.bouldercounty.gov/wp-content/uploads/2017/03/lower-boulder-creek-and-coal-creek-master-plan.pdf

Wildlife

As noted above, BCPOS has worked to successfully restore the area after mining and creek channel straightening.

The created wetlands and riparian habitat have created opportunities for wildlife use of the site. The department staff has collected wildlife monitoring data.

Environmental resource occurrences identified in the Environmental Resource Element of the Boulder County Comprehensive Plan are found in the EBC Site parcels. The East County Environmental Conservation Area (ECA #13) contains Kenosha Wetlands Critical Wildlife Habitat (CWH #65), Lower Boulder Creek Riparian Area (CWH #27), Kenosha Heronry (CWH #92) and the length of Boulder Creek identified as Riparian Habitat Connectors for wildlife. The White Rocks/Gunbarrel Hill Environmental Conservation Area (ECA #12) encompasses the western portion of the planning area. There is also a BCCP designation for Preble's Meadow Jumping Mouse along Boulder Creek. More detailed descriptions of the BCCP ERE occurrences follow below.

Critical Wildlife Habitat #27 Lower Boulder Creek Riparian Area was established in 1978 and retained in the 2013 revision due to continued use by historically documented species, a large, historical heronry, and the known occurrence of species of special concern. The full summary for CWH #27 includes an extensive list of species supported by this vital habitat, including aquatic species documented in historical data from Colorado Parks and Wildlife.

Critical Wildlife Habitat #92, Kenosha Heronry, was established in 2013 in the updated Environmental Resources Element of the Boulder County Comprehensive Plan. This site has specific habitat characteristics to support a small colony and contribute to available nesting habitat when overall risk to heron nest sites is high due to human encroachment. The site was active and expanding from the mid 2000's until 2015, after which the herons relocated to an adjacent site along Boulder Creek. CWH #92 continues to provide structure as an alternate nest site that could be utilized again in the future. The heronry site is monitored annually.

Critical Wildlife Habitat #65, Kenosha Wetlands, was established with the 2013 ERE update due the valuable habitat resulting from this man-made wetland. The wetland serves as a densely occupied nesting area for migratory songbirds and secretive marsh birds, a migratory stopover during fall and spring migration, and it is utilized by a broad range of avian species but especially waterfowl. Protection of CWH #65 and adjacent upland habitat is imperative to preserve the breeding, foraging, and seasonal migratory bird activity and habitat that supports over 142 species of birds including 20 avian Species of Special Concern. This CWH supports the adjacent heronry as potential staging, loafing, and foraging habitat for the nesting colony.

The East County Environmental Conservation Area (ECA #13) was designated using criteria which identified and centered on undeveloped landscape areas. ECAs contain habitat components that meet the needs of wide-ranging species, allow for natural disturbance regimes, contain unique or high-quality natural characteristics, and preserve areas where habitat fragmentation and edge effects can be minimized. The EBC Site is located on the edge of the East County ECA and is included in the eastern portion of the White Rocks/Gunbarrel Hill ECA. The site provides habitat for a diverse array of species due to its riparian corridors, waterbodies, low level of human presence and limited adjacent development. The designated ECAs and the wildlife-supporting elements of the CWH and adjacent riparian corridors would likely be diminished without maintaining human impacts at low intensity.

Raptors

The EBC site hosts extensive riparian corridors along Boulder Creek and Coal Creek which have nesting Bald Eagles, Red-tailed Hawks, Swainson's Hawk's, Great-horned Owls, and American Kestrels. The EBC Site serves as foraging area and home range territory for two pairs of nesting bald eagles. The Kenosha Ponds and Wittemyer area to the north is part of the established and occupied territory of one pair utilizing nearby Panama Reservoir Critical Wildlife Habitat #17 and CWH #27. Both adults and young offspring of this pair, and wintering migrant eagles and other raptors, use this space for foraging, loafing, and courtship. Public access and a network of trails could irreversibly diminish the regular, long-term use of this location by eagles.

Heronries

Overall, age structure of limited cottonwood stands along our creeks is skewed to older, decadent stages due to the disruption or cessation of mechanisms that promote cottonwood recruitment. Furthermore, the high sensitivity to disturbance of colonial nesting birds such as herons, and the reduced riparian habitat with suitable age/structure/maturity to sustain nest sites along our creeks, warrants elevated concern for protecting current nest sites and promoting future ones.

The Wheeler parcel has a growing Great-Blue Heron rookery (or heronry), a species known for sensitivity during the breeding season. A recent review of the effect of non-consumptive recreation on wildlife identified a minimum threshold distance of 100m to reduce behavioral change in wading and passerine birds, for shorebirds the threshold is lower at 50m. Heronries are sensitive to human presence and disturbances and rely on a specific combination of requirements to be successful. Heron colonies establish in locations where riparian structure and configuration is appropriate for nesting and raising young, and in close proximity to a productive food source. Great Blue Heron colonies usually exist in tall, connected tree canopies and occur in the same location for many years. Herons nest in high densities, but colonies may fluctuate in span and number from year to year. Temporal Buffers are February 15- July 30. This timing is based on local observations of heron colonies within Boulder County, and review of literature and recommendations made by other entities across this species range.

Kenosha Road heronry was monitored from 2008-2019. It remained small due to limited nesting in this area along Boulder Creek. Following the 2013 flood, there was a reduction in available streamside nesting habitat and herons redistributed across the watershed. Some sites remained intact, others were reduced in number, or sites were abandoned. At the Kenosha Rd./Boulder Creek location (partially on private land), the number of nesting pairs increased just prior to the flood and the site retained 6-10 nest sites until 2016, when the site was abandoned. Also following the flood, as heron rookery locations and numbers of individuals occupying new locations increased, a small colony developed on the adjacent Wheeler Ranch property and has since been expanding.

Waterfowl

The most recent wildlife data collected across the EBC site is related to waterfowl and migratory songbird presence from 2012-2017. Annual avian monitoring was completed by trained volunteers who recorded waterfowl and shorebirds year-round, and later added migratory songbirds to the effort. Staff qualified unusual sightings when possible and added several new species during field visits in 2023. The results of this effort accumulated over 7000 records spanning several years. Staff also recorded incidental wildlife sightings starting in 1991 and continue to do so.

Mammals

Preble's Meadow Jumping Mouse (PMJM): Riparian corridors in Boulder County are home to many small mammal species, including the Preble's meadow jumping mouse (*Zapus hudsonius preblei*), a Federally Threatened riparian obligate. PMJM are known to be naturally rare throughout their range; this, combined with the fact that they occupy a restricted habitat type and have a narrow geographic distribution, puts them at high risk for extinction. This subspecies is endemic to and dependent upon the riparian areas of the Front Range, and the primary threat to this species is the destruction or adverse modification of riparian habitat (from ERE). Impacts to riparian habitat from the flood event of 2013 have likely altered the abundance and distribution of many small mammal populations dependent upon that habitat. Recent surveys did not detect PMJM at the EBC Site following the 2013 flood event, however habitat restoration could provide habitat linkages for upstream populations of this species. The BCCP ERE categorizes the riparian habitat of the EBC Site as "Suitable, Contiguous Habitat." This represents an area with suitable habitat that is contiguous to a known population but where jumping mice either have not been captured or where trapping has not occurred. These areas span 600 ft. on each side of the stream channel for areas within the 100 yr. floodplain, and 300 ft. a side for areas outside the 100 year floodplain.

Prior to planning team's recommended creek restoration activities, surveys for the mouse should occur to provide updated data on the occurrence of Preble's in affected areas. As a federally listed species, in accordance with the Endangered Species Act, consultation with the U.S. Fish and Wildlife Service (USFWS) and Colorado Parks & Wildlife (CPW) prior to any habitat disturbance or change from construction or restoration activities is necessary. Cooperative planning for improving the continuity and quality of mouse habitat along Boulder and Coal Creeks to provide broader range for the species eastward can be developed.

In 2023, Preble's meadow jumping mouse were detected near the confluence of Coal Creek and Rock Creek, the farthest east that they have been detected so far, six miles upstream of the EBC site.

Prairie dogs are managed on the site in accord with the Prairie Dog Habitat Element of the Grassland and Shrubland Management Policy.

Aquatics

Historical fisheries data were requested from CPW for this planning area, and a list of 29 species is retained on record. Due to the data including sensitive or protected species, or private land locations, a complete description cannot be provided here. With the exception of Gizzard Shad, the historic survey data confirmed all species listed in the 1998 Lower Boulder Creek Master Plan. To provide updated fisheries data, CPW has responded positively to our request for an assessment and aquatic survey of select ponds on the planning site. Riparian habitat and water quality impacts have diminished stream quality over decades. This, along with the introduction of exotic or predatory game species has reduced native species composition, and it is expected that updated data with current surveys will confirm this. Surveys to update our understanding of aquatic species composition have been recommended for stretches of Boulder and Coal Creek where restoration is being considered.

EBC Wildlife Species List

This is a list of wildlife species observed on the East Boulder Creek site during volunteer and staff wildlife surveys, incidental sightings during staff visits to the property from 1991-2023, and species confirmed during historical aquatic surveys performed from 1950-2003 by Colorado Parks and Wildlife. From 2011-2017, volunteer avian surveys primarily focused on waterfowl and shorebirds across water bodies on the EBC site, and later added land bird species encountered. These simple, standard surveys occurred year-round and captured species occurrence during spring and fall seasonal migrations, summer breeding season, and winter months. On occasion, BCPOS staff will contribute to an incidental wildlife sightings list from property visits, which spans late 1980's to the current year. The species list below is compiled from all these sources.

There are broad gaps in our understanding of some groups of species on the site, such as terrestrial and aquatic invertebrates, diversity of small mammals, recent fisheries data to name a few. During staff visits to the site in 2023, several species of breeding birds not noted in previous datasets were detected on the site. These additions are reflected in the lists below.

*Species in red are Species of Special Concern (SSC) listed in the 2014 Environmental Resource Element update to the Boulder County Comprehensive Plan. Species in orange are listed as declining by the Cornell Lab of Ornithology.

Aquatics - 29 Species

Snapping Turtle

Bigmouth Shiner
Black Bullhead
Black Crappie
Bluegill
Brassy Minnow
Brown Trout
Central Plains Killifish
Central Stoneroller
Common Carp
Common Shiner
Creek Chub
Fathead Minnow
Green Sunfish
Iowa Darter
Johnny Darter
Largemouth Bass
Longnose Dace
Longnose Sucker
Northern Plains Killifish
Northern Redbelly Dace
Plains Topminnow
Pumpkinseed
Rainbow Trout
Sand Shiner
Smallmouth Bass
Western Mosquitofish
White Crappie
White Sucker
Yellow Perch

Mammals - 8 Species

American Mink
American Beaver
Coyote
Marmot – Historical records
Muskrat
Red Fox
Striped Skunk
White-tailed Deer

Landbirds Birds - 71 Species

American Crow
American Goldfinch
American Kestrel
American Robin
American Tree Sparrow
Bald Eagle
Bank Swallow
Barn Swallow
Belted Kingfisher
Black-billed Magpie
Black-capped Chickadee
Blue Grosbeak
Blue Jay
Bobolink
Brown Thrasher
Brown-headed Cowbird
Bullock's Oriole
Burrowing Owl
Chestnut-Collared Longspur
Cliff Swallow
Common Grackle
Common Raven
Common Yellowthroat
Cooper's Hawk
Eastern Kingbird
Eastern Meadowlark
Eurasian Collared Dove
European Starling
Ferruginous Hawk

Landbirds - Continued

Golden Eagle
Gray Catbird
Great-horned Owl
Great-tailed Grackle
Green-tailed Towhee
House Finch
House Wren
Lincoln's Sparrow
Marsh Wren
Mourning Dove
Northern Flicker
Northern Harrier
Northern Rough-Winged Swallow
Northern Shrike
Orchard Oriole
Osprey
Peregrine Falcon
Prairie Falcon
Red-Tailed Hawk
Red-Winged Blackbird
Ring-Necked Pheasant
Rock Pigeon
Rough-Legged Hawk
Sage Thrasher
Savannah Sparrow
Say's Phoebe
Sharp-Shinned Hawk
Song Sparrow
Spotted Towhee
Sprague's Pipit
Swainson's Hawk
Tree Swallow
Vesper Sparrow
Violet-Green Swallow
Warbling Vireo
Western Kingbird
Western Meadowlark
White-Crowned Sparrow
Yellow Warbler
Yellow-Breasted Chat
Yellow-Headed Blackbird
Yellow-Rumped Warbler

Waterbirds - 71 Species

American Avocet
American Bittern
American Coot
American White Pelican
American Widgeon
Barrow's Goldeneye
Black Tern
Black-Crowned Night Heron
Black-Necked Stilt
Blue-Winged Teal
Bonaparte's Gull
Bufflehead
Cackling Goose
California Gull
Canada Goose
Canvasback
Western Cattle Egret
Cinnamon Teal
Clark's Grebe
Common Goldeneye
Common Loon
Common Merganser
Double-Crested Cormorant
Eared Grebe
Forster's Tern
Franklin's Gull
Gadwall
Great Blue Heron
Great Egret
Greater Scaup
Greater Yellowlegs
Green Heron
Green-winged Teal
Hooded Merganser
Horned Grebe
Killdeer
Least Sandpiper
Lesser Black-backed Gull
Lesser Scaup
Lesser Yellowlegs
Little Blue Heron
Long-billed Dowitcher
Mallard
Northern Pintail
Northern Shoveler
Pied-Billed Grebe
Red-breasted Merganser
Redhead
Red-necked Grebe
Ring-Billed Gull
Ring-Necked Duck
Ruddy Duck
Sandhill Crane
Semipalmated Sandpiper
Snow Goose
Snowy Egret
Solitary Sandpiper
Sora
Spotted Sandpiper
Trumpeter Swan
Tundra Swan
Virginia Rail
Western Grebe
Western Sandpiper
White-faced ibis
White-Fronted Goose
White-winged Scoter
Willet
Wilson's Phalarope
Wilson's Snipe
Wood Duck

Soils and Slopes

Prior to aggregate mining disturbances, the soils of the EBC site were primarily in the Loveland and Niwot associations. They were nearly level, deep soils in bottom lands and low terraces. Manclave clay loam was present in the Coal Creek drainage (and still is in some areas that weren't mined) and Ascalon sandy loam above the valley north of Boulder Creek. The portions of Wheeler Ranch and the Wise properties that lie above the floodplain and valley floor have Manclave and Ascalon soils with highly rated agricultural qualities and consequently are designated in the BCCP as Agricultural Lands of National Importance. The Loveland and Niwot soil types are common in the floodplain and comprise a large proportion of the property. However, they have poor drainage and other soil qualities that the Soil Survey of the Boulder County Area (US Department of Agriculture Soil Conservation Service 1975) equate to having severe limitations for agricultural use. For those types, the Soil Survey recommends pasture uses instead of crops. Data and information can be accessed in the 1975 Soil Survey for the Boulder County Area, Colorado, Soil Conservation Service. Updated information is available on the NRCS Web Soil Survey application.

Aggregate mining disturbed many portions of the EBC site and in those locations created a soil profile that is very deficient in topsoil and has poor soil health. The soil is very limited in its ability to hold water because the remaining soil textures are generally coarse with limited fine particle materials. Also, the past reclamation work used a variety of non-native reclamation grasses such as Russian wild rye that impact soil properties and their ecology. The department is working with tenants to get more organics incorporated into the soils by having supplemental livestock feedings done in select places.

Plant/Floristic Quality

The site vegetation has been disturbed by previous land uses, particularly aggregate mining. Since acquisition, the department has been working on restoring mined areas. Efforts are also intended to regrow a tree canopy that can shade the creek and thereby improve water quality by lowering stream water temperatures. There are important wetlands as well as riparian habitat on the site. The department will protect those areas from impacts by both public use and grazing.

Four Main areas of Interest for the EBC site from Plant Ecology:

1. Wetland Restoration and Preservation
2. Riparian Habitat Improvement
3. Grassland Improvement
4. Interpretive Opportunities

<u>Wetlands</u>

The department assessed wetlands on open space properties in the southern county in 2021 including the EBC site. All of the wetlands within the EBC site received a C+ to C- rating. Details on assessment and ranking system are below.

Mapping, assessments, and report was completed by Peak Ecological Services LLC, and the Colorado Natural Heritage Program. The last update to wetland mapping on BCPOS land

occurred in 2003. Very few wetlands within the county had ever received a formal assessment of ecological integrity and function.

Summary details of wetland assessment on Boulder County Open Space properties.

- 310 wetlands mapped across 69 properties.
- 104 in mountains, 206 in the plains.
- Total of 774 acres of wetlands
- 69 properties accounting for 12,875 acres of Open Space
- 92 formal assessments

Ecological Integrity Assessment (EIA)

The Ecological Integrity Assessment was developed by NatureServe (Faber-Langendoen 2006, Faber-Langendoen et al. 2008). EIAs evaluated 4 biotic and abiotic categories, each with several metrics. The four biotic and abiotic categories: Landscape context, Vegetative Condition, Hydrologic condition, and Physiochemical condition. Each category contains several metrics and evaluates how far the wetland deviates from reference condition. The categories correspond to different levels of alteration and represent different management opportunities. The metric scores are then combined into a category score, and then each of the category scores are combined into an overall EIA score (which range numerically from 1.0 to 5.0) and were subsequently assigned an alphanumeric rank (A, B, C or D). Much like a report card: "A" is highest score, "D" is lowest score; "A" scores represent the best of the best and are considered as a "reference condition" wetlands and devoid of all or nearly any negative human impact. To better refine the EIA scores, they are translated into a 7-tiered ranking system of A, B+, B-, C+, C-, D+, D- with each letter corresponding to a range of numeric scores.

EIA Ranking Score definitions:

A – Excellent Condition / Reference Site (*No or Minimal [negative] Human Impact*):

- A = 4.5–5.0
- Wetland functions within the bounds of natural disturbance regimes.
- Surrounding landscape - essentially unfragmented with little to no stressors
- Vegetation structure - nonnative species are essentially absent; a comprehensive set of key species are present
- Soil properties and hydrological functions are intact.
- Management should focus on preservation and protection.

B – Good Condition / Slight Deviation from Reference:

- B+ = >4
- B- = >3.5
- Wetland predominantly functions within the bounds of natural disturbance regimes.
- Surrounding landscape - minimally fragmented with few stressors
- Vegetation structure -nonnative species and noxious weeds are present in minor amounts; most key species are present
- Soils properties and hydrology are only slightly altered.
- Management should focus on the prevention of further alteration.

C – Moderate Condition / Moderate Deviation from Reference:

- C+ = >3
- C- = >2.5
- Wetland has several unfavorable characteristics.
- Surrounding landscape - moderately fragmented with several stressors
- Vegetation structure - nonnative species and noxious weeds may have a sizeable presence or moderately negative impacts; many key species are absent
- Soil properties and hydrology are altered.
- Management would be needed to maintain or restore certain ecological attributes.

D – Poor Condition / Significant Deviation from Reference:

- D+ = >2
- D- = >1
- Wetland has severely altered characteristics.
- Surrounding landscape - little natural habitat and is very fragmented
- Vegetation structure - nonnative species and noxious weeds exert a strong negative impact; most key species are absent
- Soil properties and hydrology are severely altered.
- There may be little long-term conservation value without restoration, and such restoration may be difficult or uncertain.

Results

Wetlands on the plains are in poor condition. Of all assessed wetlands in Boulder County, most assessed wetlands on the plains fell into Rank "C", one wetland on the plains received a "B", zero wetlands on the plains received an "A". The EBC site has 27 wetlands totaling 112.5 acres in area and six of the wetlands were assessed. All wetlands within EBC site received a "C+" to "C-" ranking.

Assessed Wetlands within EBC Site Complex				
AA = Assessment Area				
EIA = Ecological Integrity Assessment				
Assessed Wetlands - Totals				
PROPERTY	COUNT OF AA	SIZE (ACRES)	SIZE (HECTARES)	Notes
Alexander Dawson	4	32.31	13.08	*no wetlands within the EBC Site were designated as "of Importance"
Bailey-Kenosha Ponds	1	17.64	7.14	
Wheeler	1	4.17	1.69	

Assessed Wetlands - Scores				
PROPERTY NAME	AA NAME	EIA SCORE	LETTER GRADE	Recommended Management Action
Alexander Dawson	ALEX-01	3	C-	Consider managing noxious weeds and removing the one tamarisk tree and several Russian Olives.
	ALEX-02	2.71	C-	The major threat includes abundant weed cover, including aggressive wetland graminoids. Noxious weeds (Carduus nutans (Musk thistle), Elaeagnus angustifolia (Russian Olive), Cirsium arvense (Canada thistle) and C. vulgare (Bull thistle) are in relatively low cover within wetland, but more prevalent along berm/ditch and other disturbed upland margins. Mechanical or chemical control should be carefully targeted to avoid desirable native species. Carefully timed and targeted grazing (when soil is dry, etc.) could help "release" desirable native plants.
	ALEX-02B	2.85	C-	This site has occasional noxious weeds. If completing chemical control of weeds, take care not to kill widespread native graminoids and forbs. This site has reached a somewhat steady state, so no major management is recommended.
	ALEX-07	3.23	C+	Noxious weeds include Lepidium draba (white top), Epilobium hirsutum (Hairy Willow herb), and Iris pseudacorus (Yellow Iris) scattered throughout wetland in low cover. Small Russian olive trees in adjacent uplands. Mechanical or targeted spot spraying recommended to avoid impacts to native graminoids and forbs. There are cattle grazing in the area, but with minimal impact on wetland with current grazing regime. There are abundant weeds in surrounding upland areas.

	AA NAME	EIA SCORE	LETTER GRADE	Recommended Management Actions
Bailey-Kenosha Ponds	KENO-49	2.58	C-	There are some weeds scattered throughout site (Tamarix, Elaeagnus angustifolia, Cirsium arvense). Minimize mechanical or chemical impacts to native wetland plants. Consider burning or otherwise removing dense cattail litter in the lowest lying wetland areas to improve vegetative diversity. Consider adding more native trees and shrubs to the upland islands within this wetland complex, which are primarily dominated by non-native grasses and weeds.
Wheeler	WHEE-01	2.66	C-	For the WHEE-01 site, consider eliminating the Russian olive trees (Elaeagnus angustifolia) from this site and replant with native trees and/or shrubs. In addition, it is recommended that the larger Wheeler open space be considered for a larger wetland/riparian restoration as the aerial photography shows numerous historic oxbows located in close proximity to Boulder Creek that are currently being used for hay pasture.

Mapped Wetlands within the EBC Site Complex		
LOCATION, PROPERTY NAME ECOLOGICAL SYSTEM AND WETLAND ID	SIZE (ACRES)	SIZE (HECTARES)
Alexander Dawson		
WGP Wet Meadow Marsh Drainage Network		
ALEX-01	4.8	1.9
ALEX-02	10.4	4.2
ALEX-02B	6.8	2.7
ALEX-02C	0.5	0.2
ALEX-03	1.7	0.7

LOCATION, PROPERTY NAME ECOLOGICAL SYSTEM AND WETLAND ID	SIZE (ACRES)	SIZE (HECTARES)
ALEX-05/04	3.4	1.4
ALEX-07	10.4	4.2
ALEX-08	3.4	1.4
ALEX-10	1	0.4
ALEX-11	2	0.8
ALEX-12	3	1.2
ALEX-15	6.1	2.5
ALEX-17/1	13.2	5.3
ALEX-17/1B	2.6	1
ALEX-17/1C	3.4	1.4
ALEX-4/5	13.5	5.4
WGP Wet Meadow Marsh Drainage Network Total	86.2	34.9
Alexander Dawson Total	86.2	34.9
Bailey-Kenosha Ponds		
Western North American Emergent Marsh		
KENO-49	17.6	7.1
KENO-49B	0.8	0.3
Western North American Emergent Marsh Total	18.4	7.5
Bailey-Kenosha Ponds Total	18.4	7.5
Doniphan		
Western Great Plains (WGP) Wet Meadow Marsh Drainage Network		
KENO-20	0.1	0
KENO-26	0.6	0.3
KENO-26A	0.3	0.1
KENO-29	0.4	0.1
KENO-29A	0.5	0.2
WGP Wet Meadow Marsh Drainage Network Total	1.9	0.7
Doniphan Total	1.9	0.7
Wheeler		
WGP Wet Meadow Marsh Drainage Network		
WHEE-01	4.2	1.7
WHEE-02	1.8	0.7
WGP Wet Meadow Marsh Drainage Network Total	6	2.4
Wheeler Total	6	2.4

All wetlands in the EBC Site are designated as Wet Meadow Marsh Drainages. Defined by the EPA: Wet meadows are a type of marsh that commonly occurs in poorly drained areas such as shallow lake basins, low-lying farmland, and the land between shallow marshes and upland areas. These wetlands, which often resemble grasslands, are typically drier than other marshes except during periods of seasonal high water. For most of the year wet meadows are without standing water, though the high-water table allows the soil to remain saturated. A variety of water-loving grasses, sedges, rushes, and wetland wildflowers proliferate in the highly fertile soil of wet meadows. (https://www.epa.gov/wetlands/wet-meadows)

Wetland Restoration priorities and recommendations for Alexander Dawson:

- Alex-07 (estimated at a low cost level) highest ranking wetland in EBC complex
- Alex 5/4 (estimated at a medium cost level)
- Broad Recommendations: Weed management, increased native plant diversity, grazing regime/fencing, compost amendment (ALEX-5/4)

Wetland Restoration priorities and recommendations for Doniphan and Baily-Kenosha:

- KENO-49: C-
    - priority for conservation and restoration in EBC site
- Recommendations:
    - Weed management
    - Dense cattail removal
    - Native tree and shrub planting on upland islands within wetland

Wetland Restoration priorities and recommendations for Wheeler:

- WHEE-01: C-
- Recommendations:
    - Russian olive removal and replacement with native trees recommended
    - Additional Contractor Recommendations: *"In addition, it is recommended that the larger Wheeler open space be considered for a larger wetland/riparian restoration as the aerial photography shows numerous historic oxbows located in close proximity to Boulder Creek that are currently being used for hay pasture."*

Riparian Habitat Improvement

Overall, Riparian Communities are lacking in diversity and resiliency throughout the EBC site. Broad scale goals for Riparian Corridors in EBC Site:

- Increase sinuosity
- Increase floodplain
- Increase native plant diversity
- Allow for natural disturbance

Riparian Considerations for Alexander Dawson:

- Lower Boulder Creek (LBC) stream restoration project - continued adaptive management
    - Recommendations:
        - Non-native tree removal
        - Additional native plantings or seeding over time, as warranted

- Between 287 and 109th
    - Riparian fencing and understory planting

Riparian Considerations for Doniphan and Bailey-Kenosha:

- Recommendations
    - Consider and collaborate with the Howell Ditch project
    - Extreme channel incising on Lower Boulder Creek; floodplain development and restoration
    - Coal creek, minimal work proposed
- Upcoming work, other stakeholders
    - Intersection of coal creek and the Boulder and Weld County Ditch
    - Public works replacing bridge, increasing capacity of coal creek
    - Erie work on coal creek (south of Kenosha rd.)

Riparian Considerations for Wheeler:

- Recommendations:
    - Support Russian olive removal
    - Native tree plantings to replace Russian Olives
- Opportunities:
    - Coal Creek:
        - Diversity and habitat improvement
        - Riparian fencing
        - Floodplain development recommended by contractor
    - Floodplain improvement on Lower Boulder Creek
        - Long range planning

Background Information on Lower Boulder Creek Restoration Project
This restoration on Boulder Creek was designed and implemented over the course of 10 years] in collaboration with the US Army Corps of Engineers and reintroduced channel complexity through constructed curvature to the stream flow (sinuosity), adding instream habitat features, planting diverse native vegetation, and re-connecting the creek to the floodplain. This stretch of 6300 linear foot creek restoration was completed in 2016 and is being improved on each year mainly by way of noxious weed removal, plant support infrastructure removal and supplemental plantings or seeding as necessary.

<u>Grasslands</u>

Broad scale goals for Grasslands in EBC Site:

- Limit human disturbance
- Increase native plant diversity
    - Collab. with Weeds
- Place Infrastructure development in already disturbed areas
    - Trailheads/parking, trail development, etc.
- Define limits of disturbance during construction, and adhere to them (per the BCPOS CAMP)

Interpretive Opportunities

Broad scale goals for native plant interpretation in EBC Site:

- Highlight Native Plants
- Highlight Ecosystems
- Spotlight Indigenous Communities

Interpretation Ideas:

- Native grasslands interpretive panel/other
- Native plant or grassland ecology features in nature discovery area
- Indigenous relationships
- Constructed shade features to artistically represent native plants
    - Giant blue grama or sunflower shade?

Weeds

As of 8/23/23, for the 2023 season the invasive plant work group has spent 171.25 hours on the EBC site mapping and treatment infestations of both List A and List B species. 892 acres have been treated with mostly spot spraying of herbicide. Most work has focused on the aquatic List A species that have been discovered in large populations along Boulder Creek and adjoining ditches. A map of the work completed as of 8/23/23 can be found in the supporting documents.

Species at EBC that are designated for elimination: Purple Loosestrife, Yellow Flag Iris, Yellow Toadflax, Leafy Spurge, Salt Cedar, Myrtle Spurge, Hairy Willow herb, Russian Knapweed, Spotted Knapweed Hybrid, Garden loosestrife.

Another group of species are designated for containment and suppression: Canada Thistle, Common and Cutleaf Teasel, Field Bindweed, Downy Brome, Russian Olives, Musk Thistle, Scotch Thistle, Diffuse Knapweed, Hoary Cress, Perennial Pepper Weed, Common Mullein, Kochia, Curly Dock, Dalmation toadflax, Houndstoungue, Poison Hemlock, Redstem Filaree, Wild Lettuce, Crack Willow.

Considerations for ongoing weed treatment include current livestock operations, prairie dogs, wildlife buffer closures, and challenges for equipment access. The site can also be difficult to treat due to variable vegetation types, the size of infestations, and restoration sites with grass seedlings. Possible future challenges would include new and ongoing disturbance, public usage in treatment areas and critical wildlife habitat designations. Maps of previous work done by BoCo Invasive Plant Crew can be found in the supporting documents.

Habitat Zones

The site is in the Western High Plains Ecoregion as defined by the EPA. The East Boulder Creek Valley includes wetlands and riparian habitats associated with the stream and accompanying ditches and reservoirs.

Geology

The site is in the Colorado Piedmont where streams have eroded into uplifted sedimentary layers from the Cretaceous Period such as the Pierre Shale. The East Boulder Valley bottom is composed of alluvial sediment transported and deposited by the streams during the Quaternary Period. No geologic hazards or constraints are found on the site per the BCCP Geologic Hazards and Constraints map.
https://bouldercounty.gov/property-and-land/land-use/planning/boulder-county-comprehensive-plan/update/bccp-20-0001-geologic-hazard-mapping-geology-element/

Physical and Human Land Use

The area is bounded by rural development, state highways, and county roads. The roadways include US 287 running north-south through the west side of the project area and East County Line Road on the east boundary. The Town of Erie lies south of Kenosha Road. The property includes very few structures, primarily buildings associated with agricultural operations.

Existing Site Infrastructure

The site is encumbered by existing easements for oil and gas facilities, the electrical transmission and service lines of Public Service Co. of Colorado/Xcel Energy, water supply lines, communication lines, irrigation ditches, and drainages that are shown in the property surveys. Since oil and gas development is closely regulated in Boulder County, the department will coordinate any site development with the oil and gas operations companies and all other easement holders.

Existing access roads on the site are generally maintained by the oil and gas operators to service their facilities and those are used by the agricultural tenants as well. As POS determines the public use of the site, the department will need to coordinate the use and crossing of the existing road network by proposed recreational facilities with the ag tenants and utility operators.

Lefthand Water District provides potable water to the area around the EBC site but there is currently no water service on any of the open space properties. (The leased home facilities and lots do have water supplies.) There is electric service to parts of the site already.

Planning Context

On the Alexander Dawson Property of EBC, there are two agreements that will need revisions for the proposed plan. The first is the PPA (Project Partnership Agreement) with the US Army Corps of Engineers for the Lower Boulder Creek restoration project that allowed the project to commence and provided it funding. The PPA intent is to ensure that the site would be retained for those restoration purposes and the partners didn't subsequently want a future owner to put improvements in a floodplain that had just been re-meandered to create some natural values. The agreement highlights the official project area and states that the county agreed to protect the site resources. A second document that applies to the Alexander Dawson property is a Covenants, Conditions, and Restrictions (CC&R) agreement on the portion of the property that GOCO provided grant funding to the department as a reimbursement of the purchase. A final management plan that shows any trail or other site development must be reviewed and approved by the GOCO Board and the City of Boulder.

Floodplain: Nearly all of the property is mapped in the regulatory 100-year floodplain of Boulder or Coal Creeks per the county's online Assessor's Property Search website.

Trail Considerations

Site Context

The Boulder-Erie Regional Trail (BERT) is a county-led project to connect Boulder with Erie and the trail systems and bike facilities in between. The project is in the master planning phase and coordinated by the Regional Trail Program in the CP&P Department. The working alignment for the trail is the old Union Pacific Railroad line (now owned by RTD) which is about one-quarter mile south of Jasper Road where it runs east of N. 109th Street. This is consistent with the BCCP Trails Map. The Trails Map also portrays a corridor along Boulder Creek from US 287 to the confluence with Coal Creek and the trail corridor depicted there just east of East County Line Road. The Town of Erie in the last several years has been working diligently to provide a trail network to its community. The town has also acquired open space in areas south of the EBC site.

The 1998 Lower Boulder Creek and Coal Creek Open Space Master Plan identified a regional trail alignment along the south side of the Alexander Dawson property with a connecting spur to the Wise Homestead Museum. On the Bailey Kenosha Ponds property, the plan shows an internally-oriented interpretive loop trail system which also includes regional linkages to Erie. Boulder County Comprehensive Plan Trail Map: https://assets.bouldercounty.gov/wp-content/uploads/2017/03/bccp-map-county-trails.pdf

Cultural Resources

Eight previous cultural resource surveys have been completed on parts of the EBC management plan area between 1977-2022. The previous surveys did not cover the entire EBC management plan area. The results of the previous surveys recorded a total of 5 cultural resources that consist of 2 irrigation ditches, a transmission line, a small barn, and a farm complex. The small barn and farm complex have been demolished since their recordings. The Colorado State Historic Preservation Office (SHPO) identifies both ditches as Officially Not Eligible for the National Register of Historic Places. The transmission line does not have an official SHPO determination of eligibility, but instead only a field determination by the recording agency as field not eligible. It is important to note that Boulder County local historic landmark eligibility was not considered for any of the previous recordings and should also be considered for future cultural resource eligibility decisions.

Since the EBC management plan area has not been entirely surveyed for cultural resources, and all but one of the 8 previous cultural resource surveys that only cover portions of the management plan area are now considered obsolete due to their age being over 10 years, the recommendation is to complete a new intensive-level cultural resource survey of the entire management plan area except for the previously gravel mined areas and heavily disturbed flood areas along Boulder Creek before any ground disturbance projects take place on the properties. By completing the new cultural resource survey, the critical baseline information obtained from the project will inform future decisions in the management plan area in order to avoid or mitigate

any adverse effects to any significant cultural resources and also indicate future possible interpretation opportunities.

Agriculture

Most of the area has been grazed in the past by former owners and now lessees once the lands were acquired by POS. The east part of Bailey-Kenosha and portions of the Wheeler property have been used for cultivated agriculture. Agriculture is an important value of our department and the department has contractual relationships with tenants that must be honored. And, in order for agricultural use to continue, the department will need to work with tenants to ensure they are able to operate on our properties.

Alexander Dawson: Includes Alexander Dawson & Doniphan

- 151.28 acres of irrigated cropland
- 42.3 acres of dryland cropland
- 520.98 acres of introduced rangeland
- 82.98 acres of out of production
- 60.47 acres of wetlands
- 25.61 acres of riparian

The Alexander Dawson lease is currently managed for cattle grazing, grass hay, and alfalfa hay production. Grazing primarily occurs on the center rangeland portion of the property, grass hay is produced on field AD-7, and alfalfa hay is produced on field AD-28. Revegetation work is ongoing on the Doniphan property to try and establish perennial cover. A hay shed is part of the ag lease.

Fences: Fences in poor to good condition with a majority needing replacement or heavy maintenance in the near future. Fences and gates are damaged regularly at the NW entrance to the Doniphan property as vehicles drive right through them as they miss the turn at Lookout Rd and 115th St.

Concerns: The portion of the property east of HWY 287 was mined for gravel in many areas. Mining began in the 1970's and was completed in 1994. Many of the soils within these formerly mined sites are severely depleted and lack any soil aggregate structure, organic matter, or productive forage base for grazing. Fields with these soils' characteristics include AD-13, AD-16, AD-18, AD-39, AD-40, and AD-31. Grazing on Alexander Dawson is complicated by the fence that excludes the restored area of the Lower Boulder Creek project which bisects the property. A property corner that was fenced after the flood and LBC project has complicated access to a part of the property north of the creek.

Bailey-Kenosha:

- 29.39 acres of irrigated cropland
- 3 acres of out of production (Quonset building)

The Bailey-Kenosha lease utilizes a small section of the property to the east of Coal Creek. These fields have been planted to alfalfa and are harvest as part of the tenants grass hay business. Fields have been planted to other small grains in the past and are utilized in the tenants crop rotation as needed. The Quonset building on the Bailey-Kenosha lease is part of the ag lease and used by the tenant to store ag equipment.

Concerns: Extensive soil erosion is taking place along the banks of Coal creek. Each year more of the fields fall away into the incised banks and curves in field BK-12.

Bailey Kenosha SW:

- 34.46 acres of introduced rangeland
- 2.3 acres of out of production

The property is 35 acres of dryland pasture that is grazed by horses throughout the year. This property has a history of gravel mining which leads to reduced forage due to poor top-soil.
Fences: Fair to good condition

Wheeler Ranch:

- 148.54 acres of irrigated cropland
- 7 acres of dryland grass
- 16.26 acres of out of production
- 49.11 acres of riparian

This 220 acre property is currently managed for cattle grazing and hay production. Cows calve during the winter and are rotated around the property until late May before they are moved off the property. Two cuttings of Grass hay are harvested each summer before the cows are brought back to the property in October. Cattle access the creeks as their water source when on the property.
Fencing: Poor to good. A few new fences built since the County purchase the property but most of the fences are in need of major repairs or replacement. Riparian fencing was severely damaged or destroyed during the flood. New riparian fencing is needed to better manage cattle operations within riparian corridor.
Concerns: Delivering irrigation water to the property is a major concern for the tenant and ag department. Russian olive removal has begun and will be large undertaking and drastically change the riparian area and its utilization for the tenant.

Wittemyer-Bailey: Includes Wittemyer Ponds & Bailey-Kenosha Ponds

- 29.1 acres or irrigated cropland
- 59.12 acres of introduced rangeland

The Wittemyer-Bailey lease is comprised of two separate properties. The Wittemyer Ponds property is 145 acres that is owned by the City of Boulder. In 1996, Boulder County acquired a conservation easement in exchange for consideration and agreements with the City of Boulder relative to the Caribou Ranch Open Space project. The Bailey Kenosha Ponds property is 35.4 acres. The property is managed for grazing cattle and grass hay. The property is used in rotation with the Wheeler Ranch property.
Fences: Fair to poor condition. Some of the perimeter fencing needs to be replacement.
Concerns: Water delivery through the property.

Wise:

- 27.65 acres of irrigated cropland
- 22.31 acres of dryland cropland
- 31.29 acres of wetland

The property has a long history of growing alfalfa but has grown a variety of crops as well. The property is short on irrigation water but has good sub-soil moisture levels.

A portion of the property has a dry up clause that is maintained by the City of Lafayette. While legally it cannot be irrigated, the entirety of the property is sub irrigated and suits well for alfalfa production.

Water and Water Rights

The properties within the management planning area include water rights associated with several irrigation ditches. The water rights at Bailey-Kenosha are used to offset the augmentation plan for the created wetland feature constructed during the reclamation of the mine—Kenosha Pond. Replacement and relocation of the Howell Ditch diversion structure is planned for 2023 and the potential for some collaborative opportunities between the City of Boulder (which has water storage reservoirs just north of Bailey-Kenosha) and Boulder County with respect to water improvements.

Irrigation water is supplied to properties within the project area from the following ditches:

1. Wheeler-east: Lower Boulder Ditch
2. Wheeler-west: Howell Ditch
3. Bailey Kenosha-east: Lower Boulder Ditch
4. Alexander Dawson-east: Boulder & Weld County Ditch
5. Alexander Dawson-west: Leggitt Ditch

Refer to Irrigation ditch map for ditch alignments, diversion points, and tailwater return flow areas.

The Boulder & Weld County Ditch conveys our Martha Matthews Ditch irrigation water which is used to augment the evaporative losses of the open water and wetlands at Kenosha Pond for which the irrigation water is conveyed to Coal Creek on the Bailey-Kenosha Ponds property either via direct pipeline to Coal Creek or through Kenosha Pond and then through that pond's outlet structure to Coal Creek. The county has been to water court over this augmentation plan which also includes compensation to Lafayette to make up the balance of the augmentation. This augmentation arrangement will need to continue on the property and be accommodated by any future management or public uses.

The county, City of Boulder, and Mile High Flood District are involved in an effort to repair the Howell Ditch on the Doniphan and Bailey Kenosha Ponds property. The ditch was damaged in the 2013 flood. It is a very old ditch with the number three priority on Boulder Creek. The county owns shares along with the City of Boulder.

The county has a close relationship with the City of Boulder at Wittemyer Ponds property just west of Wheeler Ranch. While the city uses the ponds for water storage and release purposes, the county oversees the surface management (related to the fact that the Wheeler family had a grazing/lease arrangement with the city prior to the county's purchase of the Wheeler Ranch property). There is potential to enlarge storage capacity at the site. As the city manages and plans for water storage projects, the county will be a participant in those planning efforts.

Many of the EBC site's ponds also supply water to the grazing operations. This is especially true on Alexander Dawson and Doniphan. The ponds on Alexander Dawson are very shallow and not likely suited to fisheries or public use. Doniphan property has considerable water infrastructure,

especially in its NE corner. This is being accounted for and repaired in the Howell Ditch Diversion project. The State Department of Water Resources has a water well record for Doniphan, but it has not been located on the property.

Some staff feel that past restoration projects have led to water table changes, especially on the east side of Alexander Dawson impacting corrals on the east side of the property. The Alexander Dawson property gets impacted by elevated water levels (below true flood stage). Areas south of the creek on the central and east portions especially. Some of the ground water on portions of Alexander Dawson is due to seepage from the Legget Ditch west of Highway 287. Staff noted that stream restoration and channel modification (re-meandering) previously occurred west of US 287 prior to the work on the east side of 109th Street.

Water Quality

The segments of both Boulder and Coal Creeks in the project area have EPA Clean Water Act 303(d) impairments for all classifications (Aquatic Life, Recreation, and Water Supply) except Agriculture. Boulder Creek has ammonia, arsenic, and E. coli readings above daily maximum limits. Coal Creek has E. coli, magnesium, and selenium amounts in excess of daily maximum limits.

https://cdphe.colorado.gov/impaired-waters