

Level 4 Potential Conservation Area (PCA) Report

Name Iceberg Lake

Site Code S.USCOHP*28178

IDENTIFIERS

Site ID 2710 Site Class PCA
 Site Alias None

Network of Conservation Areas (NCA)

<u>NCA Site ID</u>	<u>NCA Site Code</u>	<u>NCA Site Name</u>
-		No Data

LOCATORS

Nation United States Latitude 395305N
 State Colorado Longitude 1054059W

Quad Code Quad Name

39105-G6 Empire
 39105-H6 East Portal

County

Gilpin (CO)
 Grand (CO)

Watershed Code Watershed Name

14010001 Colorado headwaters
 10190005 St. Vrain

SITE DESCRIPTION

Minimum Elevation	10,840.00	Feet	3,304.03	Meters
Maximum Elevation	12,030.00	Feet	3,666.74	Meters

Site Description

Iceberg Lakes site is located on the east side of the Continental Divide in the James Peak Wilderness. The western border of the site is the Continental Divide, east-west trending ridges delineate the north and south boundaries of the site and the eastern boundary occurs where topography transitions from low gradient terraces to a steep valley walls. Valley trend is generally to the east but the glacially sculpted topography has created north- and south-trending hillslopes, ridges, and rocky outcrops. Glacial action and subsequent mass wasting of morainal material produced a landscape characterized by glacial cirques, arêtes, steep slopes, low-gradient benches, and terraces. This complexly sculpted landscape provides the template for the development of a diverse mosaic of ecosystems and natural communities. Ecosystems in the site include high elevation alpine tundra, krummholz and upper subalpine forests, each with a diversity of both upland and wetland habitats. Alpine zone ecosystems are an intricate mosaic of snowfields, rock cliffs, fellfields, willow carrs and turf meadows, talus and scree slopes with patterned ground intervene on steeper slopes, and slope and riparian wetlands. Fellfields are characterized by cushion plants including moss campion (*Silene acaulis*), alpine nailwort (*Paronychia pulvinata*) and alpine sandwort (*Arenaria obtusiloba*). Turf meadows are characterized by a variety of forbs and graminoids including tufted hairgrass (*Deschampsia caespitosa*), superturf (*Kobresia myosuroides*), alpine harebell (*Campanula uniflora*), and old-man-of-the-mountain (*Rydbergia grandiflora*) and, together with upland willow carrs, create a complex patchwork of plant communities that cover steep hillslopes. Upland willow carrs are typified by dense stands of bareground willow (*Salix brachycarpa*) with an understory characterized by a mix of graminoids and forbs including tufted hairgrass, superturf, alpine pussytoes (*Antennaria alpina*), and field chickweed (*Cerastium arvense*). Large patches of superturf occupy openings in the shrub canopy and increase patch diversity. Decreasing elevation is marked by a transition from alpine tundra ecosystems to krummholz stands of Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*) with exposed, rocky ridges occupied by bristlecone pine (*Pinus aristata*). Subalpine uplands are characterized by Engelmann spruce - subalpine fir forest. Openings in the forest canopy are characterized by herbaceous meadows, tarns and slope and depressional wetlands. A variety of wetland ecosystems, with a diversity of plant communities and species, occur in both alpine and subalpine ecosystems of this site occupying depressions, swales, low slopes, and the margins of lakes, tarns, and streams. Alpine wetland communities include willow-dominated fens, forb-dominated wet meadows and riparian zones and graminoid-dominated lacustrine wetlands. Willow (*Salix spp.*) dominated fens occur on a series of low-gradient, southeast-facing terraces located on lowslopes, at the base of the steep slopes that form the Continental Divide. These willow carrs are characterized by an association of planeleaf willow / bluejoint reedgrass (*S. planifolia* / *Calamagrostis canadensis*) and extend up onto adjacent hillslopes where

Level 4 Potential Conservation Area (PCA) Report

Name Iceberg Lake

Site Code S.USCOHP*28178

they are sustained by copious shallow surface and groundwater flow. Soils in the fens are saturated and hummocky with peat formation to 50 cm. Riparian and lacustrine wetlands are characterized by a linear mosaic of planeleaf willow/mesic forb communities and herbaceous vegetation dominated by communities of heartleaf bittercress - tall chiming bells - arrowleaf ragwort (*Cardamine cordifolia* - *Mertensia ciliata* - *Senecio triangularis*) herbaceous vegetation. Subalpine wetlands include herbaceous fens, forested and shrub wetlands, wet meadows, and riparian and lacustrine wetlands. Fens occur on low slopes and in depressions, often at the base of rock cliffs, and are characterized by graminoid communities dominated by few-flower spikerush (*Eleocharis quinqueflora*) and by mountain sedge / marsh marigold communities (*Carex scopulorum* / *Caltha leptosepala*). Other graminoids and forbs are typically also present and include species such as water sedge (*C. aquatilis*), small-head sedge (*C. illota*) and black alpine sedge (*C. nigricans*), elephantella (*Pedicularis groenlandica*), star gentian (*Swertia perennis*) and queen's crown (*Sedum rhodanthum*). Soils are saturated to inundated and contain accumulations of peat from 50 cm to 75 cm deep. Subalpine riparian plant communities are characterized by a lush and diverse cover of forbs with a mosaic of marsh marigold and heartleaf bittercress-tall chiming bells-arrowleaf ragwort herbaceous vegetation. Subalpine lacustrine wetlands include herbaceous and forested communities. Herbaceous lacustrine wetlands are a mosaic of forb and graminoid communities including heartleaf bittercress-tall chiming bluebells-arrowleaf ragwort, marsh marigold, and water sedge. Forested wetlands are characterized by communities of subalpine fir - Engelmann spruce / water sedge (*Abies lasiocarpa* - *Picea engelmannii* / *Carex aquatilis*). This diverse mosaic of upland and wetland, alpine and subalpine plant communities provides high quality breeding and foraging habitat for several avian and mammal species. Notable avian species present include White-tailed Ptarmigan (*Lagopus leucurus*), Pine Grosbeak (*Pinicola enucleator*), Golden-crowned Kinglet (*Regulus satrapa*) and Clark's Nutcracker (*Nucifraga columbiana*). Each of these bird species requires foraging and breeding resources that are only provided by intact, native plant communities. For instance, extensive willow carr habitat is essential for the survivability of White-tailed Ptarmigan; five-needled pines, such as bristlecone, provide an essential food resource for Clark's Nutcracker; and Pine Grosbeaks prefer to forage in open forests for seeds and buds and require very large, contiguous forested landscape to take advantage of fluctuating food supplies (Sibley 2001). Local wetland hydrology is strongly influenced by the interaction of climate and geomorphology. Glacial activity created the template for the formation of the tarns and wetlands that occur throughout the site and the interaction of climate and geomorphology provides the environmental characteristics that support the development of wetlands. Wetland hydrology in this site is strongly connected to shallow ground and surface water flow and snowmelt contributes the largest proportion of water to these wetlands through its influence on ground and surface water dynamics. Snowmelt interacts with local geomorphology to maintain high water tables in wet meadows, marshes, and fens and also exerts major control over riparian wetlands by influencing soil saturation characteristics (flooding frequency, duration, timing, and depth) that results from groundwater flow and out-of-bank flooding in the riparian zone (Rocchio 2005). Additionally, by releasing water throughout the growing season, these high altitude headwater wetlands make an important contribution to late summer flows in lower elevation streams. Importantly, these wetlands are the headwaters for numerous streams that flow through the site and are tributaries to South Boulder Creek. Geology of the surrounding ridges is primarily composed of Precambrian age metamorphic rocks that are derived principally from sedimentary rock. Rocks are comprised of biotitic gneiss, schist, and migmatite and locally contain minor hornblende gneiss, calc-silicate rock quartzite and marble (Tweto 1979). Soils on the rim of the Continental Divide are comprised of Bross-Matcher families-Lithic Cryorthents complex, 40 to 75 percent slopes. Steep slopes of alpine cirques are comprised of Cirque land, 40 to 150 percent slopes while soils on low slopes and in the basin of the cirque are Matcher family-Cryaquepts-Rock outcrop complex, 5 to 25 percent slopes. In the subalpine zone soils are primarily either Bross-Matcher families-Lithic Cryorthents complex, 5 to 40 percent slopes or Leighcan-Catamount families, moist-Rock outcrop complex, 40 to 150 percent slopes (USDA 2010).

Key Environmental Factors

Climate, hydrology, geology, and biota are key driving factors that have enabled the development and maintenance of the element plant communities and animal species present in the site. A natural hydrologic regime is essential to the sustainability of elements in this site. Especially essential to wetland and stream sustainability is shallow ground and surface water flow derived from the melting snowpack and, secondarily, out-of-bank streamflows.

Climate Description

Climate in Gilpin County varies dramatically with elevation, aspect, and time of year. Higher elevations to the north and west are colder and wetter than lower elevations to the east and south. Temperature and precipitation varies from east to west corresponding to elevation change. Average annual temperature and length of the growing season decrease as elevation increases while average annual precipitation increases. In general, temperatures decrease at a rate of approximately 3 °F for every thousand feet of elevation gain.

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Level 4 Potential Conservation Area (PCA) Report

Name Iceberg Lake

Site Code S.USCOHP*28178

Additionally, the pattern of precipitation distribution varies from the eastern to the western parts of the county. Western locations at higher elevations receive the majority of their precipitation during late winter and early spring while eastern locations receive the majority of their moisture during early spring and summer (Siemer 1977). The Iceberg Lake site is located in the most western part of the county at elevations between approximately 12,000 and 10,800 feet elevation. Mid elevations in this site received an average annual precipitation, from 1971 through 2000, of 34.85 inches; coldest temperatures occurred in January with an average maximum temperature of 23.83 degrees F and an average minimum of 4.03 °F; warmest temperatures occurred in July with an average maximum of 63.48 °F and an average minimum temperature of 38.59 °F (Prism 2010).

Land Use History

Although much of Gilpin County was impacted by mining exploration, most of the high elevations landscape near the Continental Divide, including this site, did not see mining exploration (Gilpin County 2010). The first humans to use the land in this site were likely Native Americans. Numerous sites in alpine ecosystems along the Continental Divide of the Front Range have been identified as Paleoindian and Prehistoric age game drive sites (Benedict 2005).

Cultural Features

Paleoindian to Prehistoric age Native American artifacts are potentially present (Gellhorn 2002).

SITE DESIGN

Site Map Y - Yes

Mapped Date 11/29/2010

Designer Malone, D.G.

Boundary Justification

The site was delineated to include ecological systems and processes that are essential to maintaining the communities as well as to provide a buffer against disturbance. Climate change was also considered in boundary delineation; alpine ecosystems are especially vulnerable and species that depend on tundra may disappear as alpine tundra diminishes with the advance of trees and shrubs (USFWS 2010). Hydrology is the primary process essential to long-term wetland plant community viability. Alpine/subalpine wetlands are often isolated hydrologically from other wetlands, and easily impacted by surrounding land use (Rondeau 2001). Thus maintaining an intact and unfragmented hydrologic regime is essential to element viability. The alpine and subalpine wetland plant communities in this site are reliant on water levels at or near the surface for much or all of the growing season (Rondeau 2001). Snowmelt from nearby surrounding ridges and slopes maintains abundant shallow ground and surface flow which contributes the primary source of water to depressional, slope and riparian wetlands.

Primary Area 1,609.73 Acres

651.44 Hectares

SITE SIGNIFICANCE

Biodiversity Significance Rank B4: Moderate Biodiversity Significance

Biodiversity Significance Comments

The site is drawn for the presence of a variety of wetlands. There are three fens characterized by excellent (A-ranked) occurrences of the state rare (G4/S2S3) planeleaf willow / bluejoint reedgrass (*Salix planifolia* / *Calamagrostis canadensis*) shrubland, an herbaceous fen which is characterized by an excellent (A-ranked) occurrence of the state vulnerable (G4/S3S4) few-flowered spikerush (*Eleocharis quinqueflora*) herbaceous vegetation, and a fair (C-ranked) occurrence of an apparently secure (G4/S4) planeleaf willow / marsh marigold (*Salix planifolia* / *Caltha leptosepala*) shrubland.

Other Values Rank No Data

Other Values Comments

Also observed in the alpine willow carr habitat is the globally/state secure (G5/S4) White-tailed Ptarmigan. Historical occurrences of yellow dotted alpine (*Erebia pawloskii*) and boreal toad (*Bufo boreas boreas*) also occur.

LAND MANAGEMENT ISSUES

Land Use Comments

No Data

Natural Hazard Comments

No Data

Level 4 Potential Conservation Area (PCA) Report

Name Iceberg Lake

Site Code S.USCOHP*28178

Exotics Comments

No Data

Offsite

No Data

Information Needs

Additional inventories are needed to identify and update the status of the historic and general records within and near this site.

ASSOCIATED ELEMENTS OF BIODIVERSITY

<u>Element</u>			<u>Global</u>	<u>State</u>	<u>Driving</u>
<u>State ID</u>	<u>State Scientific Name</u>	<u>State Common Name</u>	<u>Rank</u>	<u>Rank</u>	<u>Site Rank</u>
23155	<i>Eleocharis quinqueflora</i> Herbaceous Vegetation	Alpine Wetlands	G4	S3S4	Yes
24805	<i>Salix planifolia</i> / <i>Calamagrostis canadensis</i> Shrubland	Subalpine Riparian Willow Carr	G4	S2S3	Yes
24805	<i>Salix planifolia</i> / <i>Calamagrostis canadensis</i> Shrubland	Subalpine Riparian Willow Carr	G4	S2S3	Yes
24805	<i>Salix planifolia</i> / <i>Calamagrostis canadensis</i> Shrubland	Subalpine Riparian Willow Carr	G4	S2S3	Yes
24836	<i>Salix planifolia</i> / <i>Caltha leptosepala</i> Shrubland	Subalpine Riparian Willow Carr	G4	S4	No

REFERENCES

<u>Reference ID</u>	<u>Full Citation</u>
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196180	Sibley, D.A. 2001. The Sibley guide to bird life and behavior. Edited by Chris Elphick and John B. Dunning, Jr. National Audubon Society, Alfred A. Knopf, New York, NY.
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ADDITIONAL TOPICS

Additional Topics

No Data

VERSION

Version Date	11/29/2010
Version Author	Malone, D.G.

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Level 4 Potential Conservation Area (PCA) Report

Name Iceberg Lake

Site Code S.USCOHP*28178

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