

Level 4 Potential Conservation Area (PCA) Report

Name Hansen Bluffs Seeps

Site Code S.USCOHP*24712

IDENTIFIERS

Site ID 2090 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 372518N
 State Colorado Longitude 1054507W

Quad Code Quad Name

37105-D6 Baldy
 37105-D7 Alamosa East

County

Alamosa (CO)

Watershed Code Watershed Name

13010002 Alamosa-Trinchera

SITE DESCRIPTION

Minimum Elevation	7,500.00	Feet	2,286.00	Meters
Maximum Elevation	7,550.00	Feet	2,301.24	Meters

Site Description

This site encompasses the eastern portion of the Alamosa National Wildlife Refuge. Groundwater discharges at various locations along the base of Hansen Bluffs. These seeps support sedge meadows, some of which have developed organic soils (peat) and are considered fens. The presence of a fen at this low of an elevation is unusual for Colorado as most fens in Colorado occur above 9,000 ft. Some old channels and slough also exist in the site. Scientists call both fens and bogs "peatlands." Peatlands are wetlands with organic soils that consist of at least 12-18% organic-carbon content (by weight) (USDA 1994). They form where the rate of plant growth exceeds the rate of decomposition of litter. Both saturated soils and cool climates contribute to the conditions necessary for peatland formation. Peat accumulates slowly in all southern Rocky Mountain peatlands, anywhere from 4.3 to 16.2 inches per thousand years (Cooper 1990; Chimner and Cooper 2002). The slow accumulation rates suggest that fens cannot be restored to historic conditions after massive disturbance in any time period relevant to humans. Fens are peatlands that remain saturated primarily as a result of water percolating up from the ground with some contribution from surface water runoff. Peatlands are often classified along a chemical gradient (pH and concentration of cations such as Ca²⁺, Na⁺, K⁺, and Mg²⁺) (Cooper and Andrus 1994). The gradient is typically as follows: ombrotrophic bogs and poor fens are characterized by low pH and low cation concentration, whereas rich and extreme rich fens are characterized by high pH and high cation concentration. Most fens in Colorado would be considered "intermediate" or "rich" fens. The fen in this site falls within this category. These terms do not refer to the number of species in the wetland. They refer instead to the levels of nutrients (calcium, magnesium, etc.) in the water. The fen in this site is supported by groundwater discharge from the base of Hansen Bluff. Groundwater appears to be upwelling in numerous locations as indicated by small open pools of water, which proved to be deep when probed with a sharpshooter, scattered along the north and eastern boundaries of the fen. The fen also has a concave shape. Groundwater is associated with either the confined and/or unconfined aquifer of the San Luis Valley. Much of the perimeter of the fen was fairly dry, suggesting that groundwater pumping may be drying this site. The fen is characterized by analogue sedge (*Carex simulata*) occurring in the wettest areas where a floating mat has formed (the area is quacking). This is mostly near open pools of water where groundwater discharge is persistent. Nebraska sedge (*Carex nebrascensis*), beaked sedge (*C. utriculata*), slimstem reedgrass (*Calamagrostis stricta*), cattail (*Typha latifolia*), and hardstem bulrush (*Schoenoplectus acutus*) are also found near these areas. It is unclear why the latter two are established (e.g. excess nutrients, prior disturbance, or simply a nearby source for establishment) and if these species are increasing/decreasing. Further away from discharge points, water sedge (*Carex aquatilis*) and tufted hairgrass (*Deschampsia cespitosa*) dominate. Other species present include common spikerush (*Eleocharis palustris*), scratchgrass (*Muhlenbergia asperifolia*), threesquare (*Schoenoplectus pungens*), foxtail barley (*Hordeum jubatum*), ticklegrass (*Agrostis scabra*), rabbitfoot grass (*Polypogon monspeliensis*), silver weed (*Anserina argentea*), Canada thistle (*Cirsium arvense*), willowherb (*Epilobium leptophyllum*), Nuttall's sunflower (*Helianthus*

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nuttallii), dock (*Rumex triangulivalvis*), buyan (*Spaerophysa salsula*), checkermallow (*Sidalcea neomexicana*), water parsnip (*Sium suave*), white panicle aster (*Aster lanceolatus* var. *hesperius*), Lindley's aster (*Aster foliaceus*), and the infrequent northern bog aster (*Aster junciformis*). No shrubs occur in the fen. The sloughs are dominated by hardstem bulrush (*Scirpus acutus*), cattail (*Typha latifolia*), arrowhead (*Sagittaria cuneata*), mare's tail (*Hippuris vulgaris*), common spikerush (*Eleocharis palustris*), water ladysthumb (*Polygonum amphibium*), floating pondweed (*Potamogeton gramineus*), mare's tail, duckweed (*Lemna minor*), and giant bur-reed (*Sparganium eurycarpum* and American mannagrass (*Glyceria grandis*). Some hydrological alteration appears to have occurred as some peat areas are now dry. This is presumed to be from local groundwater pumping. Non-native species are low in abundance in fen, however are common along fringes of the fen. Past grazing activities may have contributed to presence of non-native species. Grazing occurred here in the past, however only deer and elk now use the site. Groundwater pumping, if proven to be drying this site, would need to cease to restore natural hydrology. Greasewood (*Sarcobatus vermiculatus*) and rabbitbrush (*Chrysothamnus nauseosus*) dominate upland areas while multiple wetland communities dominate the surrounding lowlands. Further west of the bluffs, the area is hydrologically associated with the Rio Grande and water management activities by the U.S. Fish and Wildlife Service. Although there is not much active management of wetland topography, the USFWS does manage water supply to many of the old river channels, oxbows, and basins in this portion of the floodplain (USFWS 2002). Many of these old river bottoms and managed areas are permanently saturated.

Key Environmental Factors

Groundwater. Peat accumulation.

Climate Description

No Data

Land Use History

Grazing.

Cultural Features

No Data

SITE DESIGN

Site Map Y - Yes

Mapped Date 05/04/2004

Designer Rocchio, F.J.

Boundary Justification

Boundaries incorporate those areas of groundwater discharge and adjacent areas to allow for dispersal and movement of vegetation. It should be noted that the hydrological processes necessary to the elements are not fully contained by the site boundaries. Additional research should identify critical areas to protect for groundwater recharge, as groundwater is critical to the viability of the elements in the site. This boundary indicates the minimum area that should be considered for any conservation management plan.

Primary Area 2,184.25 Acres

883.94 Hectares

SITE SIGNIFICANCE

Biodiversity Significance Rank B3: High Biodiversity Significance

Biodiversity Significance Comments

This site supports a fair (C-ranked) occurrence of a globally imperiled (G2G3/S2S3) plant species. The slender spiderflower (*Cleome multicaulis*) has a global range from southern Wyoming to central Mexico. The San Luis Valley contains the most numerous, largest, and healthiest populations in the world. Slender spiderflower has a limited distribution due to its requirement of moist alkaline soil along with periodic soil disturbance. These habitat requirements limit the slender spiderflower to the edges of alkaline wet meadows and playas. This site also supports a good (B-ranked) occurrence of a state vulnerable natural community (G4/S3). The state vulnerable (G4/S3) analogue sedge montane fen (*Carex simulata*) is known from Colorado, Idaho, Montana, Nevada, Oregon, Utah, Wyoming, and may possibly occur in California. It is commonly found with many other sedge species, but its presence is associated with deep organic soils and a perennially high water table. In addition to the above elements, this site has biodiversity significance due to the presence of a fen at a low elevation. Fens below 9,000 ft. are rare in Colorado. Another large fen is known to have occurred in the San Luis Valley at a similar elevation (Spring Creek Fen, on the Monte Vista National Wildlife Refuge) but it has been highly impacted by groundwater pumping and is no longer wet or even saturated. The fen at this site may be one of the lowest occurring fens in Colorado.

Other Values Rank No Data

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Other Values Comments

No Data

LAND MANAGEMENT ISSUES

Land Use Comments

[Rocchio 2004:] Recreation (mostly hunting, education, and bird watching) is the dominant use of the Refuge. The impact of local and regional groundwater pumping on groundwater discharge at this site should be researched as changes in upstream water use have the potential to affect the integrity of the elements at this site.

Natural Hazard Comments

No Data

Exotics Comments

No Data

Offsite

No Data

Information Needs

No Data

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>
18080	<i>Cleome multicaulis</i>	slender spiderflower	G2G3	S2S3	Yes
16887	<i>Carex simulata</i> Herbaceous Vegetation	Wet Meadow	G4	S3	No

REFERENCES

<u>Reference ID</u>	<u>Full Citation</u>
184708	Chimner, R.A. and D.J. Cooper. 2002. Modeling carbon accumulation in Rocky Mountain fens. Wetlands 22: 100-110.
184694	Cooper, D. J. and R. Andrus. 1994. Peatlands of the west-central Wind River Range, Wyoming: Vegetation, flora and water chemistry. Canadian Journal of Botany 72: 1586-1597.
159769	Cooper, D.J. 1990. An evaluation of the effects of peat mining on wetlands in Park County, Colorado. Unpublished report prepared for Park County, Colorado. 31 pp.
184706	Rocchio, J. 2004. Final Report: Survey of Critical Wetlands and Riparian Areas in Southern Alamosa and Costilla Counties, San Luis Valley, Colorado. Colorado Natural Heritage Program, Fort Collins, CO.
184703	United State Department of Agriculture (USDA). 1994. Keys to Soil Taxonomy. Soil Survey Staff, Soil Conservation Service, U.S. Department of Agriculture. Sixth Edition. Pocahontas Press, Inc. Blacksburg, Virginia.
184704	United States Fish and Wildlife Service (USFWS). 2002. Alamosa - Monte Vista National Wildlife Refuge Complex: Draft Comprehensive Conservation Plan and Environmental Assessment. Alamosa - Monte Vista National Wildlife Refuge Complex, Alamosa, CO 81101.

ADDITIONAL TOPICS

Additional Topics

No Data

VERSION

Version Date	05/04/2004
Version Author	Rocchio, F.J.

Disclaimer

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