City of Boulder
Open Space and Mountain Parks

West Trail Study Area
Cultural Resource Inventory Report

Final Draft
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List of Acronyms

BSOs Buildings, Structures, or Objects
BRC Boulder Revised Code
CCC Civilian Conservation Corps
COB City of Boulder
CRM Cultural Resource Management
MOU Memorandum of Understanding
NHRP National Register of Historic Places
OSMP Open Space and Mountain Parks
TSA Trail Study Area
UTC United Tribes of Colorado
VMP Visitor Master Plan

Introduction

People have lived on and enjoyed the lands of Open Space and Mountain Parks (OSMP) West TSA for thousands of years. Their stories and the evidence they've left behind are what Cultural Resources is all about. Cultural Resources promotes the study and appreciation of people through the ages and their effect on the land as well as the preservation of historic structures and archaeological sites. Cultural Resources also includes the study of paleontology, which includes organic and mineralized remains of prehistoric life. This wide variety of resources creates a fascinating backdrop for people who enjoy the lands of the West TSA. The cultural resource inventory is composed of four categories:

- Paleontological Sites and Features
- Aboriginal Archaeological Sites
- Historic Archaeological Sites
- Historic Buildings, Structures and Objects (BSOs)

Information for the aboriginal and historical archaeological sites and historic buildings, structures and objects was derived from inventories/studies done in 1993, 1995 and 1998. These inventories include:

- Cultural Resource Inventory of the Contiguous Boulder Mountain Parks (95')
- Mount Sanitas and Related Parcels (98')
- Bear Creek to South Boulder Creek (93')

Current condition assessments were performed in 2009 and are those conditions described in this survey.

Paleontological sites and features include organic and mineralized remains in body or track form. A current paleontological study of the lands of West TSA was conducted in 2009 by SWCA Environmental Consultants of Broomfield. The results of the survey are annotated in this survey.

Aboriginal archaeological sites include prehistoric and historic sites and artifacts which represent human activity from before history recorded to approximately1600 to 1800 A.D. The oldest artifact found within the West TSA is a Cody Complex arrowhead left by bison hunting peoples. It is between 6 and 7,000 years old.

Historical archaeological sites are either where BSOs once stood and are no longer extant or could be present near BSOs that are still extant. They could also be areas where human activity took place, like quarries and mines. There are several sites that are both archaeological sites and BSOs because both exist at the site. There are some potentially interesting sites within the West TSA, including a Civilian Conservation Corps (CCC) camp, mine pits and quarries as well as homestead trash pits and dumps (known as middens to archaeologists).

Historic Buildings, Structures and Objects (BSOs) are buildings, structures and objects constructed by humans. A building is a resource created principally to shelter any forms of human activity, like a house or barn. A structure is built for purposes other than creating shelter, such as a bridge or rock wall. Historic objects could include, but are not limited to, construction which is primarily artistic in nature or small scale, like a statue or milepost. The West TSA is home to a wide variety of BSOs which tells many stories about the settlement of the area. Some examples include homestead houses that represent our agricultural history like the Dunn House near South Mesa Trailhead and the recreational buildings built by the CCC. Some BSOs are available for use by visitors, like the Sunrise Amphitheatre, constructed by the CCC in 1934 and the Stone Shelter, constructed by the Lions Club in 1933. Some BSOs stand near popular trails and present interesting interpretive opportunities, like the Dunn Homestead (circa 1874), McGilvery (ranch house/summer residence circa 1900) and Schoolmarm's Cabins (summer residence circa 1890-1900).

The inventory also addresses condition of resources and identifies resources within 100 feet of a trail. Conditions of the resources will be classified as they are in the Colorado Management Data Survey Form (Appendix A). Condition assessments are subjective decisions made by the surveyor concerning the general condition of the site. Most sites will be either architectural/structural or archaeological/paleontological. In some cases, for instance where historical archaeology exists near structures, both categories will be rated.

a. Architectural/Structural	b. Archaeological/Paleontological
_____ Excellent	_____ Undisturbed
_____ Good	_____ Light disturbance
_____ Fair	_____ Moderate disturbance
_____ Deteriorated	_____ Heavy disturbance
_____ Ruins	_____ Total disturbance

Precise definitions and standards for conditions are left to the surveyor on site. Many historic preservationists use the following guidelines when assessing a site's condition:

- Excellent: no repairs needed, perhaps some routine maintenance;
- Good: some minor repairs needed, cleaning and/or maintenance;
- Fair: obvious repairs needed, cleaning and maintenance;
- Deteriorated: anything that has been exposed to the elements and is inferior to the original condition – can be used with any of the terms above to describe specific conditions;
- Ruins: a structure that no longer has a use and will only be preserved "as is."

The condition of archaeological sites is generally based on the amount of loss to the scientific community due to disturbance of a site. For instance, a site with only "light disturbance" may offer a great deal of information to the researchers, where a site with "heavy" or "total" has probably lost its ability to contribute to scientific research. Resources within 100 feet of a trail have been identified so we can determine if there is an increased risk of deterioration or disturbance of the resource. According to the Visitor Master Plan (VMP), "The 100 feet distance was selected as a "reasonable distance"

within which nearby resources were most likely to be affected by visitor use. The distance was arrived at subjectively after assessing a variety of buffer widths." (Review of Cultural Resources, Visitor Plan Development, p. 4). It is hypothesized that resources within 100 feet of a trail or visitor use area are at heightened risk of damage including, but not limited to:

- Paleontological and archaeological sites may incur damage due to trail use, collection or vandalism. For instance, the Antiquities Act of 1906 was enacted because it was discovered that antiquities collectors and dealers were robbing the lands around Mesa Verde and selling their wares all over the world;
- Historic buildings, structures and objects can also be vandalized or destroyed. Most of the buildings and structures on OSMP lands have graffiti or other vandalism to varying degrees. After the Morse Well on Flagstaff Summit was vandalized the City of Boulder closed the well permanently.

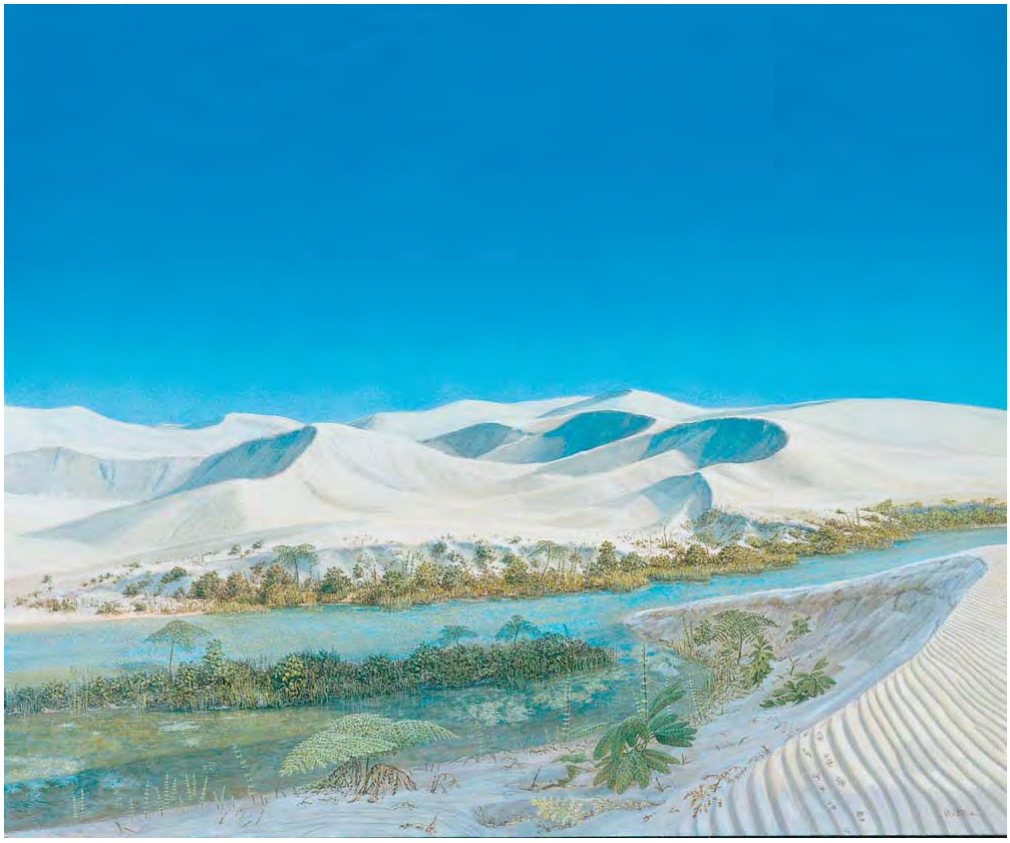
Knowing the proximity of a resource to the trail can also assist in developing an interpretive plan for the system. Those resources near trails can be interpreted and enjoyed without necessitating new trails or creating social trails.

Map 1 is of Historic Structures in the West TSA and includes only BSOs. Precise archaeological site locations are not mapped, per the City of Boulder's Memorandums of Understandings with United Tribes of Colorado and State Office of Archaeology and Historic Preservation.

Map 2: Paleontology map (provide link to Sarah)

Target: Paleontological Sites and Features

Paleontological sites and features include organic and mineralized remains in body or track form. According to Open Space Long Range Management Policies, (COB OS 1995), paleontological resources will be protected and preserved for educational and scientific purposes in accordance with management plans and scientific research programs. Paleontological resources are also protected under Colorado Statue CRS 24-80-401-411, whereby permits approved by the State Archaeologist are required for the "investigation, excavation, gathering or removal of the natural state of any historical, prehistorical and archaeological resource within the state."



Lyons Sandstone period

Summary Statistics:
Survey conducted in 2009 by SWCA Environmental Consultants.

12 sites surveyed:
Good condition: 2
Fair condition: 4
Poor to Very Poor condition: 6

- *Direct, indirect, and cumulative impacts on paleontological resources resulting from trail construction and other related developments are anticipated to be insignificant, because 1) no scientifically significant fossils (as defined herein) were identified during the field survey, 2) the fossils from previously recorded fossil localities have been collected and are preserved in museums, and 3) the level of anticipated surface disturbance is anticipated to be minimal. Nevertheless, because the locations of subsurface fossils are unknown and fossils weather out of rock matrix onto the ground surface over time, it is possible that scientifically important fossils do occur within the Boulder West TSA and could even be unearthed during minor surface-disturbing activities. If any subsurface bones or other potential fossils are discovered anywhere within the study area, a qualified and Colorado State permitted paleontologist should be consulted to assess the discovery and make further recommendations.*
(Murphey & Browne, September 14, 2009, p. 41)

Indicator: Undisturbed paleontologcal sites and features
The indicator for this target will be the percentage of paleontological sites and features which remain in "Undisturbed" condition. (Sites disturbed due to research conducted with a licensed paleontologist and with a permit from the State Archaeologist will not be considered when measuring "undisturbed" sites.) Disturbance includes deliberate actions such as looting and construction of trails which may potentially destroy resources and/or expose sites to looting and vandalism.

Inventory:

090616-PCM-01: Poorly preserved tridactyl track on sandstone overhang. Dakota Group geologic unit. Significance: Not significant. Preservation: Heavy disturbance (poor condition).

090617-PCM-01: Bivavles. Niobrara Formation; Significance: Not significant: Preservation: Heavy disturbance (poor condition) .

090617-PCM-02: Invertebrate burrows: Dakota Group. Significance: Not significant: Preservation: Moderate disturbance (Fair condition).

090617-PCM-03: Unidentifiable bone fragment: Morrison Formation: Significance: Not significant; Preservation: Heavy disturbance (Poor condition).

090617-PCM-04: Burrows and small scale ripple marks. Lyons Sandstone. Significance: Not significant; Preservation: Moderate disturbance (Fair condition).

090617-PCM-05: Stromatolitic limestone. Forelle Limestone Member of the Lykins Formation; Significance: Not significant; Preservation: Light disturbance (Good condition).

090617-PCM-06: Possible trackway; Lyons Sandstone. Significance: not significant; Preservation: Heavy disturbance: (too poorly preserved to permit a definitive identification).

090617-PCM-07: External bivalve molds and plant impressions. Dakota Group: Significance: Not significant: Preservation: Total disturbance (Very poor condition).

090617-PCM-08: Plant hash. Dakota Group. Significance: Not significant. Preservation: Heavy disturbance (Poor condition).

090618-PCM-01: Invertebrate burrows. Lyons sandstone. Significance: Not significant. Preservation: Moderate disturbance (Fair condition).

090618-PCM-02: Bivalves. Niobrara Formation. Significance: Not significant. Preservation: Moderate disturbance (Fair condition).

090724-LSB-01: Plant hash and abundant bivalves; Niobrara Formation. Significance: Important. Preservation: Light disturbance (Good condition).

Target: Aboriginal Archaeological Sites

Summary Statistics:

Total known aboriginal sites on the system (fee properties): 1
Total known aboriginal sites within 100 feet of visitor infrastructure: 1
(The 100-foot distance was selected as a "reasonable distance" within which nearby resources were most likely to be affected by visitor use.)
Total known aboriginal isolated finds on the system: 13

Aboriginal sites include sites and artifacts such as gaming walls and arrowheads. All prehistoric and aboriginal archaeological sites, isolated finds and artifacts are protected by the Memorandum of Understanding (MOU) between OSMP and the United Tribes of Colorado (UTC) adopted in 2002. Further protection of these resources is provided by Colorado Statute CRS 24-80-401-41. They are also protected by City of Boulder Revised Code 5-4-2 which prohibits removal or damage of public property. According to the MOUs with State Office of Historic and Archaeology and United Tribes of Colorado, the locations of aboriginal prehistoric archaeological sites are protected information and cannot be divulged to the public. However, the following information is available. Numbers assigned to sites are "State Site Numbers" assigned by the Colorado Historical Society Office or Archaeology and Historic Preservation.

Bear Creek to South Boulder Creek
Latest inventory completed 1993
5BL3882 One (1) site and **three (3) isolated finds** in the Bear Creek to South Boulder Creek project area are aboriginal prehistoric resources. A lack of diagnostic artifacts prevents their assignment to specific temporal periods. A small corner-notched point is likely from the Ceramic Period, ca. A.D. 1 to 1540, or the Protohistoric/Historic Period, ca A.D. 1600 to 1800. One point dates to the Cody Complex of the Paleo-Indian Period, ca. 6000-7000 B.C. and is particularly interesting in view of its antiquity. There is a distinct possibility that isolated finds identified as hunting blinds may be aboriginal in origin, but further research, including test excavations, must be conducted before determination can be made. Moderate disturbance.

OSMP lands were home to aboriginal peoples like Cheyenne and Southern Arapahoe

Within 100 feet of visitor infrastructure.

Contiguous Boulder Mountain Parks
Latest survey conducted 1995
Nine (9) isolated finds in the Boulder Mountain Parks project area were found.

58L4953 is a biface fragment made from a smooth steel-grey chert with white amorphous inclusions. This very fragmented artifact may have been burned or heat treated. The fragment measures 13 mm wide, 17 mm long and 3 mm thick.

5BL4954 is a Late Prehistoric projectile point made from red chert with dark irregular inclusions. The point measures 13.1 mm across the base, 18.2 mm long, and 3.2 mm thick. The base of the point is underground.

5BL4959 is a projectile point made from white mottled chert with macrocrystalline inclusions. This appears to be an archaic point predating A.D. 500.

5BL4962 is a scraper made from a rootbeer-yellow chert with discrete macrocrystalline inclusions. The distal edge of the dorsal surface has been modified.

5BL4960, 5BL4961, 5BL4987 and **5BL4994** are tertiary lithic flakes between1 and 4 cm across. Material types include pink and white chert, red banded quartzite, and red chert. Isolated find BL54960 appears to have been modified or utilized.

5BL5004 is a projectile point located by park visitor in September 1991. The artifact has been identified as a Hog Back Corner-notched point.

Mount Sanitas and Related Parcels
Latest survey conducted 1998
5BL4238 One (1) isolated find, consisting of three fragments of groundstone. All are of pink tabular sandstone (probably Lyons formation) and all show grinding on one side only.

Attribute: Lack of human disturbance
Deliberate actions taken by humans, including looting, vandalism and construction can degrade or demolish a site. Depending upon the level of destruction, the potential for scientific research of a site or artifacts can be limited or/and destroyed completely.
Undisturbed: no disturbance
Light disturbance: some partial disturbance has occurred but site is basically in tact
Moderate disturbance: site is partially lost to science but scientific research can still occur
Heavy disturbance: most scientific research potential has been lost
Total: all potential for scientific research has been lost

Indicator: Percentage of sites and isolated finds in undisturbed condition
It is preferable that sites and finds are not disturbed by humans as disturbances degrade resources and deny future generations the opportunity to conduct educational and

scientific research. Therefore, the indicator for this target will be the percentage of sites and finds which remain in “undisturbed” condition. Disturbance includes deliberate actions such as looting and construction of trails which may potentially destroy resources and/or expose sites to looting and vandalism.

Target: Historic Archaeological Sites

Summary Statistics:

Total historic archaeological sites: 38
Total historic archaeological sites within 100 feet of visitor infrastructure: 19
(The 100-foot distance was selected as a "reasonable distance" within which nearby resources were most likely to be affected by visitor use.)

Historic archaeological sites are manifestations of Euro-American settlement within the West TSA. Such sites which have revealed or are likely to reveal important information about our history are scattered throughout the West TSA. It is possible that new sites, features and isolated finds would be discovered during trail improvement or construction.

According to the COB Open Space Long Range Management Policies, archaeological resources will be left undisturbed unless removal of artifacts or digging in the site is justified by the need for protection. The location of historical archaeological resources is protected in the 2003 MOU between OSMP and the State Office of Archaeology and Historic Preservation. The inventory list below is based on reports completed in (1993, 1995, and 1998). Numbers assigned to sites are "State Site Numbers" assigned by the Colorado Historical Society Office or Archaeology and Historic Preservation.

Mount Sanitas and Related Parcels

5BL4171 Historic habitation, no condition recorded. **Within 100 feet of visitor infrastructure (Sanitas Valley Trail)**

5BL4178 Historic artifacts and features, no condition recorded: **Within 100 feet of visitor infrastructure (Sanitas Valley Trail)**

5BL4179 Historic artifacts and features, no condition recorded: **Within 100 feet of visitor infrastructure (along Silver Lake Ditch)**

5BL4177 Partially reclaimed trash dump, Heavy disturbance: **Within 100 feet of visitor infrastructure (north portion near Mt. Sanitas Trailhead shelter)**

5BL6199.2 Boulder Colorado Sanitarium Dairy: The Sanitarium Dairy was a part of the Boulder Sanitarium complex, built by Seventh Day Adventists in 1895-97. **Within 100 feet of visitor infrastructure (Mapleton Center parking lot).**

Contiguous Boulder Mountain Parks

5BL4930 Civilian Conservation Corps Camp, Heavy disturbance: **Within 100 feet of visitor infrastructure. (Baseline Trail runs through it)**

5BL4931 Mesa Skip Slope, Heavy disturbance.

5BL4937 Historic Artifact Scatter, Total disturbance.

5BL4950 Sawmill Site, Ruined condition.

5BL4951 Historic Scatter, Ruined condition.

5BL4981 Mine Pits and Features, Heavy disturbance.

5BL5005 Historic Walls and Foundation, Moderate disturbance.

5BL4933 (Settlers Park Quarry), 5BL4936 (Woods Bergheim Quarry), 5BL4943 (Anderson Quarry) and 5BL4949 (Third Flatirons Quarry) are potentially contributing elements to a non-contiguous historic district based on sandstone quarrying. Their role in sandstone quarrying in relation to other quarries along the Front Range would have to be ascertained. The sites were deemed not eligible for inclusion on the National Register of Historic Places (NHRP) as their structural or associational integrity has been impaired or destroyed or do not appear to contain archaeological deposits sufficient to yield data important to study of history. All in Ruined condition. **All within 100 feet of visitor infrastructure.**

Three (3) sites in the area have some slight archaeological potential and should be protected from looting or other disturbance.
5BL4945 Gregory Canyon Homesite, Ruined condition.
5BL4946 Upper Bear Canyon Cabin, Ruined condition.
5BL4947 Lower Bear Canyon Cabin, Ruined condition.

5BL5005 Settlers Park Foundation: site consists of stone walls and apparent foundation. History of buildings is unknown. They may have had something to do wtih a famous fruit and vegetable garden in the 1880s or with the sandstone quarry which is directly north of the site. Moderate disturbance (downgraded in 2009 from Structure: Ruined condition to Historic archaeological site.)

Bear Creek to South Boulder Creek Project Area

5BL3880 Rodeo Riders Camp: fragments of stone walls, foundation and low rock walls are extant. Circa 1920=1940. Within 100 feet of infrastructure. Moderate disturbance (downgraded in 2009 from Structure; Ruined condition: to historic archaeological site).

5BL3881 Unnamed single small stone enclosure: Period of significance 1920-1940. Within 100 feet of visitor infrastructure (North Fork Shanahan Trail). Heavy disturbance (reclassified from Ruined condition structure in 2009).

5BL3993 Manchester Family Homesite: Only stone foundations and low rock walls extant. Circa 1906-1920. Within 100 feet of infrastructure. Moderate disturbance (reclassified from Structure: Ruined condition to historic archaeology in 2009).

5BL3884 Unnamed site: related to agriculture, period of significance 1860-1029. Within 100 feet of infrastructure (Big Bluestem Trail). Heavy disturbance (reclassified from Ruined structure in 2009).

5BL3885 Unnamed site: related to agriculture, only stone foundations and low rock walls remain. Period of significance 1860-1029. Within 100 feet of infrastructure (Big Bluestem Trail). Heavy disturbance (reclassified from Ruined structure in 2009).

5BL3886 Unnmaed site: related to agriculture. Evidence of three structures remains. Period of significance 1860-1889. Within 100 feet of infrastructure (north of South Boulder Creek Trail). Heavy disturbance (reclassified from Ruined structure in 2009).

5BL3887 Unnamed site: related to agriculture: Evidence of three structures remains. Period of significance 1860-1920. Within 100 feet of visitor infrastructure (Big Bluestem Trail). Moderate disturbance. (Reclassified from Ruined structure in 2009).

5BL3895 small historic site consisting of remains of one structure and one feature. Function of site remains unknown due to the absence of artifacts or identifiable features. Heavy disturbance.

5BL3896 historic trash dump located on the grade of the Denver and Interurban Railroad (5BL400). Site consists of small scatter of historic artifacts and broken sandstone slabs. The Denver and Interurban Railroad (5BL400) was in operation between 1908 and 1926 and assuming material has not been redeposited, the site probably dates to sometime soon after the abandonment of the line. Light disturbance. **Within 100 feet of visitor infrastructure (south of South Boulder Creek Trail).**

5BL3897 is a historic home site, consisting of stone and cement dugout building, well and rock and cement alignments. Heavy disturbance. **Within 100 feet of visitor infrastructure (south of South Boulder Creek Trail).**

5BL 2719 Dugout associated with the Goodhue Ditch which was constructed in the 1860s. Dugout building appears to have been excavated into the bank of the ditch. No condition recorded.

5BL3898 Schoolmarm's Cabin, a historic home site consisting of ruins of cabin and other associated structures and features. This site also contains an historic building and structure. Moderate disturbance. **Within 100 feet of visitor infrastructure (Mesa Trail).**

5BL3899 Brammeier Home Site consists of ruins of log cabin and associated stone fences and buildings. Site is bisected by recreational trail. Site also contains historic structure. Moderate disturbance. **Within 100 feet of visitor infrastructure (Big Bluestem Trail).**

5BL3900 is **a historic home site consisting of a dugout structure, depressions, fences and foundations.** Heavy disturbance.

5BL3901 enigmatic historic site consisting of three stone walled structures. A recreational trail passes nearby to the south of the site. Heavy disturbance. **Within 100 feet of visitor infrastructure (adjacent to South Shanahan Trail).**

5BL3902 possible historic rockshelter with associated rock alignments. This site is located above the McGilvery Cabin (5BL3459) and may have been built by children from this cabin. Light disturbance. **Within 100 feet of visitor infrastructure (Shadow Canyon Trail).**

5BL3903 rockshelter with stone walls built under overhanging boulder. There are at least two chambers within the enclosed space that show signs of human occupation, including modern trash, shelves, fireplace and a ledge inside the shelter. Moderate disturbance. **Within 100 feet of visitor infrastructure (Shadow Canyon Trail).**

5BL3905 is a sandstone quarry connected to 5BL3904. Light disturbance. **Within 100 feet of visitor infrastructure (west of Mesa Trail at junction with Big Bluestem Trail).**

Target Historic Buildings, Structures and Objects

Summary Statistics:

2009 Survey results:
Total historic buildings, structures and objects: 40
Condition:

Excellent:	2
Good:	23
Fair:	3
Deteriorated:	6
Ruins:	6

(15 sites previously recorded in 1993, 1995, and 1997 as being in "Ruined" condition were moved in 2009 to Historic Archaeology Target.)
Total historic BSOs that serve as visitor infrastructure or sites within 100 feet of visitor infrastructure: 30

Historic buildings, structures, objects (BSOs) are cultural resources constructed by humans that are currently extant (present on the system). They can reveal a great deal about past human activity and the environment. A building is a resource created principally to shelter any forms of human activity, such as a house. A structure is built for purposes other than creating shelter, such as a bridge or rock wall. Historic objects

could include, but are not limited to, construction which is primarily artistic in nature or small scale, such as a statue or milepost. Lands in the West TSA have provided a backdrop for construction since before the Homestead Act of 1862. It is home to a wide variety of historic BSOs including rock walls built in 1893, summer cabins built at the turn of the century and recreational shelters constructed by the Civilian Conservation Corps (CCC) in the 1930s. These vestiges of our past serve as educational tools as well as aesthetic backdrops for visitors who recreate on OSMP. Such a variety of buildings, structures and objects also will require a variety of preservation decisions and techniques to enhance the West TSA visitor experience.

The following inventory information has been collected from surveys conducted in 1993, 1995 and 1998 and updated with current condition assessments in 2009. Numbers assigned to sites are "State Site Numbers" assigned by the Colorado Historical Society Office or Archaeology and Historic Preservation.

Historic Buildings: Bear Creek to South Boulder Creek

5BL3459 McGilvery Cabin: Log dwelling (circa 1870-1885) with later frame addition (circa 1917). Frame addition faced with board and batten siding. Associated structures include corral, outhouse and midden pile. Deteriorated condition. Within 100 feet of visitor infrastructure (Shadow Canyon Trail).

5BL3812 Stockton Cabin Site: cabin (circa 1890-1910), one room frame dwelling. Associated structure: one outhouse. Deteriorated condition**.** Within 100 feet of visitor infrastructure (Shadow Canyon Trail).

5BL3863 Doudy-DeBacker-Dunn Homestead: Standing house in good shape, modern roof covers the roof built in 1880s. Within 100 feet of visitor infrastructure (South Mesa Trailhead).

5BL3864 DeBacker-Blake-Hedgecock Homestead: Nine (9) buildings in good condition:

Building 1: log barn, constructed 1859;
Building 2: two room building, vertical planks and square cut nails. One room is a granary, another a blacksmith shop. Circa 1890.
Building 3: Chicken coop, dressed stone and cement, rough cut lumber. The date "1892" is incised in stone on the building. Good condition.
Building 4: milk house/summer kitchen of dressed stone and cement, "1896" incised in stone. Good condition;
Building 5: ice house, coursed dressed stone and cement. Built 1896 (incised on building). Good condition;
Building 6 and 7: include portions of large stone barn built 1913, burned down 1958. Building 6 rocked wall garage, undressed stone. Building 7 is hayshed diary barn, built 1913. Good condition;
Building 8: calf shed abutting building 8 on west. Probably built 1913. Good ` condition;

Building 9: house, 1 ½ story brick building built 1918, dormer and room added 1958. Good condition.

5BL3883 Manchester Family Homesite: Only stone foundations and low rock walls remain. Circa 1906-1912. Ruined condition. Within 100 feet of visitor infrastructure (Big Bluestem Trail).

5BL3898 Schoolmarm's Cabin, circa 1920s. Site consists of three fallen structures, three rock alignments representing fences or walls, an open but dry well or cistern, light scatter of historic trash and possible remains of an outhouse. All in ruined or deteriorated condition. Within 100 feet of visitor infrastructure (along Mesa Trail). This resource is also identified in the previous Historical Archaeology section.

5BL3899 Brammeier Home Site, circa 1895 to 1902. Consists of cabin and associated fences and buildings. Structure 1 is collapsed log cabin. Structure 2 collapsed log and stone structure. Structure 3 stone walls made of local field cobbles with no mortar apparent. Wooden doro frame leans inward to south end. North wall has collapsed inward. Structure is heavily overgrown with sumac. Structure 4 collapsed or never completed. Structure 5 walls of sandstone cobbles, collapsed. Feature 1 short rock fence or wall. Feature 2 rock alignment. Feature 3 short rock alignment. Feature 4 walls constructed of rounded cobbles and sandstone slabs. Feature 5 rock wall. Within 100 feet of visitor infrastructure (Big Bluestem Trail). This resource is also identified in the previous Historical Archaeology section.

Historic structures: Bear Creek to South Boulder Creek

5BL3865 South Boulder Foothills Ditch, circa 1883. Abandoned 1988. Ditch began on South Boulder Creek and appears to have been filler ditch for Viele Lake. Fair condition. Within 100 feet of visitor infrastructure (Homestead, Towhee, Mesa, South Boulder Creek, Big Bluestem Trails all cross Ditch).

5BL3866 Lafayette Water Pipeline. Pipeline rights-of-way granted 1928. Pipeline is still active. Three relief hatches are present in the South Mesa Trailhead project area. Good condition;

5BL3925 Bear Canyon Trail. Trail passes through the Bear Canyon Creek valley between Green Mountain and Bear Peak. Valley is fairly steep. Trail ends at Flagstaff Road near Kossler Lake. Originally built in 1861 or 1862. It was constructed to provide access to the newly opened gold mines at Central City and Black Hawk. Good condition;

5BL3927 Shadow Canyon Trail. Trail starts from two places on the Mesa Trail. These two forks join in Shadow Canyon. The trail follows the canyon up to a saddle between South Boulder and Bear Peaks. The southern fork of the trail is an old road bed that leads up to the Stockton Cabin. Good condition. Built sometime prior to 1928.

5BL3926 Fern Canyon Trail. Trail starts from the Mesa Trail on a saddle of the Dakota Hogback. It contours over to Fern Canyon, then moves up the canyon to a saddle below the summit of Bear Peak. It then follows the north ridge to the summit. It was originally part of a transportation network before being used as a recreational trail. Built prior to 1926. Good condition.

5BL3924 Mesa Trail. Trail connects Chautauqua Park to Eldorado Springs, circa 1923. Trail incorporated a number of older roads and trails. About 200 cairns were built along the trail. Many cairns, both standing and toppled , were noted along the trail during the survey, many of these had sufficient lichen growth to suggest they may have been built circa 1923. Good condition.

Historic Structures: Mount Sanitas and Related Parcels

5BL4175 Tomlinson/McCoy Lime Kiln and Quarry: limestone quarry trench excavated into the hillside with earthen mounds piled on both sides. This is the historic location of lime kin, remnants of which can still be found against steep slope below and northeast of the quarry area. Period of significance 1898-1910. Both in Deteriorated condition. Within 100 feet of visitor infrastructure (along View Point Trail).

5BL6199.3 Boulder Colorado Sanitarium Cistern: cistern related to Boulder-Colorado Sanitarium built 1895-97 by the Seventh Day Adventists. The cistern is constructed of cut sandstone with cement mortar walls. Deteriorated condition. Within 100 feet of visitor infrastructure (Mapleton Center parking lot near access trail).

5BL4182 Red Rocks Reservoir and Town of Boulder Ditch: The old ditch, actually a buried 8 inch cast iron pipeline, is still visible and easily traced. Extends along hillside above the north bank of Boulder Creek. The ditch supplied water to the Red Rocks Reservoir which was located south of Red Rocks about halfway between the Farmers and Silver Lake Ditches. Red Rocks Reservoir was abandoned circa 1906. Location of the reservoir was developed as the Glen Crosley Silver Fox Farm in the 1940s (nothing remains of it today). The buried pipeline is still present and although disturbed in a few small sections, the stacked stone retaining walls are still present in a few locations. Deteriorated condition. Within 100 feet of visitor infrastructure (north of Settlers Park with ditch extending to west).

5BL4173 Mount Sanitas Sandstone Quarries: site contains series of abandoned sandstone quarry cuts, interconnecting roads and other features. Ruined condition. Within 100 feet of visitor infrastructure (East Ridge Trail crosses site, Sanitas Valley Trail is site's eastern boundary).

5BL4183 Dakota Ridge Trail. Main portion of trail is a dirt track, with stacked stone foundation or retaining walls in a few places. It starts at a two-tracked road in the Sanitas Valley and trends first to the southeast as it climbs Dakota Ridge Hogback. The trail was constructed in 1915 by Colorado Mountain Club or University of Colorado Hiking Club

and was used by tuberculosis patients at Sanitarium. A southern extension of the trail runs along the Dakota hogback just west of the hospital complex. It contains three structures. Construction date of structures is unknown, but apparently built for use by Sanitarium patients.

5BL4183.1 Dakota Ridge Stone Shelter: sub-rectangular Dakota sandstone hut with cement mortar. Shelter and hearths may have been used for "steak frys," cookouts which were popular in the early 20th century. Deteriorated condition. . Within 100 feet of visitor infrastructure.

5BL4183.2 Dakota Ridge Arch: feature is constructed of rough Dakota sandstone with cement mortar similar to other nearby features. It is built onto a natural outcrop. Two pillars form the arch and are sitting on bedrock at the ground surface. Good condition. Within 100 feet of visitor infrastructure.

5BL4183.3 Dakota Ridge Footbridge: the bridge is constructed of uncut sandstone with cement mortar and provides access across the Silver Lake Ditch. The benches have a sitting height of 1 foot. Tabular stones serve as backs for the bench, extending 1.6 feet above the seats. A series of stone steps extend from the bridge to the east towards the former sanitarium building. Good condition. Within 100 feet of visitor infrastructure.

Contiguous Boulder Mountain Parks
Survey completed 1995

Historic Buildings:

5BL4942 Panorama Park Shelter/Halfway House: stone shelter house and adjoining patio. Original Panorama Park Shelter was constructed by Boulder Lions club and then reconstructed by CCC between 1933 and 1935. Good condition. Within 100 feet of visitor infrastructure (Flagstaff Road).

5BL4939 Flagstaff Shelter House: gable roofed, granite structure with two fireplaces, mantels are from sandstone flags. Constructed in 1933 by Boulder Lions club. Good condition. Part of visitor infrastructure.

5BL4935 Green Mountain Lodge: side gable granite building with façade gable over front door, stone slab patio and stone steps. Walkway extends around building. Built by CCC in 1935. Good condition. Within 100 feet of visitor infrastructure (Gregory Canyon, Range, Long Canyon Trails).

5BL4934 Bluebell Picnic Shelter: stone shelter and adjoining patio. Fireplace has sandstone plaque embedded carved with the legend "Erected by Boulder Lions Club." The shelter was originally built in 1923 by the Boulder Lions Club. Several modifications have occurred since its original construction, including possibly the fireplace. Timing of modifications are not known precisely, but are likely to be made by the CCC prior to 1935. Good condition. Within 100 feet of infrastructure (Many trails converge at this spot. An amphitheater built here 1997).

Historic Structures:

5BL4944 Flagstaff Mountain/Kossler Lake Road: The road begins at the western terminus of Baseline Road, at the mouth of Gregory Canyon, ascends the eastern flank of Flagstaff Mountain and follows the broad ridge between Long Canyon and Lost Gulch. A ¾ mile section built in 1906 which terminated at Panorama Park was the first established part of Flagstaff Road. A 1931 map shows the road extending all the way to Kossler Lake. The CCC undertook reconstruction of the road in 1935. Because the road has been constructed, upgraded and modified repeatedly during the past 89 years, different segments of the modern roadway are dated to different periods. Several sections of the original grade are still in use, but much of the roadbed has been modified. Good condition. Visitor infrastructure.

5BL4952 Boulder Mountain Park Historic Trails Network:

> **Pre-1925 Trails** include Tenderfoot, Green Canyon, Foothills, Green Mountain, Saddle Rock, Bear Canyon/Green Mountain, Royal Arch/Green Canyon, Woods-Bergheim/Royal Arch/Green Mountain, Royal Arch, Amphitheater, Split Rock, South Boulder Peak/Bear Peak West Ridge.
> **Pre-1965 Trails** include: Chapman Drive, Old Flagstaff, Artist Point, Plains Overlook, May's Point, Boy Scout, Range View, Gregory Canyon, H.L. Greenman, Green Mountain West Ridge, Ranger, Bluebell Nature, Enchanted Mesa, Bluebell-Baird;
> **Pre-1994 Trails** include: Panorama, Ute, Green Bear, Third Flatiron, McClintock Nature, Skunk Canyon, Mallory Cave.
> Trails are well maintained considering they receive heavy recreational use. Some trails are no longer used and are not maintained. Good condition. Part of visitor infrastructure.

5BL4941 Enchanted Mesa Road: site consists of graded roadbed and a stone and concrete bridge. The Road begins immediately south of the Chautauqua Park Amphitheater and runs south along the northern side of Bluebell Canyon. Where the road turns east and crosses Bluebell Creek, a stone and cement bridge has been constructed. This bridge was reputed to have been constructed by the CCC, but the precise date of construction is unknown. The original road was likely a quarry or logging road. Good condition. Visitor infrastructure.

5BL4940 Sunrise Circle Amphitheater and Flagstaff Memorial: This complex is located on the eastern end of the summit of Flagstaff Mountain. It consists of a stone and concrete monument and an adjacent semicircular amphitheater. The Memorial, on the western end of the complex, is a rectangular fieldstone and concrete block to which a steel flagpole has been attached. The amphitheater consists of a circular central arena or fire pit, around which a semicircular stage and two tiers of bench seating have been constructed. The elevated stage is located on the eastern side of the fire pit and is accessed by stone steps from both the east and west sides. The entire complex has been constructed from random rubble masonry consisting of granite fieldstone cobbles and cement. Seating is constructed of heavy wooden planks. The amphitheater was

constructed between 1933 and 1934 by the CCC. The amphitheater is located in a "natural amphitheater" which had been cleared of debris by local residents during the spring of 1933 as part of the Reconstruction Finance Corporation relief program. Excellent condition. Visitor infrastructure.

5BL4938 Morse Well on Flagstaff Mountain: site is on summit of Flagstaff Mountain and consists of decorative stone and concrete well head and associated concentric retaining walls, access ramps and stone benches. Original construction of well appears to be circa 1929 with improvements made to the well by the CCC in 1935. During the 1940s the City of Boulder provided a mechanical pump for the well; this pump had originally been located in Chautauqua. Subsequently the well was condemned and the pump destroyed by vandals. Fair condition. Visitor infrastructure.

5BL4936 Woods-Bergheim Quarry: site is located on the east facing ridge separating Bluebell and Skunk Canyons. It consists of large interconnected complex of quarry operations and access roads. The complex of quarries was owned and operated by Jonas Bergheim and Frank P. Wood. A variety of historic buildings in the Boulder area made use of Woods-Bergheim sandstone, including the 1907 Lennartz home at 655 Arapahoe Street. Ruined condition. Within 100 feet of visitor infrastructure. (Enchanted Mesa Trail)

5BL4932 Sunshine Lake Reservoir: the site is located at the mouth of Sunshine Canyon Road and consists of an earthen dam, dam output control structure, spillway, inlet control facilities and a small stone quarry. The reservoir was proposed in 1886 when the Red Rocks Reservoir no longer met the demand for city water. Construction was complete in 1891. Deteriorated condition.

5BL4170 Chapman Drive: grated, unpaved segment of the road known as Chapman Drive, which crosses portion of project area. It was built in 1935 by the Civilian Conservation Corps. Chapman Drive ascends the "backside" or west facing slope of Flagstaff Mountain. Chapman Drive is 20 to 24 feet wide and well cut into the uphill side. The corners of some of the switchbacks appear to be banked. Constructed features along the length of the road include rock retaining walls, drainage culverts, bridges and cattle guards. Fair condition. Visitor infrastructure.

Historic Objects: Boulder Mountain Parks

5BL4935 Green Mountain Lodge spring: a modified spring located at the base of a broad slope south of the structure has been modified to provide drinking water. Spring has been contained within a stone and concrete basin. An inscription in the overflow indicates that the spring modifications were made in 1964. Good condition. Within 100 feet of visitor infrastructure. (Ranger, Long Canyon Trails)

(Target: Historic Buildings, Structures and Objects)

Attribute: The condition of the BSOs with national, state and local significance
Conditions are rated as:
Excellent: no repairs needed, routine maintenance recommended
Good: some minor repairs needed, cleaning and maintenance
Fair: obvious repairs needed, cleaning and maintenance
Poor: extensive repairs needed, possibly requiring replacement, cleaning and maintenance
Deteriorated: anything that has been exposed to the elements and is inferior to the original condition – can be used with any of the terms above to describe specific conditions
Ruins: a structure that no longer has a use and will only be preserved "as is."

Indicator: The number of high priority BSOs in "Excellent" to "Good" condition as categorized on the Colorado Cultural Resource Survey Management form in the cases where those conditions are desirable and feasible. Each resource will be evaluated separately on its own historic merits and condition. It is likely that it will not be feasible for all of the resources near trails to be preserved in "Excellent" or "Good" condition. Cases in which "Excellent" and "Good" are not feasible, the most appropriate preservation techniques will be employed for the individual property as outlined in the COB Open Space Cultural Resource Guidelines. The actual target number of BSOs in "Excellent" to "Good" condition has not yet been determined. The number will be set after current conditions are assessed during the planning process.

Indicator Results:
Current conditions are not known at this time. Plans are being made to complete a survey by the end of 2009.

Literature Cited

Boulder County (1988.) Boulder county comprehensive plan, goals, policies, and maps. (pp126) Boulder, Colorado: Boulder County land Use Department. (Section 17 – Historic Preservation Program, plus many other cultural resource references throughout regarding open space purposes/land use designation, etc.)

City of Boulder (1999.) Boulder mountain parks resource protection and visitor use plan. Boulder, Colorado. Boulder Mountain Parks Division, Parks and Recreation Department. *Adopted by OSBT in 2000*.

City of Boulder (2005.) Visitor master plan. (pp 13,44, plus others) Boulder, Colorado: Open Space and Mountain Parks Department. *Adopted April 2005*.

City of Boulder (2005.) Marshall Mesa/Southern Grasslands trail study area plan. (pp. 9, 12, 15, 20, 44 plus others) Boulder, Colorado: Open Space and Mountain Parks Department. *Approved December 2005*.

City of Boulder (2006.) Eldorado Mountain/Doudy Draw trail study area plan. (pp. 7, 9, 10, 12, 20, 40, 49 plus others) Boulder Colorado: Open Space and Mountain Parks Department. 2006. *Approved December 2006*.

City of Boulder (2007.) Strategic operating plan. (Cultural Resource Management Legacy Program, p. 10.)Boulder, Colorado: Open Space and Mountain Parks Department.

City of Boulder (1995.) Open space long range management policies.(Cultural Resource Management section VI. pp.66) Boulder, Colorado: Open Space/Real Estate Department. *This included the formal adoption by the OSBT of CRM as part of long range management policies.*

Wheeler, B. (1990.) City of Boulder open space cultural resource guidelines. (pp.13) Unpublished report. Boulder, Colorado: Open Space/Real Estate Department. *Approved by OSBT.*

Other Cultural Resource Management (CRM) guidelines/laws that also affect OSMP management:
Boulder City – e.g., all the CRM guidelines in the B.R.C.
Boulder County
Colorado State
Federal – including U.S. and Tribal Sovereignty law

ALSO --- There are likely other OSMP area management plans, such as the North Boulder Valley or South Boulder Creek that have CRM guidelines included.

Glossary

Archaeology: Archaeology is the study of the human past. Its initial objective is the construction of cultural chronology. Its intermediate objective is the reconstruction of past life ways. Its ultimate objective is the discovery of the processes which underlie and condition human behavior.

Artifact: a man-made object which is a form or archaeological data.

Criteria: qualities through which site, buildings, structures or objects are determined to be eligible for National or Colorado State Registers of Historic Places, Boulder County or City of Boulder Historic Landmark designation.

Cultural resource: a building, structure, district, site or object that is significant in our history, architecture, archaeology or culture.

Deterioration: the process of making an historic structure's condition worse by lack of maintenance, normal wear and tear and /or exposure to weather.

Demolition by neglect: the gradual destruction of a building because of lack of maintenance.

Disturbance: the process of affecting an archaeological site's ability to convey its history (worsen its condition), for instance by destroying evidence unintentionally through careless construction or intentionally by looting the site.

Eligibility: ability of a property to meet National Register, State of Colorado or City of Boulder criteria (the standards by which the significance of a historic property is judged).

Historic integrity: the unimpaired ability of a property to convey its historical significance.

Historic property: any prehistoric or historic district, site, building, structure or object.

Historic significance: importance for which a property has been evaluated and found to meet the National Register criteria.

Historical archaeology: the study of cultural remains of literate societies with recorded histories.

Integrity: authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric period. The following seven aspects help define a property's integrity:

- Location is the place where the historic property was constructed or the place where the historic event occurred;
- Setting is the physical environment of a historic property;

- Materials are the physical elements that were combined or deposited during a particular period of time in a particular pattern or configuration to form a historic property;
- Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory;
- Feeling is a property's expression of the aesthetic or historic sense of a particular period of time;
- Association is the direct link between an important historic event or person and a historic property.

Interpretation: the educational methods by which the history and meaning of historic sites, buildings, objects, districts and structures are explained by use of docents, leaflets, tape recordings, signs, film and other means.

Local significance: importance of a property to the history of its community, such as a town or county.

Local criteria: The place (building, site, area) should show character, interest or value as part of the development, heritage, or cultural characteristics of the community, state or nation; be the site of an historic or prehistoric event that had an effect upon society; or exemplify the cultural, political, economic, or social heritage of the community:

- Date of Construction: Particular importance is placed on the age of the structure. Association with Historical Persons or Events
- Distinction in the Development of the Community of Boulder:
  This is most applicable to an institution (religious, educational, civic, etc.) or business structure, though is some cases residences might qualify. It stresses the importance of preserving those places which demonstrate the growth during different time spans in the history of Boulder.
- Recognition by Authorities: Significant recognition includes Historic Boulder, Inc., the Boulder Historical Society, local historians, State Historical Society, The Improvement of Boulder, Colorado by F.L. Olmsted, or others in published form.
- Other, if applicable.

National Register of Historic Places is the official list of the nation's historic places worthy of preservation. The National Register is administered by the National Park Service, which is part of the U.S. Department of the Interior.

National significance criteria: importance of a property to the history of the United States as a nation. Nationally significant properties embody one or more of the following characteristics:

- associated with events that have made a significant contribution to the broad pattern of our history;
- associated with the lives of persons significant in our past;
- embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic

- has yielded, or is likely to yield, information important in history or prehistory.

Paleontology: The study of life in past geologic time. Paleontologists use the knowledge they gain in their study of fossils to answer important questions such as: (1) what was the world like in the past, (2) what were the forces that made the world change, and (3) how could these forces impact the world in our lifetime and that of future generations.

Potential to yield information: likelihood of a property to provide information about an important aspect of history or prehistory through its physical composition and remains.

Preservation: the act or process of applying measures to sustain the existing form, integrity, and material of a building or structure and the existing form and vegetative cover of a site. It may include initial stabilization work, where necessary, as well as ongoing maintenance of the historic building materials and vegetation.

Property: area of land containing a single historic resource or a group of resources, and constituting a single entry in the National or State Register of Historic Places or Boulder City or County Landmark inventory.

Prehistory: a term often used to describe the period before written history.

Prehistoric archaeology: the study of extant cultural remains of societies which existed prior to recorded history.

Rehabilitation: the act or process of returning a property to a state of utility through repair or alteration which makes possible an efficient contemporary use while preserving those portionsor features of the property which are significant to its historical, architectural and cultural values.

Restoration: the act or process of accurately recovering the form and details of a property and its setting as it appeared at a prticular period of time by means of the removal of later work or by the replacement of missing earlier work.

Site: location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined or vanished, where the location itself possesses historic, cultural or archaeological value regarldess of the value of any existing structure.

Stabilization: the act or process of applying measures designed to reestablish a weather-resistant enclosure and structural stability while maintaining the essential form as it exists at present.

State Historic Preservation Office (SHPO): office in State government that administers the preservation programs under the National Historic Preservation Act.

State significance criteria: importance of a property to the history of the State of Colorado. Significant properties embody one or more of the following associations:

- Associated with events that have made a significant contribution to the history of Colorado;
- The property is associated with the lives of persons significant in our past;
- The property has distinctive characteristics of a type, period, method of construction or artisan;
- The property contains the possibility of important discoveries related to prehistory or history.

APPENDIX A:

COLORADO CULTURAL RESOURCE SURVEY

OAHP1400

Management Data Form

Rev. 9/98

(page 1 of 4)

The *Management Data Form* should be completed for each cultural resource recorded during an archaeological survey. Exceptions to this are isolated finds and re-evaluations, neither of which require a *Management Data Form*. Please attach the appropriate component forms and use continuation pages if necessary.

1. Resource Number: _____ 2. Temporary Resource Number: _____

3. Attachments (check as many as apply)
   ___ Prehistoric Archaeological Component
   ___ Historic Archaeological Component
   ___ Historic Architectural Component Form
   ___ Sketch/Instrument Map (required)
   ___ U.S.G.S. Map Photocopy (required)
   ___ Photograph(s)
   Other, specify: _____

4. Official determination (OAHP use only)
   _____ Determined Eligible
   _____ Determined Not Eligible
   _____ Nominated
   _____ Need Data
   _____ Contributing to NR Dist.
   _____ Not Contributing to NR Dist.

I. IDENTIFICATION

5. Resource Name: _____

6. Project Name/Number: _____

7. Government Involvement: Local____ State____ Federal____

   Agency: _____

8. Site Categories: Check as many as apply

   Prehistoric: archaeological site____ paleontological site____

   in existing National Register District? yes____ no____ name_____

   Historic: archaeology site____ building(s)____ structure(s)____ object(s)_____

   in existing National Register District? yes___ no___ name_____

9. Owner(s)'s Name and Address: _____

   _____

10. Boundary Description and Justification: _____

    _____

    _____

11. Site/Property Dimensions: _____m x _____m Area: _____m^2 (÷4047) _____acres

    Area was calculated as: Length x Width _____ OR (length X width) X .785 _____
    rectangle/square ellipse

II. LOCATION

12. Legal Location

    PM____ Township_____ Range_____ Section_____ ____1/4 of ____1/4 of ____1/4 of ____1/4

    PM____ Township_____ Range_____ Section_____ ____1/4 of ____1/4 of ____1/4 of ____1/4

    if section is irregular, explain alignment method:_____

    _____

Resource Number: _____
Temporary Resource Number: _____

Management Data Form
(page 2 of 4)

13. USGS Quad: _____ 7.5'_ 15' _ Date(s): _____ (attach photocopy)

14. County: _____ 15. Other Maps: _____

16. UTM Reference: Check your Datum! _____NAD 27 _____NAD 83

A. ___ ___; ___ ___ ___ ___ ___ ___mE ___ ___ ___ ___ ___ ___ ___mN

B. ___ ___; ___ ___ ___ ___ ___ ___mE ___ ___ ___ ___ ___ ___ ___mN

C. ___ ___; ___ ___ ___ ___ ___ ___mE ___ ___ ___ ___ ___ ___ ___mN

D. ___ ___; ___ ___ ___ ___ ___ ___mE ___ ___ ___ ___ ___ ___ ___mN

17. Address: _____ Lot___ Block___ Addition_____

18. Location/Access: _____

_____

_____

III. NATURAL ENVIRONMENT

19. Topographic Feature(s)

___ mountain
___ hill
___ tableland/mesa
___ ridge
___ saddle/pass
___ alcove/rockshelter
___ cliff
___ slope
___ ledge
___ terrace/bench
___ canyon
___ valley
___ basin
___ floodplain
___ cutbank
___ arroyo/gully
___ playa
___ talus slope
___ alluvial fan
___ plain
___ dune
___ _____
___ _____
___ _____

20. Site Topographic Description (mention named landforms): _____

_____

21. Site Elevation: _____feet =(x .3048) _____meters 22. Aspect: _____

23. Degree of Slope on Site: _____ 24. Soil Depth: _____cm

25. Soil Description (character and color): _____

_____

26. Depositional Environment:

___ Aeolian ___ Colluvial ___ Residual
___ Alluvial ___ Moraine ___ None
___ Other, specify; _____

27. Nearest Water: name/nature: _____ distance: _____m _____ft.

28. Nearest Permanent Water: name: _____ distance: _____m _____ft.

29. Vegetation on Site (list predominant species): _____

_____

30. Vegetation Associations/Communities Surrounding Site: _____

Resource Number: _____
Temporary Resource Number: _____

Management Data Form
(page 3 of 4)

IV. NATIONAL/STATE REGISTER ELIGIBILITY ASSESSMENT

31. Context or Theme: _____

_____

32. Applicable National Register Criteria:
___ Does not meet any of the below National Register criteria

___ A. Associated with events that have made a significant contribution to the broad pattern of our history; or

___ B. Associated with the lives of persons significant in our past; or

___ C. Embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

___ D. Has yielded, or may be likely to yield, information important in history or prehistory; or

___ Qualifies under exceptions A through G.

Level of Significance: National_____ State___ Local___

33. Condition

a. Architectural/Structural	b. Archaeological/Paleontological
_____ Excellent	_____ Undisturbed
_____ Good	_____ Light disturbance
_____ Fair	_____ Moderate disturbance
_____ Deteriorated	_____ Heavy disturbance
_____ Ruins	_____ Total disturbance

34. Describe condition: _____

_____

35. Vandalism: yes_____ no_____ describe: _____

_____

36. National Register Eligibility Field Assessment:

Eligible___ Not Eligible____ Need Data____

Statement of Significance/N.R.H.P. Justification: _____

_____

_____

37. Status in an Existing National Register District:

Contributing_____ Non-Contributing____

38. National Register District Potential yes____ no_____ discuss: _____

_____

Resource Number: _____
Temporary Resource Number: _____

Management Data Form
(page 4 of 4)

V. MANAGEMENT AND ADMINISTRATIVE DATA

39. Threats to Resource: Water erosion___ Wind erosion____ Grazing____ Neglect ___
    Vandalism___ Recreation____ Construction____ Other (specify): _____
    comments: _____
40. Existing Protection: None____ Marked____ Fenced____ Patrolled____ Access controlled ____
    other (specify): _____
41. Local landmark designation: _____ 42. Easement: _____
43. Management Recommendations: _____
    _____
    _____

VI. DOCUMENTATION

44. Previous Actions Accomplished at the site:
    a. Excavations: Test____ Partial_____ Complete_____ Date(s): _____
    b. Stabilization: Date(s): _____
    c. HABS/HAER Documentation: Date(s) & Numbers: _____
    d. Other: _____
45. Known collections/reports/interviews and other references (list): _____
    _____
    _____
46. Primary Location of Additional Data: _____
47. State or Federal Permit Number: _____ Collection Authorized: yes____ no___
    Artifact Collection: Yes_____ No_____ Artifact Repository: _____
    Collection Method: Diagnostics_____ Grab Sample___ Random Sample_____ Transect
    Other (specify): _____
48. Photograph Numbers: _____ Negatives filed at: _____
49. Report Title: _____
50. Recorder(s): _____ Date(s): _____
51. Recorder Affiliation: _____
    Phone Number: _____

NOTE: Please attach a sketch map, a photocopy of the USGS quad. map indicating resource location, and photographs.

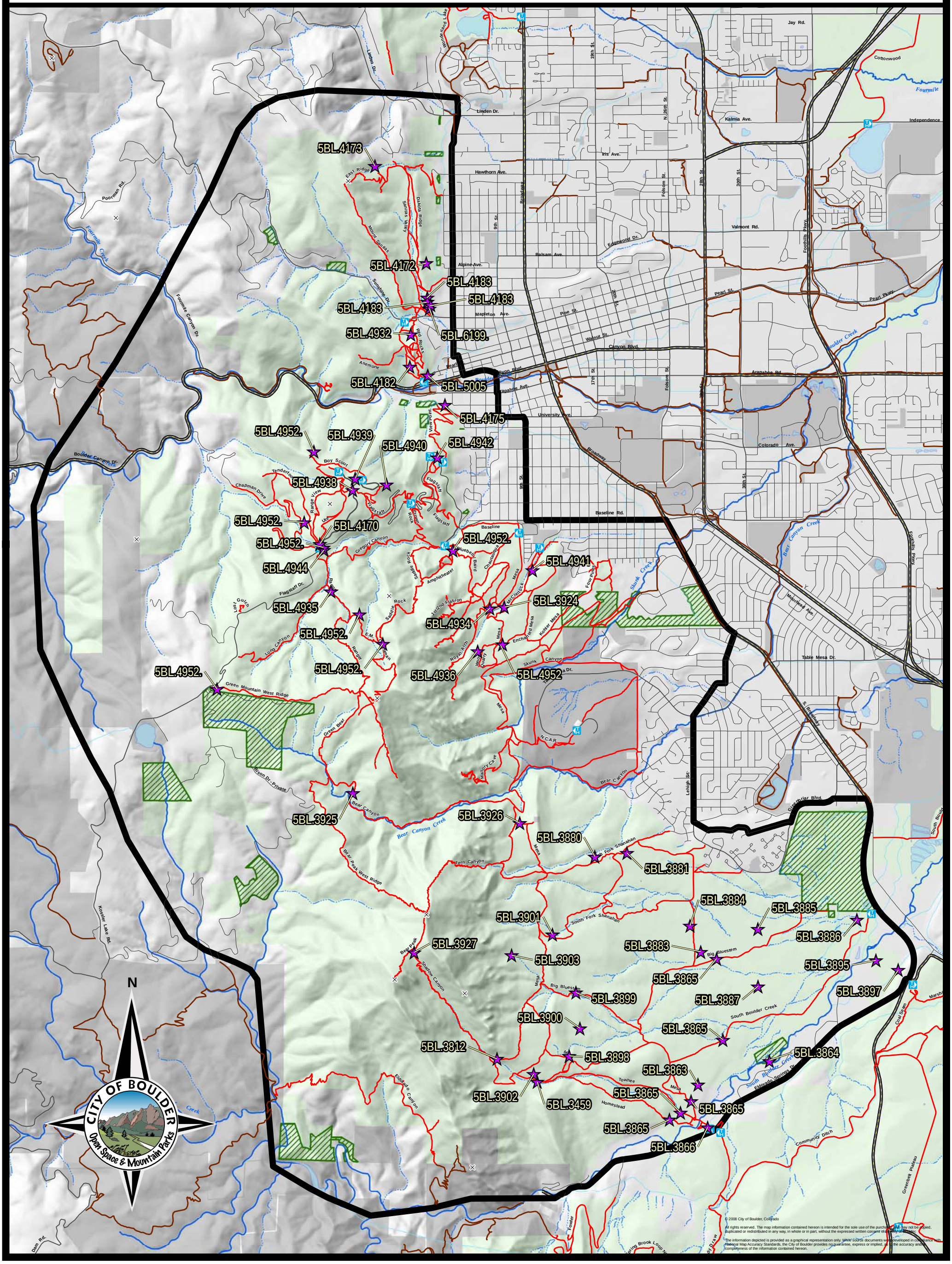
Colorado Historical Society - Office of Archaeology & Historic Preservation,
1300 Broadway, Denver, CO 80203
1303-866-3395

Map 1 West TSA - Historic Structure Preliminary Inventory

West TSA Boundary
Other Government Land
Cultural Resource
OSMP Land
OSMP Conservation Easement
Trailhead
Trail Not Managed By OSMP
Trails Managed By OSMP

0 0.5 1
Miles

revised: 7/13/2009



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Copy 2

NATIVE CULTURAL SERVICES

A Cultural Resource Inventory of City of
OSMP Studies 4045
Study
Mutaw, Robert J.

MITCHELL

CULTURAL RESOURCE INVENTORY

OF THE

CONTIGUOUS

BOULDER MOUNTAIN PARKS

BOULDER COUNTY, COLORADO

By

Mark F. Mitchell
and
Peter J. Gleichman

NATIVE CULTURAL SERVICES

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Mark F. Mitchell
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Prepared For:

City of Boulder
Parks and Recreation

Prepared By:

Native Cultural Services
4484 Hamilton Court
Boulder, Colorado 80303

December 1995

MANAGEMENT SUMMARY

Native Cultural Services conducted a cultural resource survey of the Boulder Mountain Parks in order to locate, document, and evaluate the cultural resources present. The intent of this inventory is to gain an understanding of the cultural use of the park, and to facilitate management decisions regarding treatment of the cultural properties which exist in the park.

The project area consists of the contiguous portion of the Boulder Mountain Parks system, including all or portions of Sections 1, 2, 3, 11, 12, 13, 14, 23, 24, T.1S., R.71W., and Sections 25, 26, 34, 35, 36 T.1N., R.71W., 6th P.M., in Boulder County, Colorado. The work performed included a pedestrian survey of the park, a detailed literature and archival search on the area, interviews with local informants, and contacts with ten Native American tribes.

The contiguous portions of the Mountain Parks contain 5627 acres. The park was surveyed at different levels of intensity, depending on slope angle. Approximately 3230 acres were inventoried at a Class III (intensive or 100%) level, 310 acres were inventoried at a Class II (sample) level, and 2087 acres were examined at a reconnaissance level with binoculars from vantage points.

As a result of this survey, there are now 36 historic sites documented in the Boulder Mountain Parks. This includes seven linear sites which had been previously recorded. Two of the previously recorded linear sites were reevaluated as a part of this survey. The standing shelters which had been previously recorded were totally rerecorded, and are included in the total of 36 sites. An additional historic site, the Roosa Cabin, is on an inholding of private land, and was not recorded. No prehistoric sites were observed. Fifty isolated finds were recorded, 9 of which were prehistoric. In addition 267 other cultural manifestations were located and recorded.

These cultural resources were evaluated for eligibility to both the National Register of Historic Places (NRHP) and the State Register of Historic Properties (SRHP), and 15 sites are considered individually eligible for nomination to either the NRHP or the SRHP. Twenty sites are considered not eligible for individual nomination. One site (**5BL5005**) would need evaluative testing to examine its archaeological potential prior to determining eligibility. The isolated finds are not individually eligible to the NRHP.

Eligible sites include the four shelters (Summit, Bluebell, Panorama Park [Halfway House], and Green Mountain Lodge), the Sunrise Circle amphitheater, Chapman Drive, Gordon-McHenry Road, Boulder Canyon Road, the historic trails network within the park as

well as the four trails which extend beyond the park (Mesa, Bear Canyon, Fern Canyon, and Shadow Canyon), and the Silver Lake Ditch. The contributing portion of one site, a dump, is not on Mountain Parks property.

The resources which relate to recreational use of the park can be deemed an historic district. This proposed **Boulder Mountain Parks Historic District** is based on the theme of Recreation within the Boulder Historic Context. The park was established primarily for recreational purposes, and recreational use is clearly the dominant historic use of the area. Recreational use of the park has been both long term and intensive. Numerous community organizations have a long history of involvement with the park, including Chautauqua, the Lions Club, Rotarians, Boy Scouts, Girl Scouts, Camp Fire Girls, Jaycees, the Chamber of Commerce, the Colorado Mountain Club, the Rocky Mountain Climbers Club, and the University of Colorado Hiking Club. The involvement of these entities has helped shape the cultural character of the park as well as effected the organizations themselves and the general community of Boulder. The intensive recreational use of the park is current and ongoing, including pursuits such as hiking, technical and freestyle climbing, athletic training, and picnics. The presence of the park and its recreational opportunities continues to help define the community of Boulder.

We recommend that the **Boulder Mountain Parks Historic District** be listed on the NRHP. Listing will give the park recognition for its role in the community, and make the park eligible for tax benefits and eligible for preservation grant funds for maintenance and restoration of the buildings and trails.

We also recommend that any future maintenance to the shelters, or the stonework on the roads (such as the Enchanted Mesa bridge), be done in accordance with the design, workmanship, and materials used in the original construction.

ACKNOWLEDGEMENTS

We would like to thank the staff of the Mountain Parks of the City of Boulder Parks and Recreation Department for their assistance and cooperation during the course of the project. We are particularly grateful to Mary McNellan of the Boulder Mountain Parks Division. This project stems in large part from her efforts and interest. Mary conceived and facilitated the inventory, shared her knowledge of the area, and coordinated our efforts with the Mountain Parks staff.

Mark Becker and Kirk Halford served as crew supervisors, and we appreciate their efforts. A number of people worked on the field research crews: Chris Sanning, Andre Mallinger, Dock Teegarden, Susan Villalobos, Mike Whalen, Darren McFarland, Jean Kindig, and George Price.

Mark Becker assisted with preparation of the environmental section. Mike Whalen completed the drafting of site maps as well as assisting with report production. Andre Mallinger assisted with preparation of site forms and maps and report production. Phil Rice conducted the architectural analysis of standing buildings. Dave Tucker illustrated the chipped stone artifacts.

Archival research was initially conducted by Sylvia Pettem, with further research conducted by Pete Gleichman, Ralph Benton, and Andre Mallinger.

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INTRODUCTION

The mountain "backdrop" of Boulder forms one of the most striking and beautiful settings a city could have. The dramatic uplift of extremely steep sided mountains fronted by the Flatirons is part of the image and identity of Boulder. The term "Flatirons", first applied to the large vertical slabs of rock on Boulder's mountain backdrop, has become the term for any spectacular steeply-dipping resistent sedimentary bed in the world, and Boulder's Flatirons are the type example. The presence of the mountains and rock formations has undoubtedly been a factor in the human use and occupation of the area, including but not limited to the settlement of Boulder by Euro-Americans. The mountain backdrop is far more than just a scenic vista - it is an important natural resource that has been utilized by people for many thousands of years, with particularly heavy use over the last 110 years of the historic era.

Much of the mountain backdrop, including the most dramatic rock formations, comprises the Boulder Mountain Parks.

Native Cultural Services conducted a cultural resource survey of the Boulder Mountain Parks in order to locate, document, and evaluate the cultural resources present. The intent of this inventory is to gain an understanding of the cultural use of the park, and to facilitate management decisions regarding treatment of the cultural properties which exist in the park.

The project area consists of the contiguous portion of the Boulder Mountain Parks system, including all or portions of Sections 1, 2, 3, 11, 12, 13, 14, 23, 24, T.1S., R.71W., and Sections 25, 26, 34, 35, 36 T.1N., R.71W., 6th P.M., in Boulder County, Colorado. The work performed included a pedestrian survey of the park, a detailed literature and archival search on the area, interviews with local informants, and contacts with ten Native American tribes.

The Mountain Parks contain 5627 acres. As discussed in detail in the Methods section below, the park was surveyed at different levels of intensity, depending on slope angle. Approximately 3230 acres were inventoried at a Class III (intensive or 100%) level, 310 acres were inventoried at a Class II (sample) level, and 2087 acres were examined at a reconnaissance level with binoculars from vantage points. The project area and levels of survey are depicted in Figure 1, the Boulder 1966 (photorevised 1971) and the Eldorado Springs 1965 (photorevised 1971) USGS 7.5'quadrangle maps.

Peter J. Gleichman served as Principal Investigator for the survey. Mark F. Mitchell served as Project Archaeologist. Mark Becker, Kirk Halford, and Mark Mitchell directed crews of field archaeologists. Fieldwork was initiated in December 1993, but after a few days was suspended due to snow cover. Fieldwork resumed in May 1994 and continued through September 1994.

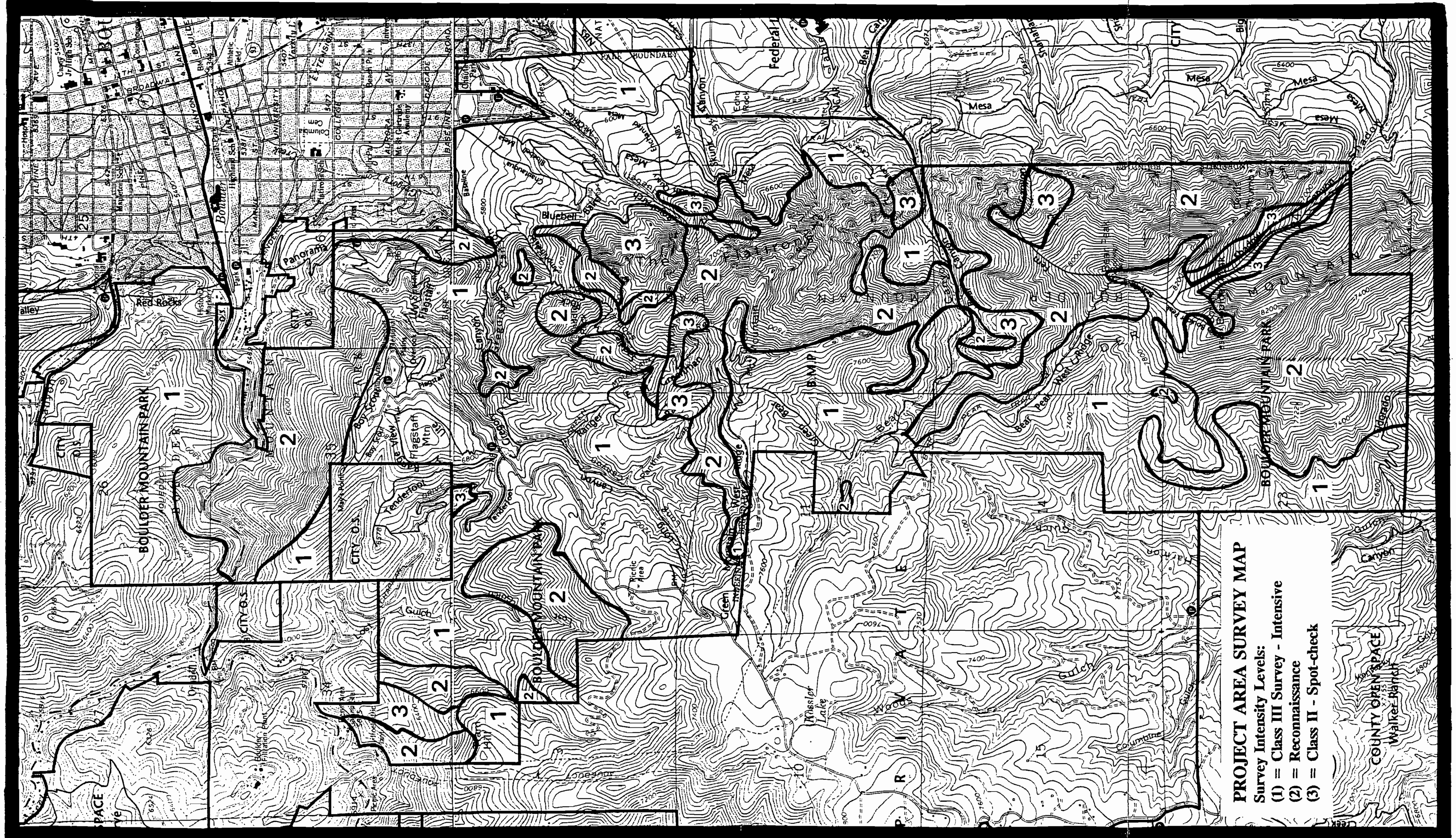


FIGURE 1. Project Area, Contiguous Boulder Mountain Parks Cultural Resource Survey. From Colorado Mountain Club Trail Map, including USGS 7.5' quadrangles, Boulder (1966/PR 1979) and Eldorado Springs (1965/PR 1971).

Additional field checks and archival research were conducted through February 1995.

Field notes and photographic negatives are on file with the City of Boulder Mountain Parks Division. Three isolated artifacts were collected during the inventory, and will be curated by the City of Boulder Mountain Parks Division.

ENVIRONMENT

The Boulder Mountain Parks form the uplift demarking the transition from the Great Plains to the Front Range of the Southern Rocky Mountain Physiographic Province (Fenneman 1931). From north to south, the park includes Anemone Hill, Flagstaff Mountain, Green Mountain, Bear Peak, and South Boulder Peak, and associated canyons. Elevation ranges from 5440 feet at Settlers Park to 8549 feet at the top of South Boulder Peak. Sunshine Canyon forms the northeast boundary of the park, and the park extends south almost to South Boulder Creek. Boulder Creek flows through the northern portion of the park from west to east. These drainages and their associated tributaries are part of the South Platte River system. At least 22 springs are also known to be in the park. Six of the springs have been modified and are thus cultural properties. Three 'wells' are also present.

Geology

This summary of the geology of the area is based on Colton (1978) and Wells (1967). The rock formations in this area trend generally north to south and dip to the east. The basement rock in the Boulder area is the Precambrian Boulder Creek Granodiorite and can be observed at the summit of Flagstaff Mountain. This intrusive igneous rock is approximately 1.7 billion years old.

There is a major unconformity on top of the Precambrian basement rocks in the Boulder area. In many areas, the uppermost levels of the Precambrian basement rock are highly weathered. The earliest Paleozoic era rock present is the Fountain Formation. It dates to the Pennsylvanian and early Permian Periods, roughly 300 million to 250 million years ago. The Fountain Formation consists of interbedded arkosic sandstones and conglomerates, with occasional siltstone and shale beds. The Fountain Formation is resistant and distinctive, and forms several notable features, including the summit of Green Mountain and the Flatirons in the Boulder area. It has been interpreted as either braided stream deposits or as alluvial fan deposits from the "Ancestral Front Range." The Lyons Formation rests on top of the Fountain Formation. It is a well-sorted, fine to medium grained quartz sandstone, that has been

interpreted as dune deposits that date to the late Permian period. It probably derives from the shore sediments of a ancient shallow sea. The Lyons Formation is also resistant, and is readily visible. Lyons Formation sandstone has been used for construction in the Boulder area for many years.

The Lykins Formation rests atop the Lyons Formation. This rock unit spans the transition between the Paleozoic and Mesozoic (Permian-Triassic, 225 million years ago), and consists of three rock members. The Harriman Member, dating to the late Permian, consists of red siltstones and shales of probable marine origin. This unit is not very resistant, and is covered by vegetation in most areas. The Forrelle Member is a pink and gray limestone. It is fairly resistant and has features indicative of algal origin in a shallow marine environment. The Strain Member, dating to the Triassic Period, consists of shale and siltstone that is reddish in color. It is non-resistant, and forms a valley, except near the top, where a resistant sandstone bed is present. It is of marine origin.

The Ralston Creek Formation (also known as the Entrada Formation) is a thin bed of red and gray calcareous sandstone and siltstone containing distinctive thin layers and nodules of red and white chalcedony. It dates to the early Jurassic (ca. 180 mya) and is fairly resistant. The formation is generally buried under Quaternary colluvium, but is exposed on the southwest side of Echo Rock just west of Table Mesa. Several creek beds such as Bear Canyon, Doudy Draw, and Eldorado Springs Canyon are deep enough to have cut through this deposit. It may have been possible for prehistoric people to have collected chalcedony for stone tool manufacture by walking in the creek beds. The Morrison Formation, which dates to the late Jurassic Period and sits on top of the Ralston Creek Formation, is a thick unit of claystone and siltstone, interbedded with sandstones and siliceous limestone. It is of fluvial and lacustrine origin.

The Dakota Group dates to the early Cretaceous Period (ca. 135 mya) and contains the Lytle and South Platte Formations that comprise the Dakota Hogback ridge. The Lytle Formation consists of sandstones and conglomerates that form a prominent hogback immediately to the west of Boulder. It is of fluvial origin. The South Platte Formation contains two members. The Plainview Member is a platy sandstone which is then covered by dark gray silty shale. The Muddy Member is a prominent ridge-forming sandstone at the top of the formation.

Portions of the project area are covered by Pleistocene/Holocene colluvial deposits. These deposits are bouldery to pebbly sandy silt and clay deposits resulting from sheet wash and gravity. They are present on the slopes of mountains and in the intervening gullies.

Soils

Soils within the Boulder Mountain Parks project area fall into the Rock Outcrop-Juget-Baller association (Moreland and Moreland 1975). A soil association is a landscape with a distinctive pattern of soils, generally consisting of one or more major soils, for which the association is named, in conjunction with at least one minor soil. This association contains rock outcrops along with very gravelly and stony soils formed in residuum of granite and sandstone. The major soil series in this association include Juget, Baller, Allens Park, Fern Cliff, Peyton and Goldvale. About 35% of the area is made up of rock outcroppings and colluvial land. Juget series soils make up about 15 percent of the association and are located primarily on south facing slopes in the northern and western portions of the Park. Juget series soils typically support open stands of ponderosa pine and short grasses. Small areas of Baller series soils are located on ridges in the eastern portion of the Park. Baller soils are very shallow and support native grass vegetation. The Fern Cliff-Allens Park complex occurs primarily on north-facing slopes throughout the project area and covers most of the central upland portion of the Park. Fern Cliff and Allens Park soils support a mixed conifer forest of ponderosa pine and Douglas fir with a sparse understory of grass. Goldvale series soils occur within the Park on the Enchanted Mesa and portions of the upland ridges to the north of the mesa. Soils of the Goldvale series support a mixed conifer forest and a locally dense cover of understory vegetation.

Soils within the project area vary in depth from very shallow to moderately deep. All are well- or excessively-well drained. Runoff is typically high for most soils within the Park. High erosion hazard is particularly noted for the Goldvale, Baller, Fern Cliff, and Juget series. Where the covering vegetation has been disturbed during the construction of roads and buildings, erosion can be a significant problem.

None of the soils within the Park are appropriate for tillage.

Fauna and Flora

Boulder Mountain Parks contains one of the most diversified wildlife areas in all of Colorado. Hogan (1989) states that there are some 350 species of vascular plants found on the north side of Green Mountain alone. "This represents an exceptional richness for an area of less than one square mile. Florissant Fossil Beds National Monument, a montane area ten times the size and with much greater variety of habitats, has 430 species. The entire alpine area of the Indian Peaks Wilderness has a flora of 253 species." (Hogan 1989:9). Clearly, Boulder Mountain Parks offer an unusual if not unique environment for plant diversity which should also encourage animal diversity.

Boulder Mountain Parks can be divided into many environmental zones. These zones include grasslands, riparian forest, grassland-forest ecotone, coniferous forest, and rock faces and canyons. Most of these zones are large areas found throughout the Front Range, but the Mountain Parks also contain several microenvironmental zones, some unique within Colorado. Many of these microenvironments are found on north facing slopes, and/or at the base of canyons. The following is an overview of the common plants and animals found in the Mountain Parks, arranged according to the different environmental zones.

Grasslands - The grasslands are found in rocky uplands and mesas between Boulder Creek and South Boulder Creek and have similar vegetation to that of a true prairie. Little bluestem Schizicharium scoparium, prairie dropseed Sporobolos heterolepis, and porcupine grass Stipa spartea, are grasses present within the park (Cooper 1984). "The latter two mentioned are rare in Colorado but are known to occur primarily in the Boulder area. This type is very well developed on many of the mesas that border Chautauqua Meadow and other mesas farther south" (Cooper 1984:5). Animals commonly found in this environment include a variety of birds, small rodents, and coyotes.

Riparian Forest - The Foothills Riparian is found in cool canyons at the mountain front. Some of the common plants are plains cottonwood, peach-leaved willow, alder, boxelder, green ash, and shrubs such as chokecherry, wild plum, and pin cherry. Animals commonly found in this zone are birds, porcupine, red fox, and fox squirrel. Black bears can be found in this zone from late summer to early fall (Jones 1990). A Mountain Riparian zone is present and found only on the north side of Green Mountain. This area is very unique within the foothills. Trees such as narrowleaf cottonwood and aspen are common. The most important shrub is beaked hazelnut. Also, a rather large number of regionally rare and disjunct species occur near permanently wet seeps and along streams in this area. One of the most unique species to this area is paper birch, Betula papyrifera. This occurrence of birch is the most southerly stand in the Western United States. These trees are a Pleistocene relict and probably reflect the southern extension of boreal vegetation into this region during the ice ages (Cooper 1984). Animals commonly found in this environment are birds, black bear, squirrel, chickadee, porcupine, and raccoon.

The Grassland-Forest Ecotone is found at the lower treeline in the Boulder area, usually occurring on the mesas and hogbacks with ponderosa pine being the primary coniferous tree. Old photographs and eyewitness accounts of this area indicate that treeline has advanced from the foothills well out onto the mesas and plains during the last century. This is probably the result of wildfire suppression, and the disturbance of soils due to ranching. The ecotone varies in habitat types from dense stands of trees to open and parklike with broad grassy area between trees (Cooper 1984).

Common animals found in this environment include birds, mountain lion, mule deer, weasel, grayfox, and coyote (Jones 1990).

Conifer Forest - Ponderosa Pine Forest is the dominant forest type over mesa tops, and the drier portions of the mountains. A mixed ponderosa pine-Douglas-fir forest can be found over much of the steep east and west faces of Flagstaff Mountain, Green Mountain, and Bear Peak (Cooper 1984). Animals common to both the Ponderosa Pine Forest and the Ponderosa Pine-Douglas-Fir Forest include birds, squirrel, porcupine, mountain lion, and bobcat (Jones 1990). A Douglas-Fir Forest occurs on steep north-facing slopes at lower elevations and on all slope aspects at higher elevations (Cooper 1984). "It is the dominant vegetation type on the upper portions of Green Mountain and Bear Peak" (Cooper 1984:11). The common animals found in this zone are birds, black bear, red fox, porcupine, and small rodents (Jones 1990).

Rock Faces and Rock Canyons - Although Trees are generally absent on the steeper faces of the lower canyons, the Flatirons, and the talus slopes associated with the Flatirons, shrubs are abundant. Yet, these areas, especially the cliffs on the eastern slopes of Green Mountain and Bear Peak provide important nesting sites for raptors including the prairie falcon, peregrine falcon, American kestrel, golden eagle, and the red-tail hawk (Jones 1990). Small rodents are also present.

Summary of Cultural Land Use Potential

The variety of environmental zones within the park, and the tremendous species richness (diversity of plants) of the park would have been noted by aboriginal people, and formed an attraction of the area. The position of the Mountain Parks, adjacent to the Great Plains, would also heighten the attraction to the area, with different biological resources available for exploitation from different ecosystems. Stone suitable for tool use may have been available from the Ralston Creek Formation. Habitation sites were probably located east of the mountain uplift and out of the park, where terrain is flatter. The park was undoubtedly used for hunting and plant gathering, and may have been used for ceremonies.

From a Euro-American perspective, suitable land uses include timber production, grazing, recreation, stone quarries and, to a very limited extent, homesites.

PREVIOUS RESEARCH

The known culture history of the general area is presented in several historic and prehistoric contexts prepared for the Colorado Historical Society to guide research (Mehls 1984A and 1984B, Guthrie et al 1984, Eighmy 1984). A file search of the Boulder Mountain Parks area was conducted for the Parks Department by the Colorado Office of Archaeology and Historic Preservation (OAHP) on January 16, 1990. The results of the file search were provided to Native Cultural Services by Boulder Mountain Parks. In addition, the Boulder County cultural resource data on file at Native Cultural Services was consulted for information on known historic and prehistoric sites in the vicinity of the project area.

Previous Investigations Within the Project Area:

No formal cultural resource surveys have taken place within the Mountain Parks. Surveys of City of Boulder Open Space parcels, County Parks and Open Space, and State land parcels which are adjacent or near to the park have been conducted, resulting in numerous historic sites being located and documented. Those projects are summarized below.

A number of sites within the park have been recorded. In 1980 Manuel Weiss, on behalf of the Boulder County Historical Society and Boulder County Parks and Open Space, performed an initial documentation on numerous historical sites in Boulder County. The focus was on standing buildings and structures. Homes, schools, churches, mine buildings and kilns were recorded. As part of his work, the Boulder Mountain Parks were termed an historic district and assigned state number **5BL755.0**. Within this informal district, the recreational facilities were assigned number **755.1**, the "First White Camp" (Settlers Park) was given number **755.2**, and the Flatirons were given number **755.3**. The recreational facilities included the shelter and amphitheater on Flagstaff Mountain, Bluebell Shelter, and Halfway House, but did not include Green Mountain Lodge. The First White Camp, **5BL755.2**, has no cultural manifestations except a commemorative plaque placed by the Daughters of the American Revolution in 1939 (now missing). Indeed, it is unknown whether this spot was the actual campsite or not. This spot was assigned a new number (**5BL1480**) in 1986. The Flatirons are striking rock formations which have been used extensively by climbers, but are not a cultural feature, and should not be considered such.

After consultation with the staff of OAHP, it was decided not to use the **5BL755** designation, and to assign new numbers to each individual site. As a result the shelters have been totally redocumented during this project.

Several linear sites which have been documented outside the park cross portions of Mountain Parks land. Site **5BL515**, the Gordon-McHenry Road, was built up Sunshine Canyon in the 1860s. Site **5BL622**, the Boulder Canyon Road, was built up Boulder Canyon between 1865 and 1871. Four trails have segments outside the Mountain Parks but also extend into the park - the Mesa (**5BL3924**), Bear Canyon (**5BL3925**) Fern Canyon (**5BL3926**), and Shadow Canyon (**5BL3927**) trails. Site **5BL3813**, the Silver Lake Ditch, is part of the city water transport and storage system, and dates to the 1880s. Colorado Cultural Resource Survey Reevaluation forms were completed for the Bear Canyon trail/road and the Silver Lake Ditch.

Three other sites, Chapman Drive (**5BL4170**), an historic dump (**5BL4177**), and the Town of Boulder Ditch/Red Rocks Reservoir (**5BL4182**) have segments on both Mountain Parks land and City of Boulder Open Space land. They have been documented both as a part of this project and as a part of the Mt. Sanitas Open Space survey, described below.

Previous Investigations Adjacent to the Project Area:

While not part of a formal inventory, the Chautauqua Park is designated as an Historic District (**5BL361**) and the Chautauqua Auditorium (**5BL362**) is listed on the National Register of Historic Places.

Formal cultural resource surveys have been completed on several areas adjacent to the park:

Walker Ranch: A survey of the Walker Ranch, in the mountains west of the current project area, resulted in the ranch, **5BL235**, being listed on the National Register as an Historic District (Kranzush 1980).

Eldorado Canyon State Park: An inventory of the Castlewood acquisition, west of Eldorado Springs, resulted in one prehistoric site (Late Prehistoric Period), two prehistoric isolated artifacts and two historic complexes being located and recorded (Hand 1981).

South Boulder Creek BLM Parcels: An inventory of BLM tracts near South Boulder Creek, south and west of the current project area, was conducted by Native Cultural Services on behalf of Boulder County Parks and Open Space. Eight historic sites and one prehistoric isolated artifact were located in the 1133 acres surveyed. This included the Denver & Rio Grande Western Railroad (**5BL455**) and the South Boulder Diversion Dam and Conduit (**5BL2375**), the Crags Mountain Resort (**5BL2376**), a road bed through South Draw (**5BL2374**), and a cabin foundation (**5BL2373**) (Gleichman and Gleichman 1988).

Bear Creek to South Boulder Creek Open Space: A series of surveys during 1992 were conducted by Native Cultural Services and covered the Open Space property between Bear Creek and South Boulder Creek (Gleichman et al. 1993). This area is immediately to the east of the southern portion of the present project area. A total of 33 sites and 28 isolated finds were recorded, consisting mainly of historic cultural manifestations, though occasional, ephemeral prehistoric properties were located. One prehistoric lithic scatter (**5BL3882**) was considered potentially eligible to the National Register. Three possible hunting blinds (**5BL3889**, **5BL3911** and **5BL3920**) were considered potentially eligible. Of the historic properties, the Stockton Cabin (**5BL3812**) was considered eligible, and the Lafayette Water Pipeline (**5BL3866**) and the Fern Canyon Trail (**5BL3926**) were considered potentially eligible to the National Register (Gleichman et al 1993:99-100).

Most other historic sites and isolated finds recorded in the area helped to define the newly proposed **South Boulder Foothills Historic Archaeological District.** Contributing sites and IFs include fourteen homesteads and habitation sites, seven ditches and springs, three trails (Mesa, Bear Canyon, and Shadow Canyon), and ten stone fence lines. Seven additional features were considered potentially contributing. All of these manifestations are considered eligible to the National Register in association with the Historic Archaeological District (Gleichman et al 1993:98-99).

The South Boulder Foothills Historic Archaeological District was defined under the unifying theme of Agriculture, and incorporates historic activities such as homesteading, farming, ranching, water management, and transportation. Agricultural use of the area began in 1859 and remains ongoing, though habitation in the area declined after the 1920s. Boundaries of the district are essentially the limits of Open Space property, with Highway 93 to the east, Bear Creek/Shanahan Hill to the north, and the Boulder Mountain Parks Historic District to the west. The southern boundary remains undefined. The results of an ongoing survey in the Doudy Draw area will hopefully help establish a southern boundary.

Mount Sanitas and Related Parcels Open Space: A survey of 971 acres of City Open Space parcels was conducted by Native Cultural Services in 1993 and 1994. The 11 parcels include Mt. Sanitas and the Bonnie Schnell parcel on Flagstaff Mountain, as well as other parcels on Flagstaff, near Settlers Park, and adjacent to the Mountain Park. The survey documented 14 historic sites and 11 isolated finds (one prehistoric). Included were 3 sandstone quarries, a granite quarry, a limestone quarry and kiln, the Dakota Ridge Trail, a habitation site, and several areas of historic features and trash. Also included were Chapman Drive (**5BL4170**), an historic dump (**5BL4177**) and the Town of Boulder Ditch/Red Rocks Reservoir (**5BL4182**), both of which have segments on both Mountain Parks land and City of Boulder Open Space land. They have been

documented both as a part of this project and as a part of the Mountain Park survey.

Historic Context

The Treaty of Fort Laramie in 1851 acknowledged Southern Arapaho and Cheyenne ownership of the area between the Platte and Arkansas Rivers, from the Continental Divide eastward into central Kansas. At the time of white contact, the Boulder area was a winter camp for the Southern Arapaho (Coel 1981). Prior to the Arapaho - Cheyenne movement into the area, several other groups are known to have utilized the plains/foothills transition area along the base of the Front Range, including the Comanche, Apache, Ute, and Shoshone.

In 1898, 40 years after the Euro-American settlement of the Boulder Valley, the first acquisition of land for the Mountain Park was made. The purchase was made in conjunction with the establishment of Chautauqua. The historic use of the Mountain Park, particularly through the inter-war period, is entwined with the history of Chautauqua.

A general history of Boulder's Parks has been published (Hudson 1991), as has a history of Chautauqua (Galey 1981). A more detailed history of City of Boulder Mountain Parks has also been produced (McNellan 1995).

The Boulder Historic Context Project defines a number of themes which are relevant to the project area (Friedman 1989). Based on the above histories and the information from the site files at the Colorado Historical Society, we know of or expect cultural properties to be present representing the following themes: Aboriginal Prehistory; Mining, Minerals and Extractive Industries (building stone); Transportation; Agriculture; Commerce and Industry (lumber); Water Resources; and Recreation. These themes are discussed in relation to the results in the Discussion section, below.

OBJECTIVES

The survey of the Boulder Mountain Parks had several related objectives. The primary objectives were to provide the Boulder Mountain Parks Division with a complete inventory of all cultural resources within the park and to produce recommendations on appropriate management of these cultural properties. Any cultural resources located were to be documented and their significance assessed in terms of eligibility for inclusion on the National

Register of Historic Places and the State Register of Historic Properties (see the Management Recommendations section below for criteria of eligibility). The presence of cultural resources in or near any existing or proposed recreational development might also provide the opportunity for education regarding the history and prehistory of Boulder County and of the park itself, through the use of interpretive signs or trail maps/brochures discussing points of interest in the cultural landscape.

The objectives were met through a combination of field survey at various levels of intensity (see Methods, below) archival research from local institutions, and interviews with persons knowledgeable about the project area. In addition, an attempt was made to further our understanding of the prehistory and history of the area through the development of a set of expectations based on findings during previous investigations in the vicinity.

It was expected that if aboriginal cultural resources were located within the project area, information obtained from these resources would be applicable to a number of research concerns such as regional chronology, settlement patterns, resource utilization, site function, and cultural affiliation. Data concerning historic Euro-American sites could be used to address questions about late 19th and early 20th century ranching, mineral extraction and recreation in Boulder County.

Archaeological site density in this part of eastern Colorado is variable. Previous cultural resource surveys in the immediate area have identified historic Euro-American resources (generally associated with agriculture and mining endeavors) and a few aboriginal sites and isolated artifacts. The low number of aboriginal sites known for this area is perhaps in part accounted for by poor ground visibility and the nature of the terrain. Aboriginal camps tend to be located near water sources in areas of low slope such as terraces or ridge tops. Areas of steep slope angle were generally utilized for specialized activities such as hunting and plant gathering, which leave few archaeological traces. Habitation sites were probably located east of the mountain uplift. The Plains/Foothills transition zone was apparently attractive to aboriginal people, probably for the variety of natural resources available from the environmental zones present on the plains and in the mountains. The proximity of perennial water sources such as Boulder Creek, may have attracted prehistoric peoples to the area, especially from the Ceramic Period (A.D. 1-1550) on. It is well known that the Boulder area was occupied by various tribal groups during the 18th and 19th centuries, ending in the mid 1860's. Some limited evidence of aboriginal use of the project area was expected; however, the historic use of the area and the proximity of urban development has probably obliterated most of the aboriginal manifestations.

Historic Euro-American remains were certain to occur in the project area, and to exhibit much higher visibility than aboriginal sites. Because of the history of ranching, mining, and recreation within and adjacent to the project area, resources related to these activities such as quarries, picnic shelters, trails, roads, and irrigation ditches were both known and expected.

METHODS

Research for this project focused on locating the physical manifestations of cultural behavior through field survey. Historical or archival data regarding the physical manifestations was also gathered through conversations with informants knowledgeable about the area, and through searching records housed at the Main Boulder Public Library and the Carnegie Branch, the University of Colorado Norlin Library, the Western History Collections at Norlin Library, Chautauqua, Boulder Parks Office, City of Boulder Central Records, the Rocky Mountain Climbers Club, the University of Colorado Hiking Club, and the Boulder Historical Society.

In addition, contact was made with ten Native American tribes, requesting any information, comments or concerns the tribes may have regarding the area encompassed by the Boulder Mountain Parks. The following tribes were contacted and invited to share information: Southern Ute, Ute Mountain Ute, Northern Ute, Southern Cheyenne, Southern Arapaho, Northern Cheyenne, Northern Arapaho, Rosebud Sioux, Oglala Sioux, and Shoshone.

In order to facilitate the pedestrian survey, and to maximize the coverage of archaeologically significant terrain features, a three-tiered survey plan was developed. Because a significant portion of the Mountain Parks consist of talus fields, steep slopes, and rock outcroppings, the park property was divided into two zones on the basis of slope angle. Slope angles were estimated by an analysis of contour pattern and width as represented on USGS 7.5' quadrangles. Parcels estimated to have slope angles lower than 35° were grouped into Zone 1; parcels with slope angles in excess of 35° were grouped into Zone 2. The slope angle estimates were field checked during the course of the survey, and the zone boundaries were adjusted accordingly. Parcels where the slope angle was determined to be less than 35°, but where pedestrian survey was futile due to the presence of extremely dense vegetation or active talus fields, were included in Zone 2. Some parcels with slope angle exceeding 35° were passable, and were therefore included in Zone 1. Of the total 5627 acres within the contiguous boundaries of the Mountain Park, 3230 acres (57 percent) were assigned to Zone 1, and 2397 acres (42 percent) were assigned to Zone 2.

Three survey techniques were utilized during the course of fieldwork. A Class III cultural resource inventory (intensive or 100% pedestrian survey) was completed for all the parcels classified as Zone 1. This Class III survey was conducted by field crews of two to four field archaeologists walking adjacent linear transects. Individual crew members were spaced at 5 to 30 meter intervals, depending on steepness of terrain. On steeper slopes larger transect intervals were used. Where the terrain was either flat or gently sloping, shorter intervals were used. In areas thought to exhibit significant archaeological potential, 5 meter intervals were used to ensure maximum coverage. Terrain features also dictated the type of transect used. Where the terrain was generally flat or gently sloping, linear transects, oriented either north-south or east-west, were used. In most areas of the Park, however, contour transects, which parallel lines of constant elevation, were used.

Zone 2 parcels were surveyed using two different techniques, based primarily on accessibility. In steep areas accessible to pedestrian survey, a Class II (sample oriented survey) technique was used. Crews of one to three field archaeologists closely examined the terrain features most likely to contain cultural manifestations, including saddles, rock shelters, open slopes, and ridges. Generally, Class II surveys involved the systematic examination of a particular parcel, without the use of formal transects.

Portions of the park which are inaccessible to effective pedestrian survey, whether due to steepness, active talus fields, or dense vegetation, were surveyed using a reconnaissance technique. This involved the systematic observation of a particular parcel of land through field glasses. Where possible, each parcel was observed from at least two locations. Potential archaeological manifestations were spot checked by teams of one to two field archaeologists. Of the 2397 acres classified as Zone 2, 310 acres (13 percent) were surveyed using a Class II survey technique, and 2087 acres (87 percent) were surveyed using a reconnaissance technique.

Ground visibility varied between good and very poor in the areas covered by the Class III and Class II surveys. As elevation increases within the park, or where water is more abundant, denser stands of Douglas fir punctuate the more open canopy of ponderosa pine. In these areas, ground visibility is substantially reduced by an accumulation of needle litter, moss, and low shrubs. In some lower portions of the Park, where the availability of direct sunlight and groundwater promotes the growth of locally dense meadows, ground visibility is similarly reduced. The areas of highest ground visibility include south-facing slopes of moderate steepness, active slope wash zones, ridgetops, and open glades in ponderosa pine stands. For this reason survey efforts concentrated on those areas. Field archaeologists also inspected exposed ground

exposed ground surfaces in eroded areas, drainage cutbanks, incised animal and pedestrian trails, rodent burrows, ant nests, and unmodified two-track roads for the presence of cultural materials.

Evidence of cultural resources was sought in the form of material debris, structural remains, or any other unusual surface anomaly. When a cultural manifestation was encountered, the area surrounding the find was carefully inspected for additional artifacts or features. The manifestations located during the course of the survey were grouped into three categories. 'Sites' were defined as a cluster of four or more artifacts, or a feature with associated artifacts, which is at least 50 years old. 'Isolated finds' and 'isolated features' were defined as a single artifact or feature, not associated with other artifacts or features, which is at least 50 years old. 'Other manifestations' were defined as isolated features or objects of recent or indeterminate age. This category includes common features such as prospector pits, logging roads, recreational camps and range fences.

When the manifestation was defined, notes were made about the objects or features and their setting. As appropriate, sites and isolated features were documented with black-and-white photography and sketch maps. Colorado Cultural Resource Survey site and isolate forms were completed. Historic artifacts and chipped stone tools were measured and described in the field. Potentially diagnostic artifacts were collected for further laboratory analysis. No test excavations were conducted.

RESULTS

There are 36 historic sites documented in the Boulder Mountain Parks. This includes seven linear sites which had been previously recorded. Two of the previously recorded linear sites were reevaluated as a part of this survey. The standing shelters which had been previously recorded were totally rerecorded, and are included in the total of 36 sites. An additional historic site, the Roosa Cabin, is on an inholding of private land, and was not recorded. No prehistoric sites were observed. Fifty isolated finds were recorded, 9 of which were prehistoric. In addition 267 other cultural manifestations were located and recorded.

These resources are summarized below. More detailed descriptions and additional information are included with the Colorado Cultural Resource Survey Forms, Appendix B of this report. The Other Manifestations are detailed in Appendix A.

RECORDED SITES

Chapman Drive:

Site **5BL4170** is a graded, unpaved segment of road known as **Chapman Drive**, which crosses a portion of the project area. Chapman Drive ascends the "back side" or west facing slope of Flagstaff Mountain. The road originates in Boulder Canyon and extends to the junction of the Flagstaff Summit road and the Flagstaff Road at Realization Point. Chapman Drive is 20 to 24 feet (6.1 to 7.3 meters) wide and well cut into the uphill slope. The corners of some of the switchbacks appear to be banked. Constructed features along the length of the road include rock retaining walls, drainage culverts, bridges and cattle guards.

The portion of the road which lies within the Boulder Mountain Parks is approximately one mile long, and includes two major switch-backs. Rock retaining walls have been erected along three portions of this road segment and vary in length from 131 to 243 feet (40 to 74 m) and in height from 6½ to 16½ feet (2 to 5 m). Each one is constructed of locally-obtained, fitted and lightly dressed cobbles and boulders, dry laid. With the exception of wall sections which incorporate natural rock outcroppings, these retaining walls are not vertical, but slant back toward the roadbed at an angle of 50-60°. Two large stone and mortar drain culverts have been constructed to carry run-off under the roadbed. The drains have vertical stone-lined entries; one drain is covered with a cast iron grate 3 feet in diameter.

A bridge-cattle guard-culvert constructed of massive fitted and dressed granite blocks is located at the boundary between Mountain Parks and Open Space property (Figure 2). The bulk of the feature

is dry-laid. The retaining wall which supports the roadbed is 10 feet (3 m) high where is crosses the ephemeral drainage and is 82 feet (25 m) long.

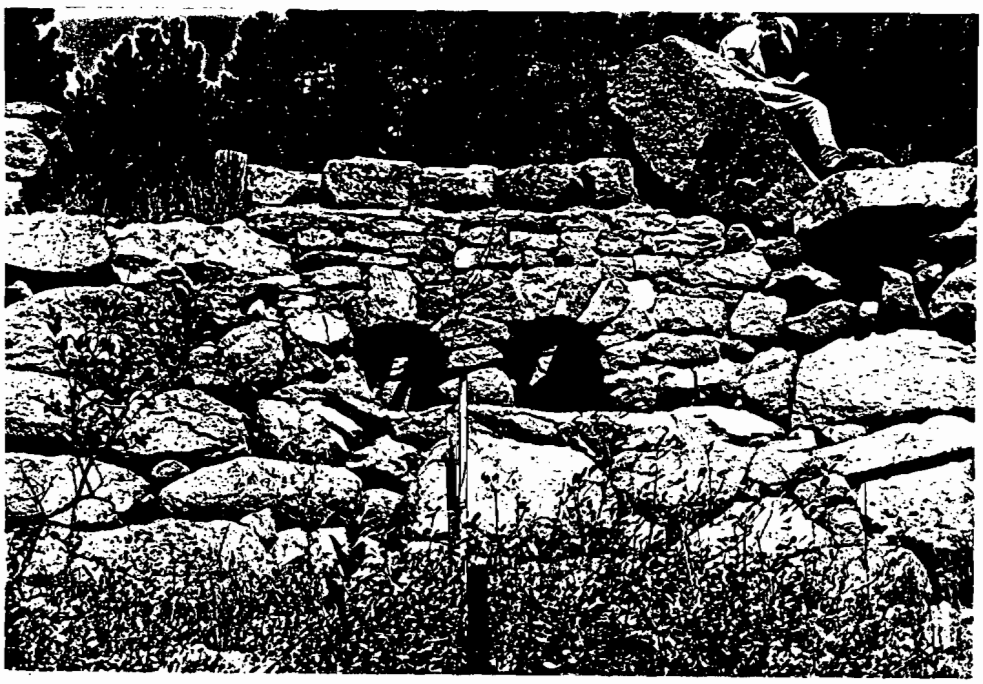


FIGURE 2 - View east at CCC stonework on bridge on Chapman Drive.

The pilasters along the top of the retaining wall, the culvert and cattle guard, and the gateposts are all constructed from mortared, dressed cobbles. The gate located on the uphill (east) side of the roadbed is supported by a short wall and gatepost. The gate is constructed from 1x4 milled stock, bolted together and hung on hand-wrought iron hinge pins.

The cattle guard is constructed from 11 (1 1/2 inch O.D.) concrete-filled pipes laid on concrete supports. The pipes are secured in place using hand-wrought iron bars. The portion of the culvert below the cattle guard is constructed from mortared granite blocks, held in place by a crude keystone.

Historic Data

Chapman Drive was constructed by camp SP5C of the Civilian Conservation Corps between the fall of 1933 and the spring of 1935. In October 1933, Camp SP5C was sent to Boulder and established a camp at 6th Street and Baseline Road. Their main endeavor was the construction of the road down the west slope of Flagstaff Mountain. The road was named Chapman Drive in honor of Oscar Chapman, then Assistant Secretary of the Interior. Mr. and Mrs. J.C. Doherty, owners of Blanchard's (now the Red Lion Inn) donated a right-of-way across their property in Boulder Canyon. The road was formally opened on March 29, 1935 (Barker 1977).

Historic Dump:

Site **5BL4177** is a large, mostly reclaimed trash dump covering about 18,000 square meters (4.45 acres). It is situated on the floodplain along the south side of a creek, and is bisected by a road. The portion south of the road is on Boulder Mountain Parks lands and has been extensively reclaimed (Dick Lyman, personal communication, 1993). This portion of the site is presently used as a parking area and picnic ground. On the north side of the road, on Open Space land, there are a series of pits and a steep, heavily overgrown drainage with a large concentration of historic trash. Materials observed in this concentration included: hundreds of cans of various sizes; hundreds of pieces of broken bottle glass of various colors including purple and aqua; a dozen complete bottles; hundreds of sherds of a white glazed stoneware china with a green double ring pattern ("Carr China Carson Crockery Co. Denver" on bottom); several enameled pans; bricks; metal fragments; steel strapping; and fragments from an earthenware pickle jar.

Historic Data

A homestead entry patent for 120 acres including the land on which this site is located was granted to William Brierley on March 20, 1882 (Patent #23). The 1915 Drum Map shows that the property was owned by the Sanitarium at that time. The Seventh Day Adventists built the Sanitarium on 90 acres of land that they acquired in 1895 (Fetter 1983; Smith 1981). According to Dick Lyman, this was an informal city dump, and was also used as a dump by the nearby Sanitarium. Some soil has been placed over portions of the part of the trash dump on Open Space to stabilize and protect it from vandalism. At least some of the material in the dump predates World War I, and probably is from around the turn of the century. Some material is however more recent.

Town of Boulder Ditch and Reservoir:

Site **5BL4182** is the **Town of Boulder Ditch and Red Rocks Reservoir.** The old ditch, actually a buried eight-inch cast iron pipeline, is still visible and easily traced. It extends along the hillside above the north bank of Boulder Creek for a distance of about 1207 meters (3960 feet) from its former headgate near Goat Rock (a.k.a. Point o' Rocks and Hanging Rock). The ditch supplied water to the Red Rocks Reservoir which was located south of Red Rocks about halfway between the Farmers and Silver Lake Ditches.

Historic Data

On October 31, 1874, Boulder citizens passed a bond to construct a city reservoir and pipeline near the mouth of Boulder Canyon. The reservoir was built in the following year. The Town of Boulder Reservoir has also been called Red Rocks Reservoir or Sunshine Reservoir Number 1. J.P. Maxwell surveyed the project and N.D.

Currigan laid the pipe and built the reservoir and John A. Elland dug the ditch. The headgate for the Town of Boulder Ditch was located up Boulder Canyon on the north side of the creek at a point below the present headgate of the Silver Lake Ditch. Water rights for the Town of Boulder Ditch were adjudicated in 1882 and an appropriation dated June 17, 1875 established a domestic right of 6.189 cfs from Boulder Creek, as well as an additional 6.189 sec. ft. for storage rights in the reservoir (Smith 1986). Because of fear of pollution from mill tailings, in 1890 a new intake was established just above the Alps and a new eight-inch pipeline was laid to Sunshine Reservoir (Burns & McDonnell, Consulting Engineers 1921).

Around 1906 the Red Rocks Reservoir was abandoned. The location of the reservoir was developed as the Glen Crosley Silver Fox Farm in the 1940's. The Silver Fox Farm ceased operation by 1948 (Jack E. Smith, personal communication) and nothing remains of it today. At present, the location is clearly visible as a flat area just north of Settlers Park. The buried pipeline is still present and although disturbed in a few small sections, the stacked stone retaining walls are still present in a few locations.

Civilian Conservation Corp Camp:

Site **5BL4930** is the **Civilian Conservation Corp Camp** located immediately south of Baseline Road, at the intersection of Baseline Road and Sixth Street. The site originally covered an area some 235 feet (72 meters) north-south by 350 feet (107 meters) east-west. According to Clifford Teegarden, who served in the CCC at this camp, it consisted of seven major buildings. Four of these structures were personnel barracks, each designed to accommodate roughly 40 men. A fifth building served as a garage housing the camps' nine vehicle fleet which included five dump trucks and four stakebed transport trucks. The largest structure consisted of a quartermaster's office and administrative facilities on the east end and a mess hall on the west end. The seventh building housed a recreational facility. In addition to these primary structures, the site originally included a number of ancillary facilities including a boxing ring, a concrete-floored latrine, a tool shed, and a creosote tank for dipping construction timbers (Clifford Teegarden, personal communication 1994).

Very little remains of the camp (Figure 3). Field investigations revealed one in situ foundation, a variety of foundation fragments, several runoff control devices, and two scatters of coal which was presumably used as a heating fuel. The single remnant foundation is located on the extreme southwest end of the camp, and probably marks the location of the recreation building. At least two recycled galvanized hot water heaters have been set into the ground on the eastern end of this foundation, presumably to channel slope runoff. Fragments of coal located on the platform indicate that

the building was probably heated by a coal burning stove or furnace.

Concrete foundation fragments similar to those noted above were observed scattered across the site; no other intact building foundations were located, however. A concentration of poured concrete foundation blocks was noted on the northeastern end of the camp, in the probable location of the quartermaster's building. It is likely that, either the buildings were generally constructed above ground using small concrete post footings, or the structures were dismantled and the land regraded. The general lack of building platforms and access road cuts seems to suggest the latter possibility.

Historic Data

This camp was occupied by several corps of men between the late fall of 1933 and the late summer of 1937. It is not known when the structures of the camp were removed, but it seems likely that they had been removed by the time ski tow operations began in 1948.

Men stationed at this camp, as well as another one located at 6th Street and Boulder Creek, participated in a wide range of construction activities between the summer of 1933 and the summer of 1935. These included the building of recreational facilities such as trails, roads, and shelter houses. The CCC also made a number of contributions to natural resource management within the park by cutting fire lines, removing trees which had been killed by the Black Hills beetle, and constructing erosion control devices. More information on the CCC is presented under Recreation in the Discussion Section.

Mesa Ski Slope:

Site **5BL4931** is a ski jump and ski lift complex known as the **Mesa Ski Slope** (Figure 4). The site is located on a broad open slope 300 feet south of Baseline Road at the mouth of Gregory Canyon. The site consists of two principal sets of features: the remnants of a rope ski tow, and a ski jump and associated facilities.

The site measures 500 feet (152 meters) east-west by 380 feet (116 meters) north-south. The ski jump has been constructed by excavating a broad trench parallel to the fall line of the slope and piling the overburden on the downslope end of the trench, creating a kind of 'backstop.' The upper portion of the jump has been graded to angle of 25°, while the middle and lower (runout) sections are graded to 40°, creating a breakover from which to jump. Artifacts observed in association with the ski jump include the wooden remnants of a jump platform, a galvanized hot water tank (recycled for use as a drainage culvert), a steel pole, a steel shovel head, and a snow fence. Several foundations were also observed adjacent to the ski jump. Feature 1, located west of the

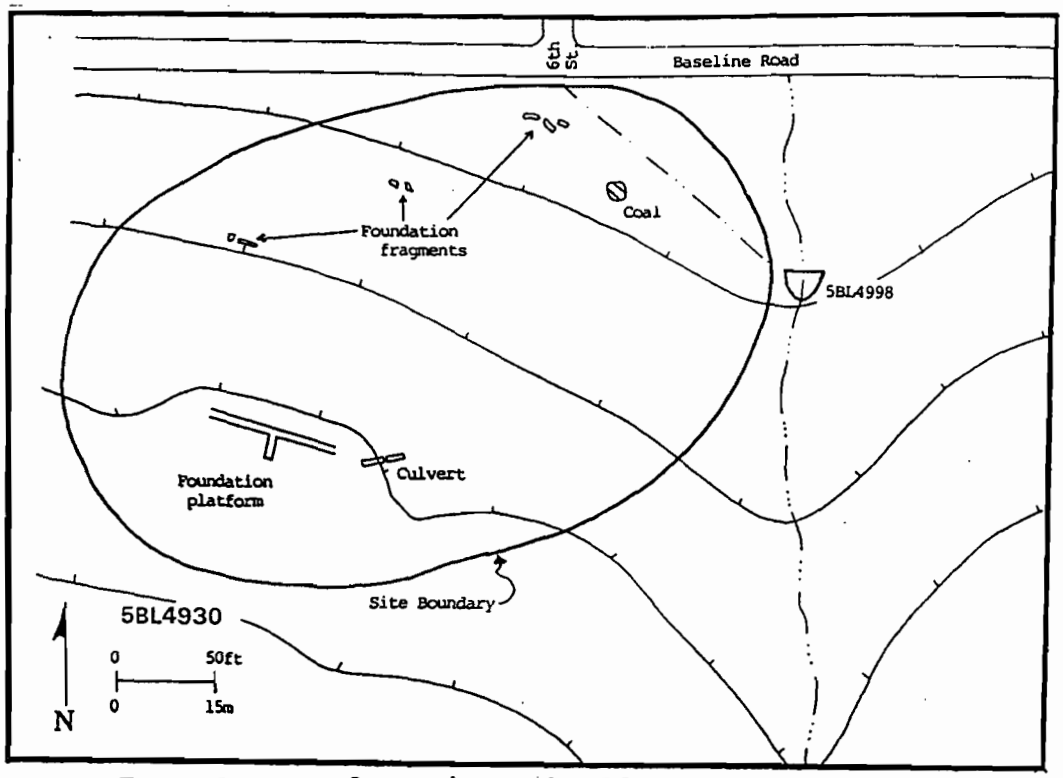


FIGURE 3 - Plan view of CCC Camp.

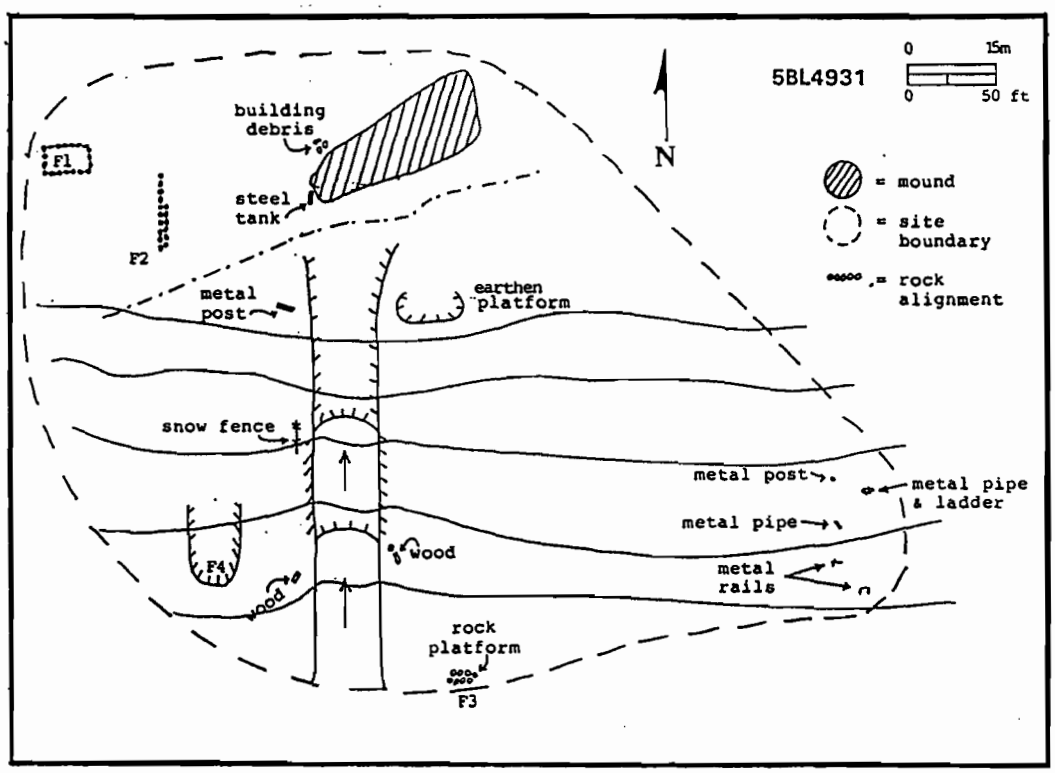


FIGURE 4 - Plan view of Mesa Ski Slope.

overburden 'backstop' at the base of the jump, is a rectangular depression and sandstone rock wall. To the east of Feature 1, roughly 75 feet (23 meters) west of the base of the jump, is Feature 2, a line of sandstone cobbles 50 feet long and oriented parallel to the fall line of the slope. The function of this rock alignment is not known. Feature 3, a small rock platform, has been constructed at the top of the slope, and may have been connected to the operation of the jump. A second, smaller jump (Feature 4) is located roughly 40 feet (12 meters) to the west of the main jump.

The rope ski tow is located approximately 325 feet (100 meters) to the east of the jump. The tow, which is oriented approximately north-south and parallel to the fall line of the slope, was originally 850 feet (259 meters) long. Observed remnants of the tow structure include metal rails, metal posts and poles, and a metal 'ladder' structure to which a rope pulley has been attached. No other features were observed in association with the ski tow.

Historic Data

During the winter of 1947-48 Harris Thompson and Steve Bradley initiated the idea for the Chautauqua Mesa Ski Area. Work on the ski tow and the ski jumps was begun in October of 1948. Junior Chamber of Commerce member Norman Winchester, along with Thompson and Bradley, then University of Colorado ski coach, organized volunteers to clear rocks from the slopes and plant new grass. The project, dubbed "Operation Big Push," was given assistance by the Jaycees, members of the local ski club, and interested community volunteers. The local National Guard contributed bulldozers to the effort.

The original 200-foot-long rope tow was driven by a Dodge gasoline-powered engine liberated from an Army truck. An 850-foot long rope tow was installed prior to the winter of 1949-50. The remains of the motor house, located at the upper end of the tow are still visible. Field telephones were used to communicate between the top and the bottom of the lift. Although this second lift served its intended purpose, Thompson noted that cross-country skiers were able to get to the mesa top faster than skiers on the rope tow.

The first ski jump was constructed from snow and dirt, and allowed skiers to jump from 15 to 40 feet. Two longer jumps, which are still visible on the western end of the ski area, were constructed prior to the winter of 1949.

Although the ski area operated for seven weeks during its first winter of operation, an "Official Grand Opening" was held in January of 1949. Members of the University ski team and two members of the Olympic ski team provided a demonstration of ski-jumping techniques. The rope tow and ski jumps were sold to the Boulder Recreation Department in 1950. The ski area was subsequently closed due to vandalism and lack of snow.

During 1962 the ski area was revived by members of the Boulder area Junior Chamber of Commerce. Use of the lift was free; it is estimated that the ski area cost roughly $200 a season to operate at that time, including gasoline for the lift motor and insurance.

A short season planned by the Jaycees for March 1963 was cut short when it was discovered that the lift facilities had been vandalized. Although the damaged lift motor and field telephones were replaced, the ski area never operated again. This description and history of the Mesa Ski Slope is derived principally from Pettem (1983).

Sunshine Reservoir:

Site **5BL4932** is the **Sunshine Lake Reservoir** complex, consisting of an earthen dam, dam output control structure, spillway, inlet control facilities, and a small stone quarry (Figures 5 & 6). The reservoir was constructed by excavating a small triangular basin, approximately 325 feet (100 meters) on a side, into the slope overlooking Sunshine Canyon. The northern end of this basin was then enclosed by constructing an earthen, rubble filled dam 360 feet (110 meters) long and 23 feet (7 meters) high. Discharge control facilities were located in the center of the dam and enclosed in a small control house. Water was admitted to the reservoir from an aqueduct which was constructed over the southern flank of Anemone Hill; inlet control pipes and valves are visible on the southern end of the reservoir opposite the outlet control shed. A dry-laid stone block apron was constructed below the inlet pipes to control erosion. Spillway facilities were located on the northeastern corner of the lake and consisted of two large iron pipes set into a concrete support structure. The pipes fed into a spillway canal. The reservoir was surrounded by a slab-paved walkway into which an iron guard rail was set. The sandstone blocks from which the walkway was constructed may have been cut from a small stone quarry above and to the southeast of the reservoir.

The reservoir, now empty, has been modified since its abandonment. A vehicle ramp has been built from the northwestern corner of the reservoir into the bottom of the reservoir basin to allow for the dumping of construction materials. A power generation facility has also been constructed on the western side of the reservoir.

Historic Data

The Sunshine Lake Reservoir (**5BL4932**) was another early water project. The reservoir was proposed in 1886 when the Red Rocks Reservoir (5BL4182) no longer met the demand for city water. The location was approved by City Council in April 1890 and construction was completed in 1891. The reservoir had a capacity of 5,000,000 gallons and cost $160,000 to complete (Schoolland, 1980). The reservoir was abandoned in the 1950s.

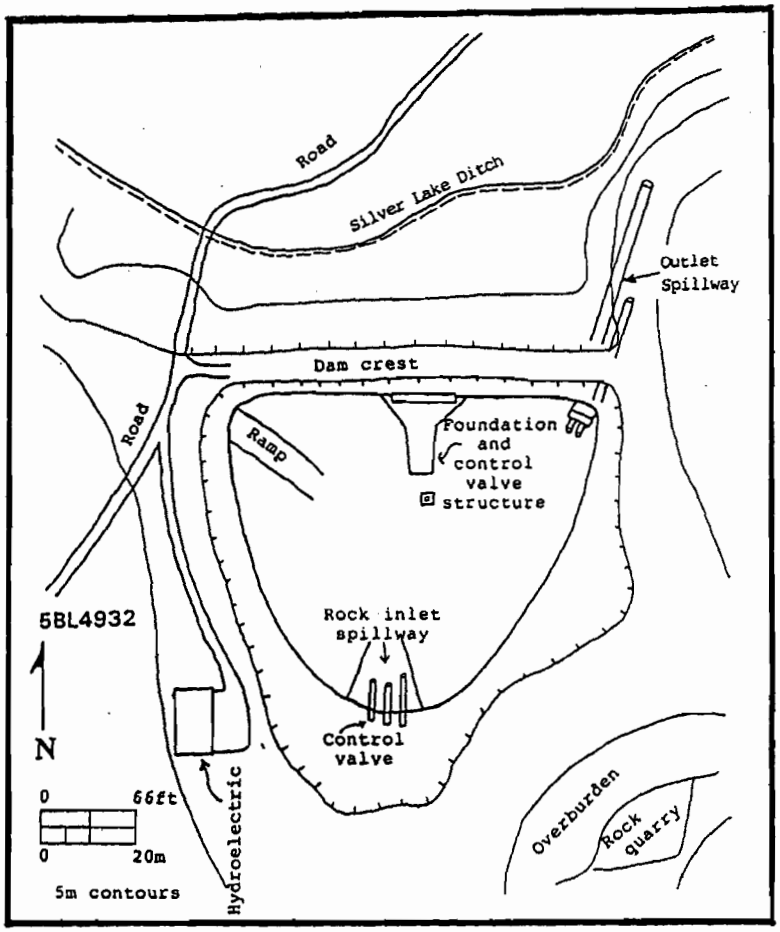


FIGURE 5 - Plan view of Sunshine Reservoir.

FIGURE 6 - View NNE at Sunshine Reservoir Dam.

Settlers Park Quarry:

Site **5BL4933** is the **Settlers Park Quarry**, a Lyons Sandstone quarry consisting of the quarry cut, an access road, and the remnant foundations of rock hauling equipment (Figures 7 & 8). The quarry area is approximately 200 feet (60 meters) on a side; the platform created by the working face measures 60 feet (18 meters) north-south by 150 feet (45 meters) east-west. The quarry face is roughly 16 feet (5 meters) high. An access road approaches from the west, turns west at the eastern face of the hogback and enters the quarry area. A rock retaining wall constructed from dry-laid stone masonry supports the southwestern section of the quarry platform. On the western end of the quarry is the remains of a tramway or some other type of rock transport equipment. The structure consists of a concrete pillar foundation and several small concrete footings. A line of ½ inch diameter rock bolts has been set into the rock outcrop below the foundation pillar, presumably supporting the tramway or rock chute superstructure required to move quarry materials to the base of the cliff. One short segment of light-duty track (2 inches wide) was observed at the site, suggesting that a rail and cart system was in use here.

The quarry bench supports an extensive growth of ponderosa pine trees. The site is currently receiving extensive recreational use. A large number of modern firepits and associated trash scatters were observed during the survey.

Historic Data

The parcel containing the quarry was owned by one Eric J. Anderson, who transferred title to James A. Maxwell on November 27, 1880. James Maxwell transferred the parcel to John Brierly on May 18, 1882. James Maxwell is listed as a stonemason in the 1880 census. James A. was the father of James P. Maxwell, considered to be one of Boulder's city fathers.

Eric Anderson was not related to Jonas Anderson Jr., who was associated with the Anderson Quarry in Skunk Canyon. Both Eric Anderson and Jonas Anderson, Jr. were incorporators of the town of West Boulder in 1874. Eric and Jonas Jr. are both noted as builders and carpenters in the 1880 census. Jonas Anderson, Sr. homesteaded much of West Boulder and was one of the incorporators of the Anderson Ditch Co. in 1874.

Since Eric Anderson and Jonas Anderson Jr. were associated, it is possible that Jonas Jr. was involved with the stone quarry at Settlers Park. John Brierly is known for his fruit and vegetable gardens, but did build a stone house in 1871 (Brierly House, 207 Pearl). This house is constructed from quarried stone. Brierly and his son Sylvester also built the Armory building at 934 Pearl St. Since the Brierly's were involved with construction, it is not impossible that they used the stone quarry. While it seems logical that stonemason James A. Maxwell would have used the quarry, this

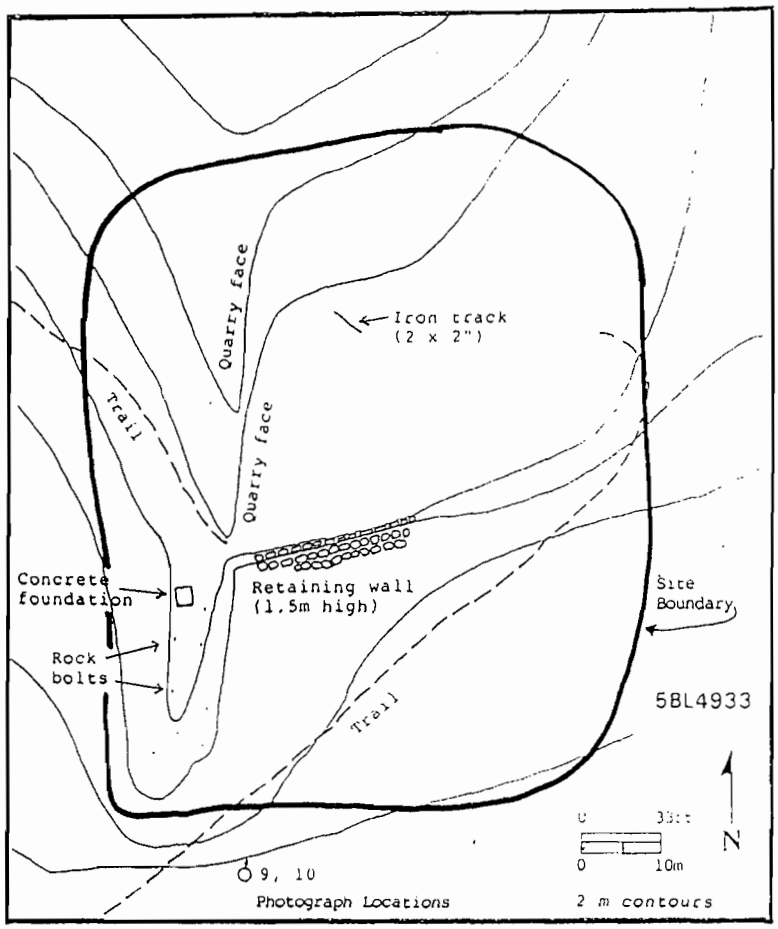


FIGURE 7 - Plan view of Settlers Park Quarry.

FIGURE 8 - View N at Settlers Park Quarry, retaining wall in center photo.

was apparently not the case. A J.B. Sturtevant photograph, taken about 1900 of the Yount Flour Mill, with Red Rocks in the background, shows no quarry cut.

Bluebell Picnic Shelter:

Site **5BL4934** is the **Bluebell Picnic Shelter.** The site consists of a stone shelter and an associated terrace containing two picnic benches and a grill (Figures 9 & 10). The overall site dimensions (including the shelter and the adjoining patio) are 26 feet (8 meters) north-south by 46 feet (14.5 meters) east-west. The shelter house itself measures 26 feet (8 meters) north-south by 18 feet (5.5 meters) east-west and is approximately 10 feet (3.2 meters) high. The structure was originally built as an open pavilion, with four battered (trapezoidal) piers supporting the roof, and a low concrete-capped stone masonry bench all around except in the center of the east side. There is now a stone fireplace in the center of the west side, and the north end and west side have been filled in with stone masonry walls. The same assortment of sandstone field stones has been used in these walls as in the original piers, but the piers are more nearly laid in courses. The 12 foot high stone chimney is more like coursed rather than random rubble. The fireplace has a sandstone plaque embedded in it carved with the legend, "Erected by Boulder Lions Club." The metal roof is laid over milled pine close-laid sheathing on milled rafters. The floor is of poured concrete.

To this original structure a macadam terrace has been added. Two concrete and stone picnic benches, and a bar-b-que grill, have been put into place on this patio.

Historic Data

The shelter was originally constructed by the Boulder Lions Club at a cost of $875. The work was completed in 1923. Lions Club President John M. White and Secretary Percy L. Corbin initiated the project in 1921, in order to alleviate demand for use of the Panorama Park Shelter House which had been built by the Club in 1919. Approval for the project was given by the Planning and Parks Commission on May 16, 1921 (Planning and Parks Commission minutes, 5/16/21).

The shelter has been modified several times since its original construction. The fireplace may not have been part of the Lions Club shelter. The north and west elevations have been infilled, presumably in order to provide additional shelter. It is also possible that the roof has been extensively repaired or replaced. The mortar on the outside northwest corner has also been maintained. The timing of these modifications is not known, although it is likely the they were made by the Civilian Conservation Corps prior to 1935. A Boulder Daily Camera article dated May 8, 1935 indicated that the CCC had been making

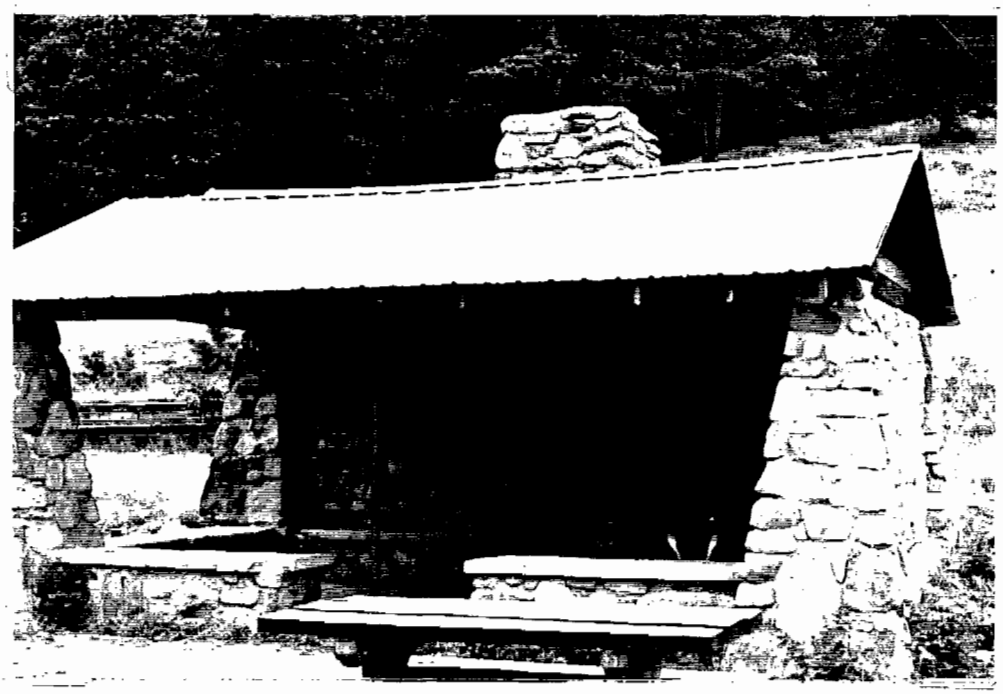


FIGURE 9 - View SW at Bluebell Shelter.

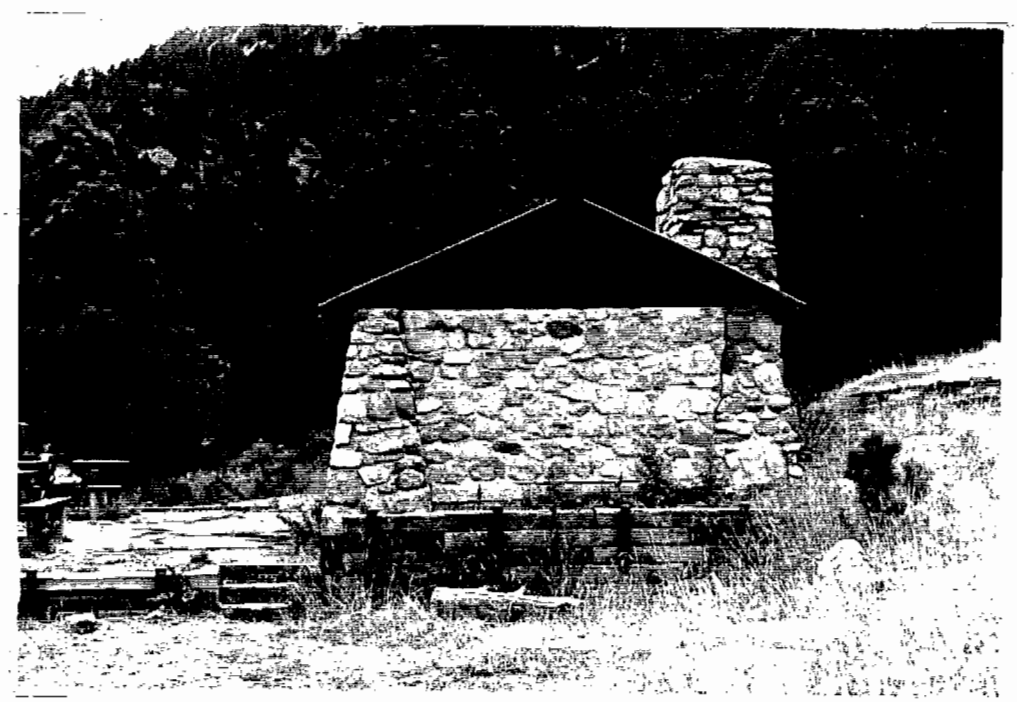


FIGURE 10 - View of north side of Bluebell Shelter.

improvements to the facilities in Bluebell Canyon, although the nature of these improvements was not specified.

The terrace and soil retaining walls on the east side of the shelter house were probably added at some later date. They do not appear to conform to typical CCC construction techniques. It is not known when these modifications were made.

Green Mountain Lodge:

Site **5BL4935** is the **Green Mountain Lodge**, consisting of the lodge structure itself, an attached patio terrace, and a modified spring (Figures 11 & 12). The structure measures 48 feet (14.6 meters) in length, 25 feet (7.6 meters) in width, and approximately 15 feet (4.6 meters) in height. This side gable building has a facade gable over the door, which pierces the north elevation approximately 1/3 of the building's length east of the west end. The whole lodge is built in courses of granite rubble, graduated in size from larger stones in the bottom course to smaller stones in the upper courses.

The stones are laid in portland cement mortar, kept well back from the faces, to create deep shadows. There are two fireplaces, one in the middle of the west end, and one on the southeast corner, made of the same fabric. Windows are located on the northwest and southwest corners and on the long sides and ends of the building. Although the windows are unglazed, all of them close with shutters made of one inch boards bolted together and covered with steel gratings.

Inside the lodge is a curious feature to mark off the "upper" (west) end of the hall. Two stone buttresses have been constructed so as almost to join in an arch. The interior is finished with tongue-and-groove planks applied vertically. All this interior wood is stained brown. The floor is of carefully fitted polygonal sandstone flags.

A stone slab patio has been constructed on the northern side of the structure. The patio has walkways that extend around the sides of the building. The patio contains a set of movable picnic benches; a concrete grill has been set into the northeast edge of the patio. A spring, located at the base of a broad slope, approximately 26 feet (8 meters) south of the structure has been modified to provide drinking water. The spring has been contained within a stone and concrete basin. An inscription in the overflow trough indicates that the spring modifications were made in 1964.

Historic Data

Originally known to local residents as the "Boy Scout Cabin," Green Mountain Lodge was built by the Civilian Conservation Corps. Under the direction of G. H. Ellenwood, CCC camp SP-2-C began work on the

FIGURE 11 - View of north side of Green Mountain Lodge.

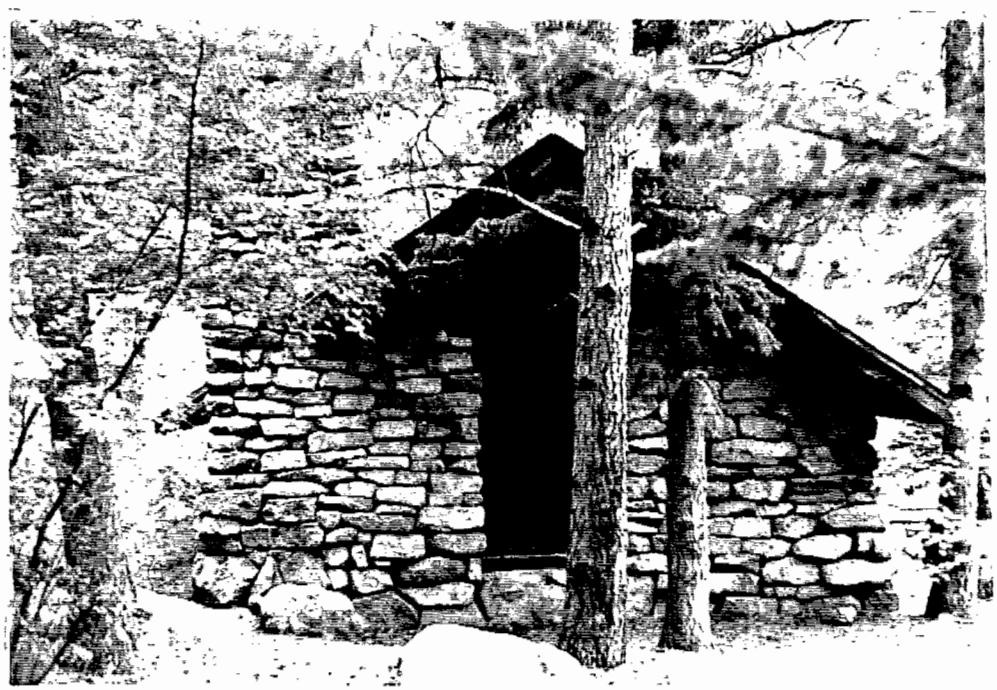


FIGURE 12 - View of east side of Green Mountain Lodge.

lodge in 1934. The lodge was completed in the fall of 1934 at an estimated cost of $5,000 (Boulder Daily Camera, December 14, 1934).

The lodge was constructed from a variety of imported materials. The roof truss structure was constructed from West Coast heartwood pinned with oak dowels. Paving flags for the patio terrace and the interior floor were brought from stone quarries in Lyons. Twelve tons of cement-and-asbestos shingles in twelve colors and sizes are arranged on the roof and grade from antique green on the eves, through grey and burgundy to light red on the ridge crest.

The structure accommodates approximately 50 people, and was intended for the complimentary use of Boulder-area organizations.

Woods-Bergheim Quarry:

Site **5BL4936** is the **Woods-Bergheim Quarry**, located on the broad, open, east-facing ridge which separates Bluebell and Skunk Canyons. The site consists of a large, interconnected complex of quarry operations and access roads, including two large working faces and a series of seven smaller cuts and surface quarries (Figure 13). The largest quarry operations are located on the southern and northern ends of the site; the smaller operations are located on the intervening ridge, overlooking Bluebell Canyon. Quarry operations cut into the Lyons Formation. The overall site dimensions are 900 feet (275 meters) north-south and 480 feet (147 meters) east-west.

The largest quarry operation (Cut 1), located immediately west of Skunk Canyon, consists of a working face between 50 and 65 feet (15 and 20 meters) high which has been cut in at least three planes. A very large quantity of waste rock debris has been deposited on the eastern side of this cut and now extends some 325 feet (100 meters) downhill, below the access bench. Three access roads enter the quarry from the north. The uppermost of these connects the most recent working face with a network of quarry haul roads located on the Enchanted Mesa. The second, located approximately 1/3 of the distance down the length of the overburden pile, has been covered by rock debris. The lowermost access road, located 1/2 the distance down the waste rock pile, is supported by fitted, dry-laid sandstone masonry and extends to approximately the middle of the waste rock pile where an air compressor station has been constructed. The compressor station is constructed from dressed sandstone blocks and concrete, and rests on a concrete foundation which is cut into and supported by the waste rock pile. Artifacts associated with the compressor station include corrugated sheet tin, wire rope, hewn timbers, and window glass.

The only artifact associated with the quarry bench is an iron wheelbarrow. At the base of the waste rock pile a number of

artifacts were observed, including metal barrel ribs and large metal containers.

A second large quarry operation (Cut 2) is located on the northern end of the site, overlooking Bluebell Canyon. Unlike Cut 1, the working face of this operation runs perpendicular to the Lyons Formation. In this case the overlying Harriman Member of the Lykins Formation caps the quarried stone to the east; accordingly the blocks removed from this cut appear to be more blocky and angular than the tabular stone removed from Cut 1. Two haul roads access this operation; an upper road, which provides access to the principal working face, and a lower road which provides access to a smaller secondary working face located 65 feet (20 meters) below the primary cut. The grade of this lower road is supported by rough sandstone block masonry. No artifacts were observed in association with this quarry.

Seven smaller cuts and surface quarries are located on the ridge between the two primary operations. Most of these are small and are not accessed by formal haul roads. Two of these smaller operations appear to be "moss rock" quarries and consist of pits dug into the upper surface of a natural talus field. Several sanitary food containers, an iron fire grate, and one 6x6 inch timber were observed in association with these moss rock operations.

Access roads connect the major quarry features. These roads are generally 5 feet (1.5 meters) wide, graded, banked and supported by rock masonry where necessary. Although many of these haul roads are now badly eroded, remnants of them can be traced across the western portion of the Enchanted Mesa and into Bluebell Canyon.

Historic Data

This complex of quarries was owned and operated by Jonas Bergheim and Frank P. Wood. Wood, who was born on December 30, 1860 and came to Boulder in 1873, was involved in a variety of businesses prior to his partnership with Bergheim, a German immigrant. Wood, who became senile in his later years, died of exposure at the age of 74 after having wandered off on March 17, 1934.

Although the date on which Wood and Bergheim began their operation is not known, it was probably prior to the turn of the century. By the early 1880s sandstone flags (tabular sandstone blocks) began to replace the existing wooden sidewalks of Boulder and Denver. A variety of historic buildings in the Boulder area made use of Woods-Bergheim sandstone (see Sandstone Quarrying in Discussion, below).

Transportation costs for quarried stone were significant. A tram was planned to connect the Woods-Bergheim Quarry to the railroad, which would be cheaper than hauling the stone by wagon, and allow considerably more stone orders to be filled (Daily Camera, March

15, 1910). The tram was never built. The accessibility of quarries near Lyons, Nolan and on Mount Sanitas in Boulder (5BL4173) decreased the competitiveness of the Woods-Bergheim operation.

The "Bergheim-Woods property" was sold to the City of Boulder on March 26, 1920 for $5,800. The city purchased this tract in order to prevent additional development and preserve the mountains for recreational uses.

Historic Artifact Scatter:

Site **5BL4937** is a historic site scatter consisting of a sparse scatter of historic artifacts, associated with at least one charcoal feature (Figure 14). The site measures 98 feet (30 meters) north-south by 89 feet (27 meters) east-west. Artifacts observed at the site include painted ceramic dinnerware fragments; aquablue, purple, green, clear, and brown glass bottle fragments; automobile seat frames and springs; sanitary food cans; rubber; and painted wood fragments.

Several features were observed in association with the site. A concentration of charcoal (roughly 6 feet [2 meters] in diameter) containing burned artifacts was observed near the center of the site. Five shallow, steep-sided pits were located on the perimeter of the site. These have been covered by brush and small branches and may represent temporary privy pits. Two large trash pits, measuring 2 to 3 meters in diameter, located approximately 40 meters east of the site, may not be directly associated with the site.

A line of trees appears to have been planted along the eastern edge of the artifact scatter. In addition, two apple trees were observed in the center of the site. It is not known whether these trees were originally located along some type of historic boundary, such as a pasture fence, or have grown up in a disused trail or road as has been observed elsewhere in the park.

Historic Data

The proximity of a major quarry access road to this site suggests that the artifact scatter may have been connected with quarry operations. The presence of aquablue and purple glass bottle fragments indicates that this site was in use prior to about 1917. The Woods-Bergheim quarry operations were in fact abandoned prior to 1920. The artifact scatter may also have resulted from use of the area during logging operations, or from recreational campers. The Enchanted Mesa was used extensively for overnight camping by the Rocky Mountain Climbers Club and other groups.

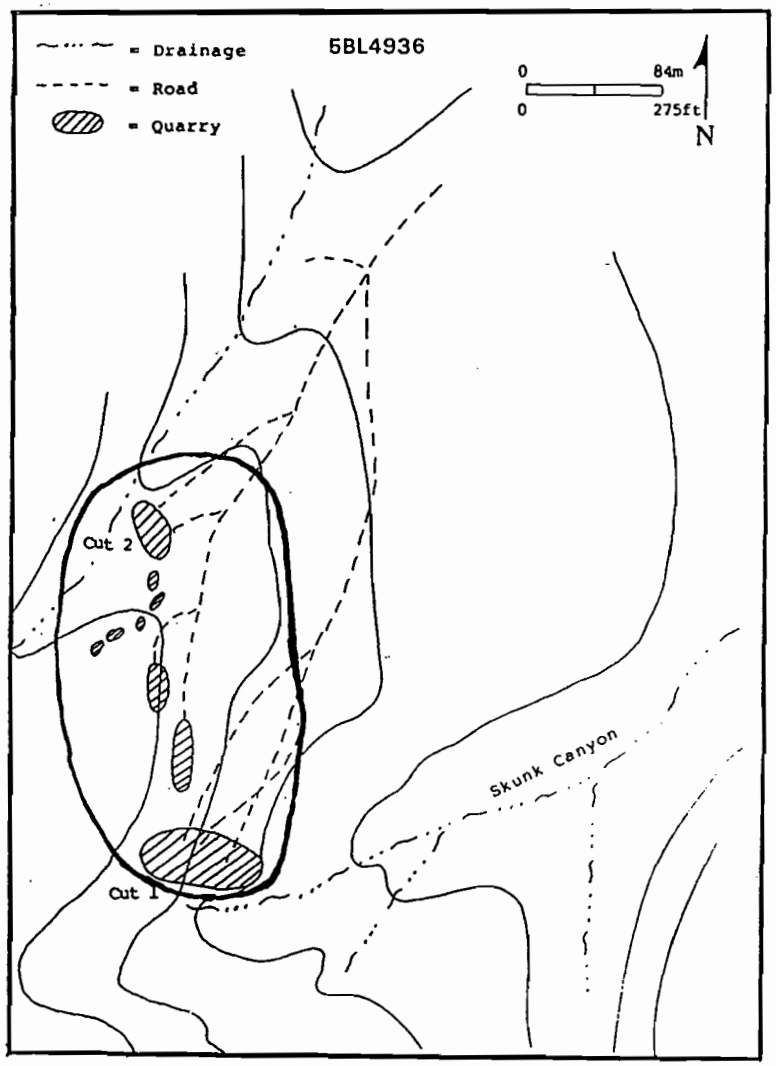


FIGURE 13 - Plan view of Woods - Bergheim Quarry.

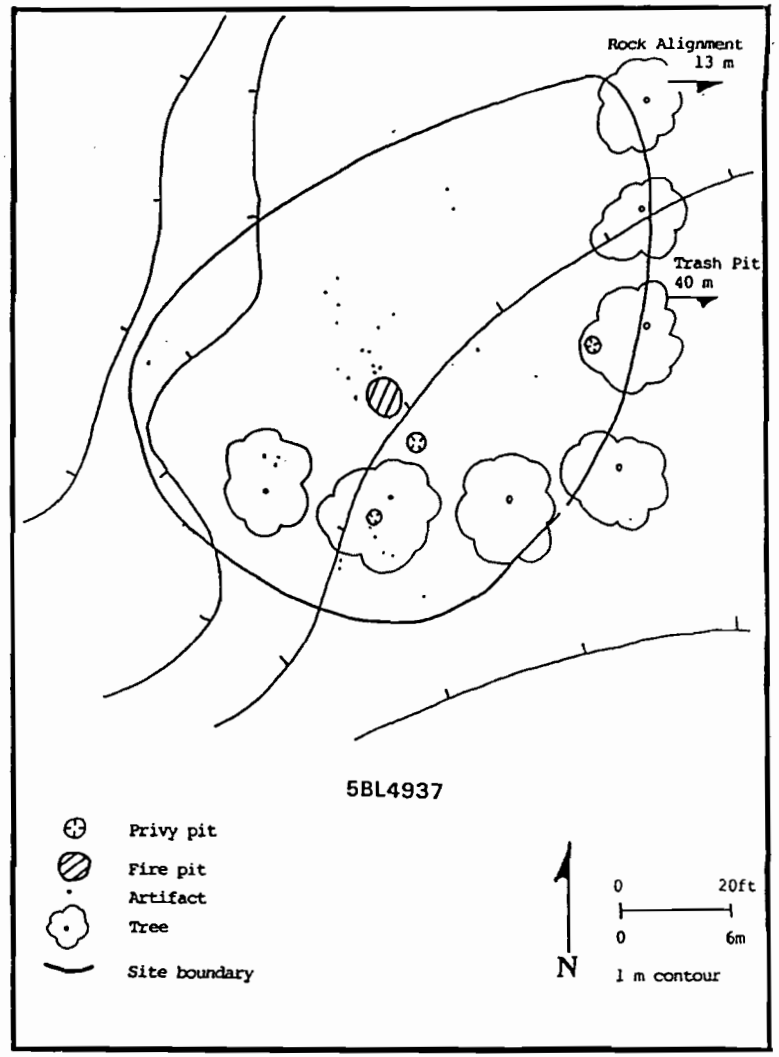


FIGURE 14 - Plan view of historic artifact scatter.

Morse Well:

Site **5BL4938** is the **Morse Well**, consisting of a decorative stone and concrete well head and associated concentric retaining walls, access ramps and stone benches (Figure 15). The well measures 52.5 feet (16 meters) by 82 feet (25 meters). The structure is constructed from partially dressed and fitted granite blocks and concrete. The stone blocks vary in size, and include some small chinking stones. Two semi-circular retaining walls extending from the east and west sides of the well head form gently sloping ramps leading down to the Flagstaff summit road. A semicircular wall, into which a concrete bench has been set, is located on the north site of the well. Overflow from the well is directed through a stone and cement trough to a downspout set into a high decorative stone and concrete retaining wall. The well head, which at one time was fitted with a mechanical pump, is now locked and appears to be non-functional.

Historic Data

A Boulder Daily Camera photograph dated April 30, 1929 appears to show the construction of Morse Well (McNellan 1995). The current form of the well appears, however, to have been due at least in part to the efforts of the Civilian Conservation Corps. A Boulder Daily Camera article dated May 8, 1935 states that, among their many activities, the CCC constructed an "artistic stone wall at the well" on the summit of Flagstaff Mountain. A press release from the Department of the Interior regarding the naming of Sunrise Circle Amphitheater mentions that James P. Solan, supervisor of the amphitheater construction, "also laid up the walls about the Morse Well..".

During the early 1940s the City of Boulder provided a mechanical pump for the well; this pump had originally been located on the Chautauqua grounds. Subsequently the well was condemned and the pump was destroyed by vandals. John J. Morse was Superintendent of the Water Department from 1922 through 1934, a time when substantial work was completed on Boulder's watershed, mostly by the CCC.

Flagstaff Summit Shelter:

Site **5BL4939** is the **Flagstaff Summit Picnic Shelter**, consisting of an open stone and log structure (Figure 16). The shelter is 33 feet (10 meters) long and 21 feet (6.5 meters) wide. This gable roofed structure is constructed from granite boulders laid as random rubble masonry on a poured concrete base. An arched opening or unglazed window pierces the southwest end and the northeast end. Rectangular sandstone flags form the sills of these openings. The southeast side is open from the poured concrete floor up to the top plate. The northwest (rear) wall is solid, and contains two fireplaces, one built into each corner. The fireplaces are made of

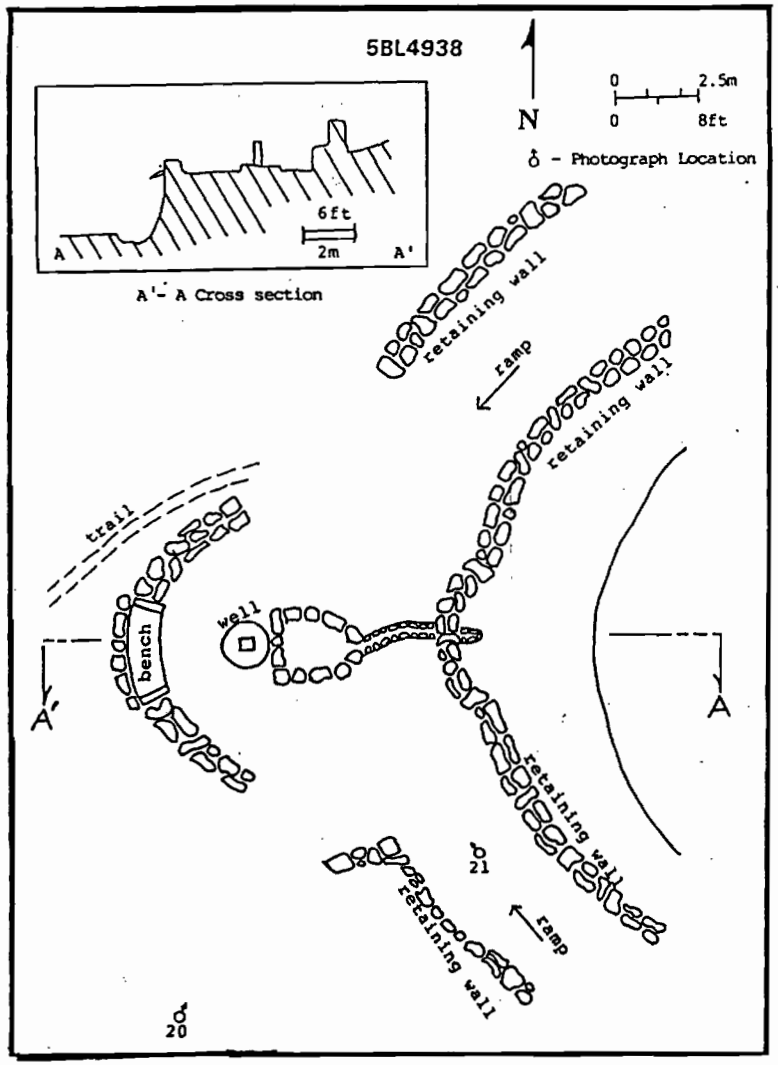


FIGURE 15 - Plan view of Morse Well.

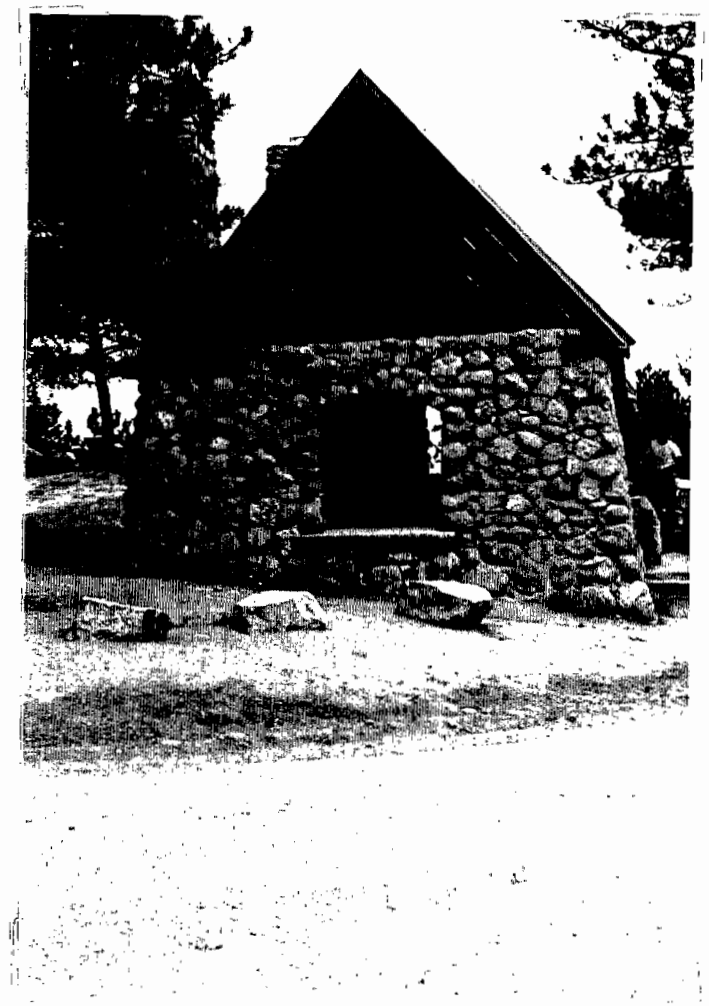


FIGURE 16 - View of Flagstaff Summit Shelter.

the same granite boulders, with low concrete aprons. The chimneys project 16" through rear the wall. The mantels are made from sandstone flags.

All the walls are battered (trapezoidal) from 30" thick at the base to 12" thick under the top plate. The t-shaped entryway is formed by two small walls which extend from the piers and leave the central section of the southeast wall open. The low walls are capped with 4" thick sandstone flags. Two feet in front of these walls is a second low wall 10'0" long and 3'8" high, also sandstone capped, which extends across the opening and frames a rectangular terrace or landing.

The roof is supported by 9" diameter peeled pine poles forming rafter couples. The gable ends are closed by peeled poles set in a herringbone pattern, following the roof slope. Metal roofing now covers the original roof surface. Two concrete and wood picnic benches have been secured to the concrete-slab lined interior.

Historic Data

The Flagstaff Summit Shelter House was constructed between February and April 1933 by the Boulder Lions Club at a cost of $577.24. These funds were donated by the Lions Club and its honorary members William H. and John A. McKenna. Professor Walter C. Toepelman, then Lions Club president, led the effort.

A shelter for the summit of Flagstaff Mountain was originally proposed by the Rocky Mountain Climbers Club in the spring of 1925. A joint committee composed of representatives from the three climbing organizations in Boulder (the Rocky Mountain Climbers Club, the Colorado Mountain Club, and the University Hikers Club) recommended that a wooden shelter house be built just below the flagpole on City of Boulder land near the summit. This structure was to have been built using trees which had been burned in the fire of 1924, over a concrete floor. This three-sided structure would have been open on the east and included a stone fireplace. Construction was arranged for May 9, 1925, but was halted at the last minute when members of the Mountain Parks board intervened and insisted that a stone structure be erected. As a stone structure was considered to be too expensive, the project was abandoned (Rocky Mountain Climbers Club meeting minutes for April 13, 1925; May 11, 1925; and May 23, 1925).

Sunrise Circle Amphitheater:

Site **5BL4940** is the **Sunrise Circle Amphitheater and Flagstaff Memorial**, consisting of a stone and concrete monument and an adjacent semicircular amphitheater (Figure 17). The site measures approximately 164 feet (50 meters) by 131 feet (40 meters). The Flagstaff Memorial, located on the western end of the complex, is a rectangular fieldstone and concrete block onto which a steel

flagpole has been attached. The monument is surrounded by a sandstone and concrete walkway 33 feet (10 meters) in diameter. A brass plaque indicates that the Memorial was erected by Nathaniel Lyon, from the Grand Army of the Republic, Post No. 5, in September, 1932.

The amphitheater consists of a circular central arena around which a semicircular stage and two tiers of bench seating have been constructed. The central arena formerly contained a firepit, which was removed in 1993. The elevated stage, 16 feet (5 meters) wide, is located on the eastern side of the arena, and is accessed by stone steps from both the east and west sides. On the west side of the arena twelve rows of semicircular, concentric bench seats, arranged into two tiers and divided by a broad walkway, have been built. The seating, which faces east and provides a view of Boulder, is divided by two aisles, each fitted with broad irregular steps. Two broad sloping ramps provide access to the amphitheater from the Memorial and the summit road.

The entire complex has been constructed from random rubble masonry consisting of granite fieldstone cobbles and cement. The seating is constructed from concrete and fieldstone. A plaque mounted to the rear of the seating area indicates that the amphitheater was constructed between 1933 and 1934 by the 809th Co. of the Civilian Conservation Corps, under the supervision of James P. Solan.

Historic Data

The Flagstaff Memorial was proposed in 1932 by Thomas Means of the Grand Army of the Republic, and Charles W. Taylor, to replace the previous 71 foot tall wooden pole which had been cut down by vandals in 1930. The new 'telescopic' steel pole was erected in September 1932 and originally measured 75 feet in height. That first steel pole was reduced in 1947 to its current height of 40 feet.

The Sunrise Circle Amphitheater was constructed between September 1933 and March 1934 by Civilian Conservation Corps camp SP2C under the direction of James P. Solan. The amphitheater was constructed in a "natural amphitheater" which had been cleared of debris by local residents during the spring of 1933 as a part of the Reconstruction Finance Corporation (RFC) work relief program (Boulder Daily Camera May 17, 1933). Elaborate dedication ceremonies for the new amphitheater were planned for March, 1934, but were cancelled twice due to snow storms and finally abandoned. (Amphitheater: Rocky Mountain News March 11, 1934; Boulder Daily Camera March 17, 1934; Boulder Daily Camera March 24, 1934; Boulder Daily Camera May 8, 1935; Memorial: Boulder Daily Camera May 17, 1933).

Enchanted Mesa Road:

Site **5BL4941** is the **Enchanted Mesa Road**, consisting of a graded roadbed and a stone and concrete bridge (Figure 18). The Enchanted Mesa Road begins immediately south of the Chautauqua Auditorium and runs from there south along the northern side of Bluebell Canyon. Where the road turns east, and crosses Bluebell Creek, a stone and cement bridge has been constructed. The road continues along the northern slope of the Enchanted Mesa, eventually turning southeast as it approaches the mesa top. The roadbed is approximately 13 feet (4 meters) wide and has been cut into the uphill bank. No formal rock masonry was observed supporting the grade.

The bridge measures approximately 33 feet (10 meters) long and 13 feet (4 meters) wide and consists of three separate sections. A concrete arch tunnel, which has been poured in place, supports the roadbed. On either end of this concrete tunnel a decorative granite fieldstone and cement retaining wall has been constructed. The lower margins of these walls follow the contour of the creek bed; the upper end consists of a low guard rail. The wall at the center of the arch is 11½ (3.5 meters) above the creek bed. Because the stone retaining walls have not been properly bonded to the central concrete arch, they are now pulling away from the roadbed and collapsing. Repairs are slated for 1995.

Historic Data

This bridge was reputed to have been constructed by the Civilian Conservation Corps, but the precise date of construction is unknown. The stonework does seem similar to CCC techniques. No records confirming CCC involvement have been located, however. Mountain Parks Fields Operations/Maintenance Coordinator Dick Lyman recalls that people could and did drive onto Enchanted Mesa via this road when he was a child. The original road was likely to have been a quarry or logging road.

Halfway House:

Site **5BL4942** is the **Panorama Park Halfway House**, consisting of the shelter house and an attached patio (Figure 19). There is also a stone privy associated. The overall site dimensions (including the shelter house and an adjoining patio) are 69 feet (21 meters) by 46 feet (14 meters). The structure itself measures 43 feet (13 meters) by 26 feet (8 meters). The building is an end-gable stone structure with the northwest corner built into the hillside. The southeast side opens onto a raised patio terrace, paved with polygonal sandstone flags and surrounded by a low wall. Two stone benches with backs are built into this wall.

The structure has three walls built of sandstone blocks. The northeast wall is pierced by three openings, or windows. These openings have been modified by the addition of small stones which

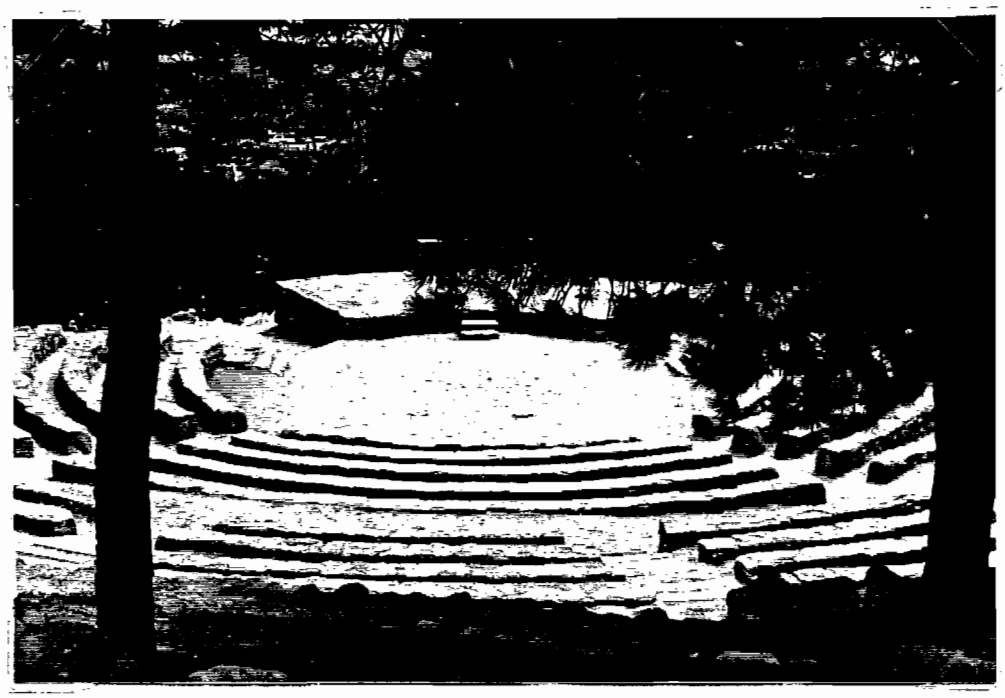


FIGURE 17 - View east at Sunrise Circle Amphitheatre.

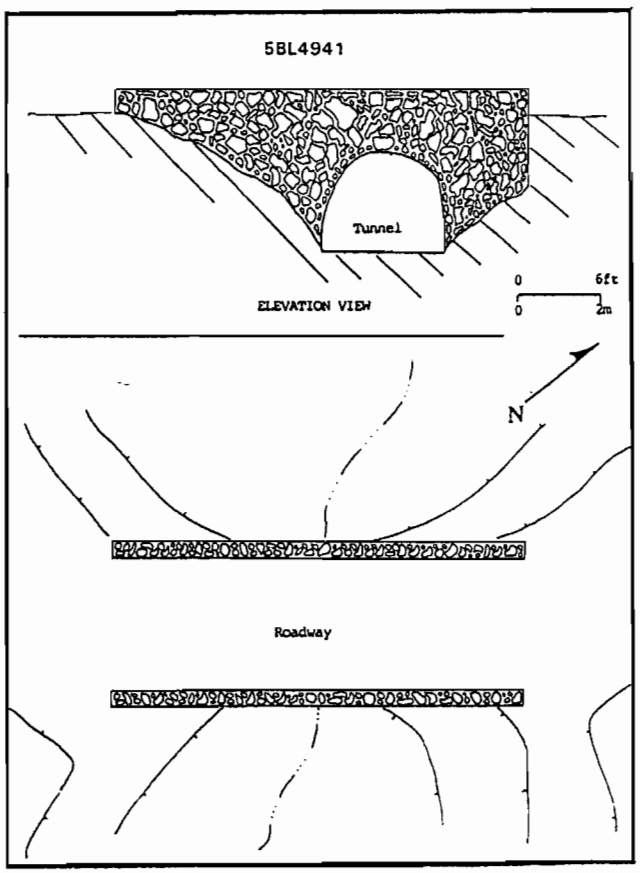


FIGURE 18 - Plan and profile of Enchanted Mesa Bridge.

have reduced the size of the openings. These unglazed windows are now fitted with wooden shutters and steel mesh grates.

The roof structure is made from 12" diameter peeled pine logs. The rafters are peeled pine poles. The roof surface was originally wood shingles over spaced rough-sawn pine sheathing but has now been replaced by metal sheeting. A fireplace is set into the center of the northwest wall; the chimney projects outside the wall. The height of the building on the northeastern corner is 7'0". The height on the northwestern corner is 4'10".

The southeast (front) wall was originally mostly open. Two interior peeled pine posts, and associated support structures formed the door and two adjacent 'windows.' These openings have been modified and are now closed by wooden shutters and steel gratings. The door and window shutters are made from heavy wooden planks.

Historic Data

The original Panorama Park Shelter House was constructed by the Boulder Lions Club at a cost of $800. The structure, completed during the summer of 1919, was the first public picnic shelter constructed in the Mountain Park, and the first of many successful construction projects financed and directed by the newly chartered Lions Club. The construction of the shelter house was directed by the club's first president Dr. L. B. Overfelt. Dedication ceremonies were held on July 6, 1919.

At the time of the shelter's construction the grade of the Flagstaff Road ran through a deeply incised road cut in Panorama Park south of the current roadbed. A Boulder Daily Camera article dated November 16, 1934 indicated that improvements to the grade of the Flagstaff Road in Panorama Park were discussed by the Boulder City Council. Architect S. R. DeBoer's plan to realign and shorten the roadbed, and to make other 'improvements' in Panorama Park was approved. It was also noted that funds to build a replacement shelter house were available through the federal government and Civilian Conservation Corps camp SP5C. A Boulder Daily Camera article dated May 8, 1935 indicated that the road realignment, and the backfilling of the original grade cut, had been accomplished. The reconstruction and lengthening of the road by the Civilian Conservation Corps between had, however, a negative impact on the setting of the picnic facility. An article from the Boulder Daily Camera dated May 17, 1933, for example, noted that although the Panorama Park Shelter remained a popular destination, its location was "spoiled" by the new construction, and that "the road passes close in front of the shelter house and separates it from the fine ovens donated by William Loach, [and] John and Will McKenna."

The new Panorama Park Shelter, renamed the Halfway House, was built by the CCC some time after May 1935.

Anderson Quarry:

Site **5BL4943** is the **Anderson Quarry** consisting of three quarry operations areas and a series of associated access roads (Figure 20). The site measures 1742 feet (532 meters) north-south by 456 feet (139 meters) east-west. The larger operations area (Cut 1) consists of two benches, accessed by separate haul roads. The benches are formed from areas which have been quarried, with terracing from quarry rubble. The lower, and larger, bench serves two large working faces. The upper bench provides access to a smaller secondary working face. The haul road to the upper bench is supported by sections of dry-laid rock masonry, which have now collapsed in several locations.

Two additional cuts are associated with this quarry complex. Haul roads leading to these work areas connect with the main quarry access road on a broad ridge east of the quarry operations. The quarry roads join what is now the Mesa Trail, which was originally a quarry road. Cut 2, located on the northern end of the site, consists of a small working face and an access bench which measures roughly 33 feet (10 meters) east-west by 66 feet (20 meters) north-south. A second small work area (Cut 3, located immediately south of Cut 2) consists of an apparent surficial moss rock quarry which measures 33 feet (10 meters) by 50 feet (15 meters). A shallow cut and fill grade connects these operations to the primary work area. Considerable talus is present between Cut 1 and Cuts 2 & 3, on the west edge of the site. Some of the talus appears to be quarry waste, possibly from moss rock quarrying, but it is unclear how much is from quarrying.

Historic Data

The age of the Anderson quarry, also known as the Green Canyon Quarry (Herzer 1965), is not known, although operations began there sometime prior to 1890. An item in the Boulder County Herald from July 2, 1890, regarding the new railroad depot, states that " the new depot....will certainly be an exceedingly handsome building...the walls are built of Boulder County stone from the Anderson Quarry at Skunk Canyon and will certainly satisfy the most fastidious of Boulder cranks of which no city in Colorado can boast of or produce a greater supply." A deed, conveyed from Eugene Austin and Charles Russell, to Jonas Anderson Jr. granting right-of-way for quarry operations was completed on November 27, 1896. This right-of-way was maintained when Russell and Austin sold their property to the city in 1903. Quarry operations appear to have ended sometime prior to 1920 when Frank P. Wood and Jonas Bergheim, who had granted a similar right-of-way to Anderson, sold their property to the city, including the right-of-way. There was, however, a 'short-cut' from the Anderson quarry to Boulder through Skunk Creek Canyon (Herzer 1965).

Jonas Anderson Jr. was an associate of Eric Anderson, who originally owned the property on which the Settlers Park quarry was

FIGURE 19 - View of east side of Halfway House.

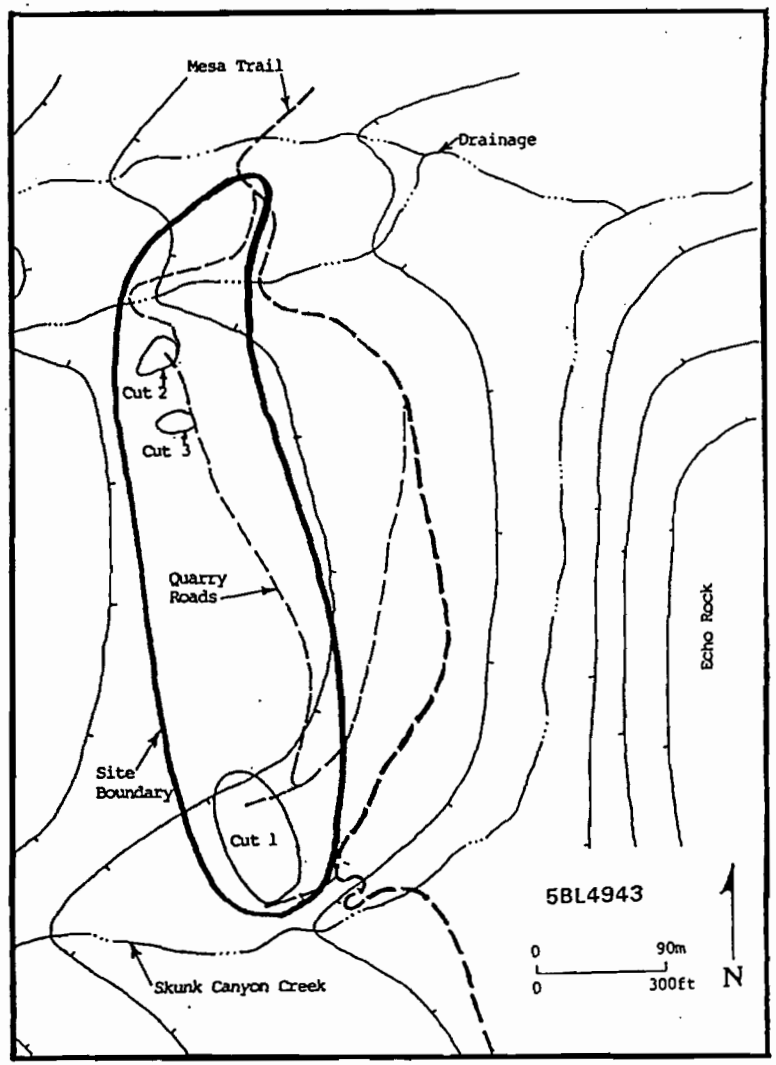


FIGURE 20 - Plan view of Anderson Quarry.

located. Both Eric Anderson and Jonas Anderson, Jr. were incorporators of the town of West Boulder in 1874. Eric and Jonas Jr. were both noted as builders and carpenters in the 1880 census. Jonas Anderson, Sr. homesteaded much of West Boulder and was one of the incorporators of the Anderson Ditch Co. in 1874. When Jonas Anderson, Sr. (1810-1894) died, his estate included "a fine stone quarry".

Flagstaff Road:

Site **5BL4944** is the **Flagstaff Road**. The road begins at the western terminus of Baseline Road, at the mouth of Gregory Canyon, ascends the eastern flank of Flagstaff Mountain, and follows the broad ridge between Long Canyon and Lost Gulch, southwest of the summit of Flagstaff Mountain. A short spur in the road, beginning at the its intersection with Chapman Drive (5BL4170), accesses the summit of Flagstaff Mountain. The road leaves the Park approximately 1½ miles (2.4 kilometers) northeast of Kossler Lake. The site consists of the roadbed and the adjacent right-of-way.

Because the road has been reconstructed, upgraded, and modified repeatedly during the past 89 years, different segments of the modern roadway date to different periods. The roadway has been realigned and reconstructed in response to changes in public use, and automobile design requirements. Although several sections of the original grade are still in use, much of the roadbed has been modified. These modifications primarily involve a reduction in grade (and therefore a lengthening of the roadway) and an increase in the radius of most corners. Erosion control structures, such as culverts and drainage ditches, have also been added and upgraded.

The roadway has generally been cut or blasted into the slope on the uphill site. Most of the modern road is built on an earthen grade, although the historic roadbed was supported in numerous places by dry-laid granite and sandstone masonry walls. The largest of these is located near the base of the road, and is still in use. This wall, measuring approximately 360 feet long (110 meters) and 28 feet (8.5 meters) high, is constructed from stones ranging in size from 1 foot (0.3 meters) to 5 feet (1.5 meters) in diameter. Typically the sections of historic rock masonry vary from 3 to 10 feet (1 to 3 meters) in height and 20 to 330 feet (6 to 100 meters) in length. Several of the retaining walls incorporate small rock outcroppings.

Early roadway construction practices also included the apparent use of wooden culverts. Three original switchbacks located near the Park boundary northeast of Kossler Lake illustrate the use of low dry-laid rock retaining walls and heavy wooden plank culverts. These structures were clearly not intended for use with heavy vehicles. The three original switchbacks have been now replaced by two larger-radius curves on the modern roadway.

A bridge built across Gregory Creek at the base of the road typifies the work of the Civilian Conservation Corp on the Flagstaff road. This semi-circular bridge measures 33 feet (10 meters) wide and 60 feet (18 meters) long. The culvert consists of a stone and cement tunnel fitted on the west end with a corrugated steel pipe. The east end of the tunnel is supported by a stone block keystone arch. Each face of the bridge is constructed from loosely fitted undressed sandstone and granite blocks and cement. On the west face of the bridge the stones are completely cemented with mortar 1 to 4 inches (3 to 10 centimeters) wide; on the east face very little mortar has been used. Both sides of the bridge are fitted with stone and cement guard rails 3 feet (1 meter) high, and 1½ feet (0.5 meters) wide. A carved inscription block located on the western guard rail indicates that the bridge was a gift of W.L. Armstrong to the City and County of Boulder in 1919.

Historic Data

A roadway was first established on Flagstaff Mountain in 1906. This 3/4 mile long segment, which terminated in Panorama Park, was ten feet wide and included grades of up to 10%. The construction cost was $2,000. Carriage excursions along the "Flagstaff Scenic Drive" from the Chautauqua grounds were advertised in 1907 (McNellan 1995). By 1915 the road was extended several miles, at least to the southwestern corner of Section 36, T.1N, R.71W, and probably at least as far as Realization Point in the saddle between Long Canyon and Lost Gulch (Drumm map 1915). By 1926 the road had been lengthened to a total of four miles, at a cost of $40,000 (McNellan 1995). A 1931 map shows the road extending beyond Kossler Lake onto what is now Walker Ranch (Drumm map 1931). The road to the summit of Flagstaff Mountain from Realization Point was built prior to the spring of 1933 at the urging of the Boulder Daily Camera (Boulder Daily Camera May 17, 1933).

By the summer of 1933, however, the entire roadway was in poor condition. As a consequence, the Civilian Conservation Corps undertook major repairs and modifications. A National Park Service press release issued after the CCC improvements were completed noted that the road was originally "unsuited to even a moderate amount of traffic. It was too narrow for cars to pass comfortably, all curves were banked the wrong way, surfacing had been washed off by initial errors in construction, and ditches where they existed were choked with debris" (National Park Service memo at Carnegie Library). Some of the grades were as high as 12 to 16 percent, and the roadbed included sharp, blind curves. The CCC reduced grades, widened the roadbed and constructed stone masonry guardrails. The horseshoe bend in Panorama Park was eliminated and the cut filled and landscaped (Boulder Daily Camera May 8, 1935).

A "Better Flagstaff" campaign to make further improvements to the roadway was initiated by the Boulder Daily Camera in 1948 (McNellan 1995).

The Armstrong Bridge across Gregory Creek was first built in 1919. The bridge, a gift to the city from then-mayor W. L. Armstrong, was later widened and modified as a part of the CCC's Flagstaff road improvement project (Boulder Daily Camera May 8, 1935). The bridge was again modified and expanded during the late 1970's or early 1980's (Dick Lyman, personal communication 1994).

Gregory Canyon Homesite:

Site **5BL4945** is an historic homesite, consisting of a foundation platform, a stone fireplace and retaining walls, an associated artifact scatter, a stone-lined path leading to the foundation platform, and several pit features (Figure 21). The site dimensions are 197 feet (60 meters) east-west by 180 feet (55 meters) north-south. The foundation platform is located on the southern side of the site and measures 18 feet east-west and 15½ feet north-south. The southern side of the foundation platform has been excavated into the ridge; the northern end is supported by a low retaining wall. Other than a fireplace in the center of the southern elevation, no portion of the structure is now standing.

The fireplace is constructed from shaped and fitted granite slabs and cobbles, and fine-grained cement. The firebox is constructed from non-aggregated cement supported by reinforcing bar. An iron kettle hook is mounted inside the firebox. Vertical granite slabs have been used to frame the firebox, and smaller fitted stones have been used to form a long, narrow mantle. Two stove pipes originally formed the chimney, although the upper portion of the fireplace has collapsed. The southern elevation of the structure is supported in part by low stone and concrete 'wings' extending from either side of the centrally located fireplace.

Several small pits are associated with the structure, located south of the rear wall. A concentration of historic artifacts is located north of the structure (downhill), which consists primarily of steel food and beverage cans, glass mason jars with ceramic lid inserts, and sheet tin. Several glass bottles with screw-type lids, ceramic plate fragments, and metal cups were also observed.

Historic Data

This homesite was probably associated with agricultural activities such as stock raising, although no direct documentation about the ownership or use of the property is now available. The substantial fireplace suggests that the structure served as more than a temporary shelter. The extensive trash scatter associated with the structure also suggests that the homesite may have been used over a period of several years. Artifacts observed at the site are from the 20th Century, but the period of occupation is unknown. The land parcel which includes this site was transferred from the federal government to the city in 1906 (Deed 95-329). This

structure may have been an unpatented (title was never granted) homestead, or may have been used by squatters.

Upper Bear Canyon Cabin:

Site **5BL4946** is a vernacular log cabin , approximately 140 vertical feet (43 meters) above Bear Creek (Figure 22). The site consists of the structure and a very sparse scatter of artifacts. The structure and foundation measures 23 feet (7 meters) east-west and 16.5 feet (5 meters) north-south. The structure was erected on a rubble-filled platform, the downslope sides of which (south and west) are supported by low retaining walls. The foundation platform extends beyond the structure on the east and west elevations. The north end of the platform is cut into the hillslope about 4 to 8 inches. A low water diversion wall has been placed north of the north elevation of the structure.

The walls of the structure are constructed from local ponderosa pine logs. The logs have been cut from the adjacent (east) slope with a handsaw and axe and notched using a modified V-pattern, similar to a square notch. The exterior bark is still attached to the logs. No evidence for split log or cement mortar chinking was observed.

The cabin consists of two rooms. The outer room, opening to the exterior on the east elevation, measures 5.9 feet east-west and 7.8 feet north-south. The larger inner room, also with a door in the east elevation, measures 13.1 feet east-west and 8.9 feet north-south. There is no evidence for the location of windows. No dimensional lumber was noted at the site and no evidence for roof construction details was observed. Four log courses remain standing in the west elevation.

The interior room contains a partially destroyed fireplace, now standing only four courses high. The fireplace was constructed from local granite cobbles loosely joined together with non-aggregated cement. No remains of a chimney were observed.

Only a few artifacts were found in association with this structure. Several bottle glass and rubber fragments were located inside the structure. Roughly 92 feet south two sanitary food containers were found. A half-full sack of solidified concrete was also noted.

Historic Data

This structure was probably associated with stock raising activities, although no documentary evidence about the ownership or function of the site is available. The ephemeral nature of the construction techniques, along with the lack of associated artifacts, suggests that the site was used on a temporary or intermittent basis. The land parcel which includes this site was

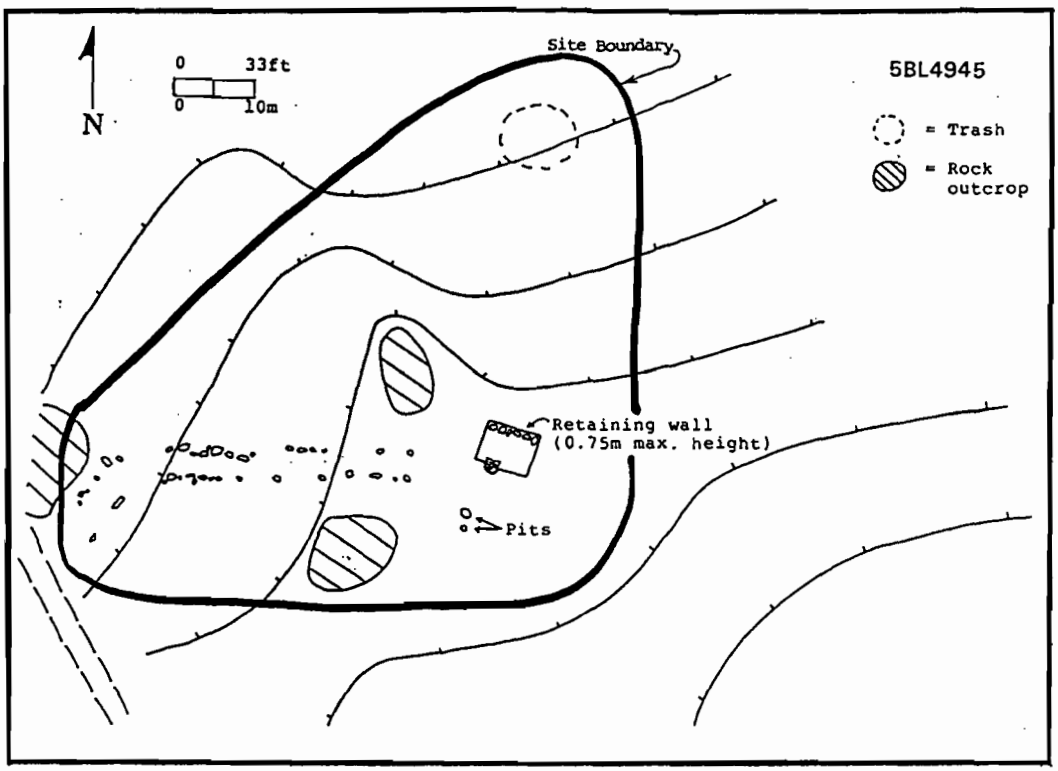


FIGURE 21 - Plan view of Gregory Canyon Homesite.

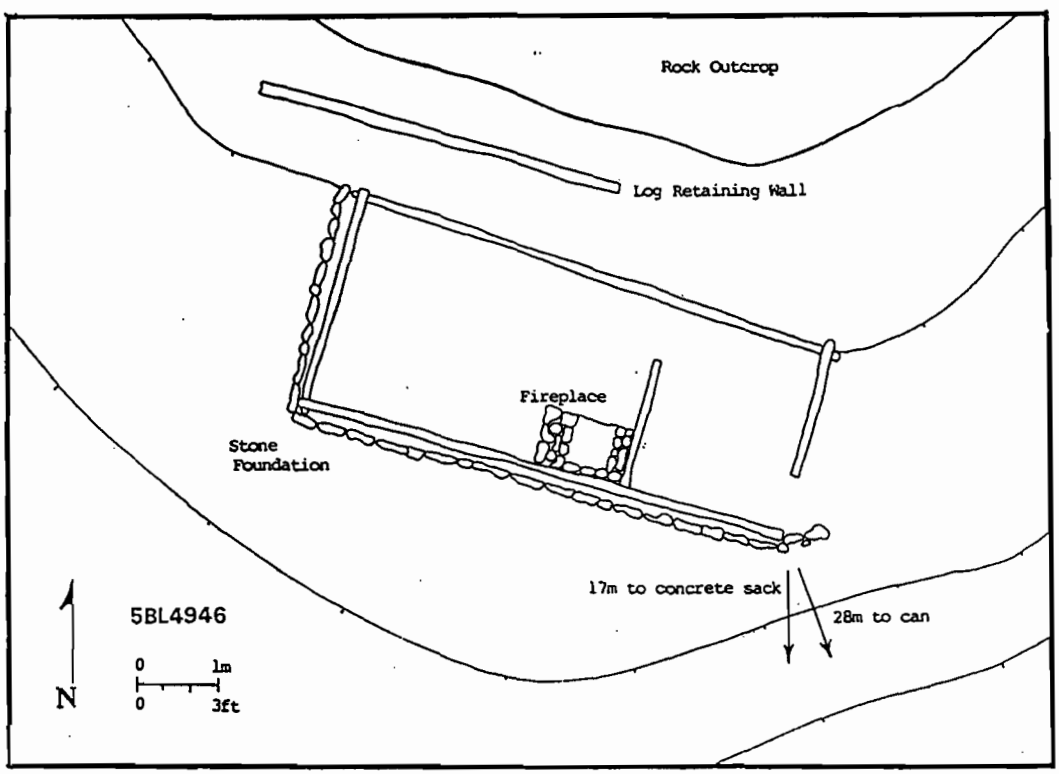


FIGURE 22 - Plan view of Upper Bear Canyon Cabin.

transferred from the federal government to the city of Boulder in 1906 (Deed 95-329).

Lower Bear Canyon Cabin:

Site **5BL4947** is a historic site consisting of a vernacular log structure, two associated pit features, a stone alignment, and a sparse scatter of artifacts (Figure 23). The site measures approximately 61 feet (18.7 meters) north-south and 45 feet (13.7 meters) east-west. The structure was built from hand-cut logs, hewn on their upper and lower surfaces, and stacked without notching. In plan dimension the structure measures 12 feet (3.7 meters) east-west and 14 feet (4.2 meters) north-south. No direct evidence for the locations of doors or windows remains, although indirect evidence suggests that there may have been a door in the west elevation. Fifteen unshaped, granite cobbles piled in the northeast corner indicate the probable location of a fireplace. No evidence for cement mortar was observed. Probable oxidation surfaces on several of the stones, however, confirm their use in a fireplace, or firepit. The remaining logs are heavily weathered and covered by a significant growth of lichen and moss on all horizontal surfaces. The eastern elevation contains the highest standing section, where four courses remain.

The artifacts associated with this structure include a segment of wire rope (3/8 inch diameter), at least two hole-in-cap cans, fragments of household ceramics, and a variety of clear and green glass bottle fragments. In addition, milled lumber fragments (1x4 and 1x6 planks) were observed near the remains of the structure. Several artifacts appear to have originated in a cutbank which may be eroding into, and exposing, a trash or privy pit.

One small pit was observed in association with the structure. A low L-shaped rock wall or platform of unknown function was also observed.

Historic Data

The location of this structure immediately adjacent to the Bear Canyon wagon Road (site 5BL3925) suggests that the two sites may have been connected, although the road's original toll house was probably located immediately east of the park boundary on what is now Boulder City Open Space property (Boyhood of E.M. Pease, n.d.).

The artifacts associated with the structure, and the apparent age of the construction timbers, indicates that the structure was probably in use prior to about 1905 or 1910. The original Bear Canyon road was built in 1862, and it is unlikely that the cabin would pre-date that period.

Gregory Canyon Road:

Site **5BL4948** is the Gregory Canyon road, traces of which can be observed intermittently beginning at the mouth of Gregory Canyon and extending west through Long Canyon. The road ends on the ridge above Long Canyon, where it intersects the Flagstaff Road (5BL4944). The site consists of the roadbed and the adjacent right-of-way.

In the lower portions of the canyon the road was built on a rubble-filled grade excavated from the uphill bank. The road is generally 8 feet (2½ meters) wide. Historic photographs indicate that the road was originally surfaced with gravel and local earth, although this has now been eroded. No rock retaining walls or erosion control structures were observed in the first 1/2 mile of roadbed.

The middle portion of the roadway features a series of impressive cuts and switchbacks blasted into bedrock. The first major cut is located where the road climbs onto the ridge between Gregory Canyon and Long Canyon. This long steep grade has been excavated out of the northern face of the ridge. Immediately above this grade is the Double 'S' curve. Here the road makes four successive switchbacks, the uppermost of which has been blasted out of a massive rock outcropping. The inclination of the roadway approaches 15° near the top of the Double 'S'. Above this the grade has been established by blasting a shallow trench through short sections of bedrock.

The gradient of the roadway through Long Canyon is considerably lower. In the eastern portion of the canyon the road crosses a broad meadow. At the western end of the meadow a short spur connects the Gregory Canyon road with Chapman Drive (site 5BL4170) and the Flagstaff Road (site 5BL4944) at Realization Point. Rock check dams or retaining walls have been built across several ephemeral drainages to support this grade.

Above the Green Mountain Lodge (site 5BL4935) the grade has been excavated into the uphill slope and supported in several places by long, low dry-laid rock retaining walls. A second series of road support structures has been put into place across the creek immediately above the lodge.

Historic Data

The Gregory Canyon road (**5BL4948**) represents the first attempt to link the fledgling gold camps at Central City, Black Hawk, Gold Hill and Ward, with the growing town of Boulder (Schoolland 1980). John H. Gregory, the discoverer of the rich gold deposits at Central City which bear his name, is reputed to have been the first to utilize this corridor to the high country. Gregory apparently brought a stamp mill for processing gold ore to Central City via St. Vrain, Longmont, Valmont and Gregory Canyon in 1859 (Schoolland 1980). Henry Clay Norton's "St. Vrain, Altona, Gold Hill, and

Gregory Road Company" improved the original Gregory route, probably in 1860 or 1861 (Schoolland 1980). Construction efforts continued intermittently throughout the 1860's and 1870's. The road appears to have been improved from the top down. Beginning near Kossler Lake the road followed the southern side of Long Canyon to the bedrock outcrop dividing Long and Gregory Canyons. At that point wagons were lowered over the precipice by block and tackle (Smith 1984). In 1873 the lower section of the road was improved from Boulder up to the Double 'S' switchbacks (Smith 1984). Schoolland states that the road was largely abandoned after about 1890 (1980:210), but a Sturtevant photo dated 1896 shows the Double 'S' section in good repair and obviously still used. William Loach used the Gregory Canyon route to haul tungsten ore from mines in the mountains in 1904-05. It was abandoned as a road when the Flagstaff Road was completed as far as Kossler Lake (Schooland 1980).

Third Flatiron Quarry:

Site **5BL4949** is the Third Flatiron Quarry, consisting of two primary working faces, two large 'moss rock' quarries, a series of smaller surface excavations, and connecting access roads (Figure 24). The site measures 772 feet (234 meters) north-south by 838 feet (254 meters) east-west. The working face and bench of the largest quarry (Cut 1) measures 72 feet (22 meters) north-south and 92 feet (28 meters) east-west; the waste rock pile extends some 50 feet (15 meters) downhill on the east. Another working face and bench (Cut 2) is somewhat smaller and located immediately south of Cut 1. Working area 3 consists of a large 'moss rock' quarry which measures roughly 164 feet (50 meters) east-west and 66 feet (20 meters) north-south. This bench is accessed by multiple parallel haul roads. The southern end of the site consists of a 'moss rock' operation which harvested a large mobile talus field. A small loading platform has been constructed at the edge of this talus field to accommodate wagon or truck traffic. A series of small surface cuts and excavations are located on the crest of the ridge between Cut 1 and Cut 3, and are not accessed by formal haul roads.

An additional series of amorphous 'moss rock' quarries is located east of the principal quarry operations, adjacent to the Royal Arch Trail. Several trenches have been excavated into the base of the large talus field extending downhill from the Third Flatiron. A series of interconnected haul roads access these operations.

The haul roads accessing each work area are approximately 6½ feet (2 meters) wide. The grade is cut into the slope on the uphill side and built on rubble fill. A least one short section of dry-laid stone masonry was observed supporting one segment of these access roads.

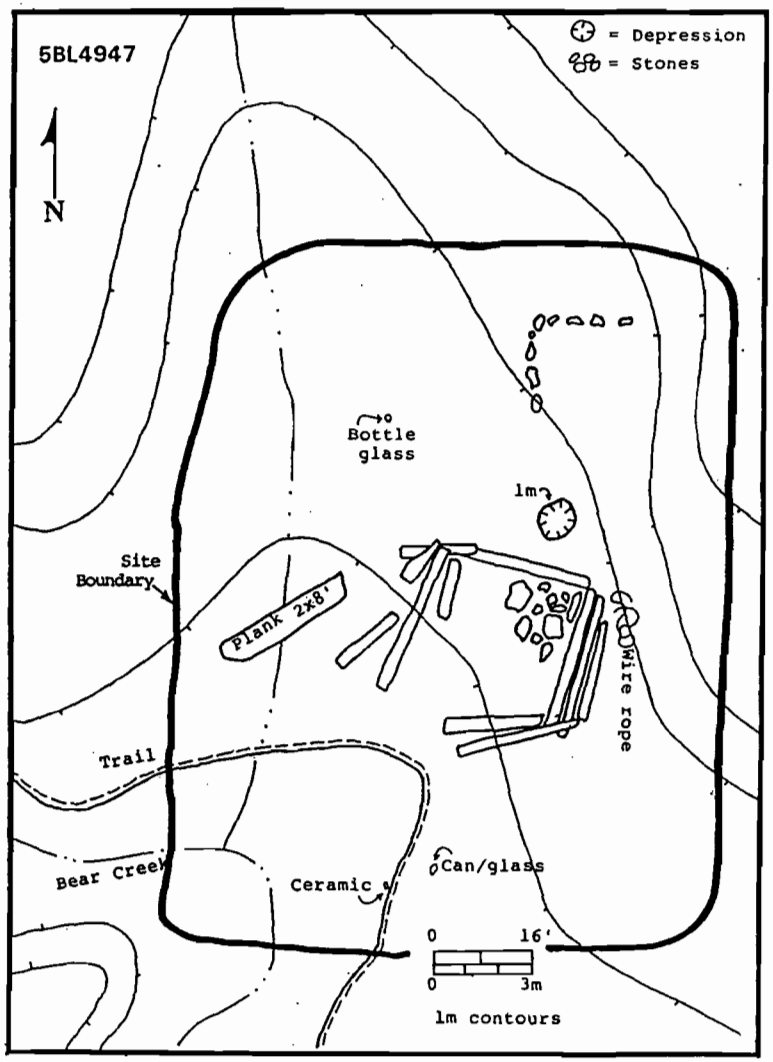


FIGURE 23 - Plan view of Lower Bear Canyon Cabin.

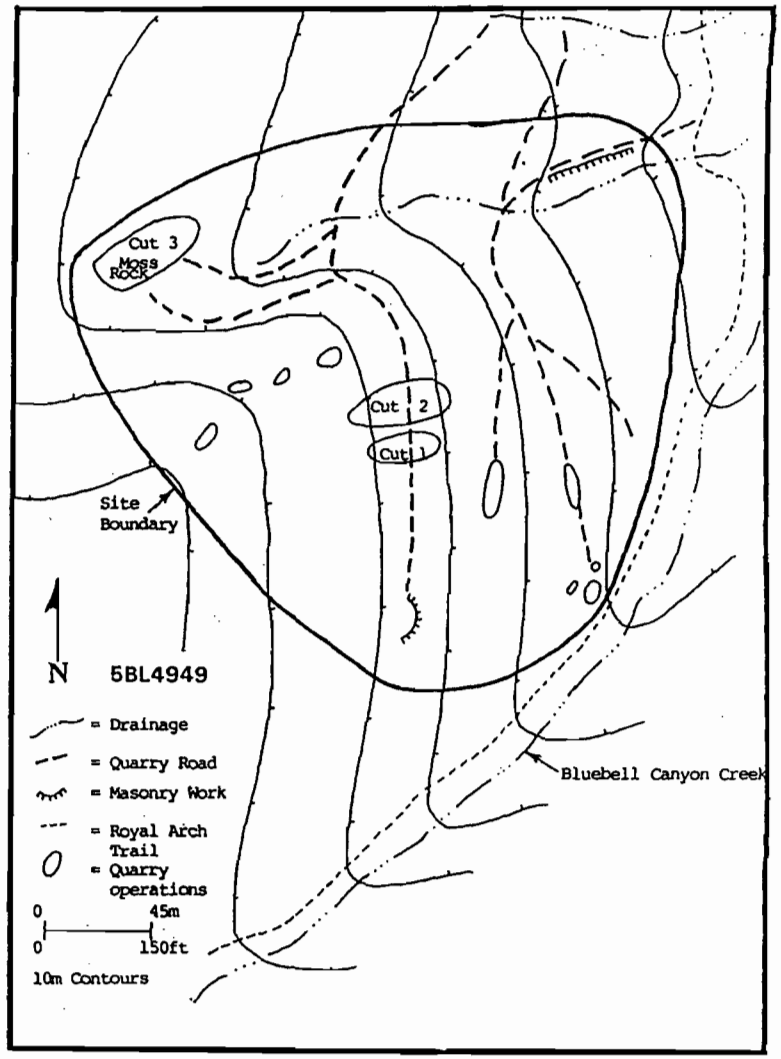


FIGURE 24 - Plan view of Third Flatiron Quarry.

Historic Data
As with the Woods-Bergheim (5BL4936), Anderson (5BL4934), and Settlers Park (5BL4933) quarries, the Third Flatiron quarry takes advantage of the high quality construction material available in the Lyons Formation. Although the ownership and dates of operation of this quarry are not known it is possible that it may have been associated with Frank Wood and Jonas Bergheim. The land parcel which includes the Third Flatiron quarry was transferred, along with their more well-known operation to the south, from Wood and Bergheim to the city in 1920 (Deed 513-436). No right-of-way documents are known for this property, and it therefore seems likely that operations were abandoned by 1920.

Sawmill Site:

Site **5BL4950** is a portable sawmill production locus consisting of two large piles of mill scrap, associated artifacts and an access road (Figure 25). The production area is located in the bottom of a shallow ephemeral drainage and measures 123 feet (37.5 meters) north-south by 123 feet (37.5 meters) east-west. The site contains two distinct mill scrap piles. The first is made up of beams with large wanes, ½-rounds and ¼-rounds. The second scrap pile is made up of small dimension trim stock. An informal haul road provides access to the production site. The road is 3 to 5 feet (1 to 1.5 meters) wide and now largely overgrown by douglas fir trees up to 6 inches in diameter. The slopes to the north of this site show extensive evidence of small scale timber production activities, including numerous stumps and stacks of partially-bucked timber. No evidence for structures or other features was observed.

Historic Data
Discussions with a current resident of the Kossler Lake area indicated that the Kossler Ranch had been extensively logged during the 1930s and 1940s. Both the Bear Peak West Ridge and the Green Mountain West Ridge show extensive evidence of small-scale logging activities (Dale Johnson, personal communication 1994).

Historic Artifact Scatter:

Site **5BL4951** is an historic artifact scatter located adjacent to the original grade of the Flagstaff Road (**5BL4944**). The site is situated on the crest of the broad ridge separating Long Canyon from Lost Gulch (Figure 26). The site consists of a sparse scatter of historic artifacts without associated structures or features.

The site measures 197 feet (60 meters) east-west by 148 feet (45 meters) north-south. No structures, foundations, or other features were observed, although the Flagstaff Road bisects the site. Several fire rings of uncertain association are located on the ridgetop; it

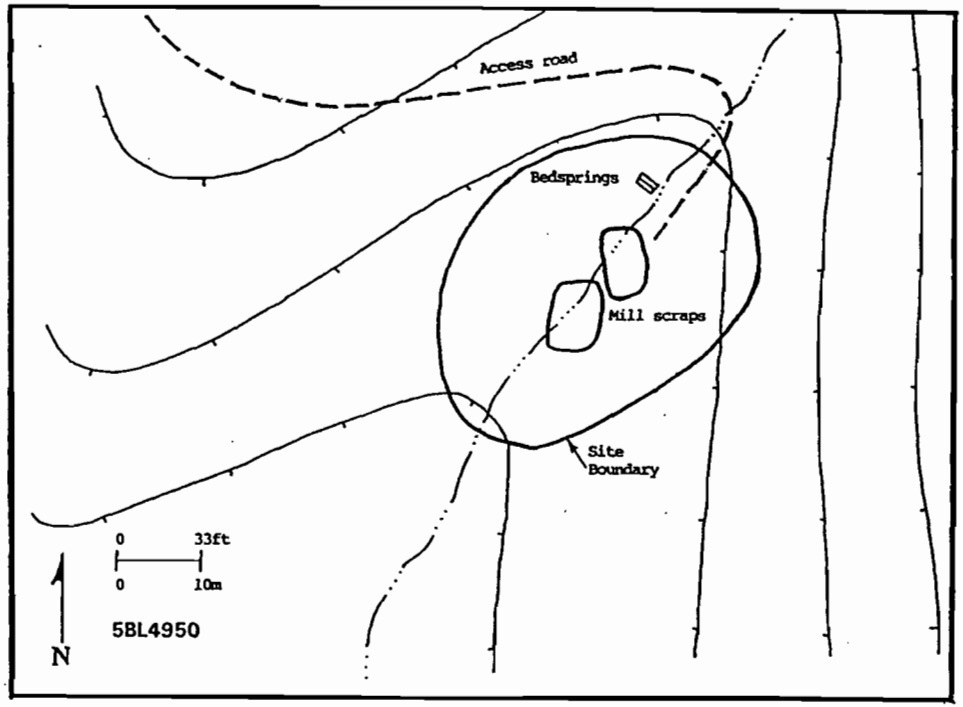


FIGURE 25 - Plan view of Sawmill Site.

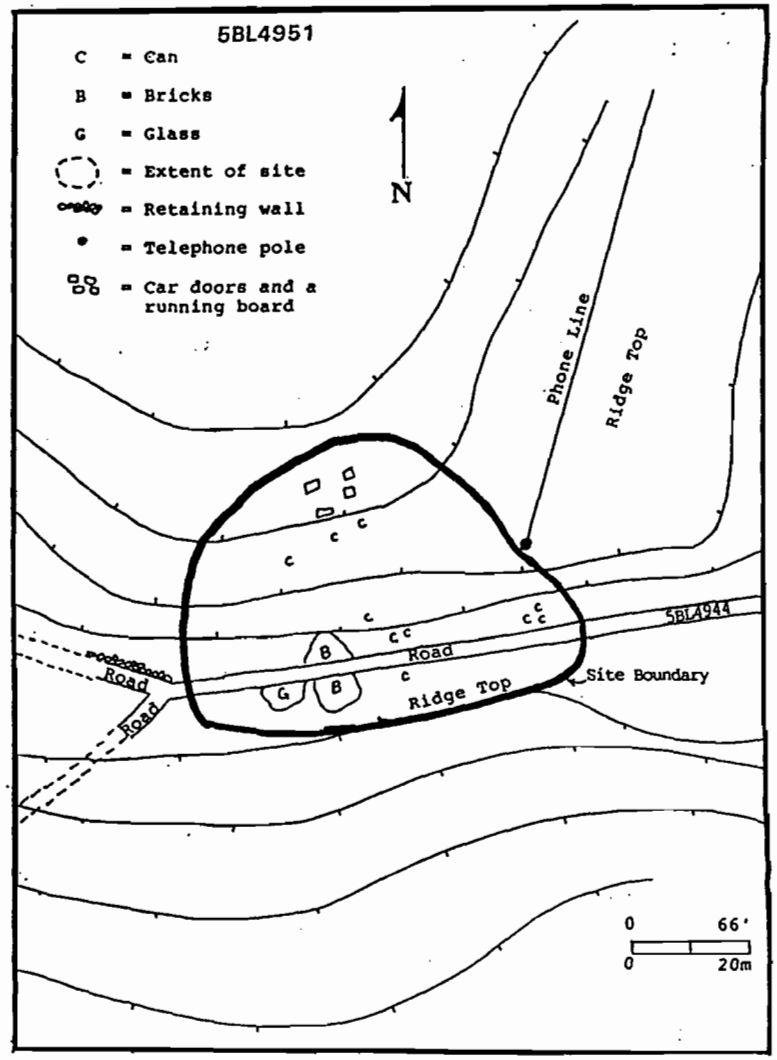


FIGURE 26 - Plan view of historic artifact scatter.

is likely that at least some of these fire rings are of recent origin, judging by the presence of recent glass bottle fragments.

Artifacts observed at the site include brick fragments, household ceramic fragments, steel beer cans with church key openings, glass bottle fragments, and the remains of one or more automobiles. Forty brick fragments were noted at the site. One ceramic teacup fragment was located as were fifteen church-key beer cans and sanitary food cans. A large number of glass bottle fragments were also observed.

The automobile parts at the site include three doors, one trunk lid, one running board, window glass fragments, and other unidentified metal fragments. The production date of the vehicle or vehicles could not be determined from the fragments, although several of the parts appear to be 1930s or 1940s vintage.

Historic Data

The origin of the artifacts at this site is not known, although the proximity of the Flagstaff Road suggests that they may have been dumped here when this section of the road was still in use. Although the precise chronology of road building events is not known, it is likely that this portion of the road was upgraded at least by 1948, and probably by the CCC in the early 1930's. Either of these dates would be consistent with the artifacts observed at the site which do not appear to be more that 65 years old.

Historic Trails Network:

Site **5BL4952** is the Boulder Mountain Parks historic trails network. The site consists of a series of linear features located primarily north of Bear Canyon and within the boundaries of the park. This trails network can be subdivided into four general areas: Flagstaff Mountain, Green Mountain, the Flatirons, and Bear Peak. In addition to the historic trails included in this network, several other historic trails are located in part on Boulder Mountain Parks property. These include the Mesa Trail (**5BL3924**), the Bear Canyon Trail (**5BL3925**), the Fern Canyon Trail (**5BL3926**), and the Shadow Canyon Trail (**5BL3927**). These trails were originally recorded and documented during a survey of adjacent Boulder County Open Space properties and are described in detail in Gleichman et al. (1993).

Information about the names and locations of historic trails was gathered from a variety of sources, including three maps of the Mountain Park: one showing current (1994) trails (Figure 27), one showing trails in use during the late 1950s and early 1960s (Figure 28), and one showing trail developments prior to 1927 (Figure 29). Trails constructed prior to 1927, and still in use, have been included in the historic trails network. A second group of trails contributes to the historic network, although the exact dates of construction are not known. It is likely that the exact locations

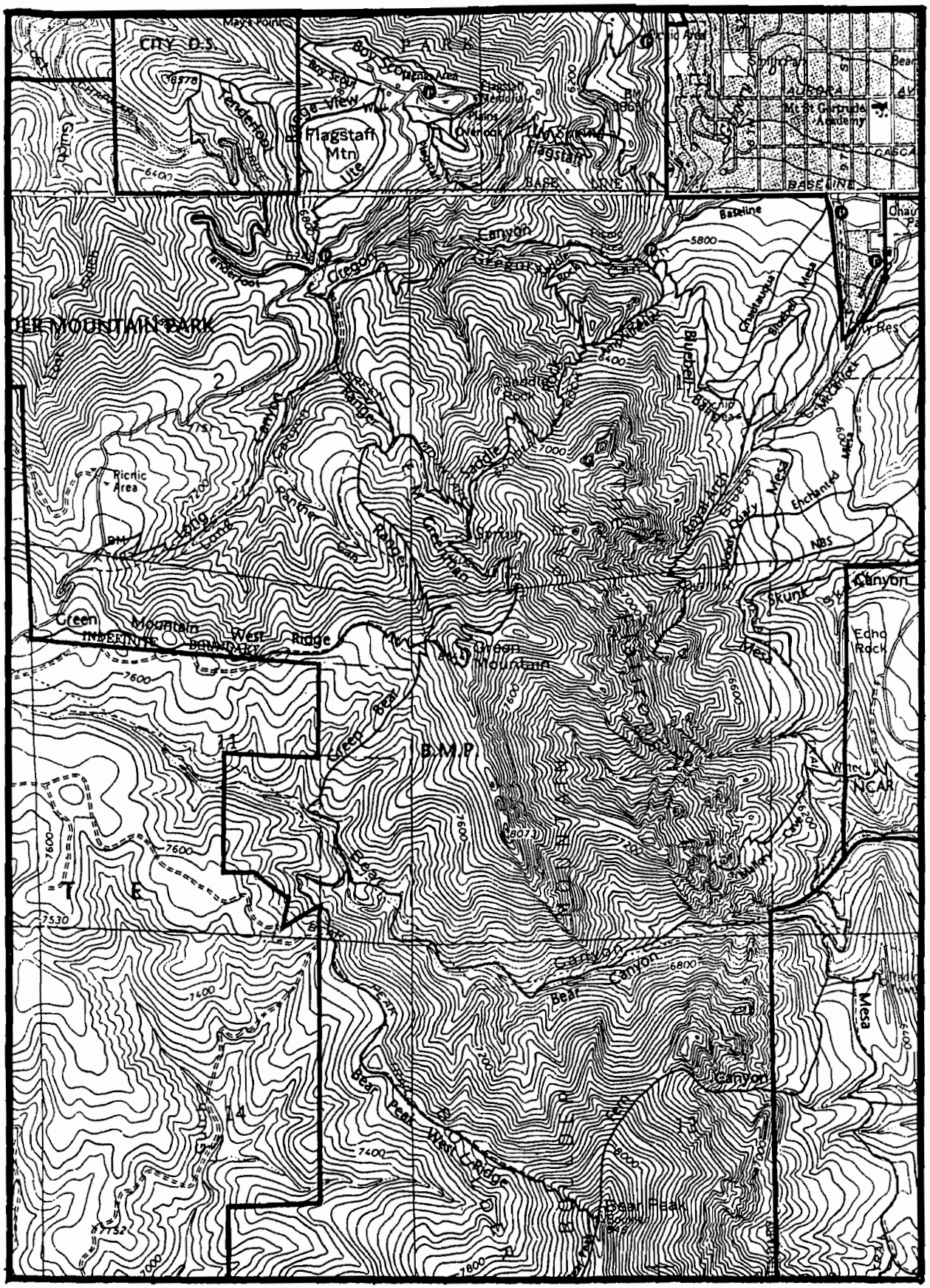


FIGURE 27 - 5BL4952 - HISTORIC TRAILS NETWORK

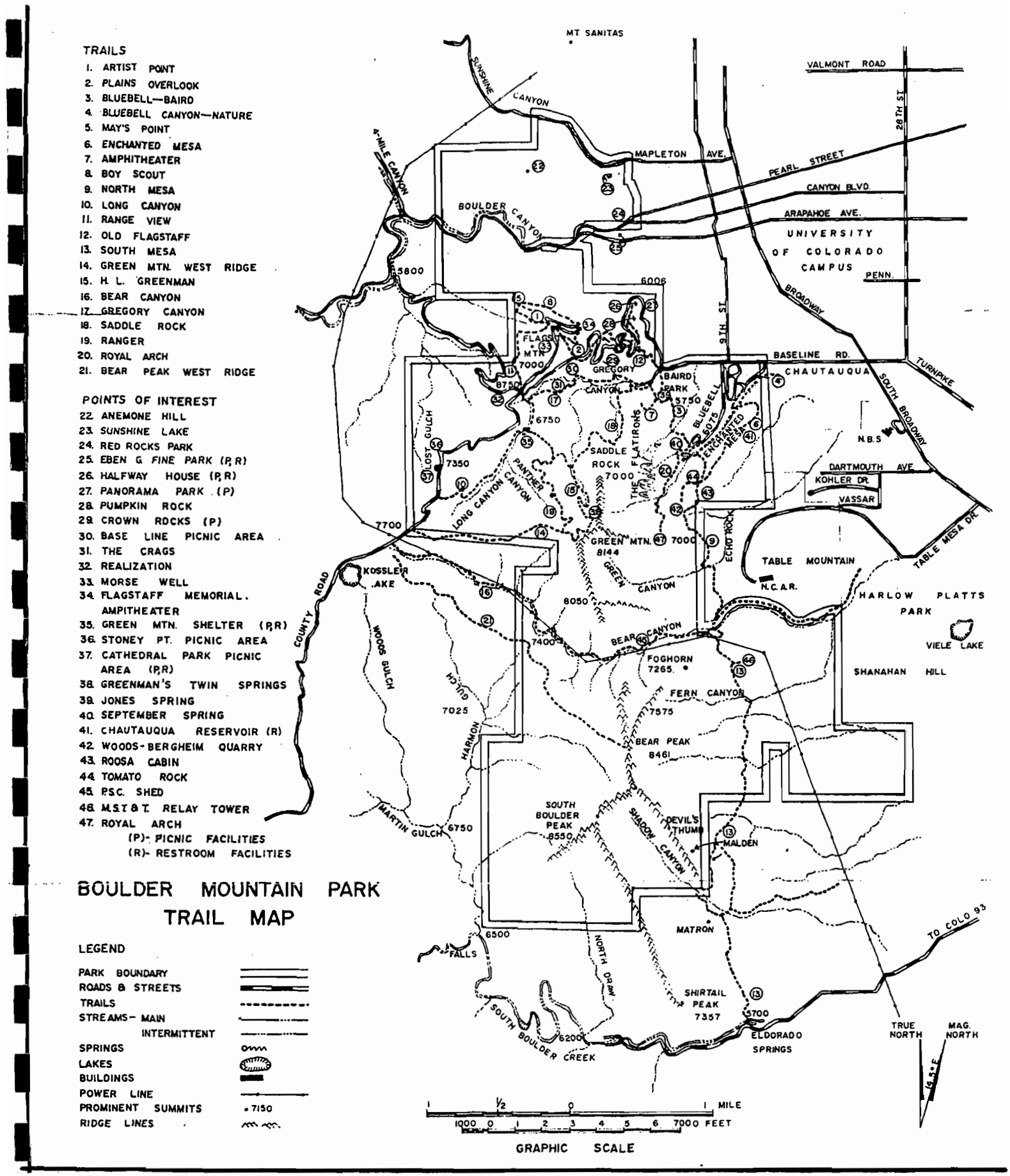


FIGURE 28 -Map of Site 5BL4952 circa late 1950s to early 1960s.

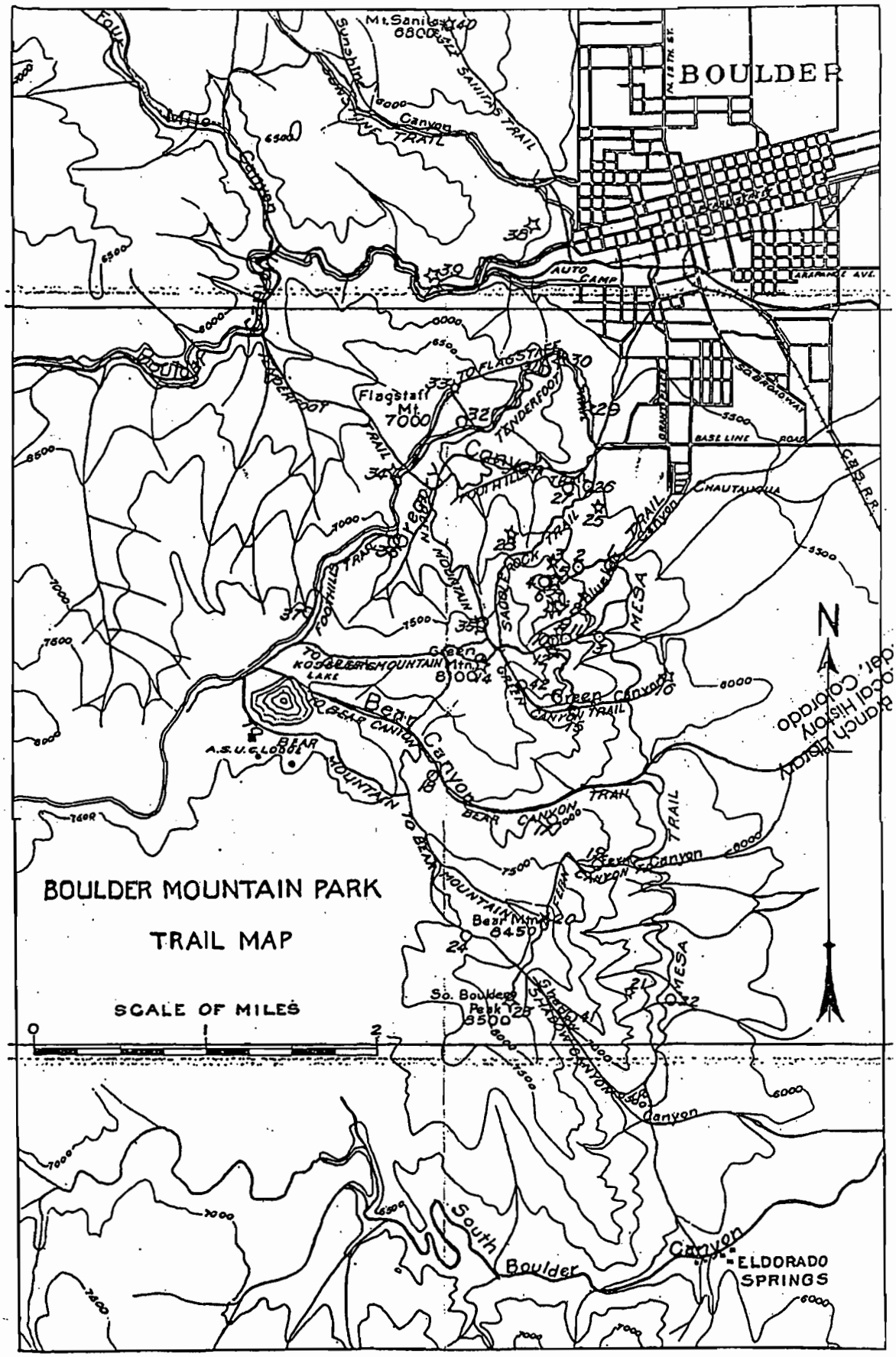


FIGURE 29 - Map of Site 5BL4952 pre-1927.

and features of each of the trails in the network have been changed or modified as a consequence of changing recreational use patterns, soil erosion, and maintenance activities. The historic trails network is detailed in Table 1.

The historic trails include the Flagstaff and Tenderfoot trails on Flagstaff Mountain; the Gregory Canyon, E. M. Greenman, Saddle Rock, Green Mountain West Ridge, and Green Bear trails on Green Mountain; the Woods-Bergheim, Royal Arch, Amphitheater and Third Flatiron trails on the Flatirons; and the Bear Peak West Ridge trail on Bear Peak. The names listed above are the current trail names. In the following descriptions, the first trail name is the current name, and any names that follow are the former or historic name or names for that trail on the older maps. Likewise, the first trail description is for the current trail as it is found today followed by the historic information as it is known.

FLAGSTAFF MOUNTAIN AREA

Flagstaff: Starts at the beginning of the road leading to the Gregory Canyon trail head. The trail winds up the east side of Flagstaff Mountain, crossing the main road five times and ending at the Morse Well. This trail was constructed by the CCC in the early 1930's.

Tenderfoot: Until at least 1926 the main Flagstaff access trail was known as the Tenderfoot trail and followed the original grade of the Flagstaff Road to Realization Point. From there the trail continued down the west side of Flagstaff Mountain to Boulder Creek. Chapman Drive replaced this section of the Tenderfoot trail in 1934.

GREEN MOUNTAIN AREA

Gregory Canyon/Foothills: Starts at the Gregory Canyon trailhead, passing the junction with the Saddle Rock trail. The trail climbs to a saddle and ends at a dirt road leading to Realization Point. The historic trail, originally known as the Foothills trail, continued from Realization Point to Kossler Lake, paralleling the Flagstaff Road (5BL4944). The Gregory Canyon portion of the trail is, with a few exceptions, located on the original grade of the Gregory Canyon road (5BL4948).

E.M. Greenman/H.L. Greenman/Green Mountain: Starts at the Ranger trail southeast of the Green Mountain Lodge and contours around a ridge, passing the junction with the Saddle Rock trail. Ends at the summit of Green Mountain. Originally known as the Green Mountain trail, the name was changed prior to 1965 to the H.L. Greenman trail. In 1992 the name was changed to the E.M. Greenman trail. It is possible that the lower end of the original route of the Green Mountain trail followed what is now known as the Ranger trail.

Table 1

Boulder Mountain Park Historic Trails Network

Pre-1926	1965	1994
Tenderfoot•	Chapman Drive	Tenderfoot
	Old Flagstaff•	Flagstaff
	Artist Point*	Artist Point
	Plains Overlook*	Plains Overlook
	May's Point*	May's Point
	Boy Scout*	Boy Scout
	Range View*	Range View
		Panorama
		Ute*
Green Canyon		
Foothills•	Gregory Canyon	Gregory Canyon
Green Mountain•	H.L. Greenman	E.M. Greenman
Saddle Rock•	Saddle Rock	Saddle Rock
Green Mountain•	Green Mountain West Ridge	Green Mountain West Ridge
Bear Canyon/Green Mountain•		Green Bear
	Ranger*	Ranger
Royal Arch/Green Canyon		
Woods-Bergheim/ Royal Arch/ Green Mountain•	Woods-Bergheim	Woods-Bergheim
Royal Arch•	Royal Arch	Royal Arch
Amphitheater•	Amphitheater	Amphitheater
Split Rock•		Third Flatiron
	Bluebell Nature	McClintock Nature
	Enchanted Mesa*	Enchanted Mesa

		Bluebell-Baird•	Bluebell-Baird
	Pre-1926	1965	1994
			Skunk Canyon
			Mallory Cave
	Bear Mountain•	Bear Peak West Ridge	Bear Peak West Ridge
	South Boulder Peak/ Bear Peak West Ridge		South Boulder Peak/ Bear Peak West Ridge

• = Boulder Mountain Park Historic Trails Network. These trails are at least 50 years old and are contributing elements to the historic trails site.

* = Other Trail. These trails are of indeterminate age, but may be 50 years old.

The remaining trails are of recent origin, and have not been included in the historic trails network.

Saddle Rock: Starts at the Gregory Canyon trail and climbs to the upper end of the Amphitheater trail. Climbs steeply to reach Saddle Rock and then continues to the E.M. Greenman trail. The original route of this trail appears to have followed the long ridge running between Saddle Rock and Green Mountain, joining with the E.M. Greenman trail at a junction considerably south of the present junction. Above its junction with the Amphitheater trail, the Saddle Rock trail follows what was originally known as Contact Canyon. The trail incorporates several roads originally constructed for timber operations in the area. During the 1960's the trail was used by skiers training for the Olympics (Cushman and Cushman 1995).

Green Mountain West Ridge/Green Mountain: Starts at an access point on the Flagstaff Mountain road and continues to the junction of the Ranger and Green Bear trails. Ends at the summit of Green Mountain. This trail probably originally followed a vehicle access road running east from the Flagstaff Road to the timber operations located around the base of Green Mountain.

Green Bear/Bear Canyon-Green Mountain: Starts in Bear Canyon at the junction of the Bear Canyon and Bear Peak West Ridge trails, and continues to the junction of the Ranger and Green Mountain West Ridge trails below the summit of Green Mountain. Although this

trail is not shown on the 1965 Mountain Parks trail map, it does appear on the pre-1926 map. The current Green Bear Trail was developed in the 1980s; it is not known to what extent it follows the original trail.

FLATIRONS AREA

Bluebell-Baird: This trail connects the mouth of Gregory Canyon (Baird Park) with Bluebell Canyon and the Bluebell Shelter. This trail was constructed by the Civilian Conservation Corps between 1933 and 1935.

Woods-Bergheim/Royal Arch/Green Mountain: This trail starts on the Mesa trail and goes west and then south, ending in the abandoned Woods-Bergheim quarry. This trail was originally part of a much larger network which connected the Mesa trail to the summit of Green Mountain via Woods-Bergheim and Royal Arch respectively. The construction of a trail connecting Royal Arch to the summit of Green Mountain appears to have been completed sometime between the spring of 1920 (when it was proposed by the Rocky Mountain Climbers Club) and 1926 when it appears on trail maps (RMCC Board of Directors meeting minutes, 4/6/1920). This network also contained two major trails which are no longer in use: the Green Canyon trail which connected the summit of Green Mountain directly to the Mesa trail via Green Canyon (currently referred to as Skunk Canyon), and the Royal Arch-Green Canyon trail which continued south from Royal Arch into the bottom of Green Canyon.

Royal Arch: Starts near the Bluebell Shelter at the end of the abandoned road from the Chautauqua trailhead. The trail follows Bluebell Canyon, dropping into a drainage and then climbing to end at Royal Arch. This trail was a part of the network discussed above under the description of the Woods-Bergheim trail. The Royal Arch trail was originally built by "Rocky Mountain Joe" Sturtevant. The Rocky Mountain Climbers Club, under the direction of Edwin Chamberlain, the Boulder Rotarians, and the Boy Scouts also contributed to the construction and improvement of the trail (Ament & McCarty,1985). The Civilian Conservation Corps also worked on the trail in the early 1930's. The most recent improvements to the trail were the steps built by Jr. Rangers in the 1980s.

Amphitheater: Starts at the Gregory Canyon trailhead and follows a draw past the Bluebell-Baird trail to the Amphitheater, a small bay in the rocks utilized heavily by climbers. The trail ends at the Saddle Rock trail.

Third Flatiron/Split Rock: Starts near the Bluebell Shelter at the end of the abandoned road from the Chautauqua trailhead. Climbs to the base of the Third Flatiron. Portions of this trail were originally known as the Split Rock trail. The trail, ending at location #6 on the pre-1927 map, makes use of quarry haul roads connected to the Third Flatiron quarry (5BL4949).

BEAR MOUNTAIN AREA

Bear Peak West Ridge/Bear Mountain: Starts at the junction of the Green Bear and Bear Canyon trails. Climbs to the summit of Bear Peak. This trail, originally known as the Bear Mountain trail, follows a constructed wagon road out of the bottom of Bear Canyon onto the ridge. This road may originally have been connected to logging operations in the vicinity.

CONTRIBUTING TRAILS

Flagstaff Mountain Area: Several trails, including **Artist Point, Plains Overlook, May's Point, Boy Scout, Ute Trail,** and **Range View** are accessed from the top of Flagstaff Mountain. The Boy Scout trail, which connects the Sunrise Circle Amphitheater to Artist Point was originally known as the Flagpole trail (McNellan 1995). Artist Point was named by Mart Parsons, an early City Park Ranger from the 1920's to the 1940's. Although the exact age of these trails is unknown, some or all of them may be at least 50 years old. A Boulder Daily Camera article dated May 17, 1933 reported that under the direction of then-city manager H.C. McClintock local residents had worked during the previous few months on the construction of improvements to the summit of Flagstaff Mountain. These improvements included the construction or modification of the summit road, automobile parking, and a trail to Artist Point. The development of the summit of Flagstaff Mountain had been a project sponsored by the Daily Camera for a number of years. Between July 1933 and May 1935 the Civilian Conservation Corps made a number of improvements to the summit of the mountain, including a trail between Realization Point (referred to at the time as Inspiration Point) and the Morse Well. It is not known whether this trail is the Ute trail or the Range View trail. The CCC may also have made improvements to the Boy Scout trail (Boulder Daily Camera, May 8, 1935; National Park Service press release, n.d., Carnegie Library). It has been suggested that a linear formation of ponderosa pine trees adjacent to the modern location of the Ute trail marks the location of an original Native American trail to the summit of Flagstaff Mountain (McNellan 1995).

Green Mountain Area: The **Ranger** trail begins at the Green Mountain Lodge. The trail climbs the northern face of Green Mountain and ends at the junction with the Green Mountain West Ridge and Green Bear trails. The trail is reputed to have been constructed by early Mountain Parks Ranger Martin Parsons. The trail was intended as a pack route to the top of Green Mountain, although it was never completed (McNellan 1995). Although the exact age of this trail is not known, it is likely that it is at least 50 years old.

Flatirons Area: The **Enchanted Mesa** trail is located adjacent to the Flatirons. The exact age of this trail is unknown, although it is likely to have been used for at least 50 years.

As mentioned above, the Shadow Canyon, Mesa, Fern Canyon, and Bear Canyon trails are also historic trails within the Boulder Mountain Parks. All four of these trails are listed on the pre-1926 park trails map. In addition a trail which is no longer in use connected the saddle between Bear Peak and South Boulder Peak with the Bear Peak West Ridge trail.

Historic Mine Pits & Features:

Site **5BL4981** consists of a series of historic features over an area 240 meters N-S by 210 meters E-W (Figure 30). The features include a road with stonework, two cuts which may be adits, a spring pipe and water trough, a foundation cut, mounds of sandstone rubble, and depressions.

The road follows Skunk Canyon, paralleling the drainage on the north side. At the point where Skunk Canyon makes a sharp turn to the south, the road crossed the creek with a bridge. The bridge is now gone, but dry laid stone masonry abutments are present on either side of the drainage. Part of the stonework on the north side is missing, with about 3 m of masonry abutment left. The abutment on the south side is about 8 m long. On the north side of the creek the road bed has a masonry foundation along the creek, extending for about 15 meters. The road ascends the slope on the west side of Skunk Canyon, passing Cut 1, and switchbacks up the slope to Cut 2. Cut 1 is oriented east-west, and is 25 x 7 m. Cut 2, directly upslope of Cut 1, is oriented north-south, and is 23 x 7 m. A spring pipe is in front of Cut 1, 2.5" o.d., directing water into a trough which has been created by cutting a cast iron boiler in half lengthwise.

On the north side of the drainage, north of the trail, is a rectangular foundation cut in the slope, 4 x 10 m. On the south side of the trail, and south of the foundation cut, is a circular mound of sandstone rubble, 12 x 12 m x 2 m high. North of the mound and on the north side of the trail is a flat platform of sandstone rubble and dirt, 33 m long by 8 to 10 m wide. The platform does not seem to connect to roads on either end. North of this rectangular foundation cut is another circular mound of sandstone and dirt, about 5 x 7 m. The area around the north and west sides of the mound have been excavated into the slope, interrupting the contours at this spot. North of this, and south of the trail are two depressions, 3 x 4 and 3 x 3 m.

Historic Data

The road and cuts appear to be the result of a mining effort. The Drumm Map of 1931 shows an "old coal prospect" adjacent to the road on what is now federal land (NCAR). There is a shallow cut in that spot. The two cuts on Mountain Parks land appear to be adits. It was originally thought that Cut 1 was formed from developing the

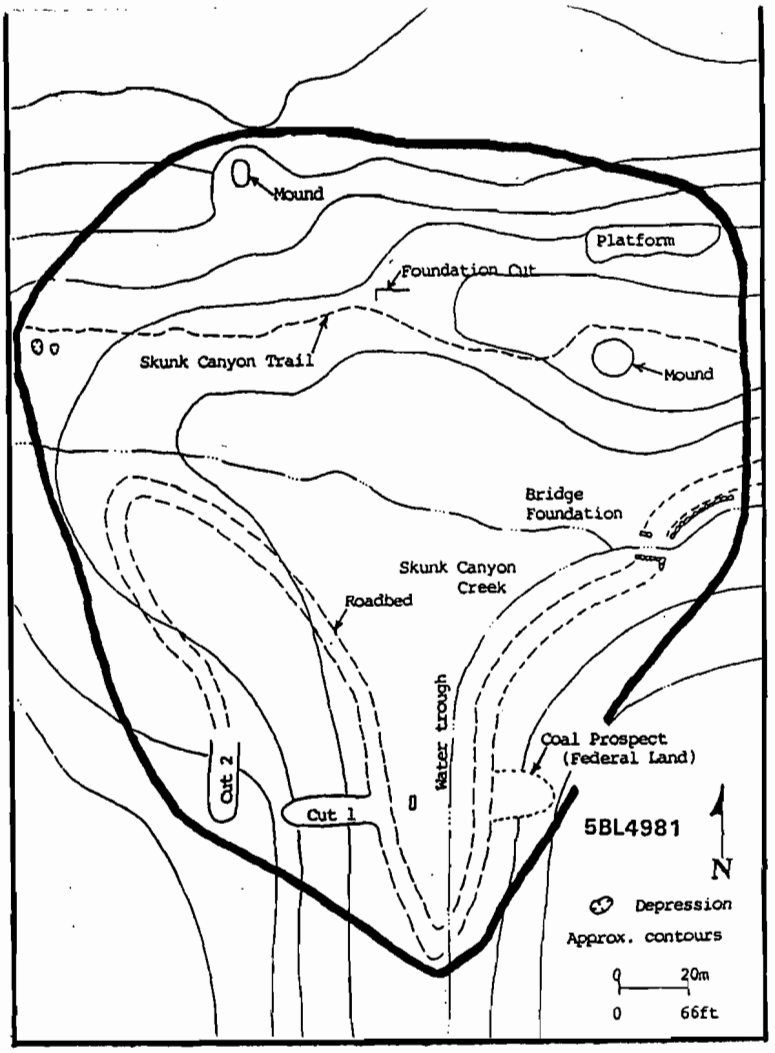
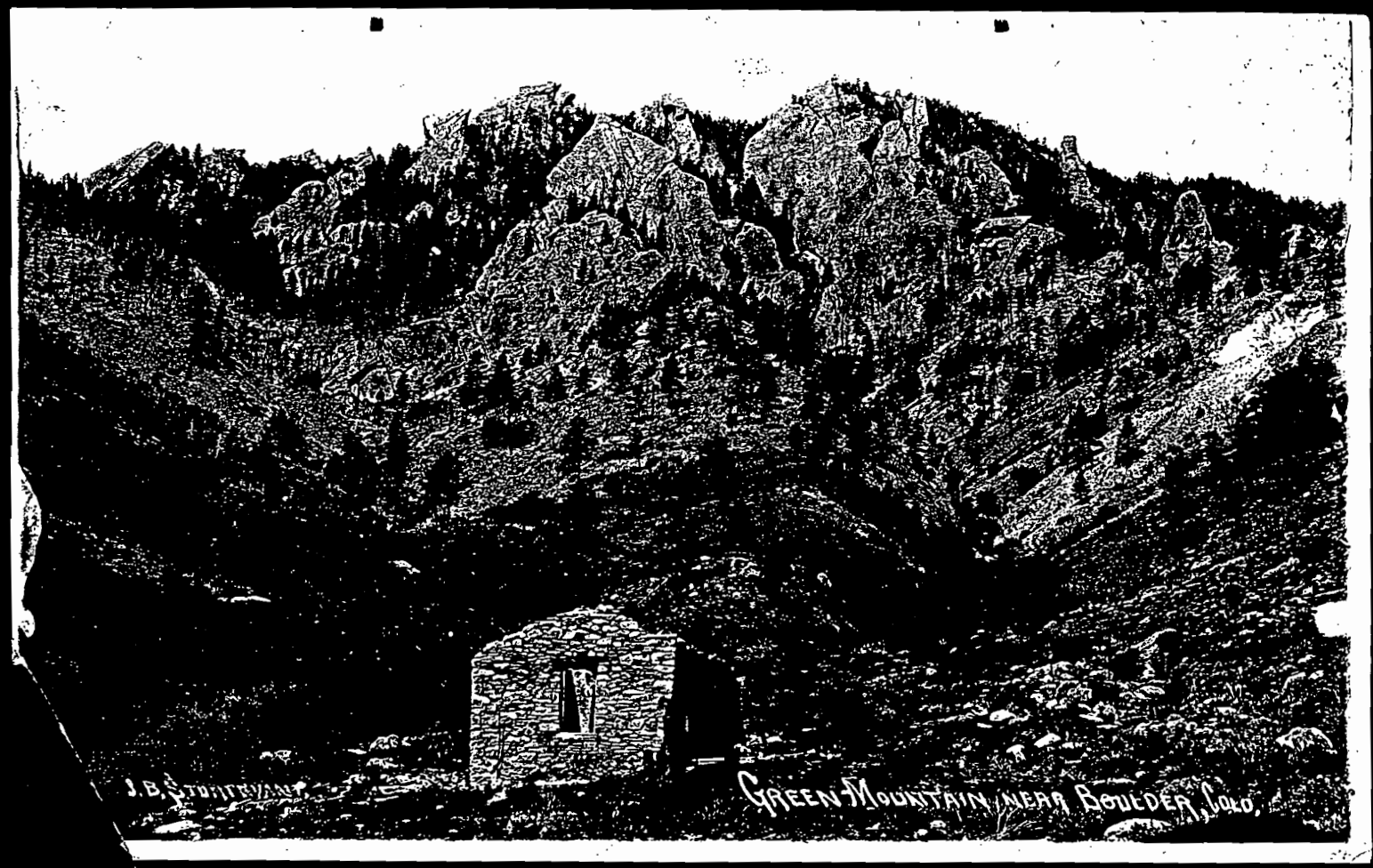


FIGURE 30 - Plan view of pits and features.

for a more substantial use of the area. Cuts 1 and 2 may in fact be from a mine. They are very similar to adit trenches or cuts on Marshall-Davidson Mesa, which were coal mines. However, no spoils piles were visible. A "Mineral Resources" map with the Open Space Resource Management Plan (McNair 1975) shows a deposit of Benton Shale (clay) in this area, and Cuts 1 and 2 may be clay pits.

The foundation cut, depressions, platform and mounds may be historically associated with the road and Cuts 1 and 2, or may be simply spatially associated. The rubble mounds and platform are very similar to features associated with sandstone quarries, and the Woods-Bergheim Quarry is just upslope to the west. A Sturtevant photo, date unknown, labelled "Green Mountain Near Boulder, Colo." shows a stone building in this approximate location. The photo had been in an album with the label "Homestead Quarry Gulch" (Figure 31 - photo courtesy Boulder Daily Camera).



Homestead Quarry Gulch

FIGURE 31: Historic photo of Site 5BL4981 location.

Historic Rock Foundation:

Site **5BL5002** is an historic stone foundation and an associated platform feature and rock alignment. The site measures 203 feet (62 meters) north-south by 184 feet (56 meters) east-west. The foundation was constructed from unshaped local granite cobbles, sandstone flagstones and fine-grained concrete mortar. The foundation is flush with the present ground surface on three sides; the north side is raised approximately 6 inches (0.15 meters). The earthen platform is located to the west of the rock foundation. This level platform was constructed by excavating a shallow cut into the uphill (south) side and spreading the resulting overburden on the downhill (north) side. To the west of the platform is a linear arrangement of small granite and sandstone cobbles 165 feet (50 meters) long. The stones are generally set into the ground and are aligned to magnetic north, parallel to the fall line of the slope. No artifacts were observed in association with this site. The function or functions of these structures and features is not known.

Historic Data

The function of this site is not known. A nine hole golf course was present on the meadow west of the Chautauqua lawn and houses from 1914 until 1919. These features may relate to the golf course in some fashion. Other topographic anomalies in the meadow may also have been associated with the golf course.

Settlers Park Foundation:

Site **5BL5005** consists of stone walls and an apparent foundation in an area 25 x 30 meters. A wall of granite slabs set in cement mortar runs for about 23 meters (76 feet), paralleling the concrete trail and the Farmers Ditch. The wall is 2-3 courses or about 2 feet high for most of its length. One segment of the wall is not visible and may be missing. The wall seems to be a retaining wall, and forms a level terraced area behind it (to the north). Towards the west end, there is a set of 5 concrete steps cut into the wall and soil behind it, ascending to the top of the terraced area. To the west of the steps, the short segment of granite wall is 4.5 feet high. Another wall extends at approximately right angles, to the NW, from the west end of the granite wall. This wall is poured concrete and sandstone rubble, and stands up to 3.5' high. It is paralleled by another concrete and sandstone rubble wall segment to the west. The space between these two walls is currently occupied by a picnic table. To the north of the picnic table and wall segments is an area that appears to be the foundation for a demolished building. This area, about 10 x 7 meters, is above the sandstone wall segments and picnic table, at the same level as the terraced area behind the granite wall. There are several pieces of concrete and a small depression in this area. Another granite wall

extends SE from the western sandstone wall segment. This granite wall is only 1.5 feet high.

Historic Data
What type of building(s) were here, their age, and function is completely unknown. The corner area formed by the granite wall and sandstone wall junction, part of the terrace created by the walls, has a dense patch of poppies. These were probably planted as ornamentals, and may indicate this was a domicile. This general site area was owned by John Brierly who had famous fruit and vegetable gardens in the 1880s. The retaining walls and presumed building may have been associated with horticulture, or the building may have had something to do with the sandstone quarry (5BL4933) which is directly north of this site.

REEVALUATED SITES

Silver Lake Ditch:

Site **5BL3813** is the Silver Lake Ditch. The ditch begins in Boulder Canyon, follows the south flank of Anemone Hill and winds around Red Rocks, Sunshine Canyon and Mount Sanitas, then runs along the hogback to Wonderland Lake and eventually to Mesa Reservoir. The site consists of the headgate, the extent of the ditch structure, and the adjacent right-of-way.

Historic Data
The ditch was constructed by J.P. Maxwell and George Oliver, and had a water appropriation date of February 18, 1888, with an appropriation of 20 c.f.s. from Boulder Creek. The ditch was originally intended to irrigate 1000 acres and provide for water storage in the Mesa Reservoir. Mesa Reservoir had a decree date of 1893. The ditch also supplied water to the Mesa Park Reservoir (Wonderland Lake), which was constructed around 1905. The Silver Lake Reservoir and the Island Lake Reservoir were constructed in the high country to provide water for the ditch. Both of these reservoirs were sold to the City of Boulder in 1906. Maxwell and Oliver sold the ditch in 1907; the adjudication date is March 13, 1907. Other appropriations and abandonments of water for the ditch have occurred between 1900 and 1988. The ditch is currently in use.

Bear Canyon Road/Trail:

Site **5BL3925** is the Bear Canyon Wagon road. This site was originally recorded during a survey of Boulder County Open Space properties (Gleichman et al. 1993). The segment of the road

located within the boundaries of the Boulder Mountain Parks begins at the mouth of Bear Canyon. From there the roadway roughly parallels Bear Creek, with crossings in several locations. This site consists of the roadbed, adjacent right-of-way, and two gates which originally controlled access along the road.

On the eastern side of the Park, at the mouth of Bear Canyon, the wagon road is located south of the creek, approximately 120 feet (36½ meters) above the canyon floor. One thousand feet (304 meters) west of the Park boundary, the road descends to the bottom of the canyon, and crosses to the north side of the creek. Although the road crosses the creek four more times, the roadbed is located almost exclusively on the north side of the creek throughout the Park. The Bear Canyon road eventually joins the Flagstaff Road (site 5BL4944) ¼ mile east of Kossler Lake.

Extensive retaining walls have been constructed on the eastern end of the roadway. These structures incorporate natural rock outcrops and talus fields. Each consists of dry-laid sandstone masonry walls, angled back slightly from vertical. In at least one location the retaining wall is supported by a line of rock drill steels which have been sunk at intervals into the sandstone cliff. Against these steel bars a series of first logs and then dry-laid sandstone masonry has been constructed.

Through the canyon the roadway is generally located adjacent to Bear Creek, and many sections have been damaged or destroyed by floodwaters. No formal retaining walls were observed in the central portion of the canyon, although in several sections the roadway appear to have been cut into the uphill bank and built on rubble fill.

At the western boundary of the Park the road passes through a contemporaneous gate and fence structure. The fence consists of three barbed-wire strands (Baker's Barb), mounted on split log fence posts. The gate was constructed from iron-bound end posts joined by mortised cross bars which were held into place with large nails. The gate appears to have been intended to accommodate significant vehicle traffic. A second similar gate is located ½ mile west of the eastern park boundary, at the foot of the Sacred Cliffs. This gate has, however, been almost entirely destroyed, and its dimensions are impossible to reconstruct.

Historic Data

The Bear Canyon road (**5BL3925**) was constructed to provide access to the newly opened gold mines at Central City and Black Hawk. Henry Clay Norton and George Williamson, in seeking a route to the gold mines which bypassed Denver, began work on an alternate road under the authority of the newly organized "St. Vrain, Altona, Gold Hill and Gregory Road Company" (Friedman 1989; Schoolland 1980). In 1862 Norton built a road up Bear Canyon, which due to its proximity

to the creek was washed out by flood waters. He rebuilt the road in 1864, only to see it washed out again (Schoolland 1980).

In December of 1868 the Bear Canyon and Black Hawk Wagon Road Company was incorporated and issued $12,000 in capital stock. Local residents George Dana Harmon and Onsville C. Coffin, both immigrants from Maine, each bought 10 shares, valued at $1,000. Work began on improvements to the road on the 31st of May 1869 and was completed on the 9th of December. Twenty-two men, plus Harmon and Coffin, did the work (Roosa 1940). Apparently no more successful than Norton before them, one of the original board of directors, Peter M. Housal of Valmont, sold his shares to Harmon and Coffin, probably early in 1879. Harmon filed for title to land at the mouth of the canyon in 1870 or 1871 (Roosa 1940).

The homestead of the Bear Canyon Road toll collector Mary Coffin was probably located at the mouth of the canyon on the eastern side of the park. E.M. Pease, Mary Coffin's nephew, recounts his visits to his aunt's homestead, and indicates that "in the early days there was a great deal of traffic to and from Black Hawk and Central [City], and I, a small boy, enjoyed the responsibility of collecting the toll" (Pease n.d.).

In 1885, the Bear Canyon and French Gulch Wagon Road Company tried to reconstruct the road, an attempt which only recapitulated the failures of Norton, Harmon, and Coffin (Smith 1984). The road was again rebuilt in 1907 by the Colorado Power Company which used the route to haul construction supplies between 1907 and 1910. The road was again washed out in 1919; a final reconstruction of the roadbed was completed by the Civilian Conservation Corps in 1935 (Ament and McCarty 1985).

RECORDED ISOLATED FINDS

The isolated finds documented during the course of the survey can be divided into four classes: prehistoric artifacts, historic artifacts, historic features, and features of indeterminate age. Of the 49 isolated finds and features located and documented during the survey, 8 were prehistoric artifacts, 15 were historic artifacts, 21 were historic features, and 5 were features of indeterminate age. One additional prehistoric isolated find described here was discovered by a park visitor in 1991.

Prehistoric Artifacts

The 8 prehistoric isolated finds documented during the survey include 4 tools or tool fragments, and 4 lithic flakes.

Isolated find **5BL4953** is a biface fragment made from a smooth steel-grey chert with white amorphous inclusions. This very fragmented artifact may have been burned or heat treated. The fragment measures 13 mm wide, 17 mm long and 3 mm thick.

Isolated find **5BL4954** is a Late Prehistoric projectile point made from a red chert with dark irregular inclusions. The point measures 13.1 mm across the base, 18.2 mm long, and 3.2 mm thick. This point is side notched, has a square base, and straight sides. The hafting or neck width is 9.3 mm. The base of the point is unground.

Isolated find **5BL4959** is a projectile point made from white, mottled chert with macrocrystalline inclusions. The material has been identified by long-wave ultraviolet inspection as Kremmling chert. The point measures 22.9 mm wide, 32.7 mm long, and 5.5 mm thick; the base of the point is missing. The point has symmetrical excurvate sides and appears to be side-notched. The extrapolated hafting width is 15.5 mm. This appears to be an Archaic point, predating A.D. 500.

Isolated find **5BL4962** is a scraper made from a rootbeer-yellow chert with discrete macrocrystalline inclusions. The scraper measures 31.5 mm long, 25.8 mm maximum width, and 8.5 mm thick. The distal edge of the dorsal surface has been modified.

Isolated finds **5BL4960**, **5BL4961**, **5BL4987**, and **5BL4994** are tertiary lithic flakes between 1 and 4 cm across. Material types include pink and white chert, red banded quartzite, and red chert. Isolated find 5BL4960 appears to have been modified or utilized.

One additional isolated find, **5BL5004**, is a projectile point located by a park visitor in September 1991. The point is made from Kremmling Chert and measures 17.1 mm wide, 25.5 mm long, and

4.2 mm thick. Although the tangs are broken the hafting width is 7.4 mm. The point has symmetrical straight sides, is deeply corner-notched and has been made from a flake, with only minor retouch on the ventral surface. The artifact has been identified as a Hog Back Corner-notched point (Benedict 1990).

Historic Artifacts

Fifteen isolated finds classified as historic artifacts were located and documented during the course of the survey. Of these 4 are lead-welded hole-in-cap cans, 9 are glass bottle fragments, and 2 are recycled galvanized hot water heaters.

Isolated finds **5BL4955**, **5BL4956**, **5BL4964**, and **5BL4972** are 3 to 4 inch diameter hole-in-cap food containers. These lead-welded cans were generally produced until about 1905, when they were replaced by sanitary-style food containers. Because the vertical lap seam of these cans has been mechanically welded, the earliest date of manufacture is 1883.

Isolated finds **5BL4963**, **5BL4968**, **5BL4970**, **5BL4971**, **5BL4973**, **5BL4991**, and **5BL4996** are fragments of purple glass from a variety of beverage and medicine bottles. Isolated find 5BL4991 is a purple glass bottle fragment and a shell button. The element manganese, once used as a glass clarifier, is responsible for the purple tint observed in these artifacts. The outbreak of World War I cut off critical German supplies of manganese for glass production. Accounting for the consumption of stockpiles, the latest date of manufacture for manganese-clarified glass is about 1917.

Isolated finds **5BL4984** and **5BL4995** are fragments of aquablue glass from beverage bottles. The aquablue tint of these artifacts, indicates that they were probably manufactured and disposed of prior to the 1910s or 1920s.

Isolated finds **5BL4982** and **5BL4983** are galvanized hot water heaters which have been recycled for secondary use. Both have been used as drainage culverts under roads and trails. The top and bottom of these multi-section cast iron containers have been removed, creating a metal pipe 18 inches in diameter and roughly 3 feet long. Recycled heater tanks of this type have been observed in association with the Civilian Conservation Corps camp (site 5BL4930). Iron tanks such as these were originally used for residential hot water heating, generally prior to the 1920s. The date at which these artifacts were modified for secondary use is not known, although it may have been as early as the 1930s.

Historic Features

Twenty-one historic features were located and documented during the course of the survey. Four of these are modified springs, 2 are wells, 2 are mineral exploration adits, 3 are stone platforms or foundations, and 10 are miscellaneous constructions.

Isolated feature **5BL4965** is the Green Mountain Summit Plaque. The plaque consists of a stone monument to which a brass plaque has been fitted. The trapezoidal monument (4 feet [1.2 m] high; 10" [0.25 m] wide at the top and 20" [0.5 m] wide at the base) is constructed from local arkose sandstone slabs and portland cement mortar. The brass plaque (10" [25 cm] in diameter) mounted on top of the monument indicates the names, elevations and locations of 24 peaks visible from the top of Green Mountain. The plaque was erected in May 1929 by the University of Colorado Hiking Club.

Isolated feature **5BL5003** is a trails registry. The registry consists of a sandstone and concrete monument 24" (0.6 m) high and 18" (0.5 m) wide at the base. A 2½" O.D. iron pipe has been set into the side of the monument. This pipe originally contained a paper register listing the names of local hikers. The registry is no longer used.

Isolated find **5BL4966** is a firepit and an associated informal windbreak immediately north of the summit of Green Mountain. The firepit measures 2 feet (0.6 meters) in diameter; the log and stone windbreak, located 3 feet (1 meters) from the firepit, measures 1 foot (0.3 meters) high. A fragment of purple glass from a 4 inch diameter beverage bottle was associated with the firepit, indicating use of the feature as early as 1917.

Isolated feature **5BL4977** is a stone cross located on a broad ridge east of the summit of Green Mountain. The cross measures 15 feet (4.5 m) long and 10 feet (3 m) wide and 8 inches (0.2 meters) high, with the long axis aligned toward magnetic north. The crossbar is located on the southern end. The cross has been made from local, lichen covered stones (2" to 1 foot [0.05 to 0.3 m] in diameter). The gaps between the stones have been filled with needle litter and pine cones. The age and original use context of this feature is not known.

Isolated feature **5BL4978** is a picnic area located at the mouth of Gregory Canyon. This rectangular slab-paved space measures 28 feet (8.5 m) east-west by 15 feet (4.5 m) north-south. The picnic platform has been cut into the slope on three sides (north, east, and west sides). The slope is supported on each of these sides by stone and cement retaining walls. The retaining walls are up to 6½ feet (2 meters) high on the north side. A low border of rocks marks the southern end of the paved space. The retaining walls have partially collapsed. Four church-key beer cans were observed in association with the feature. The construction date of this

feature is not known, although is appears on maps dated from 1965. The masonry techniques suggest that the original date of construction may have been as early as the 1930s.

Isolated feature **5BL4985** is a stone enclosure or hunting blind. This construction is located on the southern face of Anemone Hill, immediately below the crest of the ridge. The enclosure measures 10.7 feet (3.25 meters) long, 9.8 feet (3.0 meters) wide, and 3.6 feet (1.1 meters) high and is constructed from dry-laid granite fieldstones. The northern side of the enclosure is supported by a low rock outcrop. Artifacts associated with this feature include glass vessel fragments, metal cans and sheeting, and a salt shaker top.

Isolated feature **5BL4993** is a series of three low erosion control features placed across an ephemeral drainage near the summit of Flagstaff Mountain. These check dams measure approximately 6½ feet (2 meters) long and 1 foot (0.3 meters) high. Sediment has completely filled the small basins created by the dams.

Isolated feature **5BL4998** is a diversion dam and feeder irrigation ditch. The dam has been built across an unnamed drainage south of Baseline Road, and east of site 5BL4930. The dam measures 24 feet (7.3 meters) across, 2 to 3 feet (0.6 to 1.0 meters) high, and 3 to 4 feet (1.0 to 1.2 meters) wide. The dam impounds water for release into a shallow ditch which follows the contour of the slope northwest away from the drainage. The dam is constructed from sandstone cobbles and cement, and contains a gravel fill. A recycled galvanized hot water heater has been used as a culvert in the ditch to direct water under Baseline Road.

Isolated feature **5BL4999** is a bridge abutment. This dry-laid sandstone construction has been placed across an ephemeral drainage located east of site 5BL4930. The stone block wall which forms the eastern side of the bridge is 4 to 5 feet (1.2 to 1.5 meters) high and 15 feet (4.5 meters) wide. A smaller stone construction forms the western abutment. Evidence for the road or trail which would have crossed this bridge has been largely destroyed.

Isolated feature **5BL5000** is a cement culvert located in an ephemeral drainage immediately south of isolated feature 5BL4999. The culvert is 3 1/2 feet (1.1 meters) in diameter and 18 feet (5.5 meters) long, and consists of 6 separate steel-reinforced concrete pipe segments. A road appears to have crossed the drainage at this point.

Modified Springs and Wells

Of the 21 historic features located and documented during the survey, 4 are modified springs and 2 are wells.

Isolated feature **5BL4967** is the Greenman Twin-Pipe Spring, located on the northern face of Green Mountain. One galvanized 1" I.D. iron pipe has been set into sandy soil adjacent to the Greenman trail. A second similar pipe has been set into stone blocks loosely piled across the spring. No water is currently flowing from either pipe.

Isolated feature **5BL4986** is a modified spring located on the southern face of Flagstaff Mountain. The spring consists of a 55-gallon collection drum sunk into the ground below a 2.75" (7 cm) diameter iron spring pipe. The spring modifications are still functional.

Isolated feature **5BL4988** is the Gregory Spring. The spring modifications consist of a concrete enclosure set into the ground. The spring was originally accessed through a steel plate set into the top of the enclosure. These modifications are no longer functional; the spring now issues from the slope approximately 30 feet (9 meters) above and 100 feet (30 meters) to the west of the concrete structure.

Isolated feature **5BL4990** is the Ute Spring, located on the southern face of Flagstaff Mountain. The spring consists of a 55-gallon collection drum set nearly flush with the ground surface. A 1" I.D. iron spring pipe is set into the ground above the collection tank. The spring modifications are currently functional.

Isolated feature **5BL4989** is a hexagonal wooden well house surrounded by a paved apron. The paving is constructed from sandstone flags and cement. The well house is 4 feet (1.2 meters) high and is constructed from 2X12" wooden planks. The well may have at one time been fitted with a mechanical pump. The well does not now appear to be functional.

Isolated feature **5BL4992** is the Bluebell well, located approximately 250 feet (76 meters) west of the Bluebell Shelter House (site 5BL4934). The structure is 5½ feet by 9 feet (1.7 by 2.7 meters) in plan dimension. Two steps lead up to the platform on which the well house sits. The platform is constructed from local granite fieldstone cobbles and cement mortar; the well house itself is concrete. A steel access plate covers the opening in the top of the well. There may at one time have been a mechanical pump attached to this plate. The water table is currently 15 feet (4.6 meters) below the top of the well (which is 2 feet 4 inches [0.7 meters] above the present ground surface). The well does not now appear to be functional.

Platforms and Foundations

Three of the 21 historic isolated features located and documented during the survey are earthen platforms or foundations.

Isolated find **5BL4976** is a platform located on the north side of Bear Canyon, approximately 75 feet (23 meters) above the creek bed. The platform has been dug into the slope on the uphill side, and is supported by a rock retaining wall on the downhill side. The retaining wall is 13 feet (4 meters) long, 1 foot (0.3 meters) high, and is constructed from dry-laid, irregular, local fieldstones, which are heavily lichen covered, and range from 8" to 20" (0.2 to 0.5 meters) in size. The plan dimensions of the platform are 16 feet (5 meters) north-south by 20 feet (6 meters) east-west. No trail or road leads to the feature. A wooden pole has been set into the ground south of the rock wall which extends 4" (0.1 meters) above the present ground surface. The function of the platform is not known.

Isolated feature **5BL4997** is a stone and cement platform, located east of site 5BL4930, on the east site of a shallow ephemeral drainage. This rectangular platform has been constructed from sandstone blocks, flags, and concrete. The platform measures 7 1/2 feet (2.3 meters) east-west by 9 1/2 feet (2.9 meters) north-south and is 15 inches (0.4 meters) high. Only the north face of the structure is exposed above ground level. The function of this platform is not known.

Isolated feature **5BL5001** is a stone platform located immediately east of Chautauqua Auditorium. The semi-circular, coursed, dry-laid sandstone retaining wall on which the platform is constructed is 3 feet (1.0 meter) high, 27 feet (8.2 meters) north-south and 33 feet (10 meters) east-west. The platform may have been a patio or picnic platform associated with Chautauqua Auditorium.

Adits

Two of the 21 historic features documented during the survey were mineral exploration adits.

Isolated feature **5BL4974** is an adit located in Lost Gulch. The feature consists of a trench 33 feet (10 meters) long and 6½ feet (2 meters) wide, which exposes competent rock. The subsurface component of the adit consists of a tunnel 6½ feet (2 meters) wide, 4 feet (1.2 meters) high and 13 feet (4 meters) in length. The waste rock from the trench and tunnel extends approximately 16 feet (5 meters) downslope from the mouth of the trench. No constructed road or trail is visible near the workings. No artifacts were observed in association with the adit.

Isolated feature **5BL4975** is an adit located in Shadow Canyon. The feature consists of a trench 39 feet (12 meters) long and 3 feet (1.1 meters) wide. Competent rock has been exposed at the end of the trench, but the subsurface tunnel has collapsed. The downslope end of the trench crosses Shadow Canyon trail. This feature is probably associated with the Stockton Cabin (site 5BL3812) and

other similar prospects nearby (isolated features 5BL3906 and 5BL3907).

Features of Indeterminate Age

Of the 49 total isolated finds and features located and documented during the survey, 5 are stone constructions of indeterminate age. Of these, 3 are stone cairns not of recent origin.

Isolated finds **5BL4957**, **5BL4969**, and **5BL4980** are rock cairns. 5BL4957 is located on a broad ridge overlooking Bear Canyon and is comprised of a large central boulder stood on end and surrounded and supported by a pile of smaller stones. The central stone measures 7" by 7" by 20" high, while the smaller stones range from 6" to 10" in diameter. The stones are heavily covered by moss and lichen. No trail or road is visible in the vicinity of the cairn. Cairns similar in form to this one have been used to mark the corners of mineral claims elsewhere in Boulder County. 5BL4969 is located on a broad slope overlooking Gregory Canyon and consists of 11 stones ranging from 5" to 8" in diameter, stacked in a low pile. The stones are well set into the present ground surface and are heavily lichen covered. No trail or road is visible in the vicinity. 5BL4980 consists of 10 stones set in a pile on the upper surface of a large boulder in an unnamed drainage on the north side of Bear Canyon. The stones are heavily covered by lichen and moss. No road or trail is visible from the cairn.

Isolated find **5BL4958** is a stone enclosure overlooking the upper end of Gregory Canyon. The enclosure is constructed from roughly piled fieldstone cobbles and small boulders, 6" to 16" (0.15 to 0.4 meters) in diameter. No cement mortar has been used. The stones are partially supported by a ponderosa pine which has grown around the enclosure. Substantial lichen and moss growth can been seen on all of the stones. Fragments of clear plastic were located near the enclosure, but their association to this feature is not known. No trail or road leads to the feature.

Isolated feature **5BL4979** is a linear rock alignment located on the north side of Anemone Hill. The alignment consists of an intermittent line of locally-obtained, irregular cobbles measuring 2" to 16" (0.05 to 0.4 meters) in diameter. Some of the stones are arranged into small piles or cairns, others are placed in long lines. The alignment is 292 feet (89 meters) long, and oriented toward true north. Most of the stones are deeply embedded into the ground surface and are heavily covered with lichen. The alignment also incorporates several large trees. Larger trees grow on the east side of the wall; smaller, younger trees grow to the west. The alignment overlooks a small ravine. The age and function of this rock alignment are not known.

OTHER CULTURAL MANIFESTATIONS

During the course of fieldwork a large number of cultural manifestations which were not characterized as either sites or isolated finds were observed. These artifacts and features were categorized as "Other Manifestations" because of insufficient or indeterminable age, or because of their ephemeral or ubiquitous nature. A total of 267 observed cultural manifestations fell into this category. These manifestations were further subdivided into seven classes: sanitary tin cans (C), recreational fire rings (F), linear features (L), pit features (P), stone alignments (S), windbreaks (W), and miscellaneous. Of the 267 total other manifestations, 27 were classified as sanitary cans, 73 were classified as fire rings, 49 were classified as linear features, 32 were classified as pit features, 17 were classified as stone alignments, and 11 were classified as windbreaks. The balance, 95 manifestations, were classified as miscellaneous. See Appendix A for additional information.

Sanitary Cans. Sanitary tin cans are found throughout the park, either as isolated artifacts or in small groups. Many of these artifacts are found in association with fire rings or other recent cultural manifestations. Sanitary metal food and beverage containers were first produced immediately after the turn of the century and had dominated the food container market by 1911. Because this style of can is still in use it is generally not possible to determine the age of a particular can in the field.

Fire Rings. Recreational fire rings can be found throughout the park. In most cases it is not possible to determine the absolute age of a fire ring, although it is clear that some are much older than others. Although many of the fire rings are associated with clearly modern trash, it is likely that some proportion of them are older than 50 years. There is no reliable method for making a field determination of age, however. All of the fire rings observed are thought to be from the historic use of the park.

Fire rings vary in size from 1 to more than 3 feet in diameter. Most of them have not been used recently, although some are probably still in use despite the prohibition on woodburning. Fire rings in areas accessible to pedestrian traffic are more likely to have been recently used. This is particularly the case on the south side of Anemone Hill, in Gregory Canyon and on the east side of Flagstaff Mountain. Fire rings are typically located on ridgetops, saddles and broad knolls.

Linear Features. Linear features include fence lines, social trails, disused trails, and road segments. As with recreational fire rings it is generally not possible to make a determination in the field about the age of the feature. Clearly, however, some of these manifestations are much older than others. In addition, some

of these features are much more formal than others; social trails are, for example, created by concentrated foot traffic, whereas some of the road segments in this category are graded, and supported by constructed rock masonry.

Fences generally fall into two categories. The first group, drift fences and informal property boundaries, probably predate public acquisition of park properties. These fences are typically not accurately aligned to a cardinal direction, and are often constructed from short segments of barbed wire, spliced together. These fences make use of living trees and locally-obtained split logs for fence posts. Some of the more unusual varieties of barbed wire, such as the Watkin's Diamond, Brotherton's Barb, and Baker's Perfect Barb, are to be found in these types of fences. Discussions with Mountain Parks Field Operations/Maintenence Coordinator Dick Lyman indicated that many miles of fences were removed from Park property during the 1960s and 1970s. The second variety of fence probably marks property boundaries established at or after the time of park acquisition. These fences are more uniform in orientation, materials and construction. Most of the fences in this variety make intermittent use of steel fence posts. Because many of these fences correspond with the modern boundaries of the Mountain Parks they were used to mark the perimeter of the survey area.

Roads and trails are also generally of two types. Many of these are informal and came into being through repeated use. Most of these roads and trails have been abandoned for a considerable period of time. These include logging skids, informal pedestrian trails, stock drives and mineral prospect access roads. A second group of roads and trails may have at one time filled a much more formal purpose. These are generally cut into the slope and graded. Often they include rock work support features and drainage or erosion control structures. Many of these have been 'recycled' and are now used for foot traffic. The road which provides access from the Bear Canyon trail to the Bear Peak West Ridge trail is a good example of this type of manifestation (#270).

Other types of linear features include power and telephone transmission lines.

<u>Pit Features</u>. This category is dominated by mineral prospect pits and adits, although borrow and latrine pits are included. Fourteen mineral prospect pits and three adits were recorded as other manifestations. These features vary in size from as small as 2 meters on a side and 1 meter deep to as large as 6 meters on a side and 2.5 meters deep. Adits consist of a trench roughly 12 meters long and two meters wide. Two additional adits, which included subsurface elements, were recorded as isolated features (5BL4975 and 5BL4974). Some mineral prospects are located adjacent to access roads (#295, for example), although most are not. Mineral prospects are located throughout the Park, although a large

concentration of adits is located along an unnamed intermittent tributary of Boulder Creek on the south side of Anemone Hill.

A variety of shallow road and trail borrow pits were also observed during the survey.

Stone Alignments. These manifestations can be divided into rock piles and linear, circular or rectangular alignments. Many of the rock piles are recent cairns marking informal trails or camping spots. Three additional cairns were recorded as isolated features because significant lichen growth suggested an age greater than 50 years, and because they were not located near a modern road or trail. The remainder of the rock piles may represent building material stockpiles. The second group of stone features consists of various rings, walls, and rectangular enclosures. Three additional, more formal, stone walls and enclosures were recorded as isolated features. The function of these stone features is not known.

Windbreaks. Ten stone and log windbreaks or shelters were observed during the survey, many in association with one or more fire rings. Although most of these shelters are very informal and temporary, several, located near the top of Anemone Hill, were more substantial and may have been used repeatedly over the course of a season (#303 and #305).

Miscellaneous. In addition to the items discussed above, 95 miscellaneous other manifestations were noted during the survey. A large proportion of these are metal artifacts, including sanitary food containers, metal buckets, barrels, poles and wire. Most of these are probably of recent origin, although a precise determination of age is generally not possible.

Miscellaneous other manifestations also include a number of modern structures, such as the Flagstaff Summit picnic area (#73, built in 1965), a solar-powered weather station (#232), and a water tank (#29). The list includes a variety of discarded automobile parts (#146), piles of unused fence posts (#242), and rock shelters (#337).

DISCUSSION

The survey methodology is believed to have assured that significant cultural resources visible on the ground surface would be located and recorded. Ground visibility throughout the project area was generally poor. A comparison between expectations and actual survey results indicates that expectations were, for the most part, realized. Few cultural resources were expected for the prehistoric period, and only a total of nine isolated finds have been documented within the project area. Historic resources were expected and were anticipated to represent agricultural, mining, transportation and recreation activities. Thirty-six historic sites have been documented within the project area.

This project contributes to the state archaeological research plan and to City of Boulder Parks and Recreation goals by documenting the presence of sites and isolates representing seven historic themes. Four sites represent the theme of agriculture, four represent early transportation, one represents logging activities, five represent mining and sandstone quarrying, three represent the early exploitation of water resources, and 16 sites represent the theme of recreation. The thematic association of three of the sites is unknown. A variety of isolated finds are also representative of these six historic themes. In addition nine isolated finds are representative of the theme of aboriginal prehistory. Of course, many sites crosscut themes, and may have related to different themes at different times, or be pertinent to several themes at once.

History of Boulder Mountain Parks Property Acquisition

Just before the turn of the century, the City of Boulder began to acquire Mountain Parks property through the purchase, donation, and lease of parcels from a variety of landowners, including the federal government, the state of Colorado, and private citizens.

The first acquisition of park property came in the spring of 1898, when the city agreed to purchase property belonging to William and George Batchelder for the use of the Chautauqua Association. When it was announced in February of 1898 that the newly incorporated "Texas-Colorado Chautauqua Association" was scouting for a site which would probably be located in either Boulder or Denver, the Boulder city council appointed a parks committee (Boulder Daily Camera April 27, 1959; Schoolland 1980). On March 18, 1898 a committee dispatched from the Chautauqua asked the council to purchase the 80 acre Batchelder tract for their use (Boulder City Council minutes, March 18, 1898). After much discussion the council passed a resolution pledging financial support to the organization (Schoolland 1980). The Chautauqua committee also asked the city to take an option on the 160 acre Russell-Austin

property which adjoined the Batchelder tract to the west. City Alderman Russell indicated that the parcel could be sold to the city on a 5-year option for $4,500 (Deed 270-40, recorded 4/21/1903). The smaller Batchelder tract would cost the city $8,000 (Deed 206-24, recorded 5/5/1898). At the same time the council's parks committee recommended the purchase of 160 additional acres, including the summit of Flagstaff Mountain (Boulder Daily Camera April 27, 1959). These acquisitions were approved by the voters of Boulder 1,358 to 38 during an April election. Property owners, to whom the tax burden would fall, voted 425 to 12 to authorize a bond issue to pay for these purchases. In December 1898, the council named the city's purchase "Texado Park."

The excitement surrounding the arrival of the Chautauqua prompted additional park acquisitions. Early in 1898, city attorney C. M. Campbell had proposed that the city council request park lands from the federal government. On July 5th, one day after the opening of the Chautauqua, the council wrote a 'memorial' to the Colorado congressional delegation requesting that 1800 acres of federal land be given to the city as a gift (Boulder Daily Camera April 28, 1959). On December 13 Senator Henry M. Teller introduced a bill to that effect and the parcel was given to the city early in 1899 (Denver Times December 13, 1898). This donation of federal land appears to have been made available to the city under a federal statute that allowed cities to acquire federal properties for the purpose of park development (Denver Times February 9, 1900). The bill provided, however, that the city mark the boundaries of its new park. As this was apparently not done congress withdrew the gift, probably in 1900 (McNellan 1995). The city petitioned congress for the parcel again in 1906, but by then it had been reduced to 1601.75 acres due to public purchases (Deed 95-329, recorded 12/22/1906).

At the end of January, 1900, the city acquired title to four lots in Section 35 of Township 1 north, Range 71 west. These parcels included portions of Flagstaff Mountain and "American Park" on the mountain's summit, which had been named by the Boulder City Council in December of 1898 (Denver Times January 23, 1900). An additional portion of Flagstaff Mountain (160 acres in the southwest 1/4 of Section 36, Township 1 north, Range 71 west), which was owned by the state as a school section, was leased to the city (Denver Times February 9, 1900).

The success of early efforts to acquire park lands prompted the city to establish a Parks Board in 1907. An outgrowth of the Boulder Improvement Society, which had been formed originally in 1890 and revived in 1903, the Parks Board was charged with recommending acquisitions, and administering the park's maintenance allowance. In 1916 the Parks Board was replaced by the Planning and Park Commission (Central Records).

The next major acquisition of park land came in the fall of 1908 and was a gift to the city from Dr. William J. Baird. Dr. Baird donated four lots extending west from the Russell-Austin tract at the mouth of Gregory Canyon to the upper end of Lost Gulch, including Realization Point (Drumm map, 1931; Deed 328-280, recorded 10/6/1908). Green Mountain and adjoining tracts were purchased from the federal government in 1916. (Deed 59-566, recorded 5/27/1916). During January and February of 1915 Eben Fine and Martin Reinert of the City Parks Board circulated a public petition to present to the city council requesting that funds for this 1200 acre purchase be made available (Boulder Daily Camera, February 3, 1915; January 15, 1915). At that time the government was charging what Fine and Reinert considered a 'nominal' $1.25 per acre, or $1,500.

In 1920 several large land purchases were made. In January of that year the city purchased at least 120 acres at Red Rocks on the western end of Pearl Street. This land was acquired to prevent the commercial development of Boulder's 'mountain backdrop' (McNellan 1995). In March the city received title to the parcels owned by stone quarry operators Jonas Bergheim and Frank P. Wood. This 320 acre tract on the eastern flank of the Flatirons was purchased by the city at a cost of $5,800 (Drumm 1931 map; Deed 513-436, recorded 9/24/1924). Following a $2,000 purchase of 40 acres at Red Rocks in January 1926, the park boundaries remained stable until the 1960's.

During the early 1960's residential development pressures lead to additional land purchases. Between 1962 and 1964 Boulder residents lead an effort to issue municipal bonds for the purchase of the Enchanted Mesa, formerly known as Horse Mesa (Lanham 1974). In 1962 an issue of 105,000 bonds was approved by Boulder voters. Subsequently 160 acres of the Enchanted Mesa were acquired by condemnation (Boulder Mountain Parks files). Private funds were also used to secure title to parcels in the vicinity. In August of 1966 10 acres were acquired at Red Rocks. In February 1973, 120 acres in Skunk Canyon were deeded to the city by the federal government in conjunction with a property grant from local citizens to the National Center for Atmospheric Research (Patent f. 808, n. 055946).

More recent acquisitions include 425 acres in Cathedral Park (purchased in 1986), Bear Peak West Ridge (55 acres purchased in 1986), Panorama Point, and Tram Hill. The contiguous portion of the park now covers an area of 5627 acres.

Historical Themes

The cultural manifestations recorded during the survey of the Boulder Mountain Parks can be organized according to a set of

themes developed as a part of the Boulder Historic Context Project (Friedman 1989). The discussion which follows is arranged according to those thematic headings.

Aboriginal Prehistory, 12,000 B.C. to A.D. 1880

Direct evidence for use of the Mountain Parks by Native American groups is limited. Eight prehistoric isolated finds were located during the course of the survey, a cache of chipped stone bifaces was discovered in a ravine east of Chautauqua in 1929, and a single projectile point was located by a park visitor in September 1991. In addition a groundstone tool was located during construction activities near Eben Fine Park, although the exact relationship of this find to the Mountain Parks boundary could not be determined. No prehistoric sites or features were documented during the survey.

The biface cache found in 1929 had been donated to the University of Colorado Museum and is currently on loan to the Boulder Parks and Recreation Department. A functional analysis of this cache was conducted (Becker 1994). The cache, which consists of 14 oval artifacts made from Kremmling Chert (Figure 32), was examined under high power magnification to determine whether of not they had been used as tools, and if so for what purpose. It was determined that the artifacts had not been used and were therefore unfinished tool 'blanks' or preforms. The temporal and cultural affiliation of these artifacts can not be determined.

The groundstone tool recovered from the vicinity of Eben Fine Park is a bifacial granite-cobble mano measuring 12.5 x 7 x 4 cm. Manos such as this were used for a variety of food processing activities. The temporal and cultural affiliation of the mano can not be determined.

Of the eight isolated finds located during the survey, six were either fragmentary or otherwise non-diagnostic of a particular cultural period. The remaining two can be assigned on the basis of morphology to broad temporal periods. Isolated find **5BL4954** is a Late-Prehistoric side-notched projectile point, and probably dates to between 1000 A.D and 1550 A.D. Isolated find **5BL4959** is an Archaic projectile point and probably dates prior to 500 A.D. The remaining projectile point, isolated find **5BL5004**, is a Hog Back Corner-notched point, dated to between 520 A.D. and 1185 A.D. (Benedict 1990) (Figure 32).

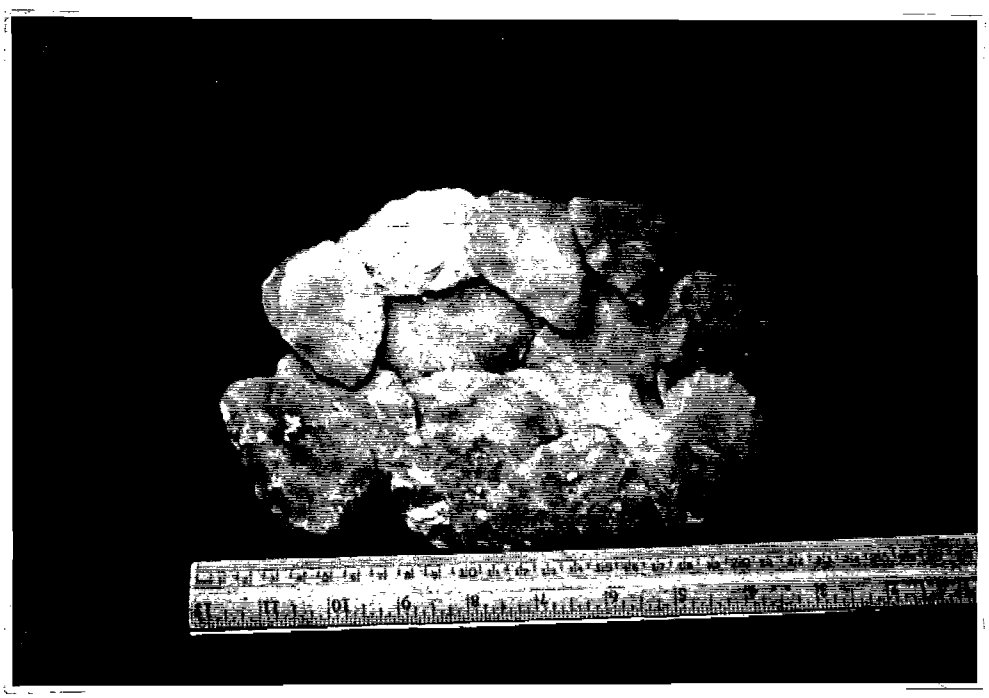
Although it is difficult to speculate, given the paucity of direct evidence, about the uses aboriginal peoples may have made of Boulder Mountain Parks property, it is clear that the area has been visited and utilized for a considerable period of time. The widely dispersed and isolated nature of the prehistoric artifacts recovered from the park suggests a low intensity use of park

5BL4954

5BL4959

5BL4962

5BL5004



Cache of 14 biface tool preforms found in 1929

Figure 32: Aboriginal Artifacts

properties by aboriginal peoples. Although a number of significant aboriginal sites are known from Boulder County, the absence of habitation sites or artifact concentrations within the park boundaries suggests that this land was utilized primarily for limited duration activities such as hunting and plant gathering. The intensive recreational use of the park during the last century has undoubtedly destroyed evidence for aboriginal use and occupation of the area. It is noteworthy that the biface cache and several of the isolated finds are made from Kremmling Chert, a stone tool material type available in Middle Park. This is indicative of a relationship between this area and areas west of the Continental Divide, either through travel or trade.

It is possible that some of the firepits, windbreaks, and stone features are the result of Native American use, although most are clearly relatively recent and are likely relate to recreational use by Euro-Americans.

Agriculture, A.D. 1859 to Present

The theme of agriculture covers a wide variety of economic activities, including farming, cattle ranching, fish rearing, and milk and poultry production. Agricultural property types include flour mills, livestock ranches, dairy industries, gardens, orchards, and farms (Friedman 1989).

Cattle ranching and truck farming were early uses of Mountain Parks property. As early as 1883, for example, the Rea family had built a homestead at the mouth of Gregory Canyon and established a small vegetable business (McNellan 1995). Walter B. and Lucy Neville Rea had arrived in Boulder County in 1874 and built a homestead along South Boulder Creek near the Walker Ranch. In 1883 the couple moved to Boulder and built their homestead at Gregory Canyon. Mr. Rea, a Confederate soldier during the Civil War, was stricken with paralysis at his mine at Magnolia and died at home in 1897. In 1898, the year that William and George Batchelder sold their holdings to the city, the Rea's son built a home at 879 7th Street (5BL3473), in which Lucy lived until her death in 1937 (Figure 33).

The Batchelder Ranch was built by William Batchelder in 1882. The property originally included a ranch house, out buildings, a small spring-fed reservoir for alfalfa irrigation, and an apple orchard. The Huggins Ranch, another early agricultural property, extended west from 9th Street onto the eastern flank of Flagstaff Mountain (Schoolland 1980).

The presence of a "Chicken Ranch" is alluded to in some documents (see McNellan 1995, Dick Lyman, personal communication 1994) and apparently existed at what is now known as Realization Point. No traces of this operation were located.

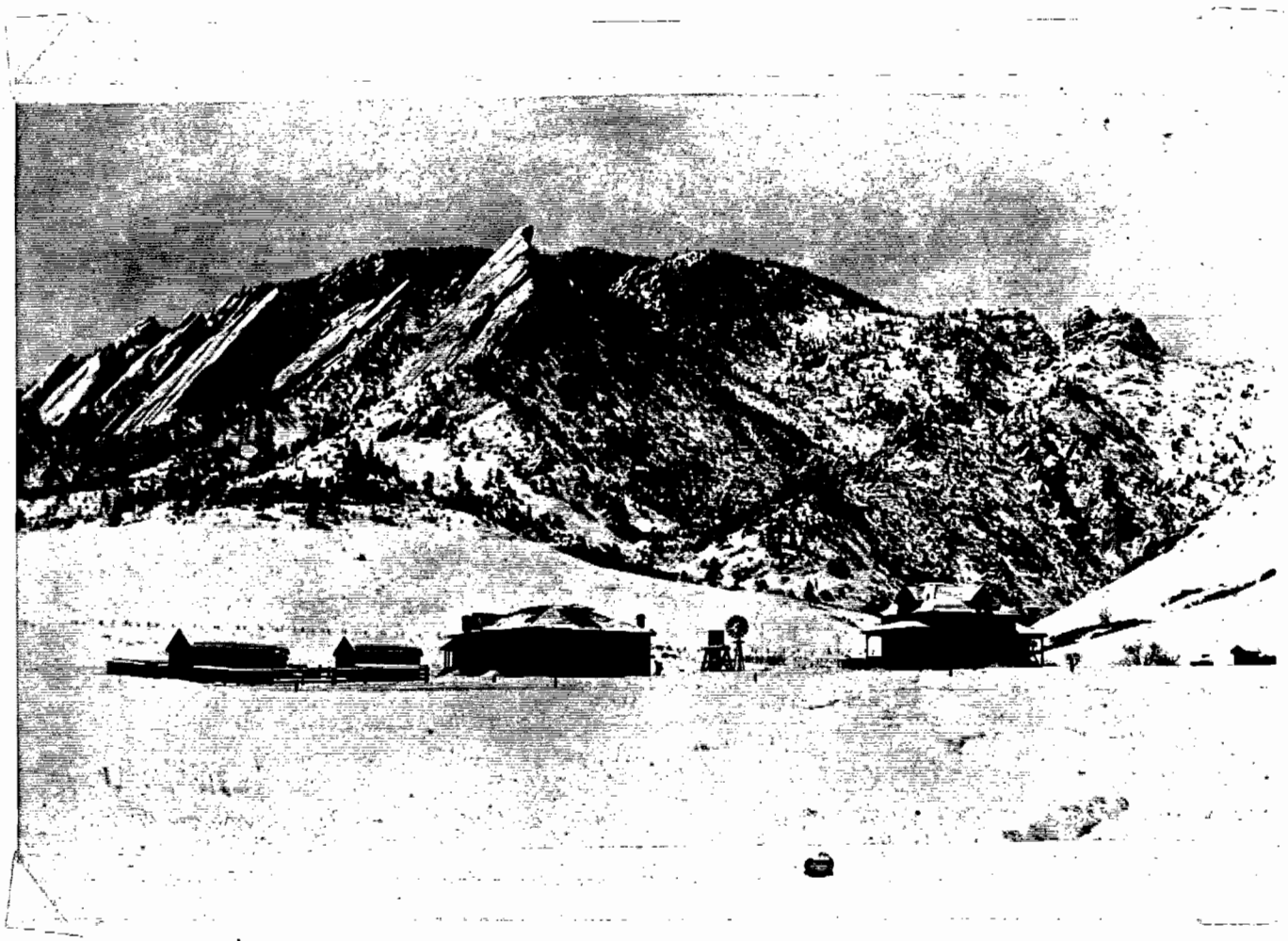


FIGURE 33 - Historic photo of Rea Ranch, Mar. 1899. Courtesy of Carnegie Branch Library for Local History, Boulder Historical Society Collection.

The area around the mouth of Bear Canyon and Skunk Canyon was owned by the Harmons. Harmon was involved with the Bear Canyon Toll Road and with logging. According to Herzer (1965), Harriet Harmon was born in a cabin "up Bear Canyon back of Bear Mountain". The family later moved east of Bear Canyon. Harriet married Frank Roosa, and Herzer states that the Roosa Cabin was built in 1935 by Harriet and Frank on land that had been part of the "Harmon Ranch". A Boy Scout troop had been permitted to use the cabin. The Roosa Cabin, a stone structure, is present on an inholding of private land, still owned by the Roosa Family. The Harmons may also have been engaged in raising stock.

The Walker Ranch, known as the South Boulder Cattle Ranch, was west of the project area and consisted of 800 acres in 1886. In addition to cattle, horses, pigs, chickens and turkeys were raised. The Walkers also engaged in logging and sawmilling. The ranch eventually covered 6000 acres. Some of the grazing and logging may have occurred on land which later became the Mountain Parks.

Several ranches or farms existed east of Bear Peak and South Boulder Peak, east of the Mountain Parks boundary, such as the Dunn - DeBacker, Brammeier, and Blake operations. Some grazing probably occurred on what is now park land.

By 1882, John Brierly and his family owned the land which is now Settlers Park. Brierly grew fruits, vegetables, and ornamental flowers in this area. The walls and foundation comprising site **5BL5005** may be from the Brierly operation, or some other farm. A Sturtevant photo from about 1900, reproduced in Schoolland (1980:224), shows a house and barn in the area of this site.

Aside from 5BL5005, no direct archaeological evidence can be linked to these farms and ranches; however, indications of farming and stock growing can be observed throughout the park. For example, an irrigation feeder ditch (OM 2) may have been used to bring water to the Rea or Huggins ranches. Similarly isolated feature **5BL4998** is a small diversion dam and irrigation ditch which may have been associated with one or more of these early ranching efforts.

A variety of other cultural manifestations located within the boundaries of the park attest to the extensive use of park property for stock growing. Although many of them have been removed, a large number of fences once divided the Mountain Parks into separate pastures. Dick Lyman, long-time Mountain Parks employee, indicated that he removed as many as thirty miles of fencing in one year (Lyman, personal communication 1994). Many of these fences were informally constructed and may have served as drift fences. Road segments such as OM 290 and OM 379 may have been used to move cattle between mountain pastures. Similarly many of the firepits observed in the park may have been used in conjunction with cattle operations, although the age and use context of any particular firepit is not known.

Several of the historic sites recorded during the survey were also probably associated with agricultural activities. Site **5BL4945**, the Gregory Canyon Homesite, and site **5BL4946**, the Upper Bear Canyon cabin, may have been associated with a variety of stock raising activities, although no direct documentary evidence is available. The Gregory Canyon homestead appears to have been a substantial construction, based on the heavily built and well crafted stone fireplace which is still visible. The extent of the artifact scatter located near the cabin suggests that the property was used regularly or continuously over a period of at least several years. In contrast the Upper Bear Canyon cabin appears to have been used on a temporary or intermittent basis. The rudimentary construction techniques and the lack of accumulated artifacts implies that the cabin may have only been used on a seasonal basis. Little else is known about these structures because the land on which they were built appears never to have been claimed, or title to the land was never perfected. Based on the probable age of the artifacts observed in association with these structures it is likely that they were in use during the first part of the 20th century, but may have been occupied earlier.

Site **5BL4947**, the Lower Bear Canyon cabin, may also have been associated with agricultural activities and 19th century homesteading. Mary Collins, in Pioneering in the Rockies, describes her life in and around Bear Canyon prior to the turn of the century (Collins n.d.). This site may have been associated with that occupation. The artifact deposition at the site suggests that the structure may have been used over a number of years.

The Gregory Canyon Road (5BL4948) was also used by local ranchers, Mart Parsons among them, to bring cattle to Denver from the western slope prior to 1890 (Schoolland 1980). It is likely that the Bear Canyon Road was also used for this purpose.

Agricultural uses sometimes conflicted with other uses of Mountain Parks property. In March of 1919, for example, Herb Robinson requested that city manager E.O. Heinrich grant him permission to graze 1200 to 1500 sheep on a tract of city parks land located between Green Mountain and Bear Peak. After objections were registered by other users, the city denied the application (Central Records, Letters from Herb Robinson to E.O. Heinrich (3/29/19) and Jean Sherwood to E.O. Heinrich (4/8/19)).

Transportation, A.D. 1540 to Present

Early Euro-American Roads, A.D. 1540-1900

Transportation was one of the earliest uses of Mountain Parks property by the Anglo-American settlers of Colorado's Front Range. Several important transportation corridors cut across the Boulder Mountain Parks. Some of the trails and roads, such as Gregory Canyon and Bear Canyon, probably followed aboriginal trails. Some

of the current roads and hiking trails were originally roads established for access to quarries or for logging, such as the Enchanted Mesa Road and the Mesa Trail. Chapman Drive and Flagstaff Road were established essentially to provide access to the park. These sites are discussed under recreation, below.

Site **5BL515**, the Gordon-McHenry Road, was a federally financed military road built up Sunshine Canyon in the 1860s. It is named after the two head engineers of the project. The road followed Sunshine Canyon to Ritchie Gulch, then to Orodell in Four-Mile Canyon, west to Sugarloaf, and down Gordon Gulch to North Boulder Creek. It was intended to cross Arapaho Pass into Middle Park, but was abandoned north of Caribou (Fetter 1983).

The Gregory Canyon Road (**5BL4948**) represents the first attempt to link the fledgling gold camps at Central City, Black Hawk, Gold Hill and Ward, with the growing town of Boulder (Schoolland 1980). The route was originally used by John H. Gregory, the discoverer of the rich gold deposits at Central City, who is reputed to have brought a stamp mill for processing gold ore to Central City via Longmont, Valmont and Gregory Canyon in 1859 (Schoolland 1980). Henry Clay Norton's "St. Vrain, Altona, Gold Hill, and Gregory Road Company" improved the original Gregory route, probably in 1860 or 1861 (Schoolland 1980). Construction efforts continued intermittently throughout the 1860's and 1870's (Figure 34). A photo from 1896 shows the Double 'S' section in good shape (Figure 35). The road saw at least occasional use until the Flagstaff Road was completed as far as Kossler Lake, sometime after 1907. However, the road must have been unsatisfactory for hauling freight, as evidenced by the repeated attempts to build and maintain a viable route up Bear Canyon.

The Bear Canyon Road (**5BL3925**) was also constructed to provide access to the newly opened gold mines at Central City and Black Hawk. Traffic to and from these early gold camps originally followed Golden Gate Canyon, located north of Golden. Smelter operators located in Boulder were interested in diverting the production of gold ore from smelters in Denver to local operations (Friedman 1989). Boulder and Marshall residents were also interested in capturing a portion of the market which supplied equipment, produce and other goods to the gold camps. In 1862 Norton built a road up Bear Canyon which, due to its proximity to the creek, was washed out by flood waters. He rebuilt the road in 1864, only to see it washed out again. In 1868-1869 the Bear Canyon and Black Hawk Wagon Road Company rebuilt the road, and it was operated as a toll road. In 1885, the Bear Canyon and French Gulch Wagon Road Company tried to reconstruct the road, an attempt which only recapitulated the previous failures (Smith 1984). The road was again rebuilt in 1907 by the Colorado Power Company. The road was again washed out in 1919; a final reconstruction of the roadbed was completed by the Civilian Conservation Corps in 1935 (Ament and McCarty 1985). Although the road was damaged or

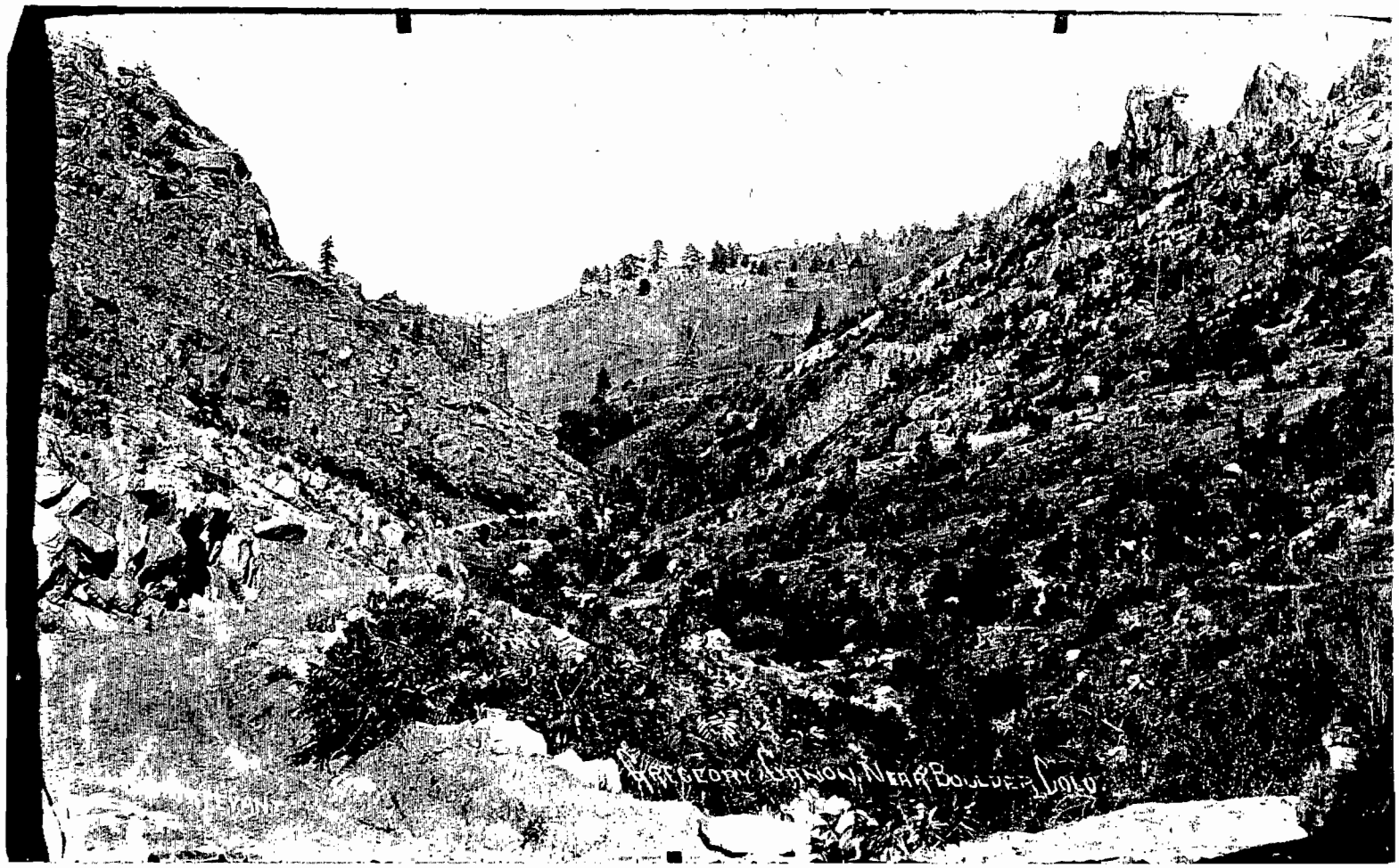


FIGURE 34 - Historic photo of Gregory Canyon Road. Courtesy of Boulder Daily Camera.

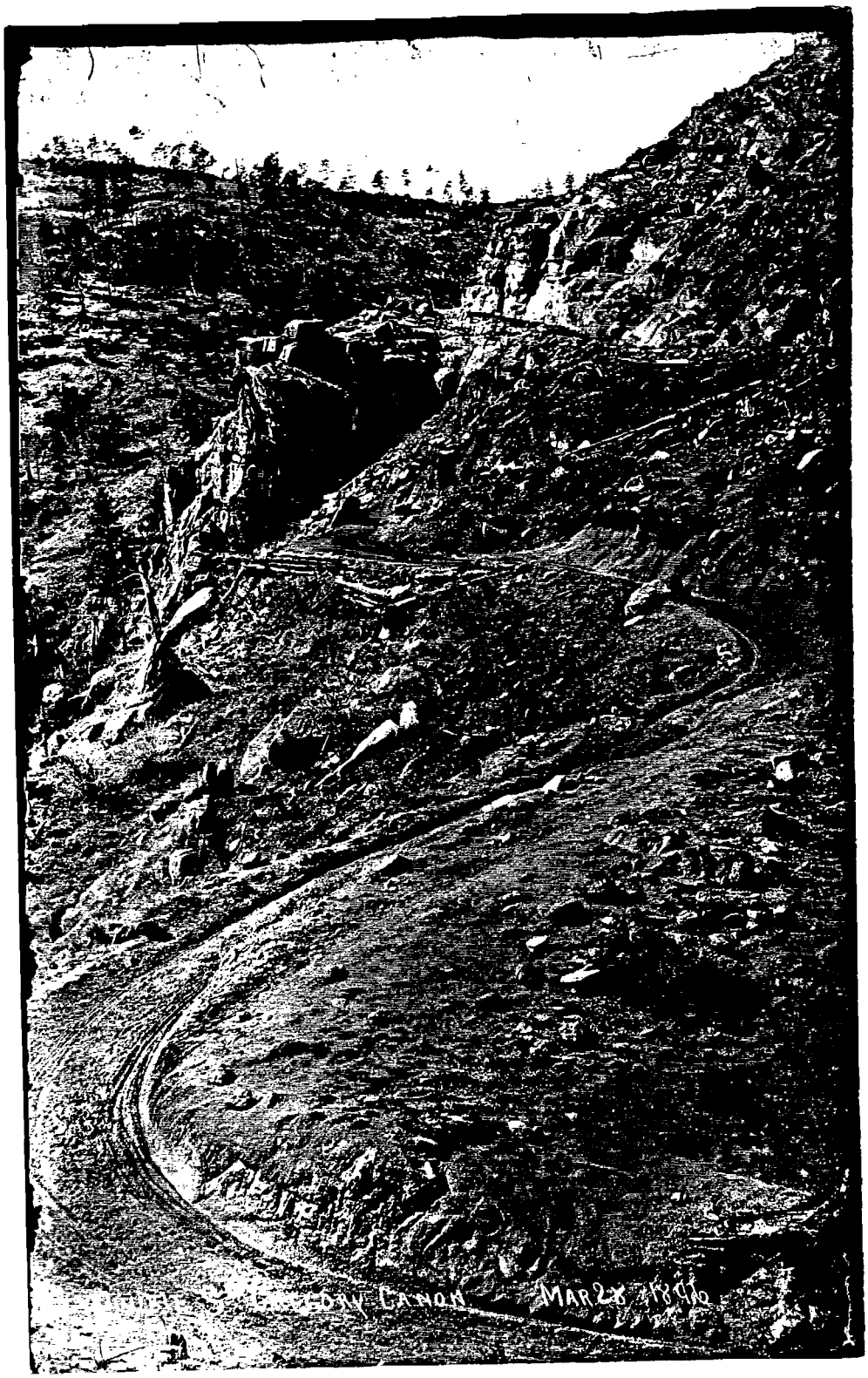


FIGURE 35 - Historic photo of Gregory Canyon Road, Mar. 28, 1896. Photograph courtesy of Boulder Daily Camera.

destroyed repeatedly, it served as a corridor between the booming mining towns and Boulder. Boulder Canyon was considered impassable by the earliest pioneers and settlers, but again the mining boom at Central City and Blackhawk, and the potential economic benefits of connecting Boulder with the mining country, provided the stimulus to attempt construction of a road. J.P. Maxwell and C.M. Tyler created the Boulder Valley and Central City Wagon Road Company which began construction of Site **5BL622**, the Boulder Canyon Road, in 1865.

The first section, from Boulder to Four- Mile Canyon, took three months to complete. Some of the original dry-laid stonework can still be seen in the lower portion of Boulder Canyon. By 1866 the road had been completed as far as Magnolia Hill, turning south to South Boulder Creek, and onto the Enterprise Road and Blackhawk. The Enterprise road was the main toll road connecting Denver, via Golden Gate, with the mines of Blackhawk.

Boulder Canyon above Magnolia Hill contained the falls and the "narrows", named because the canyon walls were so close to the creek, and was too daunting to continue up the canyon. In 1869, however, silver was discovered in Caribou, increasing the need for a direct route from Boulder. That winter a survey crew discovered that a route through the narrows to Nederland was six miles shorter. The construction of the road to Nederland was completed in 1871 and contained thirty-three bridges. The canyon road remained one lane with occasional turnouts. From 1913 to 1917 the road was widened and improved for automobiles using state prison labor. It was not until 1949 that the road was completely paved, including the addition of stone guardrails, under the direction of the U. S. Bureau of Public Roads. The Boulder Canyon tunnel was constructed in 1953 in order to bypass the Hydroelectric plant. In 1954, ninety years after the original road construction began, the modern road was completed. Information on the Boulder Canyon Road is from Fetter (1983) and Schoolland (1980).

Commerce and Industry, A.D. 1859 to Present

Lumber and Construction Industry, A.D. 1860 to Present

One of the primary natural resources of Boulder's 'mountain backdrop' has been timber. Schoolland (1980) reports that as early as 1864 a sawmill was established near the mouth of Bear Canyon (1980), but this seems doubtful. The opening of the Bear Canyon toll road also provided access to large stands of timber on the mountain slopes adjacent to South Boulder Creek. Several local residents, including George Dana Harmon, Onsville C. Coffin and others, filed claims on land and began timber operations (E. M. Pease n.d.). Harmon and Coffin, who had served together in the 1st Cavalry Colorado Volunteers, both came to Colorado from Maine. Their timber operations probably began after an unsuccessful

attempt to resurrect the Bear Canyon Wagon Road in the 1860's (Roosa, 1940). Later, during the 1930's and 1940's, timber was cut on the Kossler Ranch west of the Mountain Parks (Dale Johnson, personal communication 1994; Drumm Map 1931).

Evidence of logging operations can be seen throughout the park in the form of stumps, abandoned logging roads, and stacked cordwood. A crude and temporary log shelter of uncertain age (OM 289) was, for example, probably associated with small-scale timber or firewood operations on the Green Mountain West Ridge. Similarly the Saddle Rock trail is reported to have incorporated a variety of informal logging roads in "Contact Canyon" on the north slope of Green Mountain (Cushman and Cushman 1995). The Enchanted Mesa was logged by Ed Kohler, probably around the turn of the century. A sawmill is reported to have been located in Bluebell Canyon (Herzer 1965). The mesa was logged again in the 1970s as part of Project Greenslope, to manage mountain pine beetles.

Site **5BL4950** was probably the location of a portable sawmill. Timber was brought to the mill site from the surrounding ridges and cut into various sizes of dimensional lumber. The size of the remnant mill scrap piles suggests that the mill was operated at this location for a period of perhaps several seasons. Portable sawmills are known to have been used on the nearby Walker Ranch property and in South Boulder Canyon.

By the First World War wood cutting in the area was so complete that when the U.S. Cavalry Roughriders, including 600 men and 500 horses, camped in Ed Kohler's meadow east of the Enchanted Mesa, a local wood contractor, Dan McAllister, was forced to go as far as Boulder Canyon and Sugarloaf to obtain firewood for the troops (Herzer 1965).

Mining, Minerals and Extractive Industries, A.D. 1858 to Present

Sandstone Quarrying, A.D. 1880 to Present

Another important natural resource of Boulder's 'mountain backdrop' was sandstone block quarried for use as a building material. Quarries in the park, including the Anderson (**5BL4943**), Woods-Bergheim (**5BL4936**), Third Flatiron (**5BL4949**), and Settlers Park (**5BL4933**) take advantage of the high-quality building material present in the Lyons Formation which forms a portion of the hog back. This fine-grained, durable, easily-worked sandstones has been used extensively as a construction material. Quarrying was done largely by hand, although the presence of a large compressor station at the Woods-Bergheim main cut suggests that mechanical rock drills may have been in use. Stone blocks were removed in layers, with blocks being lifted out individually. Blocks were sometimes loosened by driving wedges into natural cracks between blocks or layers. A large number of buildings and structures in

Boulder and along the Front Range incorporate Lyons sandstone in their foundations, walls, sills, and sidewalks. The materials originate from a large number of stone quarries located between Ft. Collins and Boulder, including several near Lyons, Colorado.

It is likely that quarry operations on what would become Mountain Parks property began in the 1880s. Although it is not known precisely when Jonas Anderson, Jr. began operations at his quarry in Skunk Canyon, the Union Pacific Depot in Boulder was constructed from Anderson Quarry sandstone in 1890. According to the Boulder County Herald the "new depot ... will certainly be an exceedingly handsome building ... the walls are built of Boulder County stone from the Anderson quarry at Skunk Canyon and will certainly satisfy the most fastidious of Boulder cranks of which no city in Colorado can boast of or produce a greater supply" (Boulder County Herald, July 2, 1890). A deed formalizing Anderson's right-of-way to the quarry operations was conveyed from Eugene Austin, Charles Russell, and W.H. Nicholson in November 1896 (Central Records). The Settler's Park quarry probably began operations sometime after the turn of the century. The quarry is not visible in a photograph dated about 1900 which depicts the southern end of Red Rocks (Schoolland 1980). Similarly the date in which Wood and Bergheim began their operations is not known, although it was also probably prior to the turn of the century. By the early 1880's sandstone flags (tabular sandstone blocks) began to be used to replace the existing wooden sidewalks of Boulder and Denver. In 1892, for example, a Boulder city ordinance required that sandstone be used for the construction of sidewalks along Pearl Street, between 9th and 19th Streets. Quarrying operations began on a large scale in nearby Lyons after the arrival of the railroad in that community in 1891.

A variety of historic buildings in the Boulder area made use of sandstone from Mountain Parks quarries. In 1907 the Lennartz home at 655 Arapahoe Street was constructed exclusively from Lyons sandstone excavated by Wood and Bergheim. The home's owner, Herman Lennartz, had acquired an interest in the quarry operations and took his share of the profits in building stone. Mr. Lennartz's daughter, Beatrice, recalled that the stone had been brought to the building site by wagon. In the spring of 1908 the Boulder Daily Camera reported that Woods-Bergheim stone was being used in the construction of the Clayton home in Denver (March 31, 1908). The same article reported that a 'resting place' on the road to Chautauqua had been built from moss rock obtained at the Woods-Bergheim operation. The Union Pacific Depot was constructed from Anderson Quarry stone. Although a variety of sources have suggested that Lyons sandstone from one or more of these four quarries was used during the construction of buildings on the University of Colorado campus, no direct evidence for this could be located.

The cost of transporting stone block from the quarry operations to a construction site was a significant obstacle. A Boulder Daily Camera article from March 15, 1910, indicated that a "tentative line [for a] tram road from the Bergheim-Wood quarry in Bluebell Canyon to the railroad track" was being planned, and that the owners "could fill large orders if they could obviate the expense of the wagon haul to town." The accessibility of quarries in Lyons, Nolan, and on Mount Sanitas in Boulder (5BL4173) decreased the competitiveness of the quarries adjacent to Green Mountain and the Flatirons.

Coal Mining, A.D. 1864 to Present

Prospecting for other mineral deposits also occurred within the park boundaries. Site **5BL4981** appears to be the vestiges of mineral prospecting activities, possibly associated with coal production. Extensive coal mining occurred in the southeastern portion of Boulder County near the town of Marshall (Simmons, Gleichman, and Samson 1995). The exploitation of these resources beginning in the 1860's may have prompted prospectors to search for other deposits in the hogback, where similar sedimentary strata have been uplifted and exposed. A Drumm map from 1931 shows an "old coal prospect" in this area. Alternatively, the site may have been associated with clay quarrying.

Precious Metal Mining, A.D. 1858 to Present

Other small-scale mineral prospects can be observed throughout the park. Most of these features were probably related to the search for gold and silver and therefore date to the period between the discovery of gold along the Front Range in 1859 and the First World War when most of these areas were acquired as park property. None of these prospects, however, is associated with any artifacts which would help to define more precisely their age. The most prominent of these prospects include isolated features **5BL4974**, located in Lost Gulch, and **5BL4975**, located in Shadow Canyon. Both adits consist of surficial trenches 33 to 39 feet (10 to 12 meters) in length and shallow subsurface workings. No artifacts were observed in association with either prospect. Isolated feature 5BL4975 was probably associated with the Stockton Cabin (site 5BL3812) and other similar prospects nearby (isolated features 5BL3906 and 5BL3907).

Although most of the mineral prosect features in the park are isolated and widely dispersed, a small cluster of adits and prospect pits is located on the western end of Anemone Hill (OM 322-326).

Isolated find **5BL4957** is a stone cairn similar to those used elsewhere in Boulder County to mark the corners of mineral claims. This feature may indicate the boundaries of a mineral claim which was never patented.

Water Resources, A.D. 1859 to Present

Some of the earliest water projects in Boulder were located on land which is now a part of the Mountain Parks, undoubtedly due to the presence of Boulder Creek. One of the earlier water diversion structures, the Town of Boulder Ditch (**5BL4182**) was constructed in 1875 and brought water from Boulder Creek to the city's first reservoir located at Red Rocks. The Red Rocks Reservoir was completed in 1876 and provided water for fire protection, as well as for residential use. It was used until about 1906. The Sunshine Lake Reservoir (**5BL4932**) was another early water project. The reservoir was proposed in 1886 when the Red Rocks Reservoir no longer met the demand for city water. The location was approved by the City Council in April 1890 and construction was completed in 1891. The reservoir had a capacity of 5,000,000 gallons and cost $160,000 to complete. It was used until the 1950s (Schoolland 1980).

The Silver Lake Ditch (**5BL3813**), which begins in the park and winds around Anemone Hill, Red Rocks, and Sunshine Canyon was constructed by J.P. Maxwell and George Oliver. Water was originally appropriated for the ditch on February 18, 1888. At that time 20 c.f.s. were allocated to irrigate 1000 acres and provide for water storage at the Mesa Reservoir north of Boulder (Gleichman 1992). The ditch is still active.

Recreation and Sports, A.D. 1859 to Present

Recreation has been the most important land use in the Boulder Mountain Parks. The park has supported a wide variety of activities, from hiking and camping, to community 'steak fries' and family picnics. Site types which reflect this long heritage of recreational use include hiking trails, shelter houses, golf courses, ski areas, camping areas, and picnic areas (Friedman 1989).

Community involvement has always been critical to the development of recreational facilities in the Mountain Parks. Civic organizations and public enterprises, from the Boy Scouts and the Lions Club, to the federally-sponsored Civilian Conservation Corps have made significant contributions to the recreational opportunities available to Boulder residents.

CIVIC ORGANIZATIONS

The Boulder Lions Club has played a major role in the development of the Boulder Mountain Parks. The Boulder club was organized in the fall of 1917 and officially chartered in January 1918, just one year after the founding of Lions Clubs International (Lions Club Pamphlet 1978). The early major projects undertaken by the club focused on recreational visitation to the Mountain Parks. During

1918 the construction of a shelter house in Panorama Park on the eastern face of Flagstaff Mountain was planned. Construction was begun in the late spring of 1919 and the completed shelter was presented to the city on July 6, 1919.

John M. White, fourth president of the club, began plans for the Bluebell Canyon Shelter in 1920. The shelter was constructed during 1923 for a cost of $875.00 (Boulder Daily Camera, May 17, 1933). In 1933 the club built a shelter on the summit of Flagstaff Mountain. Plans had originally been made by local climbing organizations to erect a wooden shelter house on the summit during the spring of 1925. The insistence of the Mountain Parks Board, however, that the structure by built of stone put an end to that first effort. The Lions Club resurrected the idea during the early 1930's and completed construction between February and April 1933 at a cost of $577.24. The Flagstaff Shelter House was dedicated and presented to the city on May 17, 1933. Professor Walter C. Toepelman, then Lions Club president, led that effort.

The Boulder Rotarians also made an early contribution to Mountain Parks recreational facilities. The club reconstructed a trail between the Bluebell Springs and Royal Arch during 1921. This project, one of the first undertaken by the club, was completed with the assistance of the Boy Scouts, Eben Fine, and Ernest Greenman (McNellan 1995).

BOULDER CLIMBING AND HIKING CLUBS

Private climbing and hiking organizations also contributed significantly to the development of the Boulder Mountain Parks recreational facilities. The three principle organizations were the Rocky Mountain Climbers Club (RMCC), the local chapter of the Colorado Mountain Club (CMC), and the University of Colorado Hiking Club (UCHC). The RMCC, an outgrowth of the Chautauqua Pedestrian Club, was originally organized in 1898 as the Colorado Chautauqua Climbers Club, and incorporated in 1910. The name was changed to the Rocky Mountain Climbers Club in a 1911 reorganization and the club was finally incorporated on July 11, 1912 (Chautauqua Bulletins 16(2) and 19(3); Galey 1981). The purpose of the club was to "promote interest in climbing and exploring the mountain areas, and to conserve and preserve the forests, flowers, wild animals, and natural scenery." The club also intended to "build and mark trails to points of interest and to construct and maintain shelters and cabins" (Chautauqua Bulletin 16(2)). Early activities of the RMCC included the construction of trails (including one to Royal Arch), and the cleaning and modification of springs.

The UCHC was founded on April 1, 1919. The club named several park features, including Fern Canyon and Saddle Rock, and constructed a monument on the summit of Green Mountain in 1929 (**5BL4965**). The

Boulder chapter of the Colorado Mountain Club was organized in 1920 (Robertson 1971).

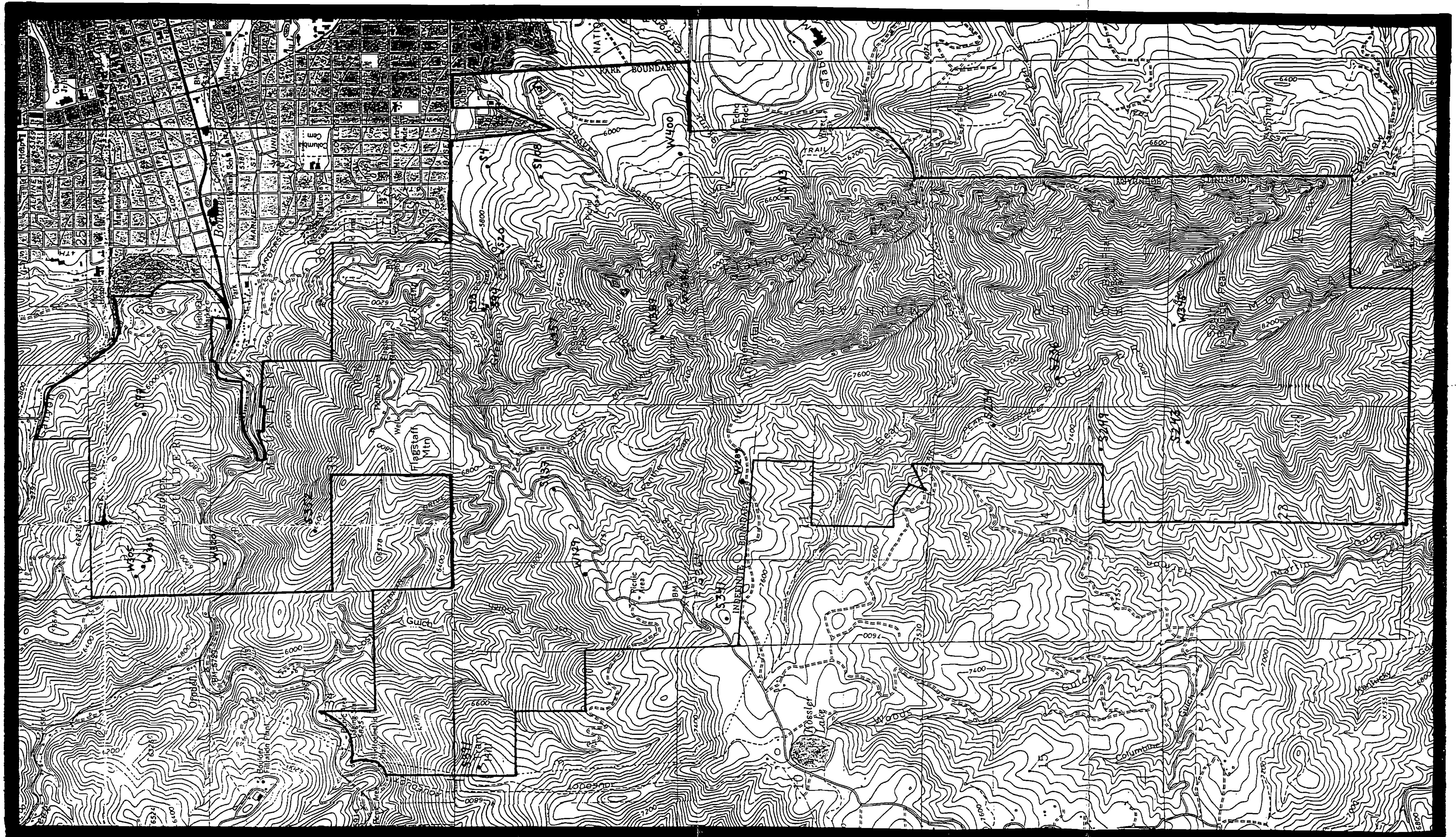
The three local hiking and climbing clubs also cooperated on a variety of park improvement projects. During January 1925 the Colorado Mountain Club proposed that a committee be formed to promote the construction of trails, shelter houses, and springs in the park. The committee was composed of three members, one from each of the three Boulder outdoor clubs. The Mountain Parks were divided into three 'territories,' with each club responsible for a different area (RMCC Board of Directors Meeting minutes January 10, 1925). The UCHC was allotted the trails around Bear Peak (UCHC Meeting Minutes October 7, 1930). During 1924 the RMCC and the CMC began marking trails. One of the principal organizers of the effort, Ernest M. Greenman who had come to Boulder in 1896, recalled that 200 cairns were put into place between Boulder and Eldorado Springs (McNellan 1995). Greenman also participated in the construction of the Mesa trail which at that time was a collection of sandstone quarry haul roads and informal social trails. During 1925 the CMC requested that the president of the UCHC serve simultaneously as the vice-president of the CMC (UCHC Meeting Minutes October 27, 1925).

During the early 1930's the UCHC worked on a variety of trail construction projects, including the rebuilding and improvement of the Bear Peak trail and the Mesa trail (UCHC Meeting Minutes November 12, 1930; April 7, 1931).

The Boulder Chamber of Commerce also has had a hand in the construction of trails in the Mountain Parks. In the spring of 1924 the Trails Committee of the Chamber allotted the building of trails and the improvement of springs on Green Mountain to the RMCC. The Chamber was also involved, along with E.M. Greenman and the RMCC, in the construction of the Mesa trail. The Chamber of Commerce has also published versions of Mountain Parks trails maps.

The Boy Scouts, Girl Scouts, and Campfire Girls collected donations for the purchase of trees to be planted in the park to replace trees lost during a 1924 forest fire near the summit of Flagstaff Mountain. Eben Fine and a volunteer crew which included the Scouts and Chamber of Commerce members planted some 5,000 ponderosa pines in 1927 (Boulder Daily Camera, August 1, 1976).

Camping, although no longer permitted, had always been a popular activity in the Mountain Parks. In the spring of 1920 the Planning and Parks Commission gave permission to erect tents on park land in "restricted regions and with written permission from the city manager's office" (Planning and Parks Commission minutes, May 17, 1920). Early Rocky Mountain Climber's Club photographs show large groups of people hiking and camping in the park (Figure 36, Figure 37).



MAP 1 Other Manifestations, Contiguous Boulder Mountain Parks. Windbreaks (W) and Stone Features (S). USGS 7.5' quadrangles, Boulder (1966/PR 1979) and Eldorado Springs (1965/PR 1971).

CIVILIAN CONSERVATION CORPS

The federal Civilian Conservation Corps, begun as a New Deal work program, and administered by the Department of the Army and the National Park Service, made the most extensive and visible contributions to Boulder Mountain Parks recreational facilities. The handiwork of the CCC can be seen throughout the park today in shelter houses, trails, bridges, picnic areas, and roads. The CCC also made significant contributions to the management of natural resources within the park by planting trees, building erosion control structures, and cutting fire breaks.

Civilian Conservation Corps volunteers were men between the ages of 18 and 25. They were paid $30.00 per month, with the understanding that $22.00 of that would be sent to their families. Each camp consisted of roughly 200 men, 10 leaders and 17 assistant leaders (Boulder Daily Camera July 10, 1977).

Camp SP2C of the Civilian Conservation Corp was brought to Boulder from the Denver Mountain Parks on July 5, 1933. Most of these men came to Colorado from Oklahoma. The workers were housed at first in temporary shelters until a permanent facility could be constructed at 6th Street and Boulder Creek. In November 1933 the Oklahoma men of SP2C were ordered to return to Daugherty, Oklahoma and recruitment began in Colorado and Wyoming to replace them (Boulder Daily Camera July 10, 1977). On November 5, 1933 a second camp, designated SP5C was ordered to Boulder, after completing projects near Estes Park, and established a facility at 6th Street and Baseline Road (Figure 38). Members of both camps, a total of some 400 men, worked on projects throughout Boulder during the winter of 1933-34 (Boulder Daily Camera July 10, 1977).

On May 14, 1934 camp SP5C was ordered to a high altitude camp. At that time camp SP2C relocated from its original quarters at 6th and Boulder Creek to SP5C's quarters at 6th and Baseline. The men of SP2C worked throughout the summer until they were joined on October 5, 1934 by a second camp, again designated SP5C, which had previously been located in North Park, at Rand, Colorado (Boulder Daily Camera, May 8, 1935). In August 1937 camp SP2C went to Estes Park to begin work on facilities in Rocky Mountain National Park, and was designated camp NP1C.

Projects completed by the various camps of the Civilian Conservation Corps include the construction of the Sunrise Circle Amphitheater, Chapman Drive, the Panorama Park Halfway House, the Green Mountain Lodge, the Enchanted Mesa Bridge over Bluebell Creek, and perhaps alterations to the Bluebell Picnic shelter. The Corps constructed many miles of hiking trails, including the Flagstaff trail from Armstrong Bridge to the summit, a trail from Realization (sometimes called Inspiration) Point to the Morse Well, the current Royal Arch trail, and the Bluebell-Baird trail. The

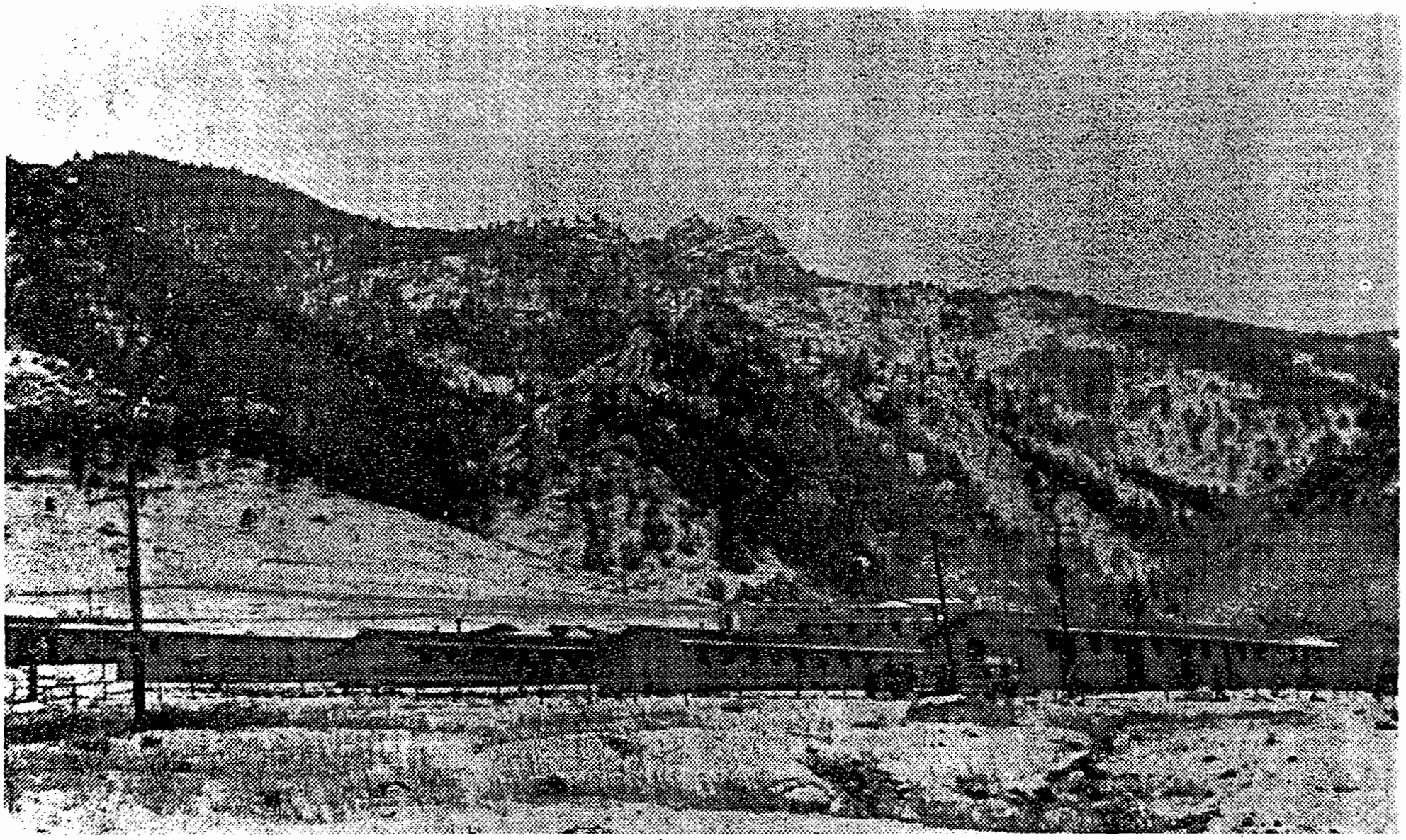


FIGURE 38 - Photo of Civilian Conservation Corp Camp, 1930s. Site 5BL4930.

CCC also made extensive improvements to the Flagstaff Road (Boulder Daily Camera, May 8, 1935).

The CCC cut down trees which had been destroyed by the Black Hills beetle, worked to control a mistletoe infestation, and planted new trees. The Corps also constructed rock check dams to control the erosion of gullies (National Park Service press releases, Carnegie Library). The CCC built several miles of fire lines to help prevent forest fires such as the 1924 fire which burned 200 acres on Flagstaff Mountain.

SITES

The significant number of sites, isolated finds, and other cultural manifestations recorded during the survey reveal the intensive use of Mountain Parks property for a wide range of recreational activities.

Recreational structures in the park include the Bluebell Picnic shelter (**5BL4934**), the Green Mountain Lodge (**5BL4935**), the Flagstaff Summit shelter (**5BL4939**), and the Halfway House in Panorama Park (**5BL4942**). Other recreational sites include the Mesa Ski Slope (**5BL4931**), the Morse Well (**5BL4938**), and the Sunrise Circle Amphitheater (**5BL4940**). The Flagstaff Road (**5BL4944**), the Enchanted Mesa Road (**5BL4941**), Chapman Drive (**5BL4170**), the Historic Trails Network (**5BL4952**), and the Mesa Trail (**5BL3924**), Bear Canyon (**5BL3925**), Fern Canyon (**5BL3926**), and Shadow Canyon (**5BL3927**) Trails are also significant recreational properties. The Civilian Conservation Corp camp (**5BL4930**) also contributes to the theme of recreation due to their extensive involvement in the construction of recreational facilities. Each of these sites is an element of the recreational opportunities available in the Mountain Parks.

A variety of isolated features also contribute to historic recreation in the park. These include springs modified to provide drinking water for hikers (**5BL4967, 5BL4986, 5BL4988, 5BL4990**) and wells constructed near popular picnic areas (**5BL4989, 5BL4992**). 5BL4967 is the Greenman Twin-Pipe Spring which was modified by hiking club pioneer Ernest Greenman. 5BL4990 is the Ute Spring, located adjacent to the Flagstaff trail. Although the age of the current modifications is not known it is likely that they were made by the Civilian Conservation Corps at the time that they constructed the trail. 5BL4988 is the Gregory Spring which may have been modified by local contractor W.T. Draper in 1930 (McNellan 1995). The age of the hexagonal wooden well at the mouth of Gregory Canyon (5BL4989) is not known, although the sandstone paving around the well is similar to that observed at the nearby picnic area (5BL4978). The age of the Bluebell Well (5BL4992) is also not known, but it may have been built either when the original shelter was constructed in 1923, or when modifications to the

shelter were made in the early 1930's, possibly by the Civilian Conservation Corps.

Several other isolated features are associated with recreational activities. The Green Mountain Summit Plaque (**5BL4965**) was put into place by the University of Colorado Hiking Club in 1929. A trails registry (**5BL5003**) similar to ones still in use at the top of Green Mountain, Bear Peak, and South Boulder Peak is located on the northern edge of the Enchanted Mesa. These trails registries were used to record the names of people who completed hikes within the park, often in the context of large hiking events sponsored by the three hiking and climbing clubs. Early photographs depict these events which may have included 50 or more people. The picnic area located at the mouth of Gregory Canyon (**5BL4978**) is typical of constructed picnic areas located throughout the eastern side of the park, many of which are still in use. The Chautauqua Bulletin Climbers Club Issue and newspapers announced 'steak fries' and community outings in which hundreds of people participated. Many of the historic food and beverage containers recorded during the survey may reflect the widespread and longstanding use of the park for recreational activities.

Similarly, the vast majority of the other cultural manifestations observed during the course of the field survey appear to be related to recreational activities. Firepits, food containers, formal and informal trails, windbreaks, stone cairns all attest to the extensive use Boulderites have made of their 'mountain backdrop.' Some of these manifestations are as substantial as a constructed tent platform (OM 255), while others are as ephemeral as a single metal food container, or a tree blaze (OM 244). It is also likely that a large number of manifestations such as these have been removed or obliterated. Dick Lyman has indicated that when new parks properties were acquired large amounts of what was rightly considered garbage were removed (Dick Lyman, personal communication 1994). In addition significant concentrations of very recent artifacts were observed during the survey. Particularly dense concentrations were observed at Red Rocks, on the eastern flank of Flagstaff Mountain, and on the lower slopes of Anemone Hill. These consist primarily of broken glass concentrations.

Two additional substantial recreational facilities were located to the west of the Chautauqua grounds. The Mesa Ski Slope (**5BL4931**) was a well-known activity during the late 1940's and early 1950's. During the winter of 1947-48 Harris Thompson and Steve Bradley led the initial effort to establish the idea of the Chautauqua Mesa Ski Area; work on the ski tow and the ski jumps was begun in October of 1948 with the assistance of the Jaycees, members of the local ski club, and interested community volunteers. The local National Guard contributed bulldozers to the effort.

An 850-foot long rope tow was installed prior to the winter of 1949-50. Field telephones were used to communicate between the top

and the bottom of the lift. Although this lift served its intended purpose, Thompson noted that cross-country skiers were able to get to the mesa top faster than skiers on the rope tow.

The first ski jump was constructed from snow and dirt, and allowed skiers to jump from 15 to 40 feet. Two longer jumps, which are still visible on the western end of the ski area, were constructed prior to the winter of 1949. Although the ski area was eventually closed and most of the remnants removed it represents a unique use of park property.

Another unique use of park property was a golf course constructed west of the Chautauqua grounds immediately prior to the First World War. The Colorado Chautauqua Bulletin of June 1, 1914, announced the construction of a new nine-hole golf course west of the lawn at Chautauqua. Tickets good for two weeks were to be given out free of charge, or a summer membership in the golf club could be obtained for $5.00. The course was in use by the 1st of July (Galey 1981) By November of 1914 the Bulletin boasted that the new 'golf links' were "destined to become one of the finest courses in the west" (Chautauqua Bulletin, 3(8) [June 1, 1914]; Chautauqua Bulletin 4(1) [November 1, 1914]). The course was in use until 1919, when another course was built at 28th Street and Kalmia. A group of local businessmen tried unsuccessfully in 1927 to resurrect the course (Galey 1981). Two cultural manifestations recorded during the survey may have been associated with the golf course. OM 1 and 3 may have been the location of two of the greens.

In sum, the Mountain Parks has been utilized for about every type of recreational activity for which the land is suited, and some activities for which the land is less than suited. There is a lengthy history of involvement of civic organizations and organized recreational groups, as well as recreational use by individuals.

RECOMMENDATIONS

The inventory of the Boulder Mountain Parks resulted in the documentation or reevaluation of 31 historic sites and 49 isolated finds. One additional isolated find was recovered by a park visitor. Five additional linear sites which pass through the park were previously recorded and were not reevaluated. The survey area therefore contains 36 historic sites, 41 historic isolated finds and 9 prehistoric isolated finds. These cultural resources were evaluated for eligibility to both the National Register of Historic Places (NRHP) and the State Register of Historic Properties (SRHP).

NRHP eligibility is judged according to the criteria set forth in 36CFR 60.4 :

> "National Register Criteria" means the following criteria established by the Secretary of the Interior for use in evaluating and determining the eligibility of properties for listing in the National Register: The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:
>
> (A) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (B) That are associated with the lives of persons significant in out past; or
>
> (C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (D) That have yielded, or may be likely to yield, information important in prehistory or history.

The State Register of Historic Properties uses essentially the same criteria with the addition of a fifth criterion, that being "geographical importance". All cultural properties eligible to the NRHP are automatically eligible to the SRHP.

On the basis of the above criteria, 15 sites are considered individually eligible for nomination to either the National Register of Historic Places or the State Register of Historic Properties. Twenty sites are considered not eligible for

individual nomination. One site (**5BL5005**) would need evaluative testing to examine its archaeological potential prior to determining eligibility (Table 2). The isolated finds are not individually eligible to the NRHP.

Eligible sites include the four shelters (Summit, Bluebell, Panorama Park [Halfway House], and Green Mountain Lodge), the amphitheater, Chapman Drive, Gordon-McHenry Road, Boulder Canyon Road, the historic trails network within the park as well as the four trails which extend beyond the park (Mesa, Bear Canyon, Fern Canyon, and Shadow Canyon), and the Silver Lake Ditch.

Sites **5BL4170** (Chapman Drive), **5BL4935** (Green Mountain Lodge), **5BL4940** (Sunrise Circle Amphitheater), **5BL4942** (Panorama Park Shelter) are considered eligible to the NRHP under Criterion A because of their association with the work programs of the Great Depression, specifically the Civilian Conservation Corps (CCC), and for their association with the recreational history of the area. They are also eligible under Criterion C, for their stonework, as examples of a type, period, and method of construction.

Similarly, sites **5BL4934** (Bluebell Shelter) and **5BL4939** (Flagstaff Summit Shelter) are also eligible under Criterion A for their association with the recreational history of the area; and Criterion C, as examples of a type, period, and method of construction.

Sites **5BL4952** (Historic Trail Network), **5BL3924** (Mesa Trail), **5BL3925** (Bear Canyon Road/Trail), **5BL3926** (Fern Canyon Trail), and **5BL3927** (Shadow Canyon Trail) are eligible under Criterion A, for their association with the recreational history of the area. Some of the Historic Trail Network was also constructed by the CCC, and both the Mesa Trail and Bear Canyon Road/Trail are facets of Boulders early transportation development.

Site **5BL3813** (Silver Lake Ditch), is considered eligible to the NRHP under Criterion A, for its association with the development of water control and irrigation agriculture in Boulder County, and under Criterion B, for its association with J.P. Maxwell, a locally prominent person. The ditch is active, and should not be impacted by recreational use of the area.

Sites **5BL515** (Gordon-McHenry Road) and **5BL622** (Boulder Canyon Road) are considered eligible under Criterion A, for their association with early transportation and the economic development of Boulder County. The Boulder Canyon Road is also associated with J.P. Maxwell, and may be eligible under Criterion C for the engineering and construction involved.

The eligible portion of site **5BL4177** (historic dump) is on Open Space. The portion on Mountain Parks has been reclaimed.

TABLE 2

Site Number	Site Name or Description	NRHP Eligibility	
		Individual	District
5BL4170	Chapman Drive	Yes	Yes
5BL4177	Historic Dump	Yes	No
5BL4182	Town of Boulder Ditch and Reservoir	No	No
5BL4930	CCC Camp	No	Yes
5BL4931	Mesa Ski Slope	No	Yes
5BL4932	Sunshine Lake	No	No
5BL4933	Settlers Park Quarry	No	Yes*
5BL4934	Bluebell Picnic Shelter	Yes	Yes
5BL4935	Green Mountain Lodge	Yes	Yes
5BL4936	Woods-Bergheim Quarry	No	Yes*
5BL4937	Historic Artifact Scatter	No	No
5BL4938	Morse Well	No	Yes
5BL4939	Flagstaff Summit Shelter	Yes	Yes
5BL4940	Sunrise Circle Amphitheater	Yes	Yes
5BL4941	Enchanted Mesa Road	No	Yes
5BL4942	Halfway House	Yes	Yes
5BL4943	Anderson Quarry	No	Yes*
5BL4944	Flagstaff Road	No	Yes
5BL4945	Gregory Canyon Homesite	No	No
5BL4946	Upper Bear Canyon Cabin	No	No
5BL4947	Lower Bear Canyon Cabin	No	No
5BL4948	Gregory Canyon Road	No	No
5BL4949	Third Flatiron Quarries	No	Yes*
5BL4950	Sawmill Site	No	No
5BL4951	Historic Artifact Scatter	No	No
5BL4952	Historic Trails Network	Yes	Yes

5BL4981	Mine Pits and Features	No	No
5BL5002	Historic Rock Foundation	No	No
5BL5005	Historic Walls & Foundation	Need Data	No
Previously Recorded Sites			
5BL515	Gordon-McHenry Road	Yes	No
5BL622	Boulder Canyon Road	Yes	No
5BL3924	Mesa Trail	Yes	Yes
5BL3926	Fern Canyon Trail	Yes	Yes
5BL3927	Shadow Canyon Trail	Yes	Yes
Previously Recorded Site--Reevaluated			
5BL3813	Silver Lake Ditch	Yes	No
5BL3925	Bear Canyon Road/Trail	Yes	Yes

* = May contribute to a non-contiguous historic district based on a theme of sandstone quarrying.

For management and research purposes, an historic district can be established for the park. A district is defined as a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. Deeming the area a district serves to acknowledge the interrelationship of the cultural resources as a unified entity. Features and properties which lack individual distinction can be contributing elements to the district, thus the grouping of properties achieves significance as a whole within its historic context.

This proposed **Boulder Mountain Parks Historic District** is based on the theme of Recreation within the Boulder Historic Context. The park was established primarily for recreational purposes, and recreational use has clearly been the dominant historic use of the area. Recreational use of the park has been both long term and intensive. Numerous community organizations have a long history of involvement with the park, including Chautauqua, the Lions Club, Rotarians, Boy Scouts, Girl Scouts, Camp Fire Girls, Jaycees, the Chamber of Commerce, the Colorado Mountain Club, the Rocky Mountain Climbers Club, and the University of Colorado Hiking Club. The involvement of these entities has helped shape the cultural character of the park as well as effecting the organizations themselves and the general community of Boulder. The intensive

recreational use of the park is current and ongoing, with such pursuits as hiking, technical and freestyle climbing, athletic training, and picnics. The presence of the park and its recreational opportunities continues to help define the community character of Boulder.

The geographical boundaries of a district are generally based on the distribution of cultural properties with a shared relationship constituting the district. In this case, the boundaries of the contiguous Mountain Parks can serve as the district boundary. The cultural properties constituting the district are mainly in the area between Boulder Canyon and Bear Canyon, and this smaller area could also be defined for the district. While the southern portion of the park does not contain shelters or the extensive trail network that exists north of Bear Canyon, it shares the long term recreational history with the northern portion of the park, and can be included if desired. The cultural properties which are considered contributing elements to the Boulder Mountain Parks Historic District are listed in Table 3. Many properties which are not individually eligible are contributing elements to the district.

The sites deemed not eligible for inclusion on the NRHP have had their structural or associational integrity impaired or destroyed, or don't appear to contain archaeological deposits sufficient to have the potential to yield data important to the study of history. The four sandstone quarries, sites **5BL4933** (Settler's Park Quarry), **5BL4936** (Woods-Bergheim Quarry), **5BL4943** (Anderson Quarry), and **5BL4949** (Third Flatiron Quarry) are potentially contributing elements to a non-contiguous historic district based on sandstone quarrying. Their role in sandstone quarrying in relation to other quarries along the Front Range would have to be ascertained.

The habitation sites in the area, **5BL4945, 5BL4946,** and **5BL4947,** may have some slight archaeological potential. While it does not appear that they are eligible to the NRHP or SRHP, they may be eligible for Boulder County Landmarking. They should be considered potential archaeological resources, and protected from looting or other disturbance.

We recommend that the **Boulder Mountain Parks Historic District** be listed on the NRHP. Listing will give the park recognition for its role in the community, and make the park eligible for tax benefits and eligible for preservation grant funds for maintenance and restoration of the buildings and trails.

We recommend that any future maintenance to the shelters, or the stonework on the roads (such as the Enchanted Mesa bridge), be done in accordance with the design, workmanship, and materials used in the original construction.

TABLE 3
Contributing Elements to a Historic District Based on Recreation.

Site #	Description	Eligibility	District
5BL4170	Chapman Drive	Yes	Yes
5BL4930	CCC Camp	No	Yes
5BL4931	Mesa Ski Slope	No	Yes
5BL4934	Bluebell Picnic Shelter	Yes	Yes
5BL4935	Green Mountain Lodge	Yes	Yes
5BL4938	Morse Well	No	Yes
5BL4939	Flagstaff Summit Shelter	Yes	Yes
5BL4940	Sunrise Circle Amphitheater	Yes	Yes
5BL4941	Enchanted Mesa Road	No	Yes
5BL4942	Halfway House	Yes	Yes
5BL4944	Flagstaff Road	No	Yes
5BL4952	Historic Trails Network	Yes	Yes
5BL3924	Mesa Trail	Yes	Yes
5BL3925	Bear Canyon Trail	Yes	Yes
5BL3926	Fern Canyon Trail	Yes	Yes
5BL3927	Shadow Canyon Trail	Yes	Yes
Isolated Finds			
5BL4965	Green Mountain Plaque	No	Yes
5BL4966	Historic Fire Ring	No	Yes
5BL4967	Greenman Twin Pipe Spring	No	Yes
5BL4978	Picnic Area	No	Yes
5BL4986	Modified Spring	No	Yes
5BL4988	Gregory Spring	No	Yes
5BL4989	Hexagonal Well	No	Yes
5BL4990	Ute Spring	No	Yes
5BL4992	Bluebell Well	No	Yes
5BL5001	Picnic Platform	No	Yes
5BL5003	Trails Registry	No	Yes

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APPENDIX A

Other Cultural Manifestations

A variety of cultural manifestations observed during the survey could not be characterized either as sites or as isolated finds. These "Other Manifestations" consist of artifacts or features which were determined to be either less than 50 years old or of indeterminate age. A total of 267 items fell into this category. These were further subdivided into seven classes: sanitary tin cans (C), recreational fire rings (F), linear features (L), pit features (P), stone alignments (S), windbreaks (W), and miscellaneous. Of the 267 total other manifestations, 27 were classified as sanitary cans, 73 were classified as fire rings, 49 were classified as linear features, 32 were classified as pit features, 17 were classified as stone alignments, and 11 were classified as windbreaks. The balance, 95 manifestations, were classified as miscellaneous.

Map 1 depicts the locations of windbreaks (W) and stone alignments (S). Descriptions of these features are listed in Tables 1 and 2.

Map 2 depicts the locations of sanitary cans (C) and firepits (F). Information about these artifacts and features is listed in Tables 3 and 4.

Map 3 depicts the locations of prospect pits (P) and miscellaneous artifacts or features. Tables 5 and 6 provide detailed information about these manifestations.

Map 4 depicts the location of linear features (L). Detailed information about these features can be found in Table 7.

APPENDIX A

Table 1. Windbreaks.		
W	129	Rough log structure without notching. Corrugated metal nearby.
W	289	Woodcutter's shelter. Vernacular log structure, constructed using logs 10 to 20 cm in diameter. Saddle notch technique; no evidence for doors or windows. Stone fire ring internal to the structure; stone loosely piled and 10 to 30 cm in diameter. No artifacts, although plastic tarp material in abundance. Structure 2.9 m E-W by 2.8 m N-S. Structure appears to be very temporary.
W	303	Brush ramada or shelter with associated hearth and small pit. Shelter 1 m high x 5 m long x 2-2.5 m wide. Triangular with 2 ridge logs and "rafter" logs along sides. Wood old and decayed. Not recently used; extensive cone and needle litter buildup. Hearth: mostly covered with pine needles and cones.
W	305	Brush ramada or shelter. Loosely piled deadwood, built over large boulders to create a protected space. Old jeans, an extension cord, a welders jacket, and plastic bags incorporated into structure. Similar to 303.
W	320	Brush shelter constructed with some dimensional wood. Covered with pine needles. One cotton sock in shelter.
W	345	Stack of axe-hewn lodge pole logs arranged over several possible cross bars which could have formed a rough temporary shelter. 3 x 4 m. A fire pit and 4 sanitary cans are associated.
W	357	Pole Brush Shelter. One vertical log (10 cm diameter) with several horizontal cross bars resting against a tree, and sheltered by a stone outcrop. One metal can lid.
W	386	Log and stone wall forming temporary, informal shelter under several large boulders.
W	387	Stone and log windbreak. Mostly destroyed, on ridge overlooking Green Mountain Spring. Includes several fire rings.

Table 1. Windbreaks.		
W	400	Windbreak. Constructed from logs stacked between living trees to form a low wall. Trees all small diameter.

Table 2. Stone Alignments.		
S	4	Rock alignment. Line of large boulders widely spaced along the contour of the slope.
S	20	Single rock alignment.
S	47	Circular rock pile; 0.70 x 0.70 m.
S	93	Rock pile- 3.5 x 2 m and 0.5 m high (from road construction?)
S	94	Rock pile- 5 x 5 m and 1 m high
S	108	Rock pile 1x1 m; 30 cm high.
S	113	Rock pile and metal can.
S	131	2 rock retaining walls for old trail, 7 m long x 1 m high.
S	137	Rock line running NW-SE; 2 meters long.
S	234	Stone ring. 0.75 m diameter, composed of irregular quartz cobbles, excavated from adjacent barrow pit. Stones are 10 to 25 cm in diameter and are arranged into a rough circle. Ring is bisected twice, each approximately parallel to the cardinal directions. Ring is completely filled with soil and covered by ponderosa pine needles. No charcoal or artifacts. (Illustrated).
S	236	Modern cairn, trash (bottle stem [capped], 2 cans), and a fire ring.
S	243	Rock cairn. 2 stones on top of a large boulder, stones 20 cm in diameter; no artifacts.
S	249	Rock pile. 10 x 1.5 m in plan dimension. Bearing on 310°, parallel to shallow fall-line. Irregular cobbles of Fountain Formation, 0.25 - 0.5 m in size. Cobbles loosely stacked, some on end or on their sides; no artifacts. Near to road (247) but no obvious connection. Near to large open field.
S	341	Stone alignment. Rough irregular cobbles with little lichen stacked along three sides of a 3 x 4 m rectangle. Not coursed but stacked 2-3 stones high. (Illustrated).

Table 2. Stone Alignments.		
S	352	Stone Cairn. Ten to 15 stones piled in a compact mound 0.4 m high, not much lichen or moss development; recent.
S	364	Stone alignment. 10 stones 10-15 cm across aligned on a stone outcrop to create a small platform which is now filled with moss. 1.5 m long.
S	391	Recent cairn.

Table 7. Linear Features.		
L	2	Irrigation feeder ditch. Two feet wide and heavily eroded.
L	51	Fence running NE, hole-in-top can.
L	52	Barbed-wire fence; sanitary can.
L	69	Road or trail.
L	116	Barbed wire fence line.
L	210	Road segments. 1.5 m wide, cut into bank, some fill areas.
L	211	Trail. 1.0 m wide, heavily overgrown and eroded.
L	218	Trail segment. 0.25 to 0.5 m long; not well developed, overgrown and disused.
L	227	Old City Parks boundary fence. 4-wire, 2-strand, single-rap, 2-point barb.
L	230	Trail segment; disused.
L	240	Two-track segment.
L	247	Road segment. Rock work embankment/retaining wall made of loosely piled, undressed stones up to 1 m high. Rock work is intermittent for about 25-30 m where road rounds high point. No evidence of road beyond the rock work; some apparent tree cutting.
L	250	Fence line (not park boundary). Two strands of 2-wire, 2-point Baker's Barb barbed wire.
L	251	Fence line (not park boundary). Two strands of 4-point Brotherton's Barb barbed wire.
L	258	Trail or road segment (skidder?) 2 m wide.
L	264	Trail segment with retaining wall rock work. Irregular undressed local cobbles stacked 2-3 rough courses high (0.2 m); 10 m long. A second segment is very obscure and overgrown. This segment continues north onto the flats above Panther Canyon.
L	269	Trail or skidder segment. Several large trees growing in track.

Table 7.		Linear Features.
L	270	Road. Graded and cut into bank, 2 m wide. No rock work. The West Ridge Bear Peak trail occupies this road now.
L	271	Road/trail segment. Some supporting rock work (5 m long x 0.5 m high). Largely overgrown and eroded.
L	273	Old power line. Follows path of existing power line. Standard wooden poles supported in some places with stones. Porcelain insulators.
L	277	Road/trail. Very eroded and overgrown. 1 m wide; appears to have been graded.
L	285	Trail segment. 1 m wide, runs uphill into drainage a short distance (100 m).
L	290	Trail. Stock drive and/or prospector's access. 1 m wide. Not graded, but cut into bank at least 1 m. Two meter sections of rough rock work, constructed from stacked irregular cobbles. Trail heavily eroded, especially lower down on the ridge.
L	291	Fence. 3-wire with split rail posts. Standard 2-point barb. Posts have been burned. Fence runs on 340°. Fence turns west at the point where it crosses trail 290; a gate has been placed in the fence there. Wire nails used; gate mostly destroyed.
L	294	Fence. Almost entirely destroyed; appears to be constructed from wood wired together. Gate fragments in at least 1 area. This is probably a northern continuation of Fence 291.
L	297	Road in Lost Gulch. Graded but destroyed in places by the creek. Heavily overgrown. 1.5-2 m wide. Extends 0.5 km into Lost Gulch.
L	298	City Parks boundary fence. 4 strand, wooden posts. Wire relatively recent.
L	302	Fence. Living trees and split rails used as posts. 3 and 4 strands, wire spliced from short segments. 1 strand is Watkins Diamond design. Almost entirely down.
L	315	Social trail from private property.
L	316	Telephone line. Has been converted to a power transmission line. Glass insulators and wooden pole crossbars.

Table 7.		Linear Features.
L	328	Trail with rock work cribbing. 3 m long x 0.5 m high.
L	332	Road. 1 - 1.5 m wide. Disused; trees up to 6" diameter growing in track.
L	334	Road. 1 m wide; no rock work. Heavily eroded and difficult to trace.
L	346	Social trail. 0.5 m wide. No cut or fill.
L	351	Fence line. Split-rail posts, heavily lichen covered. Baker's 2-point barb; fence bearing on 240°.
L	365	Social trail and two fire rings.
L	366	Social trails. Heavily eroded; no rock work.
L	377	Fence. Three strands. Baker Perfect Barb, with flat sheet metal barbs. Posts made of natural split rails and living tree trunks.
L	378	City Parks boundary fence.
L	379	Two parallel trails/stock drive. Very eroded, roughly 1 meter wide. Upper trail is more well developed.
L	380	Foot trail.
L	383	Foot trail. Short segment parallel (on the west side) to the current trail.
L	388	Social trail. heavily eroded, 0.5 meters wide.
L	390	Foot trail or log road/skidder. Heavily eroded and disused, 0.5 to 1.0 meter wide.
L	392	Fence. Three strand, Baker Barb, using split rail and living tree trunk posts. Fence not aligned N-S (220°-70°).
L	393	Social trail. Eroded into ridge, 0.5 to 1.0 meter wide. Appears to be cut into bank in places; no rock work.
L	394	Social trail. Eroded into ridge, 0.5 to 1.0 meter wide. Appears to be cut into bank in places; no rock work.
L	397	Three fence remnants. Fence and most of the fence posts have been removed.

Table 7. Linear Features.		
L	402	Trench. Four meters wide, length of Enchanted Mesa. Stone and concrete bridge abutments 2 meters long and 0.25 to 0.5 meters wide located on northern end of trench. May have been constructed to protect city reservoir.

FIGURE 36 - Campers on Enchanted Mesa, probably the 1920s-1930s. Photo by Ed Tangen, Courtesy of Carnegie Branch Library for Local History, Boulder Historical society Collection.

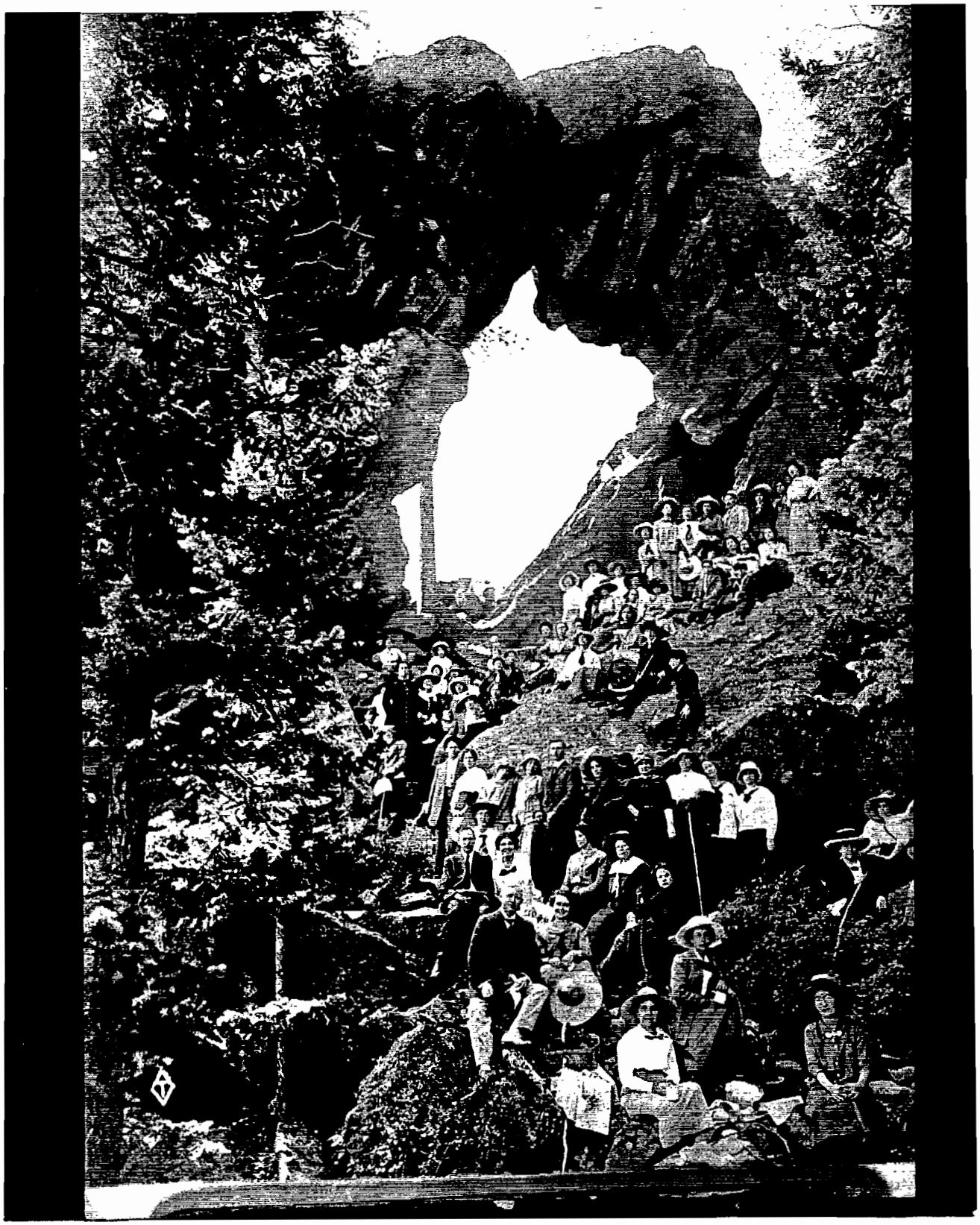
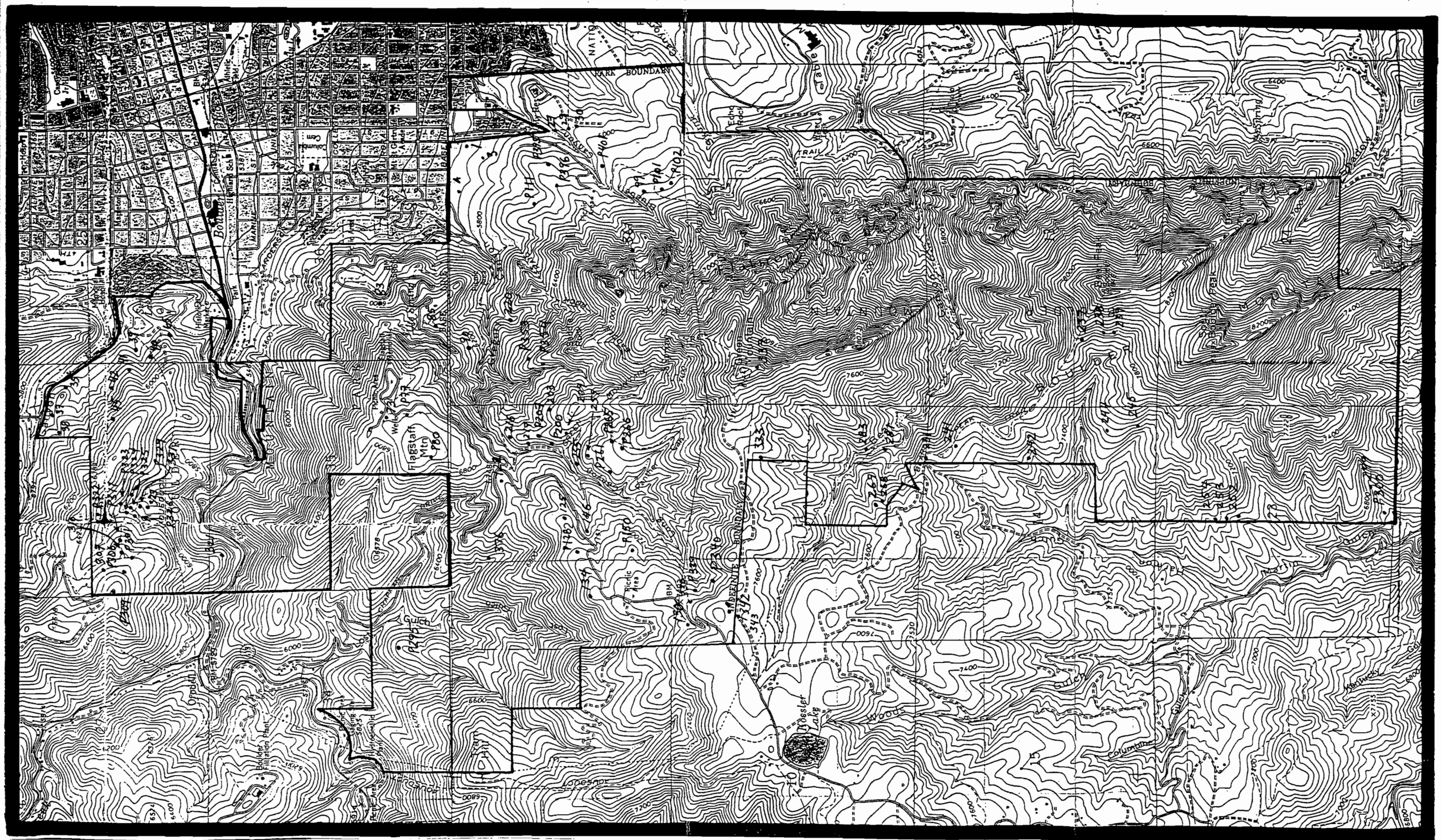


FIGURE 37 - Rocky Mountain Climbers Club - Annual Hike to Royal Arch, 1913. Photo by Ed Tangen, Courtesy of Baker Armstrong, and the Boulder Creek Press.



MAP 3 Other Manifestations, Contiguous Boulder Mountain Parks. Prospect Pits (P) and Miscellaneous (Number). USGS 7.5' quadrangles, Boulder (1966/PR 1979) and Eldorado Springs (1965/PR 1971).

Table 3. Sanitary Tin Cans		
C	34	Sanitary can.
C	36	Two sanitary cans.
C	43	Tin can (coffee can size).
C	44	Metal can top, metal spike in tree.
C	46	Sanitary metal cans (20-30), sheet tin, enamel cup.
C	49	Sanitary tin can.
C	56	Sanitary tin can.
C	60	Sanitary tin can.
C	61	Sanitary tin can.
C	62	Sanitary tin can.
C	66	Metal sanitary can.
C	75	Sanitary metal can.
C	89	Sanitary can and license plate (1929?)
C	104	Sanitary can.
C	106	Sanitary can, wire-rope, and barbed wire fence.
C	110	Sanitary cans, old fence.
C	139	Two cans and metal fragments.
C	148	Sanitary cans, hole-in-top can, modern ceramic fragments.
C	228	3 sanitary tin cans.
C	229	Hole-in-top tin can.
C	256	2 sanitary steel food cans, with replaceable lids.
C	257	Church key beer can.
C	284	Sanitary can.
C	292	Two sanitary cans.
C	375	Steel beer cans, with church key openings.
C	381	Hole-in-top evaporated milk can.
C	399	Sanitary cans and two bottles.

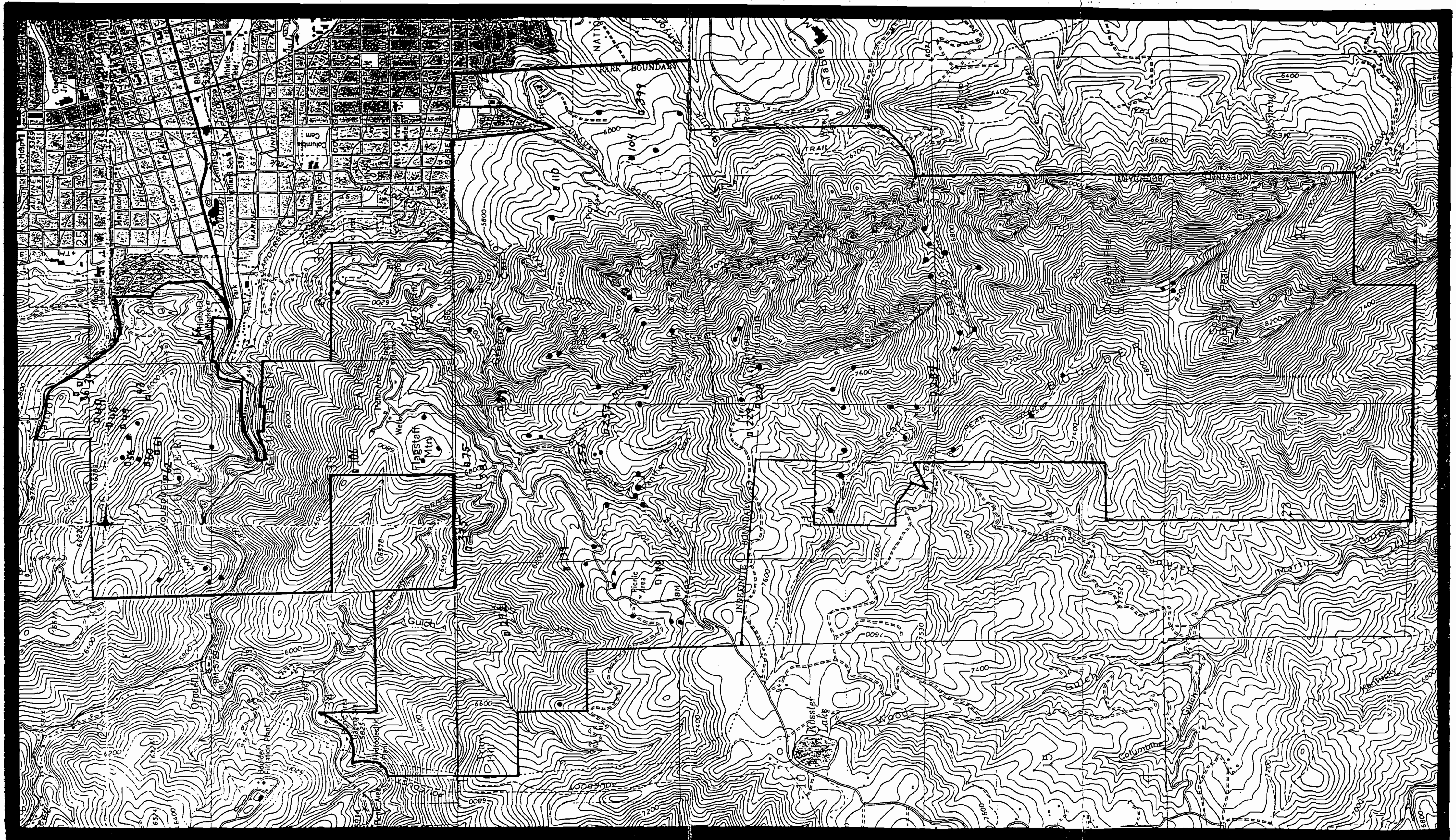
APPENDIX A

Table 4. Firepits.		
F	33	Rock circle- hearth.
F	48	Fire ring.
F	50	Circular rock pile- hearth.
F	54	Hearth with modern artifacts.
F	55	Small hearth.
F	57	Circular rock pile- hearth.
F	59	Rock circle- hearth.
F	63	Rock pile- hearth.
F	67	Fire ring.
F	68	Cluster of recent fire rings.
F	76	Rock circle- fire ring.
F	79	Stone circle- hearth.
F	81	Stone circle- hearth.
F	82	Stone circle- hearth.
F	86	Rock pile- hearth.
F	91	Fire ring and 4 sanitary cans.
F	127	Stone circle hearth.
F	132	Rock circle hearth; sanitary cans.
F	133	Seven rock hearths, and 6 large pits (construction borrow?).
F	135	Rock circle- hearth.
F	140	Six hearths, and metal cans.
F	142	Stone circle hearths (a cluster of four), and a modern pole shelter.
F	143	Rock circle hearth.
F	144	Rock circle hearth.
F	147	Rock circle hearth.
F	204	Modern fire pit. 0.4 m diameter.

Table 4. Firepits.		
F	205	Modern fire pit. 0.75 m diameter; associated with a shallow pit, 1 m x 3 m x 0.2 m deep.
F	213	Fire ring. 0.75 m diameter, 0.2 m high.
F	214	Fire ring, modern.
F	215	Fire ring.
F	221	Recreational fire pits.
F	222	Recreational fire pits.
F	224	Recreational fire pit. Stacked rocks; no artifacts.
F	225	Modern fire pit. Stacked, circled rocks; no artifacts.
F	226	Modern fire pit. Stacked rocks under a 5 m overhang; stacked wood; no artifacts.
F	233	Modern fire pit. Very little remaining charcoal; no artifacts.
F	235	Modern fire ring, almost entirely buried in needle litter; 3 main stones form ring.
F	260	2 modern fire rings.
F	262	Modern fire pit.
F	263	Modern fire pit.
F	272	Modern fire pit.
F	275	Modern fire pit.
F	278	Modern fire pit.
F	279	Fire ring.
F	280	Fire ring.
F	282	Fire ring.
F	286	Fire ring. Large with 4 inches of ponderosa pine needles covering.
F	287	Fire ring.
F	288	Two fire rings with associated 1960-70's trash consisting of cans.
F	293	Fire ring.

Table 4. Firepits.		
F	314	Rock circle- hearth. 0.5 m diameter. Stacked stones. No evidence of charcoal, but old, judging by lichen growth.
F	317	3 modern fire pits.
F	318	Large pile of local irregular cobbles with burned logs underneath/inside. One long, burned log sticking out. 1.5 m x 0.75 m x 0.5 m high.
F	319	Same as OM 318.
F	344	Fire pits clustered on south end of Bear peak.
F	347	Rock pile with burned and cut wood located adjacent. 2.5 m diameter, 0.5 m high. Irregular cobbles, no mortar.
F	348	Large central hearth. 2 m in diameter with 2 smaller fire pits associated. Wood and stone windbreak constructed on north side of the central hearth. 10 m to the south a stone circle 1 m diameter has been constructed. Does not appear to be a fire pit. Stones are of local origin and 15-20 cm in diameter. Stone circle encloses a smooth, sandy center. 20 stones used to form circle.
F	350	3 modern fire rings.
F	355	Fire pit, no trash.
F	356	Large fire ring. Covered with piled stones, 0.75 m high.
F	358	Very old fire ring.
F	362	Modern fire ring.
F	363	Modern fire rings.
F	367	Very old fire pit.
F	368	Fire pit.
F	370	Modern fire rings, in small groups or clusters.
F	371	Modern fire rings.
F	372	Modern fire rings, some in clusters.
F	373	Modern fire rings.
F	374	Modern fire rings, small cluster.

Table 4. Firepits.		
F	384	Old fire ring, with rocks piled on top.
F	385	Very large fire pit.
F	398	Fire pit.



MAP 2 Other Manifestations, Contiguous Boulder Mountain Parks. Sanitary Cans (▯) and Firepits (•). USGS 7.5' quadrangles, Boulder (1966/PR 1979) and Eldorado Springs (1965/PR 1971).

Table 5. Prospect Pits.		
P	77	Prospector pit/Trail borrow; 3x5 meters, 1 meter deep.
P	80	Pit; 5x5 meters, 0.5 meters deep.
P	101	Pit- 4 x 4 m, little depth.
P	102	Pit- 4 x 2 m, little depth.
P	111	Shallow pit, 4x2 m adjacent to trail. Construction borrow.
P	128	Borrow pit next to old road.
P	150	Two prospect pits, 2 x 2 m and circular.
P	200	Shallow pit. 1 m x 3 m x 0.3 m depth.
P	207	Pit. 3 m x 2 m x 0.5 m deep. Borrow or prospector pit? Hole-in-top steel can, clear mason jar rim.
P	261	Prospector pit. 5 m x 4 m and 1.5-2.5 m deep. Lichen covered rocks; trees growing in pit.
P	265	Shallow steep-sided pit. 1 x 1 x 0.5 m deep, covered with logs and branches. Could be a latrine pit.
P	266	Shallow steep-sided pit. 1 x 1 x 0.5 m deep, covered with logs and branches. Could be a latrine pit.
P	295	Prospect pit. 5 m x 6 m x 2.5 m deep. Adjacent to Road/Trail 290.
P	300	Shallow pit (trail borrow?). 1 m wide x 0.2 m deep.
P	301	2 pits. (1) 2 x 2 x 0.5 m deep; (2) 1 x 2 x 0.1 m deep. Moss rock or quartz quarry.
P	306	Prospector pit. 2 x 3 x 1.0 m deep.
P	309	Prospector pit. 5 x 2 x 0.75 m deep.
P	311	Pit. 1 m x 1 m with stones built up on two downhill sides and axe-hewn logs placed on top.
P	322	Prospector pit. 3.5 m deep on uphill edge. 4 x 4 m in plan dimension. Moss rock or quartz quarry?

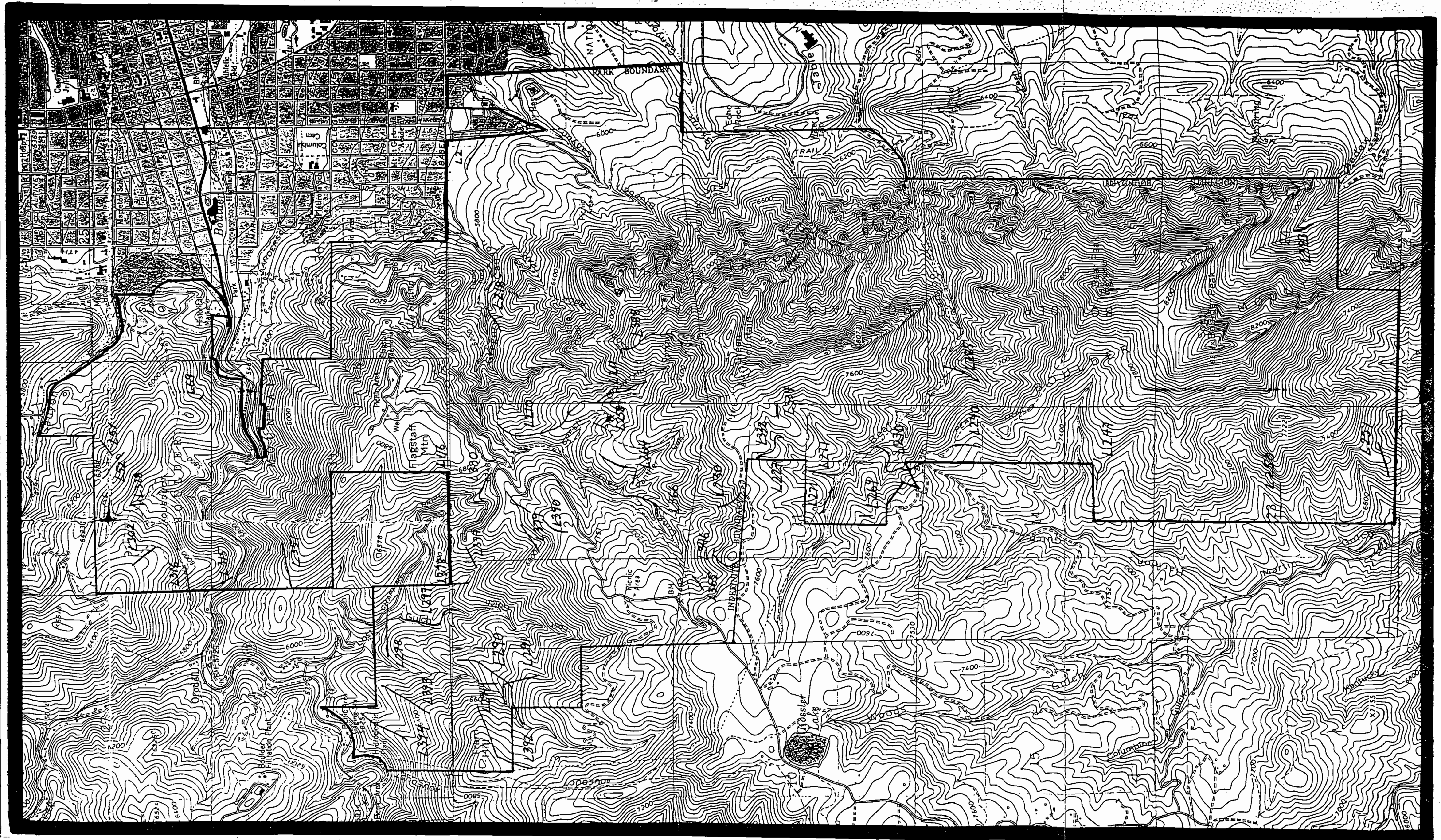
Table 5. Prospect Pits.		
P	323	Adit. Trench 12 m long x 5 m wide. Exposure of competent rock in trench face, but no subsurface tunnelling.
P	324	Adit. 13 m long. Heavily slumped in.
P	325	Adit. Similar to Adit 323 but heavily eroded and slumped.
P	326	Prospectors pit. 3 x 2 x 2.0 m deep.
P	329	Prospect pit. 3 x 4 x 0.5 m deep.
P	339	Pit. 2.5 x 2 m (prospector?).
P	340	Pit.
P	353	Pit. 1 x 3 m; level with overburden on the downhill side. Modern pit or latrine.
P	354	Prospector pit. 4 x 5 m; 2.5 m deep on uphill edge.
P	395	Building stone pit. 8 meters north-south by 5 meters east-west. No visible access road.
P	396	Trail borrow pits. Two pits, each one 2 meters by 2 meters by 0.3 meters deep.
P	401	Trash pit. Measures 2 meters by 2 meters. Pit is filled with glass bottle fragments, sanitary cans.

Table 6. Miscellaneous Other Manifestations.		
	A	Tobacco can lid.
	1	Earthen platform. Shallow excavated depression roughly 20 feet (6 meters) north-south by 20 feet (6 meters) east-west. Cut into slope with overburden piled on downhill side. Connected to Chautauqua golf course?
	3	Earthen platform. Shallow excavated depression roughly 36 feet (11 meters) north-south by 32 feet (10 meters) east-west. Cut into slope with overburden piled on downhill side. Connected to Chautauqua golf course?
	27	Steel pipe (12" diameter), running under trail.
	29	Square water tank (associated with city reservoir)
	30	Platform with rock work boundary. A disused picnic area with vehicle turnaround.
	35	Modern ceramics.
	37	Galvanized steel barbed wire (Brinkerhoff Sabre design); no direct evidence for a fence.
	38	Burned metal lid (55 gal.) and one tin can.
	39	Drill hole in granite boulder and wire rope.
	40	Concrete support for wood utility pole.
	41	Metal poles in ground.
	42	Metal artifact, keyhole shaped.
	45	Metal bucket.
	65	Concrete reinforcement for wooden utility pole.
	73	Modern Flagstaff picnic shelter.
	83	Galvanized barbed wire roll.
	85	Wrecked or discarded auto or auto parts.
	90	Large metal barrel- 0.70 m tall and 0.30 m diameter.
	99	Hewn log.
	122	Concrete reinforced hole.

Table 6. Miscellaneous Other Manifestations.		
	125	Metal plate, 50 x 50 cm.
	130	Wooden gate, wire cut nails used.
	134	Square brick and mortar fire pit; 50 cm x 50 cm. Picnic facility?
	146	Automobile frame fragments (1940's?).
	203	Men's shoe. Leather boot, size 10.
	209	Timber with large bolts and wire nails. 1.5 m long, 4x4 inch beam.
	216	Dimensional lumber plank with wire nails. 0.75 m long, 1x6 inch plank.
	217	Chainsaw blade.
	220	Glass insulator base.
	231	Welded metal framework.
	237	Pail, heavy gauge steel.
	238	Wooden arrow nailed to tree. No paint or lettering remain on sign; no trail or road evident.
	239	(Same as 238).
	241	Dimensional lumber with wire nails. Half-milled boards; no obvious structure.
	242	Stack of unused fence post or slash, axe cut. Boards 2 to 2.5 m long, 10 - 20 cm. diameter.
	244	Tree blaze made with an axe. 0.10 m wide, 0.5 m long; bark 3 cm high surrounding blaze. Blaze begins 15 cm above present ground surface. Carved into a mostly dead lodge pole which is 25 cm in diameter. No trail evident.
	245	Wooden survey stake, surrounded by rock pile.
	252	Fence post stockpile. 40 posts. Posts are split rail style; 2 m long x 0.15 m across. Quite old, probably never used.
	253	Same as 252: stockpile of 10 posts.
	254	Same as 252: stockpile of 10 posts.

Table 6. Miscellaneous Other Manifestations.		
	255	Platform/Foundation. 4 m x 3.5 m in plan dimension. Small diameter logs used for 0.4 m high retaining wall built on downslope (N) side; cut into slope on uphill side. Small trail leading from Green Mountain Lodge to platform. No artifacts. Could be a tent platform.
	259	New Age Shrine. Ponderosa pine tree decorated with dyed cloth streamers, spice bundles, eagle feathers and offering bowl.
	267	Stockpile of cut timbers varying between pole and log size. Very old and decomposing. About 25 logs.
	268	Pile of cut timbers arranged in a stack and supported by a single central pole and some stones, forming a partial platform. Looks something like a crude Arkansas loader, although no wagon track is evident. Logs very old and decomposed. Dimensions: 2 x 2 m; timbers vary from pole to log size; no really big trees present.
	281	Tin sheet: 10 x 20 cm.
	283	Coffee pot (?), very rusty, bottom gone.
	299	Bolt. 3 feet long, 1 inch diameter.
	307	Smooth cobble, irregular shape, no obvious use marks, but out of place. Black schist with white specks.
	310	Dimensional board with nails.
	321	Recreational camping area.
	327	Stove pipe segment. 4 inch diameter; associated with 6 sanitary cans, very rusted.
	331	Sheet metal. Rolled into a loose roll, 2' wide x 6' long.
	333	Half of a car (1940's vintage?). Cut in half, perpendicular to axles.
	337	Cave/shelter. 20' x 10' x 7' high, with stones piled at the entrance to block the wind. Aluminum sheeting and a fire pit located inside.
	338	Tobacco can lid.
	342	Wire rope. 1/2" diameter, 50-60' long.
	343	Old City Parks gate post.

Table 6. Miscellaneous Other Manifestations.		
	361	Rock shelter with blackened walls and stones placed across the entrance. 2.5 meters wide at the entrance, 2 meters deep and 3 meters wide at the widest.
	376	Rock feature/Fire pit?/Cairn? Rocks are stacked in a loose pile, two stones high, 10-20 cm in diameter, with one large boulder supporting the pile.



MAP 4 Other Manifestations, Contiguous Boulder Mountain Parks. Linear Features (L). USGS 7.5' quadrangles, Boulder (1966/PR 1979) and Eldorado Springs (1965/PR 1971).

NATIVE CULTURAL SERVICES

CULTURAL RESOURCES OF

CITY OF BOULDER OPEN SPACE

MOUNT SANITAS AND RELATED PARCELS

BOULDER COUNTY, COLORADO

By

Peter J. Gleichman
and
Robert J. Mutaw

Prepared For:

City of Boulder
Open Space/Real Estate

Prepared By:

Native Cultural Services
4484 Hamilton Court
Boulder, Colorado 80303

1998

MANAGEMENT SUMMARY

An intensive cultural resource inventory of 1017 acres was completed by Native Cultural Services for the City of Boulder Open Space Department. The inventory included twelve different parcels, the largest of which was the Mount Sanitas Open Space area. These parcels are located in portions of Sections 23, 24, 25, 26, 34, 35, and 36, T.1N., R.71W., and Section 6, T.1S., R.70W., 6th P.M., in Boulder County, Colorado.

The inventory was performed to locate, record, and evaluate all cultural resources within the project area and to provide the City of Boulder with recommendations concerning these resources. The intent is to increase the cultural resource data base for city open space and to facilitate management decisions regarding the cultural resources. There were two previously recorded sites within the project area. The field investigation located and recorded 15 additional sites and 12 isolated finds.

Of the 29 documented cultural resources in the project area, six have been considered eligible or potentially eligible for inclusion on the National Register of Historic Places and the State Register of Historic Properties. Eleven of the sites and all of the isolated finds are considered not eligible for either the National or State Registers. Two of these sites, **5BL4172 (Shinkle Quarry)**, and **5BL4173 (Mt. Sanitas Quarry)**, are likely contributing elements to a non-contiguous historic district with a theme of sandstone quarrying, and would be eligible to the NRHP when such a district is defined.

Site **5BL3813 (Silver Lake Ditch)** was previously recorded and is considered eligible under Criterion A, for its association with the development of water storage and irrigation in Boulder County. It is also associated with J.P. Maxwell, a significant person in the early development of Boulder. Site **5BL515 (Gordon-McHenry Road)** was previously recorded and was considered eligible under Criterion A, for its association with early transportation and the economic development of Boulder County. However, the segment of the road in this project area has been altered and paved as the Sunshine Canyon Road, and thus lacks integrity. This portion of the road is not a contributing element to the site's eligibility. Site **5BL4170 (Chapman Drive)** is considered eligible for its association with the Civilian Conservation Corps and because it represents a distinctive type of construction. Site **5BL4177 (trash dump)** is eligible for the archaeological information it contains.

Sites **5BL4171**, **5BL4178**, and **5BL4179**, consisting of historic features and artifacts, are all considered potentially eligible under Criterion D, because of their archaeological potential to produce information important to understanding the history of the

area. Evaluative testing is necessary to determine whether the sites have enough data to yield important information.

The ruins of the **Tomlinson/McCoy Lime Kiln and Limestone Quarry (5BL4175)**, and the historic **Dakota Ridge Trail (5BL4183)** are eligible for local Landmarking, for their association with the development of construction/building and recreation, respectively.

The archaeological sites which have been deemed potentially eligible should be protected from disturbance until such time as their eligibility is determined.

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ACKNOWLEDGEMENTS

Our thanks to Dock Teegarden for the knowledge he has on the cultural and natural history of the Mount Sanitas and Flagstaff Mountain areas, and for sharing that knowledge with us.

Everett Long, Dick Lyman, Clyde Reedy, Jack E. Smith, Chuck Tribble, and John Wittemyer also generously shared their knowledge of the area.

We thank Brent Wheeler of City of Boulder Open Space, Mary McNellan of the City of Boulder Mountain Parks, and Bill Arndt, University of Colorado Facilities Archivist for their assistance during the conduct of this project.

Thanks to Jody Corruccini, Wendy Hall, and Mary Jo Reitsema of the Carnegie Branch Library for Local History, for their assistance with archival research.

Sylvia Pettem, Scott Phillips, and Ted Gleichman assisted the authors with historic research.

INTRODUCTION

Mount Sanitas was named in honor of health. "Sanitas" is "health" in Latin, and this visually-prominent area of Boulder's mountainous "backdrop" was named in response to the placement of the Boulder-Colorado Sanitarium (later renamed Boulder Memorial Hospital) adjacent to the Dakota hogback. Mount Sanitas and the Dakota ridge were utilized by the Sanitarium patients for exercise and recreation, and also have a lengthy history of use for stone quarrying and agriculture in the form of livestock grazing.

At the request of the City of Boulder Open Space Department, Native Cultural Services conducted a cultural resource survey of the Mount Sanitas Open Space and related parcels in portions of Sections 23, 24, 25, 26, 34, 35, and 36, T.1N., R.71W., and Section 6, T.1S., R.70W., 6th P.M., in Boulder County, Colorado. The work was performed in compliance with Open Space quidelines concerning the treatment and protection of cultural resources on Open Space land.

Approximately 1017 total acres in twelve different parcels were inventoried. These parcels are shown on Figures 1 and 2, the Boulder 1966 (photorevised 1971) and the Eldorado Springs 1965 (photorevised 1971) USGS 7.5' quadrangle maps.

The purpose of the survey was to locate, record, and evaluate all visible historic and prehistoric cultural resources within the inventory area and to provide the Boulder Open Space Department with recommendations for the treatment of cultural resources within the area. Cultural resources are the physical manifestations of cultural behavior which are 50 years old or older.

The work performed included an intensive inventory of the below listed parcels, a detailed literature search on sites in the area, and interviews with local informants. The original field survey was conducted between May and December, 1993, with additional field checks in 1994. Peter J. Gleichman served as Principal Investigator and the field work was directed by Mr. Gleichman and Robert J. Mutaw, Ph.D. A preliminary report was produced from a collaborative effort between Mr. Gleichman and Dr. Mutaw, with Dr. Mutaw as principal author. The project was then delayed for several reasons. Research on other areas of Open Space was given a higher priority, as some grant-funded studies had time constraints. The Open Space Department was also in the process of acquiring additional properties in the area, which were to be included in this study. Inventory of the additional properties was conducted in 1996 and 1997, and more comprehensive historic research on the sites was undertaken.

The parcels surveyed:

Parcel 1, (the Mt. Sanitas Open Space area), is the largest contiguous area, and it includes 627.3 acres covering parts of Sections 23, 24, 25, and 26, T.1N., R.71W.

Parcel 2, (the Wittemyer Property) covers about 45.6 acres south of Sunshine Canyon in the NE 1/4 of Section 26, T.1N., R.71W.

Parcel 3, (the Thorne Property), is 4.1 acres located near Settlers Park in the NW 1/4 of the NW 1/4 of Section 36, T.1N, R.71W.

Parcel 4, (the Kassler Property and others), is about 92.4 acres in portions of the NW 1/4 and NE 1/4 of Section 36, T.1N., R.71W.

Parcel 5, (the Bonnie Schnell Property), covers 163 acres in the SW 1/4 of Section 35, T.1N., R.71W.

Parcel 6, (the Tippet Property), is about 21.9 acres at 17th Street and King Street, in Section 6, T.1S., R.70W.

Parcel 7, (the Mattie Dean Garden), is a series of lots on Pleasant Street west of 9th Street. It is 1.0 acre in the NE 1/4 of Section 36, T.1N., R.71W.

Parcel 8, (the Calderon/Golan Property), is 0.3 acres located at Cedar and Third Streets in the NE 1/4 of the NE 1/4 of the NW 1/4 of Section 25, T1N., R.71W.

Parcel 9, (the Stainton Property), is 1.1 acres located at the end of Third Street north of Forest Avenue in the SE 1/4 of the NE 1/4 of the SW 1/4 of Section 24, T.1S., R.71W.

Parcel 10, (the Dakota Ridge Property), is located southwest of Alpine and Third Streets and it covers 1.0 acre in the NE 1/4 of the SE 1/4 of the NW 1/4 of Section 25, T.1N., R.71W.

Parcel 11, (the Fox Property) is located up Boulder Canyon near the Four Mile Canyon intersection. This parcel covers 14.0 acres in the NE 1/4 of the NE 1/4 of Section 34, T.1N., R.71W.

Parcel 12 is the Herzer, Seventh Day Adventist, and Community Hospital Properties which were acquired subsequent to the original study. They consist of 45.3 acres in the W 1/2 of the NW 1/4 of Section 25, T.1N., R.71W.

Crew members included at various times: Alan Kirkland, Darren McFarland, Tracy Sweely, and Dock Teegarden. Phil Rice documented two standing buildings that are located on one of the parcels surveyed. Dulaney Barclay wrote the geological summary in the environment section. Dr. Mutaw prepared the site forms and the site sketch maps were drafted by Alan Kirkland, who also assisted with site form preparation. Sandra Karhu also drafted some of the site maps.

Field notes and photographic negatives are on file with the City of Boulder Open Space Department. Two artifacts were collected during the inventory, a historic leg hold trap and an iron wedge used in stone quarrying, which will be curated by the City of Boulder Open Space Department.

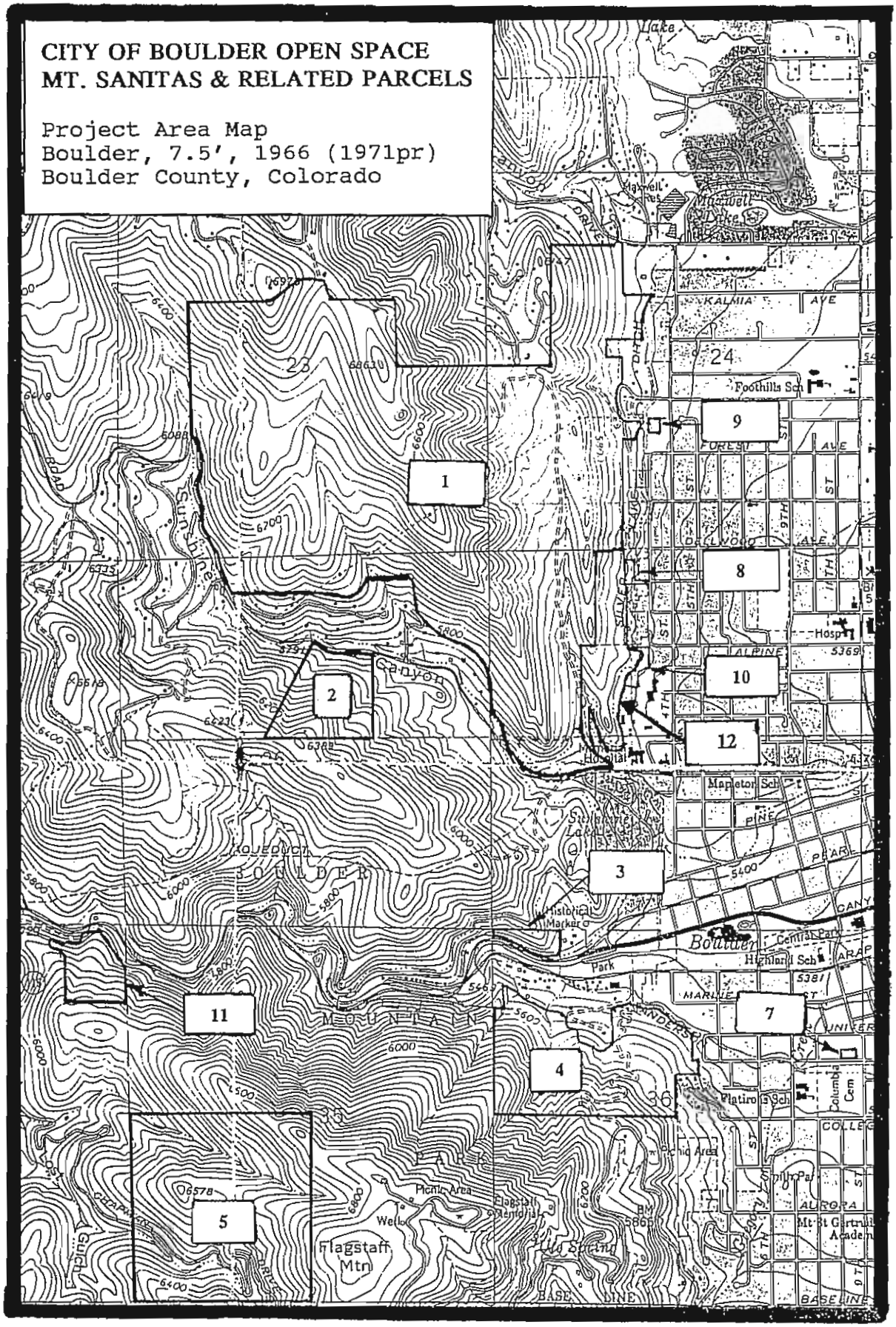
CITY OF BOULDER OPEN SPACE
MT. SANITAS & RELATED PARCELS
Project Area Map
Boulder, 7.5', 1966 (1971pr)
Boulder County, Colorado
1
2
3
4
5
7
8
9
10
11
12
Sunshine
Canyon
Flagstaff Mtn
Foothills Sch
Hospital
Boulder
Central Park
Highland Sch
Flatiron Sch
Picnic Area
Flagstaff Memorial
Maxwell Lake
Lake
KALMIA
AVE
FOREST
ALPINE
PINE
PEARL
MARINE
COLLEGE
AURORA
BASELINE
AQUEDUCT
BOULDER
MOUNTAIN
PARK
Historical Marker
Mapleton Sch
Columbia Cem
Mt St Gertrude Academy

Figure 1 -

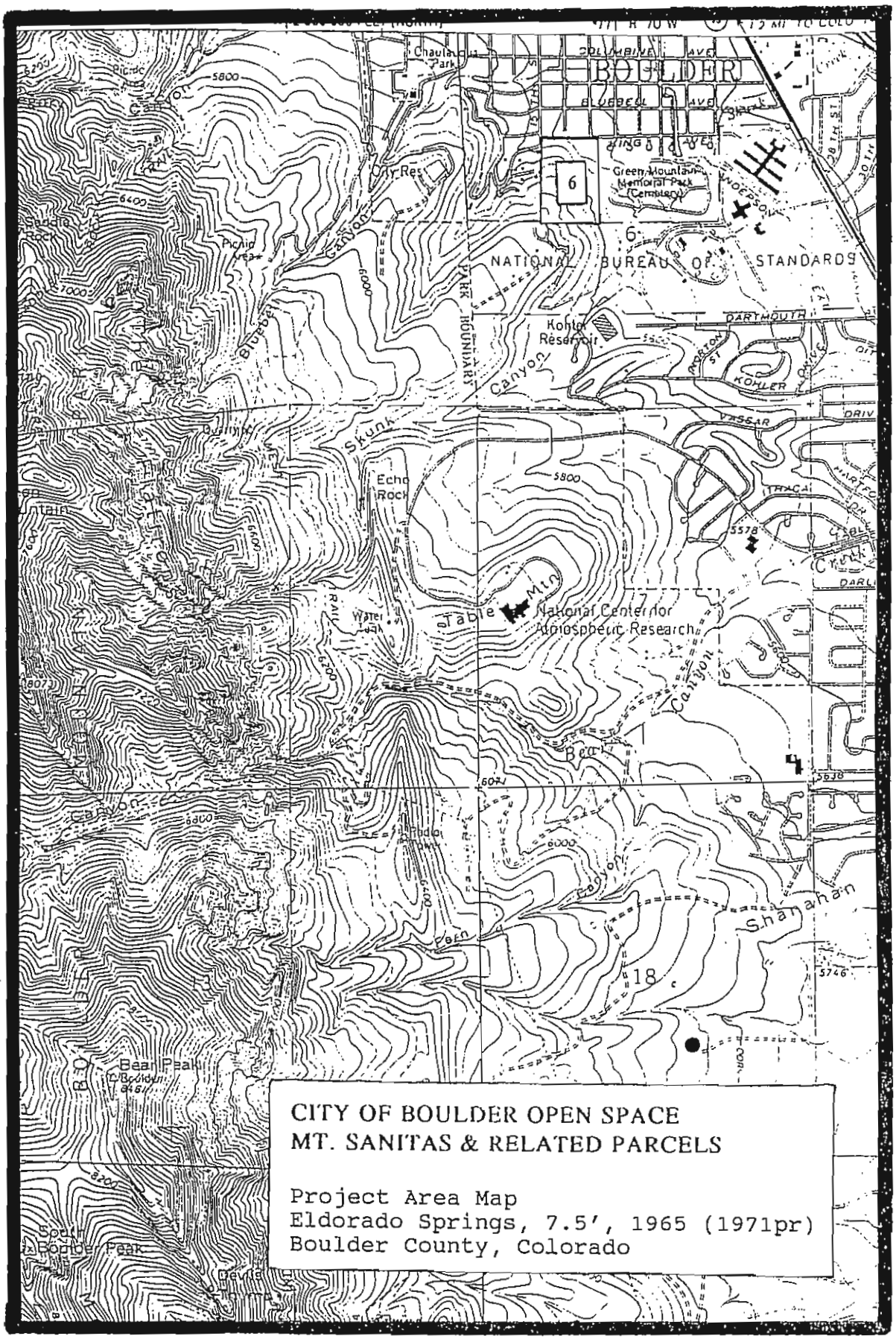
CITY OF BOULDER OPEN SPACE
MT. SANITAS & RELATED PARCELS
Project Area Map
Eldorado Springs, 7.5', 1965 (1971pr)
Boulder County, Colorado
BOULDER
NATIONAL BUREAU OF STANDARDS
Green Mountain Memorial Park (Cemetery)
Chautauqua Park
Kohler Reservoir
Echo Rock
Table Mtn
National Center for Atmospheric Research
Bear Peak
Shanahan
Skunk
Canyon
Bluebell
Boulder Canyon
Fern
Water Tank
City Res
Picnic Area
Saddle Rock
Quarry
Devils
Spot
Boulder Peak
DARTMOUTH
KOHLER
VASSAR
PARK BOUNDARY
6
7
18

Figure 2 -

ENVIRONMENT

The Mount Sanitas Open Space and related parcels are in the transition zone between the Great Plains and the Front Range of the Southern Rocky Mountain physiographic provinces (Fenneman 1931). The survey areas are primarily in the uplifted terrain forming the foothills or the base of the Front Range. Important drainages near, or crossing, portions of the project area, include Twomile Canyon at the north, Sunshine Canyon in the center, and Boulder Creek to the south. All of these are part of the South Platte River drainage system.

The geology of the Mount Sanitas area is very similar to other foothill areas up and down the Front Range of Colorado and the following summary is based on Colton (1978). The formations in this area trend almost exactly north to south and dip to the east. They form linear bands along the mountain front and become younger in age from west to east. Surficial expressions of these formations vary depending on their resistivity to erosion. More resistant sandstones, conglomerates and arkoses form ridges while the softer shales and siltstones form the intervening valleys. This results in an alternating ridge and valley topography in the Mount Sanitas area.

The rock sequence in the Mount Sanitas area begins with the Precambrian Boulder Creek Granodiorite, dated at 1.7 billion years old, and progresses up through the Holocene alluvial and colluvial deposits that are less than 10,000 years old. The western half of the project area, including Mount Sanitas, is composed completely of the Boulder Creek Granodiorite, a dark gray, coarse-grained gneissic granodiorite. Adjacent to and east of it is the Permian-Pennsylvanian aged Fountain Formation, a moderate red-brown, iron-oxide stained interstratified arkosic conglomerate and moderately coarse-grained sandstone containing layers of dark reddish-brown to purplish shales. This formation is generally thought to represent the large alluvial fans that were shed off the Ancestral Rockies located to the west.

The next formation to the east is the Permian-aged Lyons sandstone, a moderate orange to pinkish gray, fine-to-medium grained, firmly cemented sandstone. It was, and still is today, the object of much quarrying activity in the Boulder-Lyons area for use in local construction. Within the Mount Sanitas area, colluvial deposits cover much of the Lyons sandstone. Adjacent to the Lyons sandstone and mostly covered by colluvial deposits are the Triassic/Permian-aged Lykins and the Jurassic-aged Morrison Formations. The Lykins Formation consists of several members including the maroon to reddish-brown Strain shale/siltstone, the yellowish-brown to yellowish-gray finely laminated Forelle limestone, and the moderate reddish-brown,thinly bedded shales of the Bergen and Harriman shale

members as well as the Falcon limestone member. The Morrison Formation consists of a upper and a lower unit. The upper unit is a brown, sandy, marly (calcium carbonate and clay mixture) shale underlain by red and gray shales with thin beds of silty limestone. The lower unit is a fine-to-medium grained sandstone underlain by dark greenish-gray limestone and marlstone beds interbedded with marly shales.

East of these two formations and composed of two formations is the Cretaceous-aged Dakota Group that forms the prominent ridge in the project area. The lower formation is the Lytle Formation, a sandstone and conglomerate with occasional interbedded claystones. The upper formation is the South Platte Formation, a dark gray silty shale with a platy sandstone unit (Plainveiw Member) at the base and a tan sandstone at the top (Muddy Member). Lastly, much of the project area east of the Lyons sandstone is covered by Pleistocene/Holocene colluvial deposits. These deposits are bouldery to pebbly sandy silt and clay deposits resulting from sheet wash and gravity.

The area south of Mount Sanitas around the mouth of Boulder Canyon differs somewhat geologically. It too contains the Boulder Creek Granodiorite and the Fountain Formation on its western side. It also contains a small piece of an intrusive rhyodacite or basalt dike that is Paleocene in age as well as several Pleistocene to Holocene alluvial and colluvial deposits. The alluvial deposits are the Slocum Alluvium, a white to brown cobble and boulder gravel deposited during the Middle Pleistocene, and the Piney Creek Alluvium, a dark-gray, humic, sandy to gravelly alluvium thought to be Late Holocene in age. These alluvial and colluvial deposits at the mouth of Boulder Creek most likely cover the Lyons sandstone and other younger units that outcrop both to the north and south. The area to the southwest of this area around Flagstaff Mountain is completely within the Boulder Creek Granodiorite.

Unconformities exist within the rock sequence at the boundaries between major time-stratigraphic units (i.e.-Precambrian, Paleozoic, Mesozoic, Cenozoic) as well as within them. This is particularly the case within the Quaternary rock units, reflecting alternating periods of deposition and erosion related to cyclic glacial and interglacial climatic conditions. Numerous normal faults cut the Precambrian Boulder Creek Granodiorite within the project area around Mount Sanitas and the area to the southwest. They generally trend northwest to southeast and have several branches that trend at acute angles to the main fault. A branch of one main fault, located west of the project area, trends southeast down Sunshine Canyon. Movement along the fault has created a linear zone of brecciated rock in the canyon bottom. Another northwest to southeast trending fault cuts through the Fountain and Lyons Formations northeast of Mount Sanitas just outside the project area.

Three major soil associations are covered by the project area (Moreland and Moreland 1975). A soil association is a landscape with a distinctive pattern of soils. These generally consist of one or more major soils, for which the association is named, in conjunction with at least one minor soil. The western portions of the project area are covered by the Rock outcrop-Juget-Baller association. This association contains rock outcrops along with very gravelly and stony soils formed in residuum of granite and sandstone. The eastern portions of the project area include the Nederland-Valmont association. This association contains very cobbly and cobbly soils formed on old high terraces, alluvial fans, and benches. The Niwot-Loveland-Calkins association is found along a narrow strip paralleling Boulder Creek. This association consists of soils formed from loamy alluvium on low terraces and bottom lands.

The transitional nature of the project area provides access to several different ecosystems and their resources. These include plains grasslands, plains riparian, dry shrubland, and ponderosa pine savanna and forest (Mutel and Emerick 1992). A diversity of floral and faunal resources are present in these ecosystems. The transition zone was undoubtedly attractive to aboriginal peoples, with exploitable resources from both the plains and the mountains available. The presence of intermittent drainages and springs would add to the attraction of this area.

PREVIOUS RESEARCH

The known culture history of the general area is presented in several historic contexts prepared for the Colorado Historical Society to guide research (Mehls 1984A and 1984B, Guthrie et al 1984, Eighmy 1984). A file search of the project area was conducted at the Colorado Office of Archaeology and Historic Preservation (OAHP) on October 19, 1993. In addition, the cultural resource files at the City of Boulder Open Space Department and at Native Cultural Services were examined for information on known historic and prehistoric sites in the vicinity of the project area.

No formal cultural resource surveys have taken place within the project area, and only two sites have been previously recorded within the project area. Site **5BL3813**, the Silver Lake Ditch, was originally recorded by Native Cultural Services in 1991. Site **5BL515**, the Gordon-McHenry Road, was recorded in 1981 by Manuel Weiss on behalf of the Boulder County Historical Society.

A formal cultural resource inventory of the Boulder Mountain Parks was conducted in 1994 (Mitchell and Gleichman 1995), which is adjacent and south of Mount Sanitas. Three sites, Chapman Drive **(5BL4170)**, an historic dump **(5BL4177)**, and the Town of Boulder Ditch/Red Rocks Reservoir **(5BL4182)** have segments on both Mountain Parks land and City of Boulder Open Space land. They have been documented both as part of this project and as a part of the Boulder Mountain Parks inventory.

Various buildings from the Boulder Sanitarium complex have been previously recorded. Two unrecorded elements of the Sanitarium complex are on Open Space - the dairy, and the water cistern. These elements were documented as part of this study.

All of these sites are described in the Results section, below.

OBJECTIVES

The primary objective of the present project was to provide the Boulder City Open Space Department with an inventory of archaeological and historic sites, and to produce recommendations on appropriate management of these cultural properties. Any cultural resources located were to be documented and their significance assessed in terms of eligibility for inclusion on the National Register of Historic Places and the State Register of Historic Properties. Cultural properties which do not meet the criteria for inclusion on the National or State Registers (see Recommendations section below for criteria of eligibility) may still be locally significant and eligible for city or county landmarking. The presence of cultural resources in or near any existing or proposed recreational development might also provide the opportunity for education regarding the history and prehistory of Boulder County, through the use of interpretive signs or trail maps/brochures discussing points of interest of the cultural landscape.

The objectives were met through a combination of intensive (100%) field survey, archival research from local institutions, and oral histories gathered from persons knowledgeable about the project area. In addition, an attempt was made to further our understanding of the prehistory and history of the area through the development of a set of expectations based on findings during previous investigations in the vicinity.

It was expected that if aboriginal cultural resources were located within the project area, information obtained from these resources would be applicable to a number of research concerns such as regional chronology, settlement patterns, resource utilization, site function, and cultural affiliation. Many of these issues are outlined in Eighmy's (1984) "Colorado Plains Prehistoric Context". Data concerning historic Euro-American sites could be used to address questions about late 19th and early 20th century farming, ranching, mineral extraction, and urban development in Boulder County (Mehls 1984a).

Archaeological site density in this part of eastern Colorado is variable. Previous cultural resource surveys in the immediate area have identified historic Euro-American resources (generally associated with irrigation, and mining endeavors) and a few aboriginal sites and isolated artifacts. The low number of aboriginal sites known for this area is perhaps in part accounted for by the heavy vegetation growth along the plains/foothills transition zone, leaving ground visibility poor. Aboriginal camps tend to be located near water sources in areas of low slope such as terraces or ridge tops. The Dakota hogback in general seems to have been attractive to aboriginal people, probably for the variety

of natural resources available both from the hogback and from the adjacent plains and mountains. The proximity of perennial water sources such as Boulder Creek, may have attracted prehistoric peoples to the area, especially from the Ceramic Period (A.D. 1-1550) on. It is well known that the Boulder area was occupied by various tribal groups during the 18th and 19th centuries, ending in the mid 1860s. Some evidence of aboriginal use of the project area was expected; however, the historic use of the area and the proximity of urban development has probably obliterated most of the aboriginal manifestations.

Historic Euro-American remains were certain to occur in the project area, and to exhibit much higher visibility than aboriginal sites. Because of the history of farming and mining within and adjacent to the project area, resources related to these activities were expected, such as historic irrigation ditches, farm machinery, stone quarries, animal enclosures, and roads.

METHODS

The project area was inventoried by crews of one to four persons walking a series of parallel, topographically oriented transects at intervals of 30 meters or less. Transect sweeps were controlled by means of compass orientation and the use of flagging to mark the edges of the sweeps. The perimeters of the survey areas were identified by section lines, survey markers, and fencelines. Road and drainage cuts, tracks and trails, eroded surfaces, anthills, and rodent backdirt piles were closely examined for evidence of buried cultural materials. Vegetative cover throughout the project area was generally heavy, consisting of thick grasses in open meadows and dense pine duff and grasses in wooded areas. This resulted in generally poor ground visibility, averaging about 30-40%.

Evidence of cultural resources was sought in the form of material debris, structural remains, or any other unusual surface anomaly. Isolated Finds were defined as a single cultural feature or fewer than four artifacts in the space of 100 x 100 meters. Sites were minimally defined by the presence of four or more artifacts, two or more features, or the remains of at least one structure. The appropriate Colorado OAHP site forms were completed for each site. Black-and-white photographs were taken and a sketch map was drawn of each site. Artifacts were described in the field. No test excavations were conducted

Archival methods included a search of the literature housed at the Main Boulder Public Library and the Carnegie Branch, the University of Colorado Norlin Library, and the Western History Collections at Norlin Library. Patent information for property on which sites were located was collected at the Colorado State Office of the Bureau of Land Management in Lakewood. Ownership records were traced at the Boulder County Courthouse.

RESULTS

The cultural resource inventory resulted in fifteen historic sites - or portions of sites - and 11 historic and one prehistoric isolated finds being located and recorded. In addition, two previously recorded linear historic sites cross the project area.

These 29 resources are summarized below. More detailed descriptions and additional information are included with the Colorado Cultural Resource Survey Forms, which with resource location maps are a detached Appendix to this report.

Several other cultural manifestations were noted but not formally recorded as cultural properties, due to insufficient or indeterminable age, or questionable cultural origin, or ephemeral or ubiquitous nature. These other manifestations are listed with map locations in Appendix A.

PREVIOUSLY RECORDED SITES

Site 5BL3813 is the **Silver Lake Ditch**, which was constructed by J.P. Maxwell and George Oliver, and has an appropriation date of February 28, 1888, with an appropriation of 20 c.f.s. from Boulder Creek. The ditch was constructed to irrigate 1000 acres, and to provide storage of water in Mesa Reservoir. Mesa Reservoir has a decree date of 1893. The ditch also was used to supply water to Mesa Park Reservoir (Wonderland Lake), constructed somewhat later, around 1905. Other features of this water transport and storage system are Silver Lake Reservoir and Island Lake Reservoir, built in the high country to supply water to the ditch. These two reservoirs were sold to the City of Boulder in 1906. The ditch was sold by Maxwell and Oliver in 1907, and has an adjudication date of March 13, 1907. There have been other appropriations and abandonments of water for the ditch between 1900 and 1988. The ditch is still active.

Site 5BL515, the **Gordon-McHenry Road**, was a federally financed military road built up Sunshine Canyon in the 1860s. It is named after the two head engineers of the project. The road followed Sunshine Canyon to Ritchie Gulch, then to Orodell in Four-Mile Canyon, west to Sugarloaf, down Gordon Gulch to North Boulder Creek. It was intended to cross Arapaho Pass into Middle Park, but was abandoned north of Caribou.

The **Boulder Sanitarium** consists of a complex of buildings and structures, several of which have been previously documented under different Smithsonian site numbers. The elements of the complex are obviously linked historically. In conjunction with the City of Boulder Department of Community Planning, it was decided that rather than assign each element a new site number, "point numbers"

will be used for two elements which are on Open Space and were documented as a part of this study - the Sanitarium dairy and the water cistern. Site **5BL6199.1** is the number of the main historical building of the complex, the Maxwell Building. The dairy is **5BL6199.2**, and the water cistern is **5BL6199.3**. These elements are described under Newly Recorded Sites, below.

NEWLY RECORDED SITES

Site 5BL4170 is **Chapman Drive**, an unpaved road which crosses the project area. Chapman Drive ascends the "back side" or west facing slope of Flagstaff Mountain. The road originates in Boulder Canyon and extends to the junction of the Flagstaff Summit road and the Flagstaff Road at Realization Point. The road was constructed by the Civilian Conservation Corps (CCC). Chapman Drive crosses both City Open Space and Boulder Mountain Parks land.

Chapman Drive is 20 to 24 feet (6.1 to 7.3 meters) wide and well cut into the uphill slope. The corners of some of the switchbacks appear to be banked. Constructed features along the length of the road include rock retaining walls, drainage culverts, bridges and cattle guards.

Boulder City Open Space Segment: A series of three features located close together along the Open Space portion of the road are excellent examples of the construction techniques used by the CCC. Two of these features are culverts built one above the other in the same drainage. Both have elaborate, stacked stone retaining walls on the downstream side, which hold a 24-inch galvanized steel culvert pipe. The entry into each culvert on the upstream side consists of a rock lined pit which forms a funnel to drain water. The third feature is an elaborate retaining wall along the south and west sides of the road grade, at the hairpin turn between the two culverts. The retaining wall follows the curve of the road for about 100 feet and ranges in height from 15 to 20 feet. The wall is made from coursed, unshaped granite and mortar.

A bridge-cattle guard-culvert constructed of massive fitted and dressed granite blocks (Figure 3) is located at the boundary between Mountain Parks and Open Space property. The bulk of the feature is dry-laid. The retaining wall which supports the roadbed is 10 feet (3 m) high where is crosses the ephemeral drainage and is 82 feet (25 m) long.

The pilasters along the top of the retaining wall, the culvert and cattle guard, and the gateposts are all constructed from mortared, dressed cobbles. The gate located on the uphill (east) side of the roadbed is supported by a short wall and gatepost. The gate is constructed from 1x4 milled stock, bolted together and hung on

hand-wrought iron hinge pins. The cattle guard is constructed from 11 (1 1/2 inch O.D.) concrete-filled pipes laid on concrete supports. The pipes are secured in place using hand-wrought iron bars. The portion of the culvert below the cattle guard is constructed from mortared granite blocks, which are held in place by a crude keystone.

Boulder Mountain Parks Segment: The portion of the road which lies within the Boulder Mountain Parks is approximately one mile long, and includes two major switch-backs. Rock retaining walls have been erected along three portions of this road segment and vary in length from 131 to 243 feet (40 to 74 m) and in height from 6½ to 16½ feet (2 to 5 m). Each one is constructed of locally-obtained, fitted and lightly dressed cobbles and boulders, dry laid. With the exception of wall sections which incorporate natural rock outcroppings, these retaining walls are not vertical, but slant back toward the roadbed at an angle of 50-60°. Two large stone and mortar drain culverts, similar to those described for the Open Space segment above, have been constructed to carry run-off under the roadbed. The drains have vertical stone-lined entries; one drain is covered with a cast iron grate 3 feet in diameter.

Historic Data

The Civilian Conservation Corps began work in Boulder Mountain Parks on July 10, 1933. Corps members from Camp SP-2-C, located at Boulder Creek and 6th St., rebuilt Flagstaff Road, as well as constructing the Sunrise Circle Amphitheater and the Green Mountain Lodge. In October 1933 another CCC Company, SP-5-C, was sent to Boulder and established a camp at 6th Street and Baseline. Their main endeavor was construction of the road down the west slope of Flagstaff Mountain. The road was named Chapman Drive in honor of Oscar Chapman, then Assistant Secretary of the Interior. Mr. and Mrs. J.C. Doherty, owners of Blanchard's (now the Red Lion Inn) donated a right-of-way across their property in Boulder Canyon. The road was formally opened on March 29, 1935 (Barker 1977). A condition of the deeded right-of-way was that the road be kept open as a public highway for use of the public. A flood in 1969 washed out a bridge at the lower end of the road, and the city stopped maintaining the road. Local landowners requested that the road be closed, and gates and barriers were erected. In 1985 Flagstaff Associates, a development group, sued to have the road opened as a public highway, but a judicial ruling found the road to be a private roadway.

Site 5BL4171 is the remnants of an **historic habitation**, consisting of artifacts and features covering about 480 square meters (0.12 acres) as seen in Figures 4 & 5. It is situated in the valley west of the Dakota hogback at an elevation of 1706 meters (5600 feet) about 880 meters (2900 feet) from Sunshine Canyon Creek. On-site vegetation includes grasses, forbs, and narrow leaf cottonwood.

Figure 3 - 5BL4170 - View east at bridge on Chapman Drive, constructed by the Civilian Conservation Corps.

Figure 4 - 5BL4171 - View west at stone foundation, ruins of an historic habitation. Person for scale.

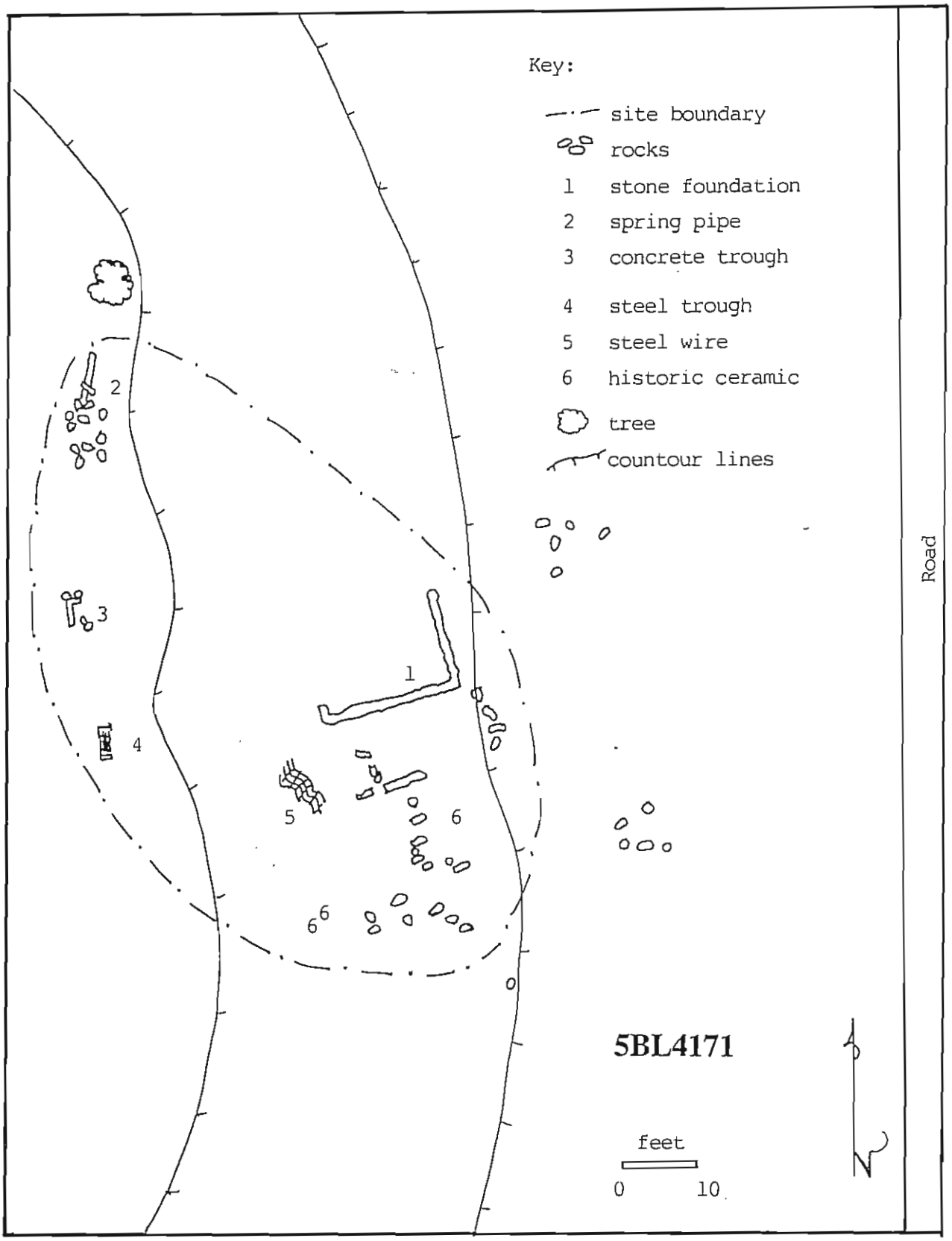

Figure 5 - Plan Map of Site 5BL4171.

This site consists of two historic features and a sparse scatter of artifacts. Feature 1 is a coursed and mortared stone foundation made from native sandstone. Most of it is rough-cut or uncut. The foundation is 20 ft ne-sw by 15 ft nw-se, and has a maximum height of 2.5 ft in the se corner. An area 6X8 ft extends to the southeast, which may have been a porch or may simply be wall fall. Feature 2 is west of the foundation, and it is a spring with a pipe driven into the hill. Ten feet below this there is a concrete trough broken in two pieces (2X3 ft,1.5 ft high). Five feet south of the trough there is half of a steel drum that is mostly buried. Artifacts are lightly scattered to the southeast of the foundation. These include about 50 feet of wire fence and three pieces of domestic ceramics. There is a good potential for buried cultural materials given the depositional nature of the site area.

Historic Data

A cash entry patent for 160 acres encompassing the land on which this site is located was granted to Caleb W. Churchill on June 26, 1889 (Patent #556). Churchill apparently began using the parcel in 1883, perhaps that is when he filed for the patent. Caleb Churchill shows up in the 1880 census as a 49 year old miner in Gold Hill, with a 41 year old wife, Anna. Neither person appears in subsequent census records. The 1915 Drumm Map shows that the entire 160 acre parcel had been transferred to Andrew Fraser and Donald Grant, stonemasons who used the Mt. Sanitas Quarry. Dock Teegarden (personal communication) recalls Bill Herzer mentioning that a "hermit" lived at the site. The site may also have been used by quarry workers at the Mt. Sanitas Quarry, as a domicile or office.

TABLE 1

Land Ownership, parcel including 5BL4171

Date	Grantor	Grantee
Oct 19, 1883	?	Caleb Churchill
?	?	John Brierley et al.
Apr 15, 1963	John Brierley et al.	Julian & Marguerite Peck
Sep 16, 1963	Julian & Marg. Peck	Dwayne Nuzum
Oct 21, 1965	Dwayne Nuzum	Richard McCabe & Joseph Sanchez
Aug 10, 1966	R. McCabe/J. Sanchez	City of Boulder

Site 5BL4172 is the **Shinkle Quarry**, a Dakota sandstone quarry. It is situated along both the east and west slopes of the Dakota hogback at an elevation of about 1768 meters (5800 feet). On-site vegetation includes Ponderosa pine, grasses, and forbs.

This site consists of two areas (Figures 6, 7, & 8). Area A is on the west side of the hogback. A single quarry cut is present with associated talus (quarry waste rock) downslope. The cut extends north-south along the vertical face of the Dakota outcrop for about 75 meters. A drill hole was observed in the cut face. A fragment of an old road is present at the base of the talus. Hiking trails are adjacent to the road segment and extend from the south end of the road, thus portions of the trail were probably originally a quarry wagon road. An iron wedge used to split rock from the outcrop face was found with the talus on the slope below the outcrop.

Area B is on the east side of the hogback outcrop, slightly north of the Area A cut. Some areas of the vertical face of the Dakota outcrop are without lichen growth and appear to have had stone removed. A ramp is present 6m east of the rock face. The ramp is similar to ramps at other quarries, and was probably used for loading quarried stone onto wagons. The ramp is 5 ft high, 10 ft wide, and 26 yards long. It is constructed of dry-laid stacked stone, with stones ranging from 10 x 20 cm up to a meter in length. A flat or leveled area is east of the ramp. An old wagon road fragment, with a bit of stone foundation running along the downhill side, is still visible, 50 meters north of the ramp, running north-south along the base of the outcrop. It descends the east slope of the Dakota hogback with switchbacks creating a loop. About 110 meters north of the ramp is a saddle or break in the Dakota outcrops, allowing access to the west side of the hogback and the Dakota Ridge Trail. The saddle has a stone fence across it, 40 ft long and 2 ft high. The fence may have been to control livestock from passing from one side of the hogback to the other, rather than being related to quarrying.

Historic Data

A cash entry patent for 120 acres encompassing the land on which this site is located was granted to William J. Iredale on December 1, 1882 (Patent #337). The 1915 Drumm Map shows that the land had been transferred to John C. Shinkle but the quarry is not shown.

John Charles Shinkle (1862-1942) was born in Illinois and moved with his family to Boulder in 1880. In 1883 he married Clara Burket (1854-1951) who came to Boulder from Ohio in 1881. In 1884 they homesteaded near Plattville, receiving the patent on the property in 1889, they then sold it and moved back to Boulder. John Shinkle was a stonemason, and practiced his trade until 1937. His obituary stated that "becoming one of the city's leading stone masons....He worked on some of Boulder's finest stone buildings,

Figure 6 - 5BL4172 - Shinkle Quarry, view east at quarry cut, Area A.

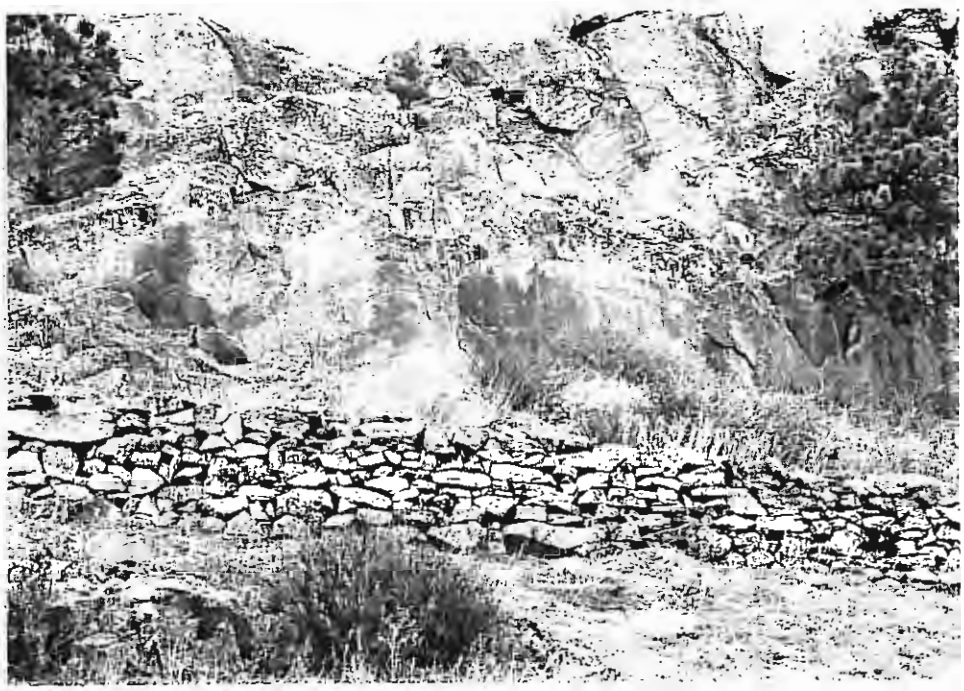

Figure 7 - 5BL4172 - Shinkle Quarry, view westnorthwest at quarry cut, Area B, with dry-laid stone loading ramp/road.

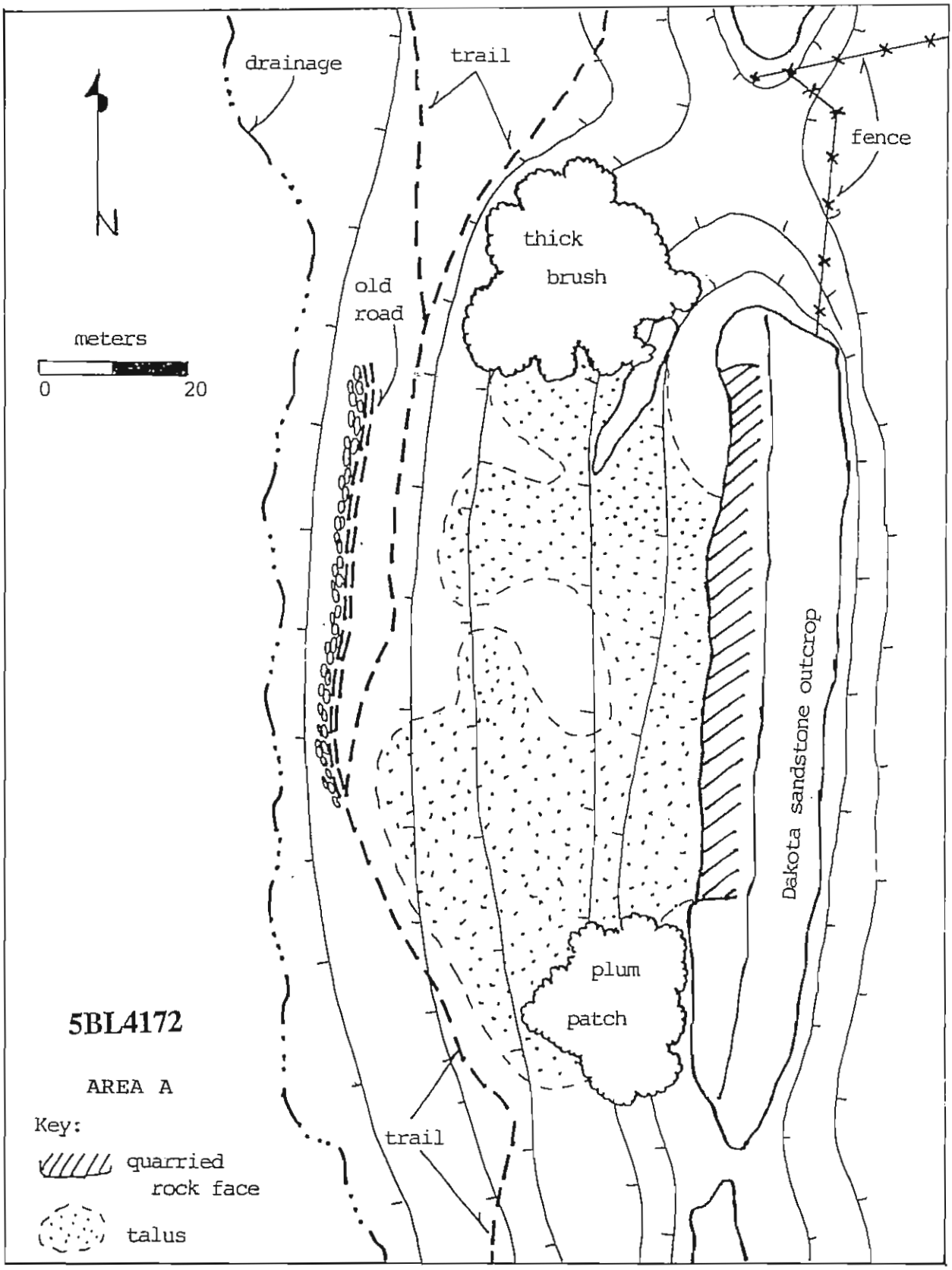

Figure 8 - Plan Map of Site 5BL4172, Shinkle Quarry, Area A.

constructing many of them" (Daily Camera 6-17-1942). The Shinkles were members of the Seventh Day Adventist Church, and in 1895 John Shinkle helped lay the foundation for the Sanitarium (Austin ND). John and Clara had two children, Ralph (1889-1945), and Vesta (1891-?), and an adopted daughter - Grace (1898-?). Ralph Shinkle was also a stonemason, and a contractor/builder of some repute. He died from injuries sustained in a fall while working on a building. Oren B. Shinkle (1872-1936) was apparently John's brother, and was also a stonemason.

John and Clara Shinkle also owned a Lyons sandstone quarry near Left Hand Canyon from 1905 to 1907. Site 5BL6495, known as the Ingersoll Quarry, is a large and important quarry that was worked sporadically from the 1890s to the 1970s. The Shinkles acquired the land containing 5BL4172 in 1906. The quarry may have already been in existence when Shinkle bought the land. The wagon road that is barely visible descending the east side of the hogback is mentioned on the deed recorded in 1907, Book 309, page 513, Boulder County Courthouse. The road was undoubtedly used for hauling rock from the quarry.

TABLE 2

Land Ownership, parcels including 5BL4172, Shinkle Quarry

Date	Grantor	Grantee
May 10, 1881	United States	William Iredale
Jul 26, 1881	William Iredale	William Newland
Mary Newland was noted as the owner in a Trust Deed dated December 19, 1887.		
Jan 26, 1898	Mary Newland	Mollie Dyer
Mollie Dyer evidently sold the lower two thirds of the patent to John Shinkle, but the deed is not recorded. Shinkle is noted as the owner in a Trust Deed dated May 3, 1906.		
Oct 7, 1907	John Shinkle	Arthur C. Jones
This sale is the "middle third" of the Iredale patent.		
Nov 5, 1937	John Shinkle	William Herzer
This sale is the "lower third," which contains site **5BL4172.**		
May 27, 1988	William Herzer	City of Boulder

Site 5BL4173 is the **Mt. Sanitas Quarry,** a large Lyons sandstone quarry covering about 431,250 square meters (107 acres), including the quarry roads. The quarry cut areas trend north-south along the Lyons Formation and the associated quarry roads extend eastward into the Mt. Sanitas Valley (Figures 9-17). Elevation of the site ranges from 1804 meters (5920 feet) at the southeast to 1945 meters (6380 feet) at the northwest. Grasses, forbs, and shrubs are common in the valley while Ponderosa pine community is found among the quarry cuts.

The site consists of a series of sandstone quarry cuts, labelled Quarry Areas 1-6, interconnecting roads, and other features. Quarry Area 5 is the furthest to the south and it contains a single cut about 10 by 20 feet, and three to four feet high. Tailings extend to the northeast, and a road extends from Area 5 north to Quarry Area 1. Quarry Area 1 contains a single cut about 150 by 50 feet and 15 feet high, with tailings, extending 50 feet downhill. A leveled area about 100 by 200 feet extends to the southeast and a graded road exits Area 1 to the north-northwest and continues to Quarry Area 2. A small arc of sandstone slabs and a stoneware mug handle were also observed in Quarry Area 1.

Quarry Area 2 (Figures 14-16) is the main quarry, and contains tailings and cuts covering an area of about 3.0 acres the extends about 600 feet (SE-NW) by 250 feet (SW-NE). A road grade arcs across the eastern portion of the tailings and continues to the northwest up and then across a drainage and then turns back to the northeast, continuing on to Quarry Area 3. A rock filled linear depression extends for 500 feet to the northeast from the center of the quarry area. This was used as a slide for hauling out the cut stone. The collapsed remains of a crushing plant and bin are located on the steep slope of a drainage cut at the north end of this quarry area. This bin, when assembled, would have measured about 12 by 20 feet, and about 40 feet high. Construction materials used in this bin include heavy timbers beams and posts, milled lumber, sandstone and mortar, iron bars, nails, and cable. A sandstone and mortar retaining wall extends 30 feet to the west of the spot where the plant and bin were anchored to the hillside. A flat area about ten feet wide extends to the south of the retaining wall. Artifacts observed across the site in general included milled lumber, stoneware, wire, window glass, and a lug nut.

Quarry Area 3 (Figure 17) is located on the north side of a steep drainage cut across from Quarry Area 2. It consists of a single quarry cut measuring about 50 by 50 feet, and 40 feet high. A road leaves the quarry area to the northeast. Another road exits to north-northeast and continues on to Quarry Area 4. Quarry Area 4 consists of a single, large quarry cut and associated tailings. The quarry cut measures about 250 by 300 feet, and is about 60 feet high. Quarry Area 6 consists of a series of small quarry cuts connected by roads that all feed into the current trail/access

road. The quarry cuts range from about 10 by 15 feet, by 5 feet high to 50 by 50 feet by 30 feet high.

Historic Data

A cash entry patent for the land on which this site is located was granted to Caleb W. Churchill on June 26, 1889 (Patent #556). This patent covered the NW 1/4 of the NW 1/4 of Section 25, the NE 1/4 of the SE 1/4 of Section 23, and the NW 1/4 of the SW 1/4 and the SW 1/4 SW 1/4 of Section 24 for a total of 160 acres. Churchill apparently began using the parcel in 1885, perhaps that is when he filed for the patent.

The quarry was originally known as the "Markley Building Stone Quarries". In 1897 ownership was transferred to Andrew Fraser and Donald Grant. Andrew Fraser (1858-1947), was a stone mason trained in Scotland, who then immigrated and worked in Kansas and Denver before moving to Boulder in 1892. While running a contracting business in Hutchinson Kansas he married Nellie Shottenkirk (1870-1951) in 1888. They had three children - Andrew, Margaret, and Percy Verness. Donald Grant (1854-1919) was also a Scottish stone mason, married to Isabel Fraser (1865-1941) (Andrew's sister?) in 1887. They also had three children - John, Alexander, and Jane. By the late 1890s the two had formed a partnership, and were operating as the firm of "Grant & Fraser".

Fraser and Grant, individually or in partnership, eventually constructed the Masonic Temple, the Methodist church, St. Johns Episcopal Church, the Presbyterian Church, National State Bank, the Carnegie Library, and many private homes such as 534 Mapleton (the Fraser home), 639 Mapleton (the Grant home), 643 Mapleton, and 904 Mapleton. They used stone from a variety of sources, not just from the Mt. Sanitas Quarry. After Grant's death, Fraser supervised the stone work for the University of Colorado's building program, from the 1920s until shortly before his death in 1947.

In 1918, Fraser and Grant sold the land but reserved the mineral rights. In 1919, Fraser and Bell Grant (Donald's brother?) assigned the mineral rights to the University of Colorado, reserving $25,000 worth of stone annually for themselves. Stone from this quarry and other quarries was used to construct several University buildings. Charles Klauder designed 14 CU buildings, using modified Italian hill town architecture, with native stone and tile roofs. Red sandstone was used, with white limestone trim. The first Klauder building, Hellems, was completed in 1921, using stone from the Sanitas Quarry. Aside from Hellems, records of which quarries supplied stone for which buildings have not been located. The Mt. Sanitas Quarry was abandoned in the 1920s because it was reputedly dangerous to operate and the stone removed was less than ideal. The quarry was reopened briefly in 1946 to secure stone for new residence halls and other buildings. One of the smaller quarry areas was operated by the Wittemyer family on land leased from the Sanitarium (John Wittemyer, personal communication).

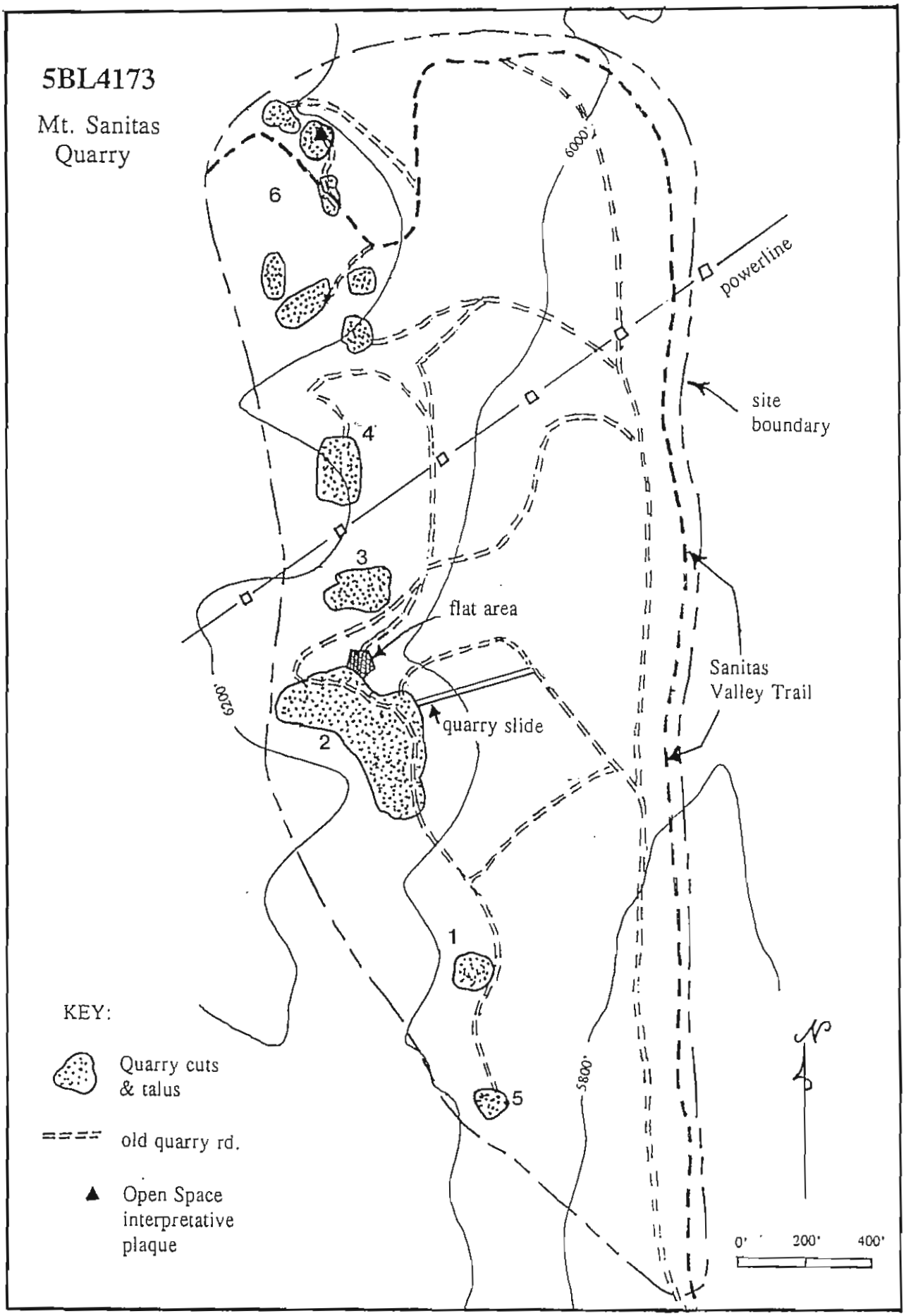

Figure 9 - Plan Map of site 5BL4173, Mt. Sanitas Quarry.

Figure 10 Figure 11

Historic photos of the Mount Sanitas Quarry, in operation. Date unknown, probably 1920. University of Colorado Museum Photograph Collection III-5-2A. Archives, University of Colorado at Boulder Libraries.

Figure 12

Figure 13

Historic photos of the Mount Sanitas Quarry, in operation. Date unknown, probably 1920. University of Colorado Museum Photograph Collection III-5-2A. Archives, University of Colorado at Boulder Libraries.

Figure 14 - Historic photo of the Mount Sanitas Quarry, in operation. Crushing plant and bin, date unknown, probably 1920. University of Colorado Museum Photograph Collection III-5-2A. Archives, University of Colorado at Boulder Libraries.

Figure 15 - Contemporary photo of the Mount Sanitas Quarry, view southwest at remains of the crushing plant and bin.

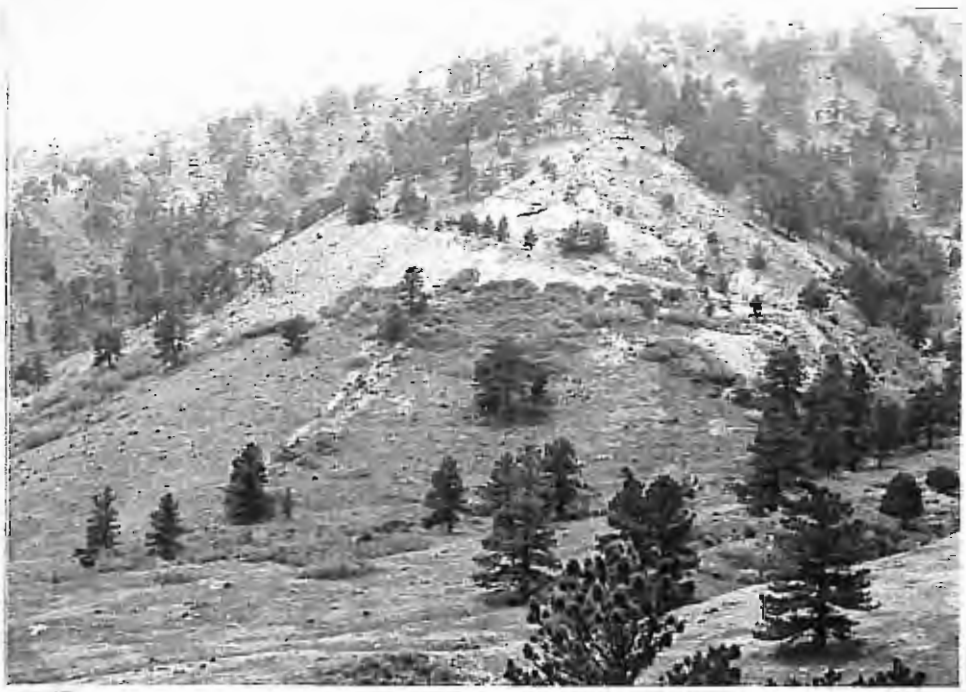

Figure 16 - 5BL4173 - Mt. Sanitas Quarry, contemporary photo of main quarry (Area 2), looking west.

Figure 17 - 5BL4173 - Mt. Sanitas Quarry, contemporary photo of Area 3, looking north-northwest.

TABLE 3

Land Ownership, parcels including 5BL4173, Mt. Sanitas Quarry

Date	Grantor	Grantee
Oct 19, 1885	United States	Caleb Churchill
Jan 19, 1886	Caleb Churchill	Caroline Markley
Caroline Markley then sold a 2/3 interest in the land.		
May 27, 1890	Caroline Markley	Edwin WIlliams
Mar 9, 1897	Caroline Markley	Andrew Fraser & Donald Grant
This is Markley's last 1/3 interest.		
?	Edwin Williams	A.E. Anderson
This is presumed, as no deed was recorded, but Anderson was the person who next sold the land, half of Williams' original 2/3 interest.		
Mar 12, 1900	A.E. Anderson	Andrew Fraser & Donald Grant
Apr 27, 1904	Edwin Williams	Andrew Fraser & Donald Grant
With this sale, Fraser and Grant completed reassembling the parcel.		
Apr 10, 1918	Andrew Fraser/Donald Grant	Frank Kutcher
This deed granted the land but reserved the mineral rights.		
Oct 11, 1919	Andrew Fraser/Bell Grant	University of Colorado
Fraser and Grant assigned the mineral rights to the University, except for stone for Kutcher to build a house and $25,000 worth of stone per year at no charge to Fraser and Grant.		
Dec 19, 1939	Frank Kutcher	B CO Sanit. Assoc.
Oct 21, 1969	B CO Sanit. Assoc.	City of Boulder
Nov 23, 1970	B CO Sanit. Assoc.	City of Boulder
This deed transferred the Churchill patent and other adjacent lands to the City, "except...mineral interests outstanding in the University of Boulder..."		

Site 5BL4174 was a **Sandstone Quarry** covering about 456 square meters (0.11 acres) (Figures 18 & 19). It is situated along the east slope of the Dakota hogback at an elevation of 1756 meters (5760 feet) about 884 meters (2900 feet) from Twomile Canyon Creek. On-site vegetation includes Ponderosa pine and skunkbrush.

The presence of a sandstone quarry in this location is based primarily on historic information. Local people have stated that there was a quarry here (Dock Teegarden, personal communication), and the 1915 Drumm Map depicts a quarry in this location. There is an exposed rock face, a single cut about 150 X 50 feet, and 35 feet high. The cut is located along a graded road that heads SE then back NE to Hawthorne. The road terminates to the west of the rock face at an artificially leveled area, or terrace, which contains the pumphouse for the wells supplying water to the houses below. An older road segment is present downslope of this road, running east-west, which has been interrupted by the artificial terrace. The pumphouse was constructed in the 1960s, and the more recent disturbance associated with the pump house and road has apparently obliterated any other evidence of sandstone quarrying in this location. No artifacts were observed on the site.

TABLE 4

Land Ownership, parcel including 5BL4174, Sandstone Quarry

Date	Grantor	Grantee
May 10, 1881	United States	William Iredale
Jul 26, 1881	William Iredale	William Newland
Mary Newland is noted as the owner in a Trust Deed dated December 19, 1887.		
Jan 26, 1898	Mary Newland	Mollie Dyer
Dec 28, 1904	Mollie Dyer	Boulder Real Estate Loan & Investment Co.
This sale is for the upper third of the Iredale patent, containing site **5BL4174**. Dyer had previously broken up the patent, selling to John Shinkle.		
Oct 30, 1906	B.R.E.L. & I.C.	Anton Spier
Apr 29, 1937	Anton Spier (in the person of his bank, his executor)	Alvin & Clara New
Aug 23, 1972	Clarence New	City of Boulder

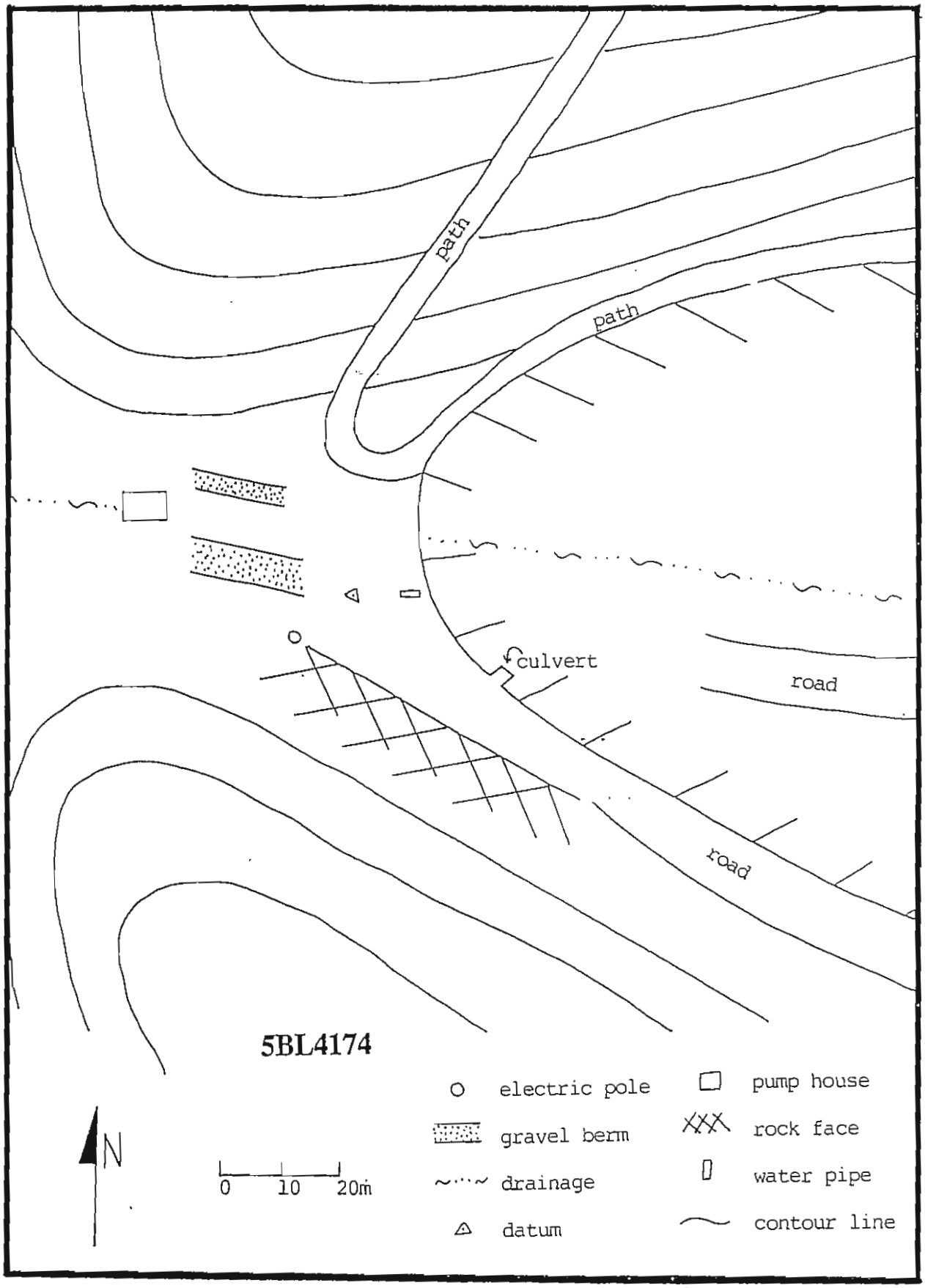

Figure 18 - Plan Map of Site 5BL4174, sandstone quarry.

Figure 19 - 5BL4174 - View south at sandstone quarry area.

Figure 20 - 5BL4175 - Tomlinson/McCoy Lime Kiln & Quarry, view south at limestone quarry trench running uphill in center photo, overgrown.

Historic Data
A cash entry patent for 120 acres encompassing the land on which 5BL4174 is located was granted to William J. Iredale on December 1, 1882 (Patent #337). The 1915 Drumm Map shows that the land had been transferred to Anton Spier and it also depicts the quarry in this location.

Site 5BL4175 is the **Tomlinson/McCoy Lime Kiln & Quarry**, and associated features, covering about 24,256 square meters (6 acres) and is shown in Figures 20 & 21. It is situated along the northeast slope of Flagstaff Mountain at an elevation of 1719 meters (5640 feet) about 213 meters (700 feet) from an unnamed tributary of Boulder Creek. On-site vegetation includes grasses, forbs, and skunkbrush.

One of the main features of this site is a limestone quarry trench that has been excavated into the hillside with earthen mounds piled on both sides. The trench extends N-S for about 700 feet and it and the mounds are about 150 ft E-W. The depth of the trench is about 20-30 feet. The trench is heavily overgrown with skunkbrush. This site was historically the location of a lime kiln, remnants of which can still be found against a steep slope below and northeast of the quarry area. The kiln is badly deteriorated and heavily overgrown by skunkbrush but its location can be identified by the concentration of burned brick and sandstone. Downhill and north of the kiln area there is a leveled area with a retaining wall on the east. An old road segment extends to the north of the leveled area and joins the current gravel road. Historically, this area was probably used for the loading and hauling of the lime. Other old road segments are visible ascending the hill to the quarry trench.

Two buildings are located on areas included with this site. Building 1 is of wood frame construction with wood siding and it is located in the northwestern corner of the leveled area. Construction methods and materials observed on this building are consistent with a construction date of ca. 1950. A neighbor claimed that it was built in 1949. Building 2 is a small wood frame cottage located in a small drainage about 150 feet west of Building 1. Building 2 appears to be less than fifty years old, and it may have been moved to this location. Construction methods and materials observed on this building are consistent with a construction date of the 1960's or 1970's.

Historic Data
The SE 1/4 of the NW 1/4 and the S 1/2 of Section 36 was vested to the State of Colorado, subject to prior rights, by proclamation on August 1, 1876. A cash entry patent for this legal description was issued on July 1, 1868 to an unknown party (Patent #234). A photograph in Schoolland (1982:213) taken from Red Rocks on July 18, 1899 shows that the quarry cut and lime kilns are present at that time. The land was then owned by Albert Tomlinson. Albert Ed

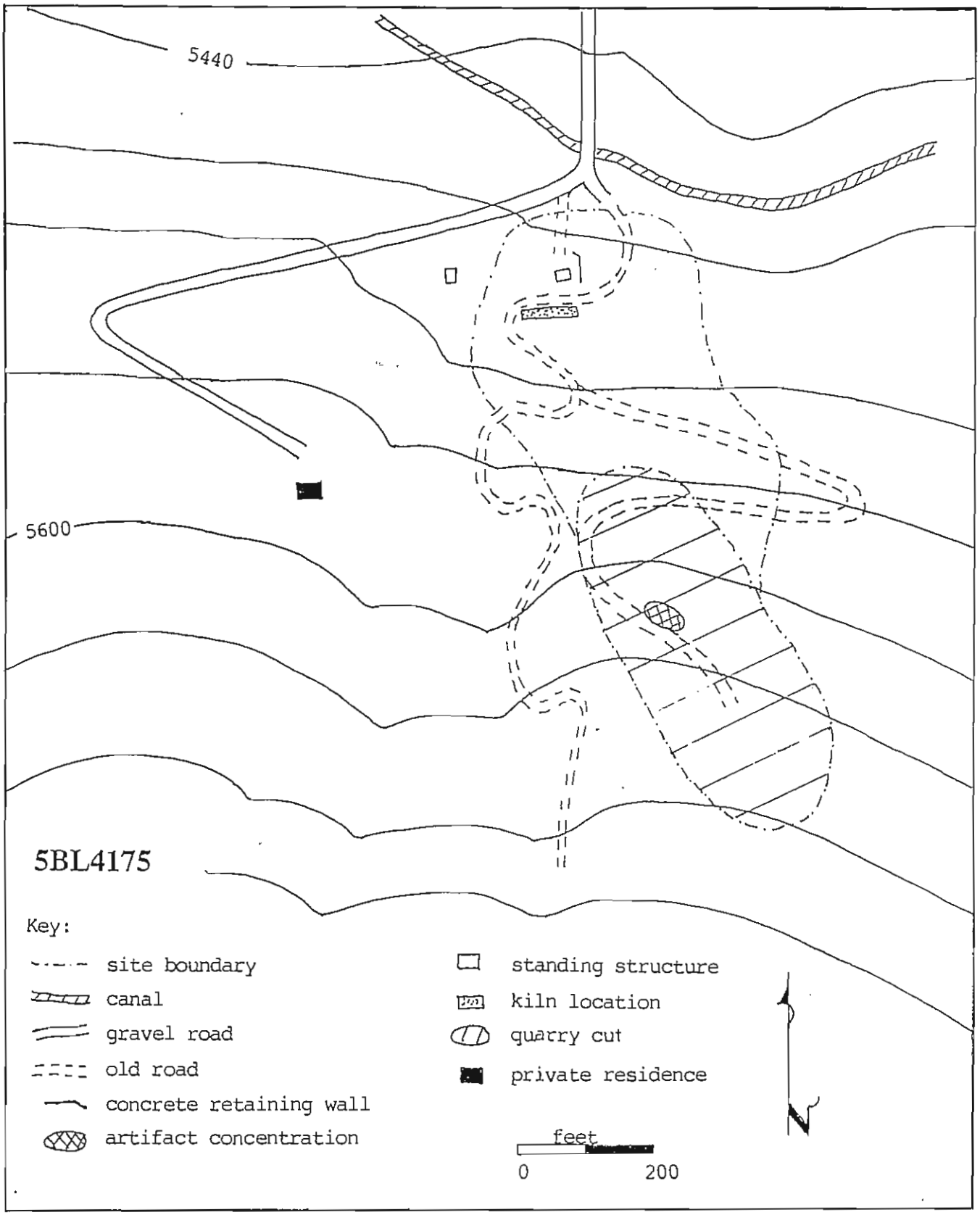

Figure 21 - Plan Map of site 5BL4175, Tomlinson/McCoy Lime Kiln & Quarry.

Tomlinson was born in Indiana in 1869. By 1900 he and his wife Lottie had been married for ten years and had four children. He listed his occupation as "lime kiln". Tomlinson sold the kiln to Abram McCoy in March of 1905. By 1910 Abram McCoy has died and his widow, Mabel McCoy, age 38, has married William L. Armstrong, president of the First State Bank of Nederland. The 1915 Drumm Map shows the lime kilns in the NE 1/4 of the NW 1/4 of Section 36 on a parcel owned by A.S. McCoy. Mabel McCoy did not sell the parcel until 1944. From the 1940's to the 1970's Curtis L. Jensen and Carol J. Jensen operated the Boulder Valley Cottages near this site. The buildings were used in connection with this business; records found inside of Building 1 are the source of this information.

TABLE 5

Land Ownership, parcels including 5BL4175, Lime Kiln & Quarry

Date	Grantor	Grantee
?	Colorado? US?	Hannah Barker?
May 1, 1885	Hannah Barker	James A. Maxwell
May 21, 1891	James Maxwell	Mary Maxwell
Jan 18, 1892	State of Colorado	James Maxwell
Jun 29, 1897	Charles & Mary Maxwell	Albert Tomlinson
Mar 22, 1905	Albert Tomlinson	Abram McCoy
Jan 29, 1906	Charles & Mary Maxwell	Abram McCoy
May 11, 1944	Mable McCoy	Edison & Daphne Cramer
		Overlook Development Corp.
Nov 15, 1967		Irving & Elizabeth Morrissett?
		City of Boulder
		Harris Thompson & Jack Collins
May 15, 1969	I. & E. Morrissett	City of Boulder
Apr 19, 1973	J. Collins/H. Thompson	City of Boulder

Site 5BL4176 is an apparent **Granite Quarry** covering about 1200 square meters (0.29 acres), as shown in Figure 22. It is situated along the northeast slope of Flagstaff Mountain at an elevation of 1731 meters (5680 feet) about 30 meters (100 feet) from an unnamed tributary of Boulder Creek. On-site vegetation includes Ponderosa pine, grasses, forbs, and skunkbrush.

This site is a small quarry cut into granite, with associated features. The "cut" area is 20 x 60 feet, and 45 ft high. The granite outcrop does not show much direct evidence of having been cut or quarried, but it does appear that granite has been removed from the outcrop. Below the granite outcrop is an area of granite talus, consisting of headstone size pieces. At the base of the talus is a ramp made of earth and stone, similar to the ramps at sandstone quarries used for loading stone into wagons. Stacked rock abuts the ramp on the west side. The area around the base of the outcrops appears to have been disturbed or modified. An apple tree is present, and a portion of a sheet metal stove, a barrel hoop, and a piece of scrap metal were observed on the site. Fragments of four milled boards are present near a modern firepit.

Historic Data

A cash entry patent for 50.18 acres including the land on which this site is located was granted to Charles A. Maxwell on September 5, 1903 (Patent #17020). The 1915 Drumm Map shows that this property was owned by J.D. Maxwell. No historic records pertaining to granite quarrying have been located.

Site 5BL4177 is a large, mostly reclaimed **trash dump** covering about 18,000 square meters (4.45 acres) and is shown in Figure 23. It is situated on the floodplain along the south side of a creek at an average elevation of 1689 meters (5540 feet). On-site vegetation includes grasses, forbs, skunkbrush, chokecherry, and cottonwoods.

This site is located on both sides of a road. The portion south of the road is on Boulder Mountain Parks lands and has been extensively reclaimed (Dick Lyman, personal communication, 1993). This portion of the site is presently used as a parking area and picnic ground. On the north side of the road, on Open Space land, there are a series of pits and a steep, heavily overgrown drainage with a large concentration of historic trash. Materials observed in this concentration included: hundreds of cans of various sizes; hundreds of pieces of broken bottle glass of various colors including purple and aqua; a dozen complete bottles; hundreds of sherds of a white glazed stoneware china with a green double ring pattern ("Carr China Carson Crockery Co. Denver" on bottom); several enameled pans; bricks; metal fragments; steel strapping; and fragments from an earthenware pickle jar.

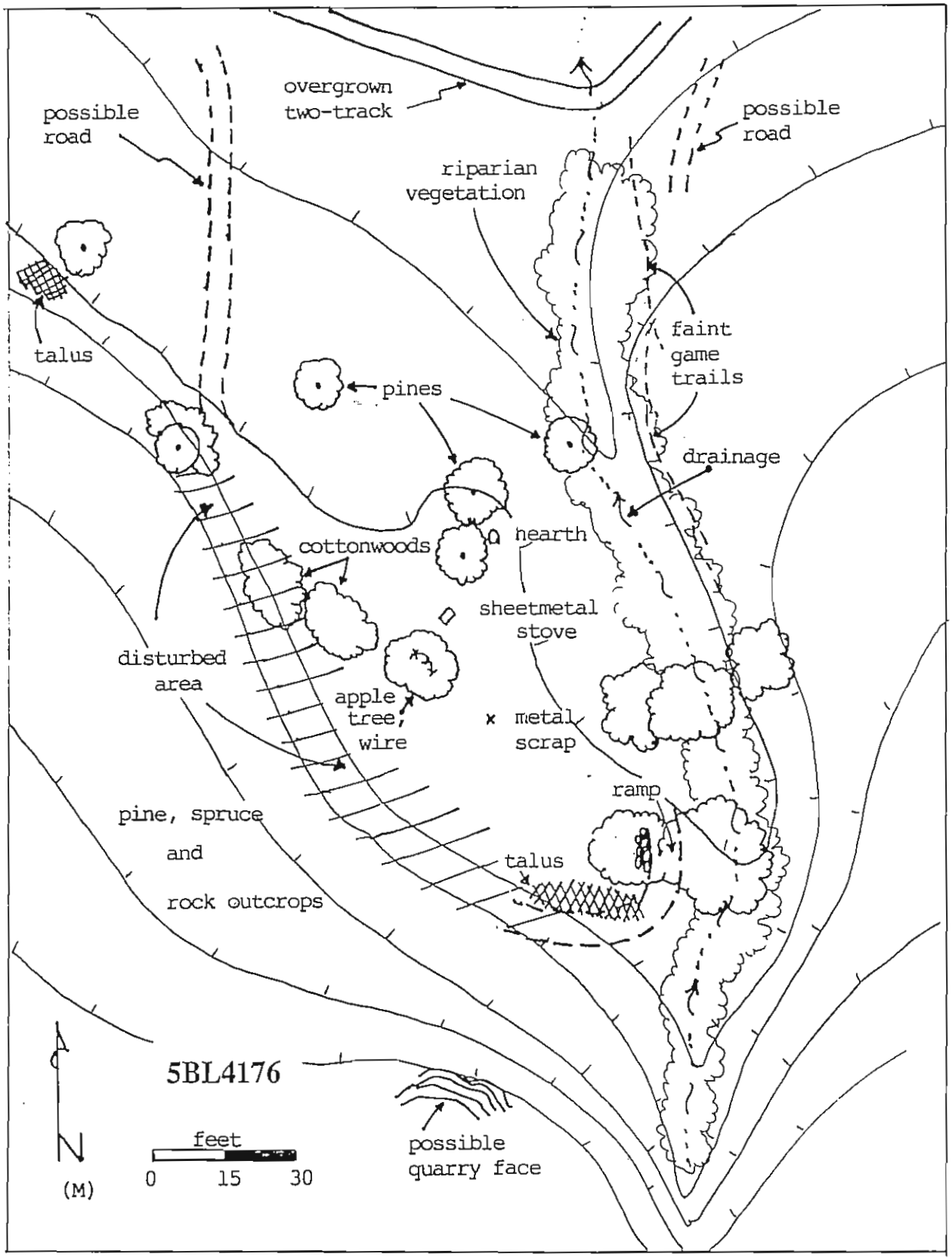

Figure 22 - Plan Map of Site 5BL4176, granite quarry.

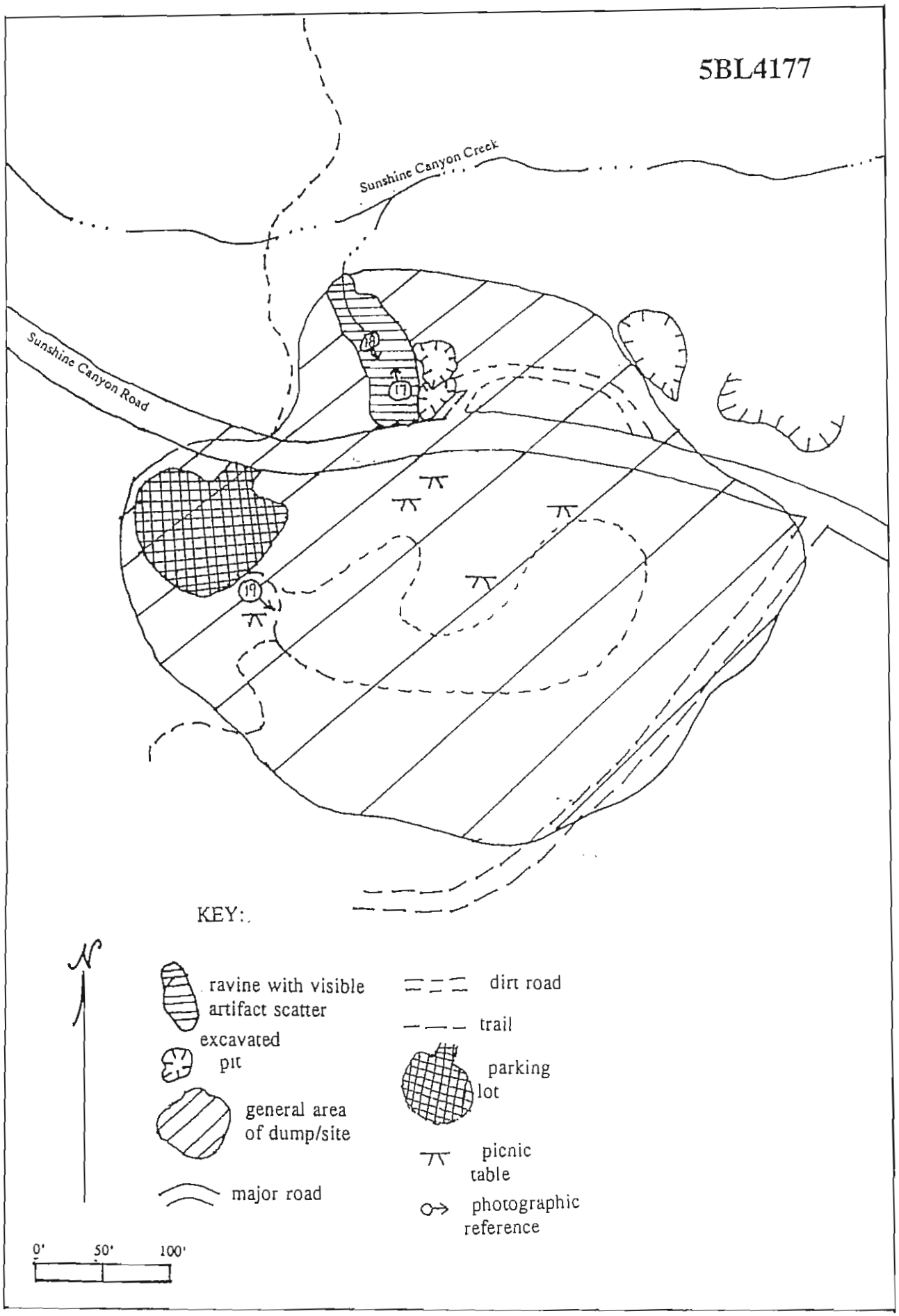

Figure 23 - Plan Map of site 5BL4177, trash dump.

Historic Data

A homestead entry patent for 120 acres including the land on which this site is located was granted to William Brierley on March 20, 1882 (Patent #23). The 1915 Drumm Map shows that property was owned by the Sanitarium at that time. The Seventh Day Adventists built the Sanitarium on 90 acres of land that they acquired in 1895 (Fetter 1983; Smith 1981). The Sanitarium treated patients with tuberculosis and other diseases. It later became Boulder Memorial Hospital (see the Discussion chapter, below). According to Dick Lyman of Boulder Mountain Parks, this was an informal city dump, and was also used as a dump by the nearby Sanitarium. Some soil has been placed over portions of this part of the trash dump to stabilize and protect it from vandalism. At least some of the material in the dump predates World War 1, and probably is from around the turn of the century. However, some material is more recent.

Site 5BL4178 is a scatter of **historic artifacts and features** covering about 120 square meters (0.03 acres) and is shown in Figure 24. It is situated along the eastern slope of the Dakota hogback, south of Twomile Canyon Creek, at an elevation of 1704 meters (5590 feet). On-site vegetation includes grasses, forbs, and shrubs.

The site consists of a light scatter of historic artifacts and two stone features. One of these features is a stone retaining wall that extends for 110 feet along the western border of the site. This wall is made from stacked natural sandstone and ranges in height from 2.5 to 5 feet. The area for about ten feet west of the wall appears to have been graded and portions of the wall have collapsed. This is probably a road. The other feature is a stone and mortar foundation that is adjacent to the retaining wall at its southern end. The foundation is rectangular in outline and measures six by eight feet. Most of the artifactual material was concentrated at the northeast end of the site. Artifacts observed included cans, pails, enamelled pans, metal fragments, milled lumber, sheet steel, and bricks. The type and function of the building that stood on the foundation is unknown, as is its relationship to the retaining wall.

Historic Data

A cash entry patent for 120 acres including the land on which this site is located was granted to William J. Iredale on December 1, 1882 (Patent #337). The 1915 Drumm Map shows that a portion of the parcel had been transferred to Anton Spier.

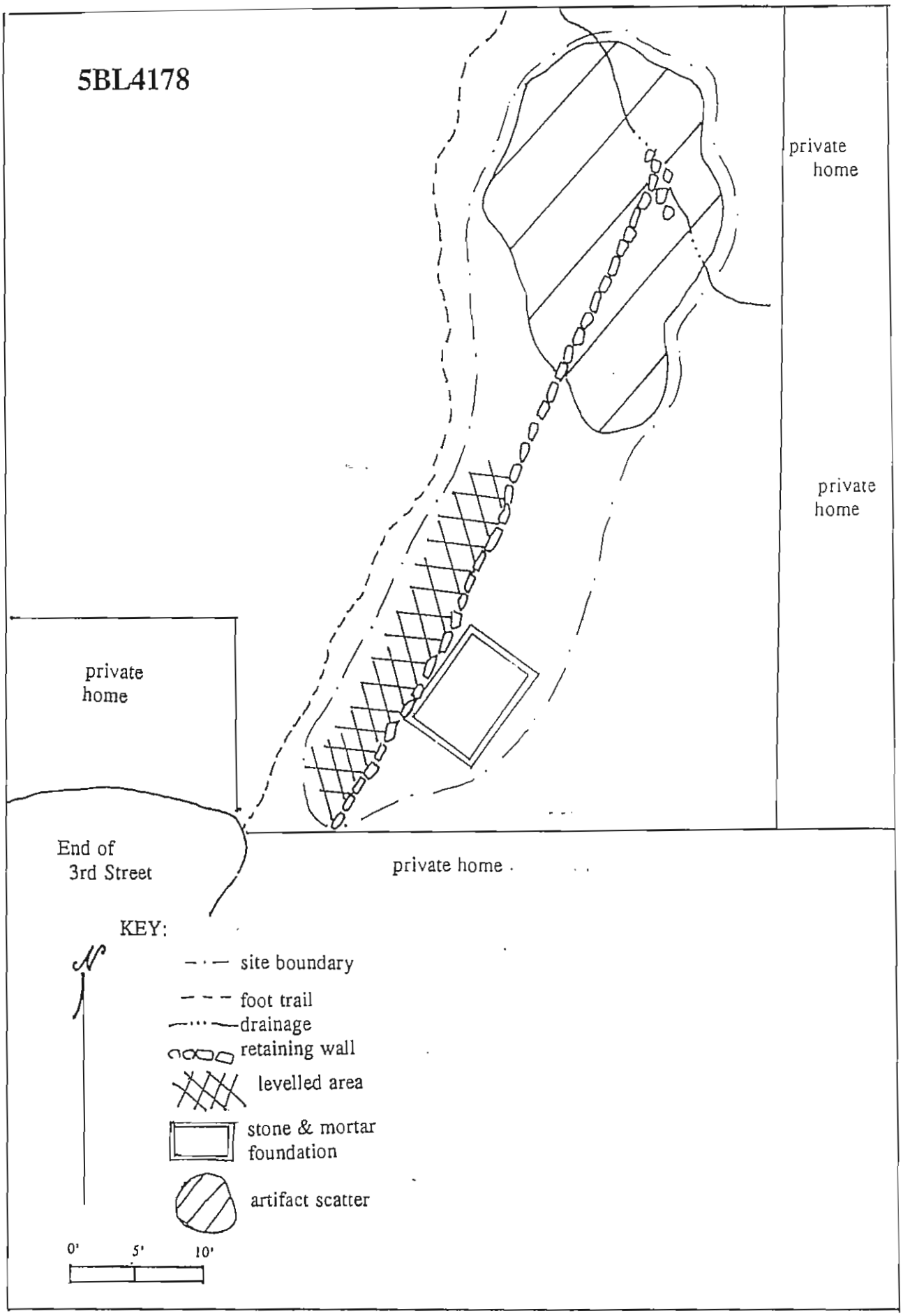

Figure 24 - Plan Map of Site 5BL4178, historic features and material.

TABLE 6

Land Ownership, parcel including 5BL4178, Historic Features

Date	Grantor	Grantee
May 10, 1881	?	William Iredale
Aug 29, 1900	William Iredale	Mollie Dyer
Dec 28, 1904	Mollie Dyer et al.	Boulder Real Estate Loan & Investment Co.
Oct 30, 1906	Boulder Real Estate Loan & Investment Co.	Anton Spier
Nov 6, 1924	Anton Spier	Public Service Co.
?	?	City of Boulder

Site 5BL4179 consists of **historic artifacts and features** covering about 3150 square meters (0.78 acres) and is shown in Figure 25. It is situated along the eastern slope of the Dakota Hogback at an elevation of 1707 meters (5600 feet). On-site vegetation includes grasses, forbs, and skunkbrush.

The site consists of a light scatter of artifacts, a small trash dump area, a leveled area, the remains of a structure and possibly a privy. This may be a habitation site. The trash dump appears to be an excavated pit measuring about 15 by 25 feet, located in the southwestern corner of the site. Artifacts observed in the pit included numerous pieces of glass of various colors including purple, tin cans, metal fragments, stoneware, earthenware, a vehicle transmission, and a 1932 Colorado license plate. The dump area appears to have been enclosed by a snow fence at one time, but now only the posts and two short segments of fence remain. An area measuring about 150 by 150 feet located to the east and north of the trash dump appears to have been leveled.

To the north of the leveled area there is the remains of a structure. This consists of a native stone and mortar foundation that measures about 10 by 25 feet and cut into the hill slope along the west. Within and around the foundation are numerous pieces of milled lumber of various sizes fastened with round nails. A section of the roof is partly intact and covered with shake

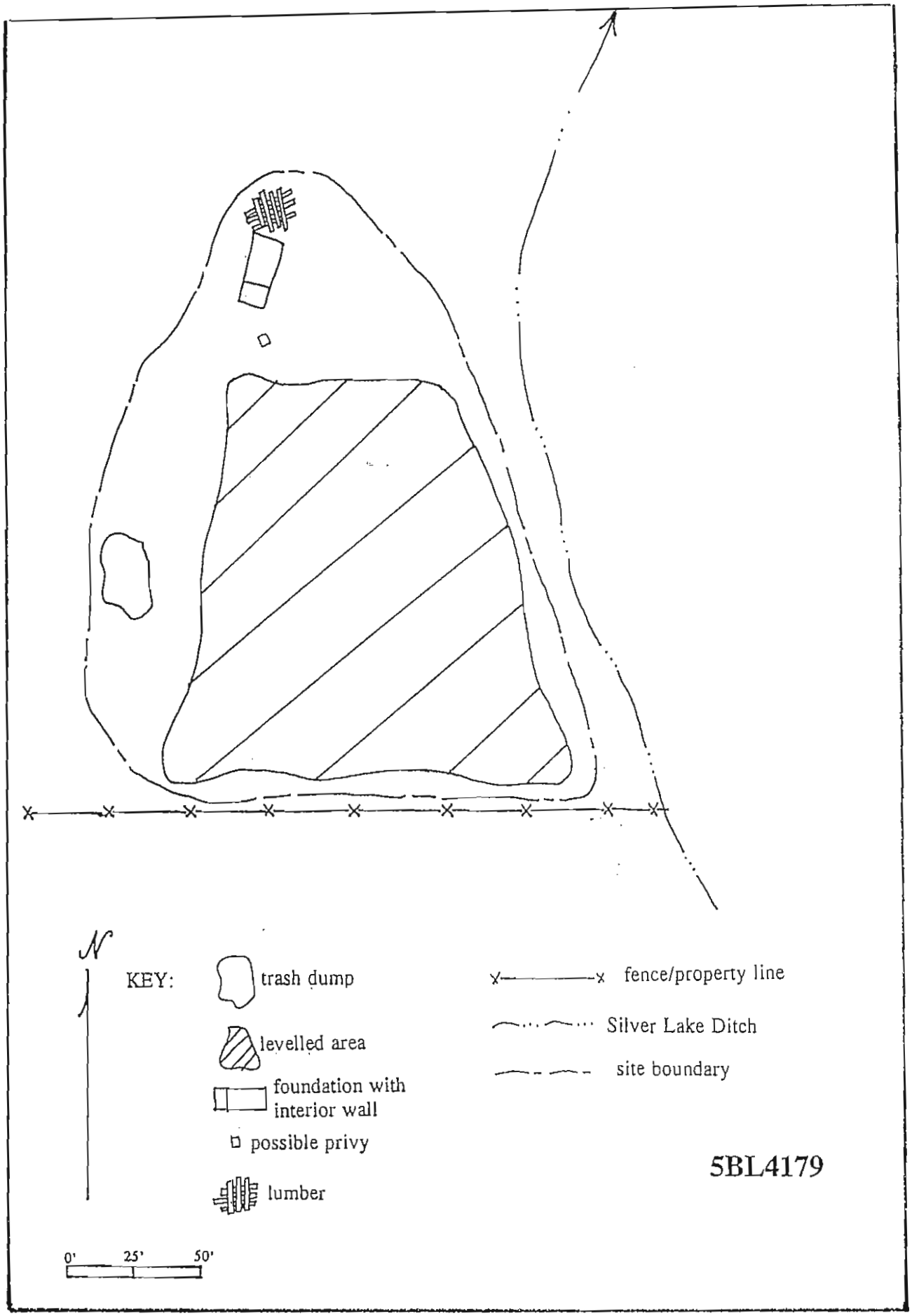

Figure 25 - Plan Map of Site 5BL4179, historic features and material.

shingles. Also in association with the foundation were pieces of four-pronged barbed wire, chicken wire, several bricks, and two rubber tires. Between the foundation and the leveled area there is a wooden frame (3 x 3 feet) that is filled with a small amount of trash. This is possibly the remains of a privy.

Historic Data

A military patent for 40 acres including the land on which this site is located was granted to Hiram Walbridge or Smith W. Baurn on October 26, 1883 (Patent #84764). The 1915 Drumm map shows that ownership of this land had been transferred to J.P. Maxwell.

TABLE 7

Land Ownership, parcels including 5BL4179, Historic Features

Date	Grantor	Grantee
Dec 29, 1881	U.S. Government	Smith Braun & Hiram Wallbridge
Mar 24, 1915	Ella Carpenter?	James P. Maxwell
Jul 9, 1918	James Maxwell	Franklin Lawrey
Jun 23, 1920	Franklin & Minnie Lawrey	James Starling
Jul 27, 1920	James Starling	George Mead
Feb 8, 1932	George Mead	Cora Johnson
Aug 15, 1934	Cora Johnson	Cora Johnson & Tom Mead
Oct 4, 1934	Cora Johnson	"sole owner now"
Jul 22, 1958	Cora Johnson	Claude Johnson
Jul 25, 1958	Claude Johnson, ex.	Julian & Frances Hutchinson
July 25, 1958	Ruffella Hottel	?

Site 5BL4180 consists of a scatter of **historic artifacts and features** covering about 5300 square meters (1.3 acres) and is shown in Figure 26. This is situated on a flat area near the base of a hill slope extending along the northeast slope of Green Mountain. It is at an elevation of 1683 meters (5520 feet) about 460 meters northwest of an intermittent drainage. On-site vegetation includes grasses, forbs, hackberry, cedar, ponderosa pine, and prickly pear cactus.

Feature 1 consists of artifacts including about 25 pieces of milled lumber (some of which is burnt), a pile of small stones, about 12 metal fragments, and two strands of barbed wire (one strand with a diamond barb). The area is slightly depressed and may have been slightly cut into hill slope. This feature may be the remains of a storage shed or a stable.

Feature 2 is a small rectangular pad made from six-inch diameter fence posts bolted together, milled lumber, sheet metal and native stone. The pad measures four by six feet and is located east of Feature 1. A neighbor said that this was recently moved here by some teenagers as a foundation for a hut. Feature 3 is a rectangular cut into the hill slope measuring about 20 by 30 feet. A few pieces of milled lumber were observed in the cut area.

Features 4, 5, and 6 are all stone piles made from various sized native stone. Feature 4 is a rectangular pile measuring about two by four feet and containing over 30 stones. It is on the east edge of an old wagon road and is about 120 feet southeast of Feature 3. Feature 5 consists of two circular stone piles about three feet in diameter. One contains over 30 stones and the other over fifteen. These are located on the east edge of an old wagon road about 15 feet south of Feature 3. Feature 6 is a large rectangular stone pile measuring about four by fifteen feet. It consists of over 100 stones and a few brick fragments. It is located on the eastern edge of an abandoned ditch immediately south of Feature 3.

Feature 7 is an abandoned wagon road that begins just south of Feature 3. It is about ten feet wide and follows along an even contour to the southeast. Just beyond the open space property, the wagon road appears to join an improved road that runs east into Green Mountain Cemetery. Feature 8 is an abandoned ditch that starts at the channelized drainage known as King Gulch. This ditch is about one foot deep and two feet wide. It runs along an even contour to the southeast for about 360 feet where it appears to stop. The ditch probably served to distribute water from the intermittent Yubelai Creek to the level field below it.

In addition to the features, artifacts observed on the site included numerous pieces of cut bone (probably cattle), one square nail, a wrought iron farm implement, two railroad ties, and five pieces of iron water pipe (two-inch and four-inch diameter).

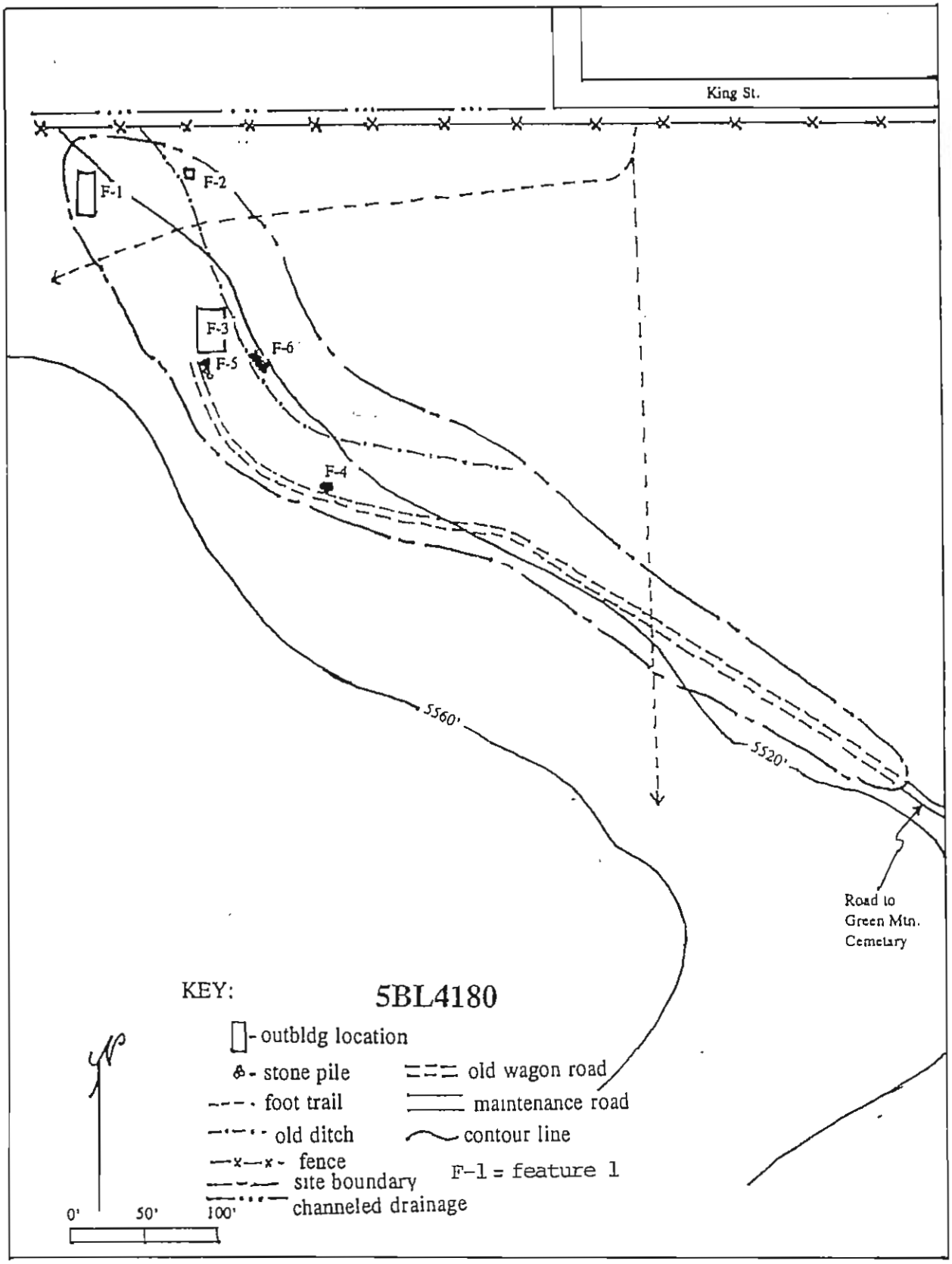

Figure 26 - Plan Map of Site 5BL4180, historic features and material.

Site 5BL4181 consists of a **historic stone structure** with a few associated artifacts covering about ten square meters (0.002 acres) and as shown in Figures 27 & 28. This is situated along the crest of the Dakota hogback at an elevation of 1792 meters (5880 feet). On-site vegetation includes Ponderosa pine, grasses, and forbs.

The structure consists of a rectilinear stone alignment that is one course in most places with a couple of stones stacked. Some of the rocks are too big for children to have placed. It measures two meters by 3.5 meters and was built against a rock outcrop which forms an east wall about 1.5 meters high. Also, two pieces of glass, one purple and one clear were observed in association with the structure, and a small concentration of charcoal is present just outside the structure. The structure was probably a short-term habitation or temporary shelter from the historic period. These types of structures are often found near sandstone quarries, and are known to have been used by sandstone quarry workers in the Horsetooth Reservoir area (Mutaw et al. 1990, 1991).

Historic Data
A cash entry patent for 120 acres including the land on which this site is located was granted to William J. Iredale on December 1, 1882 (Patent #337). The 1915 Drumm Map shows that the parcel with the site had been transferred to Charles H. Hedlund. Who used the structure is unknown.

Site 5BL4182 is the **Town of Boulder Ditch and Red Rocks Reservoir.** The old ditch, actually a buried eight-inch cast iron pipeline, is still visible and easily traced. It extends along the hillside above the north bank of Boulder Creek for a distance of about 1207 meters (3960 feet) from its former headgate near Goat Rock (a.k.a. Point o' Rocks and Hanging Rock). The ditch supplied water to the Red Rocks Reservoir which was located south of Red Rocks about halfway between the Farmers and Silver Lake Ditches, just north of Settlers Park.

Historic Data
On October 31, 1874, Boulder citizens passed a bond to construct a city reservoir and pipeline near the mouth of Boulder Canyon. The reservoir was built in the following year. The Town of Boulder Reservoir has also been called Red Rocks Reservoir or Sunshine Reservoir Number 1. J.P Maxwell surveyed the project and N. D. Currigan laid the pipe and built the reservoir and John A. Elland dug the ditch. The headgate for the Town of Boulder Ditch was located up Boulder Canyon on the north side of the creek at a point below the present headgate of the Silver Lake Ditch. Water rights for the Town of Boulder Ditch were adjudicated in 1882 and an appropriation dated June 17, 1875 established a domestic right of 6.189 cfs from Boulder Creek, as well as, an additional 6.189 sec. ft. for storage rights in the reservoir (Smith 1986). Because of

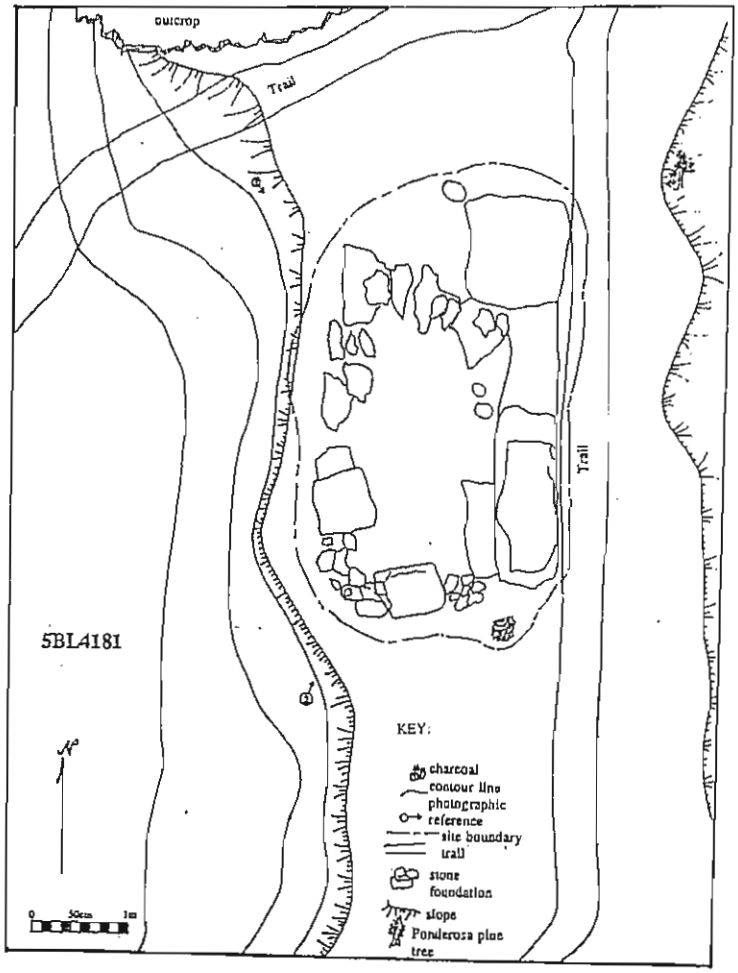

Figure 27 - Plan Map of Site 5BL4181, historic stone structure.

Figure 28 - 5BL4181 - View east at historic stone structure.

fear of pollution from mill tailings, in 1890 a new intake was established just above the Alps and a new eight-inch pipeline was laid to Sunshine Reservoir (Burns & McDonnell, Consulting Engineers 1921).

Around 1906 the Red Rocks Reservoir was abandoned. The Wittemyer Ranch house was south of the reservoir and west of Settlers Park. The Wittemyer's grazed cattle in the vicinity, including in the Sanitas valley, after the Sanitarium ceased its dairy operation about 1950. The location of the reservoir and portions of the Wittemyer property were sold and developed as the Glen Crosley Silver Fox Farm in the 1940's. The Silver Fox Farm ceased operation by 1948 (Jack E. Smith, personal communication) and nothing remains of it today. At present, the location of the Red Rocks Reservoir is clearly visible as a flat area just north of Settlers Park. The buried pipeline is still present, although disturbed in sections, and the stacked stone retaining walls are still present in a few locations. The land was purchased for Open Space in 1974.

Site 5BL4183 is the **Dakota Ridge Trail.** The main portion of the trail is a dirt track, with stacked stone foundation or retaining walls in a few places. It starts at a two-track road in the Sanitas Valley and trends first to the southeast as it climbs the Dakota hogback. It then runs to the north along the crest or west side of the hogback until it rejoins the two-track at the north end of the Sanitas Valley.

A southern extension or spur to the trail runs along the Dakota hogback just west of the hospital complex. It contains three stone structures - a shelter, an arch, and a bridge with benches over the Silver Lake Ditch (Figures 29 & 30).

5BL4183.1 is the **Dakota Ridge Stone Shelter.** It is sub-rectangular in outline and constructed of local unshaped Dakota sandstone with cement mortar. The overall lengths of the four walls are: 9.5 ft on the north, 4.6 ft on the west, 4.9 ft on the south, and 13 ft on the eastside. The size of the sandstone varies from 87cm x 65cm at the wall base, to 55cm x 31cm at the top of the walls. Smaller chink stones averaging 10cm x 10cm are used throughout the walls. The walls average 2'2" thick, narrowing slightly towards the top. The shelter stands 8.2 ft high from the outside; interior height is 6.5 ft. The roof is a level concrete construction with stone filling visible from the interior. Narrow gauge rails serve as roof support beams, oriented north-south in the structure. Additional support is provided with iron piping, barbwire, and hogwire. The floor of the structure is earthen. The entrance is in the eastern wall. Three benches line the interior walls opposite the entryway. The benches extend approximately 1.5 ft from the wall, at a sitting height of 1.8 ft. A window, measuring 3.5 ft wide x 2.3 ft high, is located in the

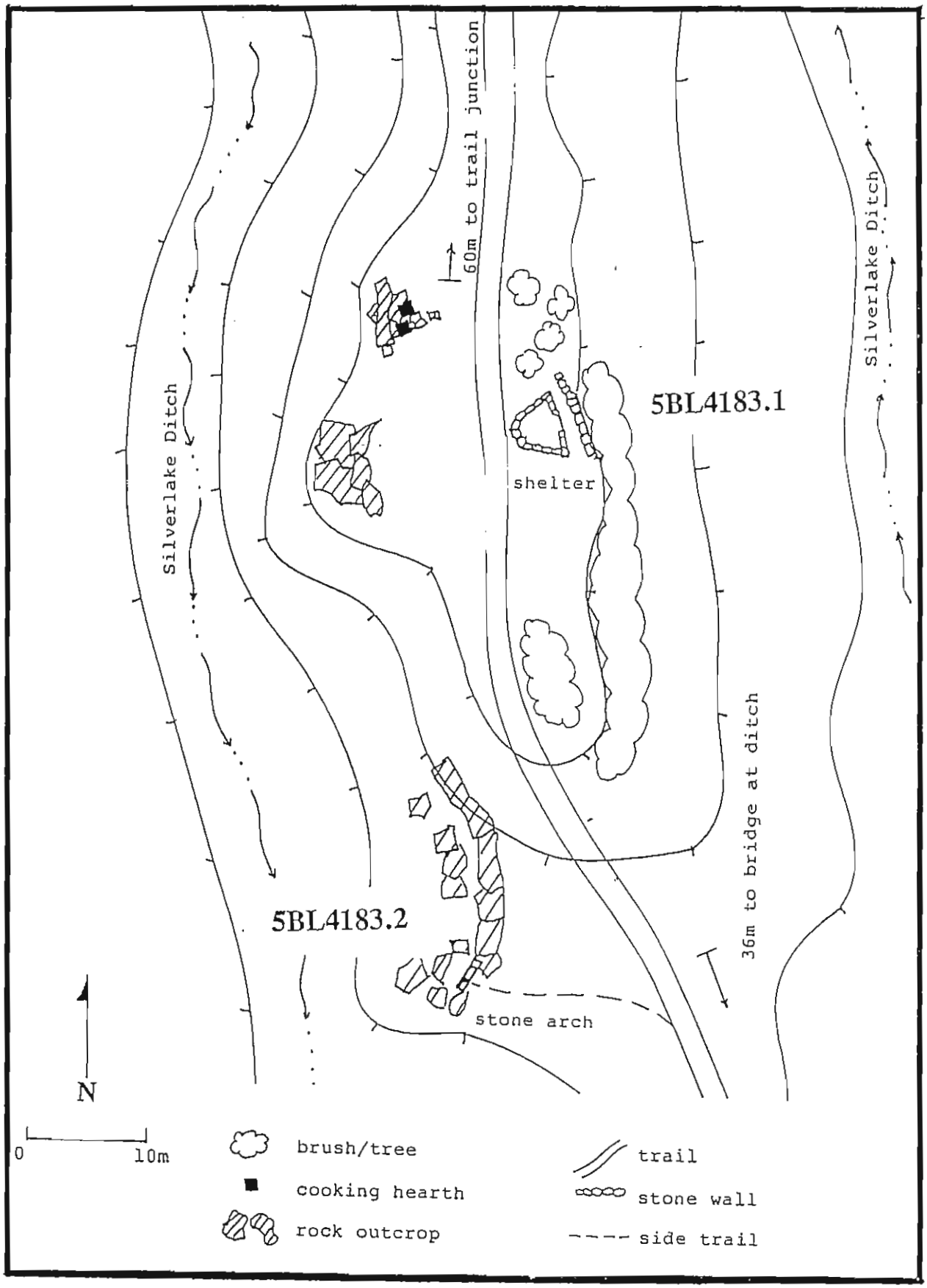

Figure 29 - Plan Map of site 5BL4183, Dakota Ridge Stone Shelter and Stone Arch.

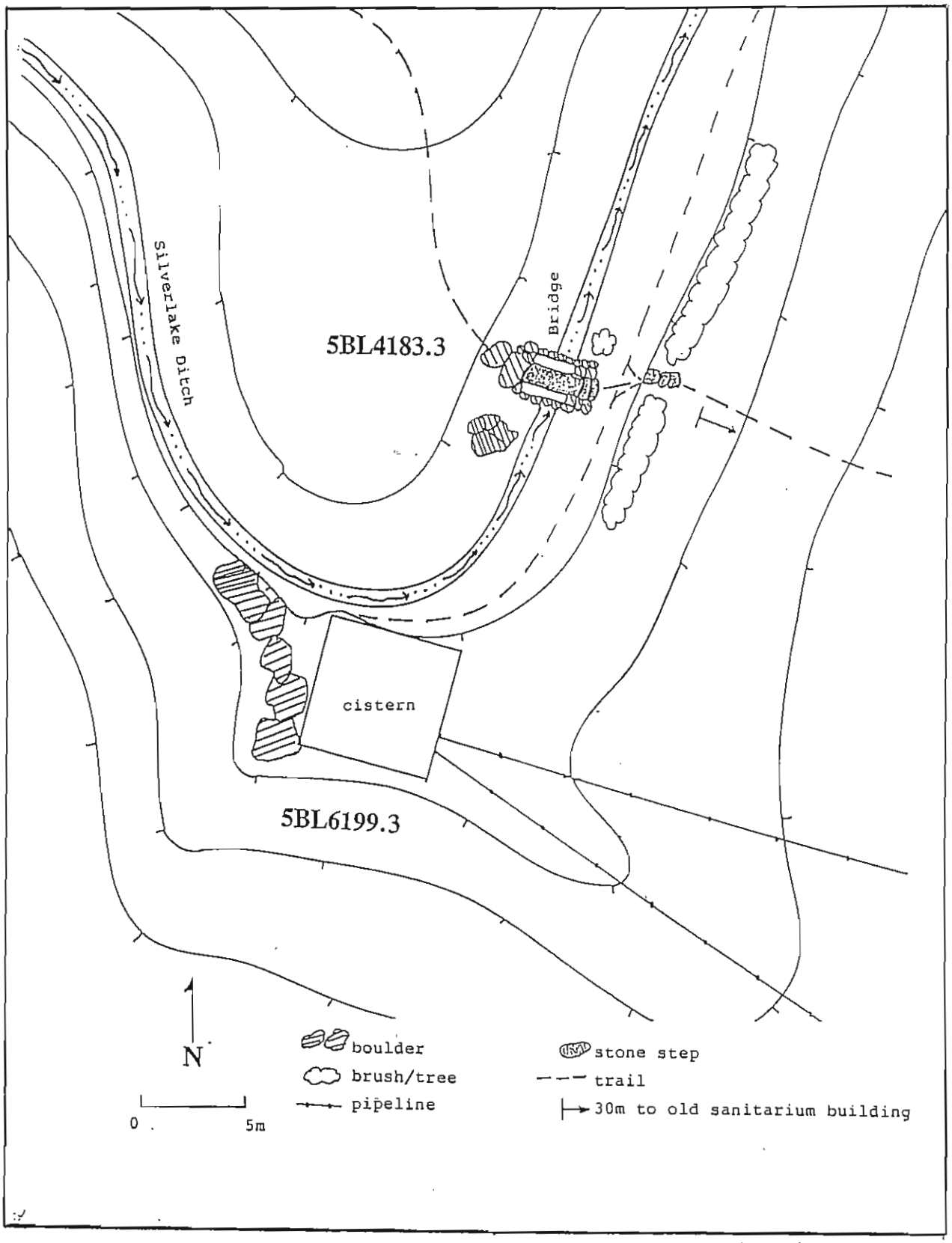

Figure 30 - Plan Map of sites 5BL6199.3, Sanitarium Water Cistern; and 5BL4183.3, Dakota Ridge Bridge.

south wall. It is placed 2.3 ft from the east wall and 1.7 ft above the bench.

A low stone wall is located approximately 2.3 ft in front of the east wall. The wall is approximately 2.5 ft high, 1.6 ft wide, and 24.6 ft in length. An 8 inch clay pipe is located in the center of the wall. Graffiti is painted on the roof of the structure.

Two hearths or fireplaces or are located approximately 10 m to the northwest of the structure. They are constructed with mortared Dakota sandstone and abut a natural stone outcrop with some metal reinforcement visible. The fireplaces are oriented southeast and northeast. The former is 84cm x 84cm ft, and 70cm high, the latter is 80cm x 80cm, and 60cm in height. The Dakota Ridge Trail runs between the structure and the two hearths.

5BL4183.2 is the **Dakota Ridge Arch.** The feature is constructed of rough Dakota sandstone with cement mortar similar to the other nearby features. It is built onto a natural outcrop. The archway approaches a magnetic north alignment, allowing an eastward view when seated on a natural rock outcrop "bench" enclosed by the arch. Two pillars form the arch, and are approximately 3.3 ft apart. The south pillar is entirely man-made, sitting on bedrock at the ground surface. It is 7.4 ft tall, 3.2 ft thick at the base and narrows to 2.4 ft at the top. The northern pillar is partly natural outcrop, with 4.3 ft of mortared stone added. A 5 gallon bucket is mortared onto the southern side of the south pillar, possibly serving as a trash receptacle.

5BL4183.3 is the **Dakota Ridge Footbridge.** The bridge is constructed of uncut sandstone with cement mortar and provides access across the Silver Lake Ditch. The overall dimensions of the bridge are 9.2 ft in length by 8.2 ft wide. The floor of the footbridge is 8.5 ft in length and 3.1 ft wide. Cut Lyons sandstone benches, 6 ft long and 1.2 ft wide are on both sides of the bridge. The benches have a sitting height of 1 ft. Tabular stones serve as backs for the bench, extending 1.6 ft above the seats. A series of stone steps extend from the bridge to the east towards the former sanitarium buildings.

Historic Data

The trail was constructed around 1915 by Bill Herzer and other members of either the Colorado Mountain Club or the University of Colorado Hiking Club (Brent Wheeler personal communication). It was used by tuberculosis patients at the Sanitarium for exercise (see Discussion chapter, below). The dates of construction of the shelter, arch, and footbridge/bench are unknown. They were apparently built for the use of hospital patients. The shelter and hearths may have been used for "steak frys", cookouts which were popular in the early 20th century.

Site 5BL6199 is the **Sanitarium Complex.** The Boulder Sanitarium, aka the Colorado Sanitarium, Memorial Hospital, and currently Boulder Community Hospital Mapleton Center. The complex consists of the hospital, the Maxwell Building, several cottages, and other buildings and structures. Two elements of the complex are documented here. The main historic building remaining in the complex is the Maxwell Building, 5BL6199.1

5BL6199.2 is the ruins of the **Sanitarium Dairy**, consisting of a barn and associated features (Figure 31).

Feature 1 is the remnants of the dairy barn, a foundation 60 x 28ft with apparent trough structures. It is poured concrete, using wooden forms to a height of 7". Sill bolts protrude from the wall tops and wire nail heads along the interior wall edge (every 6"). Wall height is 37", wall thickness is 7.75", except interior walls which are 5.5" thick. The trough structures are set 4' from the foundation walls, parallel to its length. 2" diameter pipes were set in the floor, the pipes have now been cut level with the floor, but possibly once supported railing for milking stalls. One trough demonstrates purple glass embedded in the concrete. The two symmetrical trough sets at the north portion of the foundation each have 9 pairs (18 total) of pipes, 1' apart, at intervals of 30". The north portion is separated from the south portion by an interior wall. The north portion is 35' of the foundation's length, while the south portion is 25'. In the foundation's concrete floor, 40" inward from the trough base are 9 more pipe ends, approximately centered outward from each pair of pipes at the trough base. The two trough sets in the southern portion of the foundation have similar pipes inset, but present only five sets of pipes. Given the arrangement of pipes, if they did form stalls, the barn would have approximately 28 such stalls. The foundation had an entry door, 8" wide, centered on the north side, with a slab remnant from an apparent drive, and another slab adjacent to the east side of that slab. The entryway demonstrates a slot in the concrete, apparently for a horizontally sliding door. Trees currently grow in the foundation and the south side presents no foundation wall. There is also a pipe set in the concrete floor, possible for drainage.

Feature 2 is a poured concrete foundation, similar in form and material to Feature 1. Unlike Feature 1, Feature 2 only presents foundation wall remnants, not interior structure. It is partially constructed into the southeast facing slope. Its walls are 7.25" thick and reach a height of 3'3", but due to fragmentation and tree growth, wall lengths can not be determined with certainty. They are at least 33 ft long.

Feature 3 is a concrete slab or foundation, 72 x 10 ft, built on a terrace. The slab has no walls. The terrace height is about 2'. The slab is fragmented toward the north end and practically abuts an ephemeral two-track road at the south. Due to the lack of walls

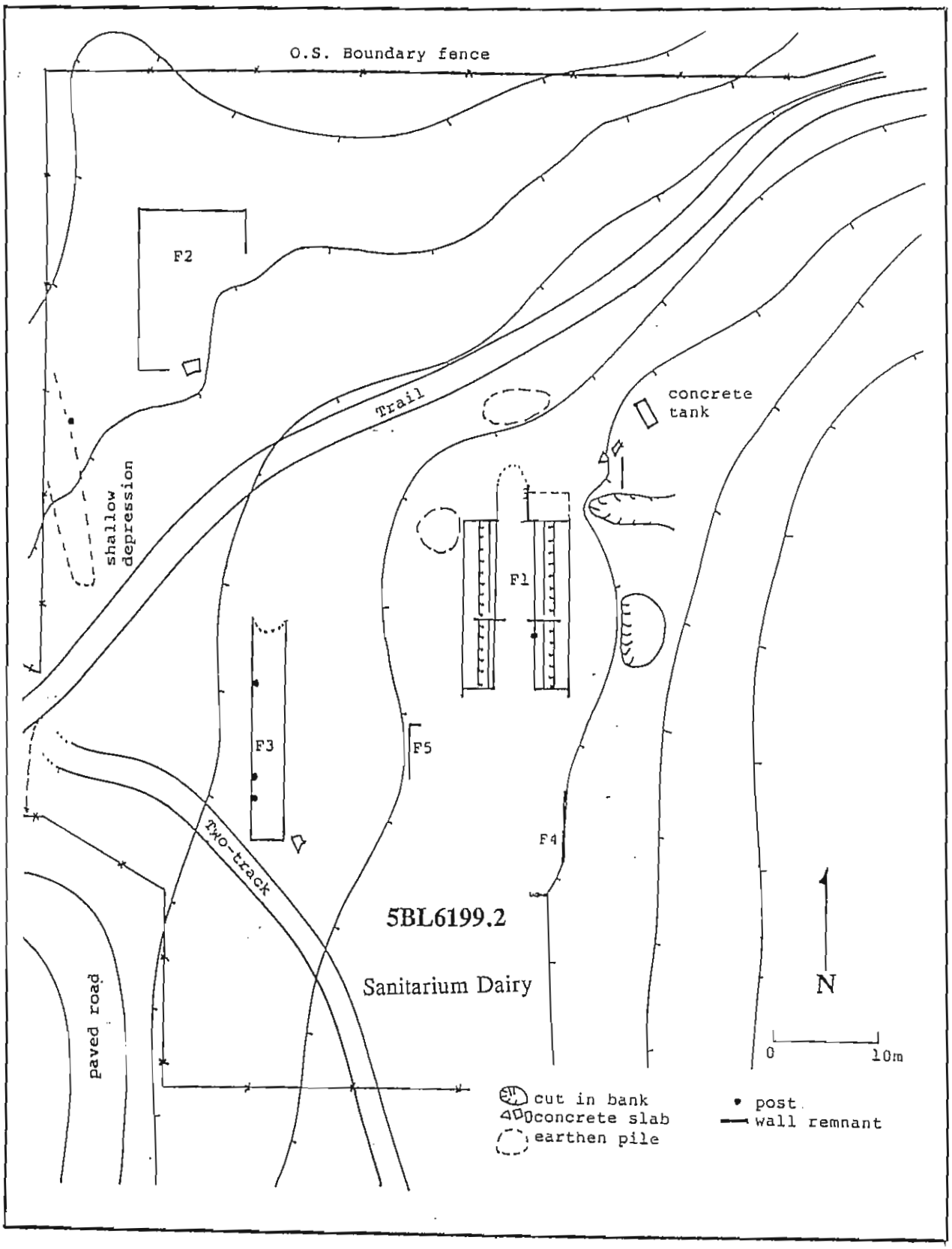

Figure 31 - Plan Map of Site 5BL6199.2, Sanitarium Dairy.

edging this slab, it is guessed that it was used as a drive or some such non-building structure. It does present some wooden posts set in its west edge. It may have been roofed and still open walled, but seems too narrow for a hay shed.

Feature 4 is a concrete wall fragment, 30 ft long, set into the downslope, east edge of the site terrace. The wall top is level with the terrace surface. It has 12.5" thick walls, with a 22" high face currently exposed. It suggests a corner with a perpendicular wall segment at its south end, but the wall is two fragmented to determine whether a corner connection was actually made.

Feature 5 is a concrete wall fragment 16.5 ft long, set into the slope at the west side of the terrace, but east of Feature 3. Its wall is 10.5" thick, and presents an interior wall face 40" high above the terrace surface. This wall presents the remnants of a corner on its north side.

5BL6199.3 is the **Sanitarium Water Cistern.** The cistern is constructed of cut sandstone with cement mortar walls and roofed with modern corrugated metal. The structure is built into the hillslope at the southern end of the Dakota hogback, just south of where the Silver Lake Ditch curves around the hogback (See Figure 30). It appears to be rectangular, with walls approximately 23 ft long and the southern wall is over 3.3 ft thick. At the southern end of the east wall two pipes, 2 inch diameter and 4 inch diameter, project outward. The cistern is approximately 6.5 ft deep. The entire structure is enclosed with barbwire. The cistern was filled by pumping water from a spring house or pump house located where the current shelter at the Mt. Sanitas Trailhead now is (See Figure 36, below).

Historic Data

The Boulder-Colorado Sanitarium was constructed in 1895-96 by the Seventh Day Adventists as direct health-care related outreach and ministry facilities (See Figure 35, below). The hospital primarily served patients with tuberculosis, but not exclusively. The sanitarium movement was an approach to holistic health care. The placement of the hospital at the base of the hogback stems from theories (long since abandoned) of beneficial ozone movement from air currents moving up and down the hogback. The Sanitarium Complex eventually had a nursing school, and its own dairy, bakery, and food factory as part of its holistic approach. The Sanitarium became Boulder Memorial Hospital in 1961, and is now part of Community Hospital. Additional information regarding the Sanitarium is provided in the Discussion chapter, under the theme of Health.

RECORDED ISOLATED FINDS

Isolated Find 5BL4184 consists of a single feature situated on a floodplain at an elevation of 1695 meters (5560 feet) about 10 meters north of Sunshine Canyon Creek. The feature consists of five pieces of sandstone (one cut) piled between two trees. The feature may have functioned as a fence post cairn or a marker.

Isolated Find 5BL4185 consists of a single feature situated on the steep south slope of a ridge between the trail and the creek at an elevation of 1719 meters (5640 feet) about 60 meters north of Sunshine Canyon Creek. The feature consists of a segment of stacked stone wall or fence about 50 feet long, 2-3' wide, and 1-3' high. It is made from 1-5 courses of native stone without mortar and some portions have collapsed. The feature may have functioned as a fence or property boundary marker.

Isolated Find 5BL4186 consists of a single artifact situated on the east slope of a hogback at an elevation of 1780 meters (5840 feet) about 350 meters north of Sunshine Canyon Creek. The artifact is one piece of thick green glass from a beverage bottle.

Isolated Find 5BL4187 consists of three artifacts situated on the east slope of a hogback at an elevation of 1774 meters (5820 feet) about 260 meters north of Sunshine Canyon Creek. The artifacts are three pieces of purple glass from the same bottle.

Isolated Find 5BL4188 consists of a single feature situated on the northeast slope of Flagstaff Mountain at an elevation of 1743 meters (5720 feet) about 670 meters south of Boulder Creek. The feature consists of a pit that has been excavated into hillside and lined with crudely stacked stone on the north, south, and east sides. It is made from over 50 large pieces of natural stone and it measures 12 by 12 feet by 3.5 ft high on east side. The feature may have functioned as a sump for a spring.

Isolated Find 5BL4189 consists of a single artifact situated on the northeast slope of Flagstaff Mountain at an elevation of 1731 meters (5680 feet) about 180 meters west of an unnamed tributary of Boulder Creek. The artifact is one piece of earthenware crockery with brown glaze outside and white glaze inside. The fragment is probably from a pickle jar.

Isolated Find 5BL4238 consists of three fragments of groundstone situated on a flat ridge crest on the northeast slope of Green Mountain near the base at an elevation of 1750 meters (5740 feet) about 460 meters northwest of Skunk Creek, an intermittent drainage. The groundstone fragments are all of a pink tabular sandstone (probably Lyons formation) and all show grinding on one side only.

Isolated Find 5BL4239 consists of a carved stone situated near the bottom of a steep intermittent drainage cut at an elevation of 1786 meters (5860 feet). The carving is on a sandstone boulder measuring about 2 x 2 x 3 ft. and the area is overgrown by skunkbrush and wild plum. Near the center of a flat face of the boulder there is a pecked outline of a human face with indications of eyes, nose and mouth and a triangular design along the forehead giving the appearance of a feather headdress (Figure 32). Portions of the face are covered by lichens. Initials and other designs either carved or pecked into other portions of this face but none of these are overgrown by lichens. The "Indian Head" has been there for at least 40 years (Dick Lyman, personal communication).

Isolated Find 5BL4240 consists of a series of three cairns situated on the west facing slope along the Dakota hogback at an elevation of 1780 meters (5840 feet). The easternmost cairn is made from at least 55 rocks about three layers deep and built up at the base of a vertical outcrop of bedrock. The second cairn, 16 meters west of the first cairn, is circular with a hole in center. The third one is along a trail about 11 meters west of the second cairn and it is a small circular cluster made from about 15 stones. The cairns are very close to the section line and were probably used as fence post supports.

Isolated Find 5BL4241 consists of a leg-hold trap situated in an overhang along the Dakota hogback at an elevation of 1804 meters (5920 feet). The same overhang contained some charcoal flecking and some broken glass. The trap measures 3 x 7 x 2 inches and it was collected.

Isolated Find 5BL4242 consists of a circular alignment of stones situated up on a rock outcrop on the west side of the Dakota hogback and is shown in Figures 33 & 34. The rocks vary in size from 10 x 13 x 9 centimeters to 28 x 37 x 14 cm. The circle is fairly complete, a few rocks are missing along the north side but these seem to be in the interior. Charcoal flecking was also noted in the interior but no artifacts were observed. The feature is possibly a "New Age" ritual site or a temporary use from the historic period.

Isolated Find 5BL7118 is a segment of stone fence, extending from the rock outcrop on the crest of the Dakota hogback to the east for 45 ft. The stone fence is stacked local sandstone, from 1 to 4 courses, up to 3 ft high and up to 2 ft wide. The fence marks the north section line of Section 25, T.1N, R.71W.

Figure 32 - 5BL4239 - Carved boulder, with face and feather headdress.

Figure 33 - 5BL4242 - View northnorthwest at stone circle, probably modern. Ski pole for scale.

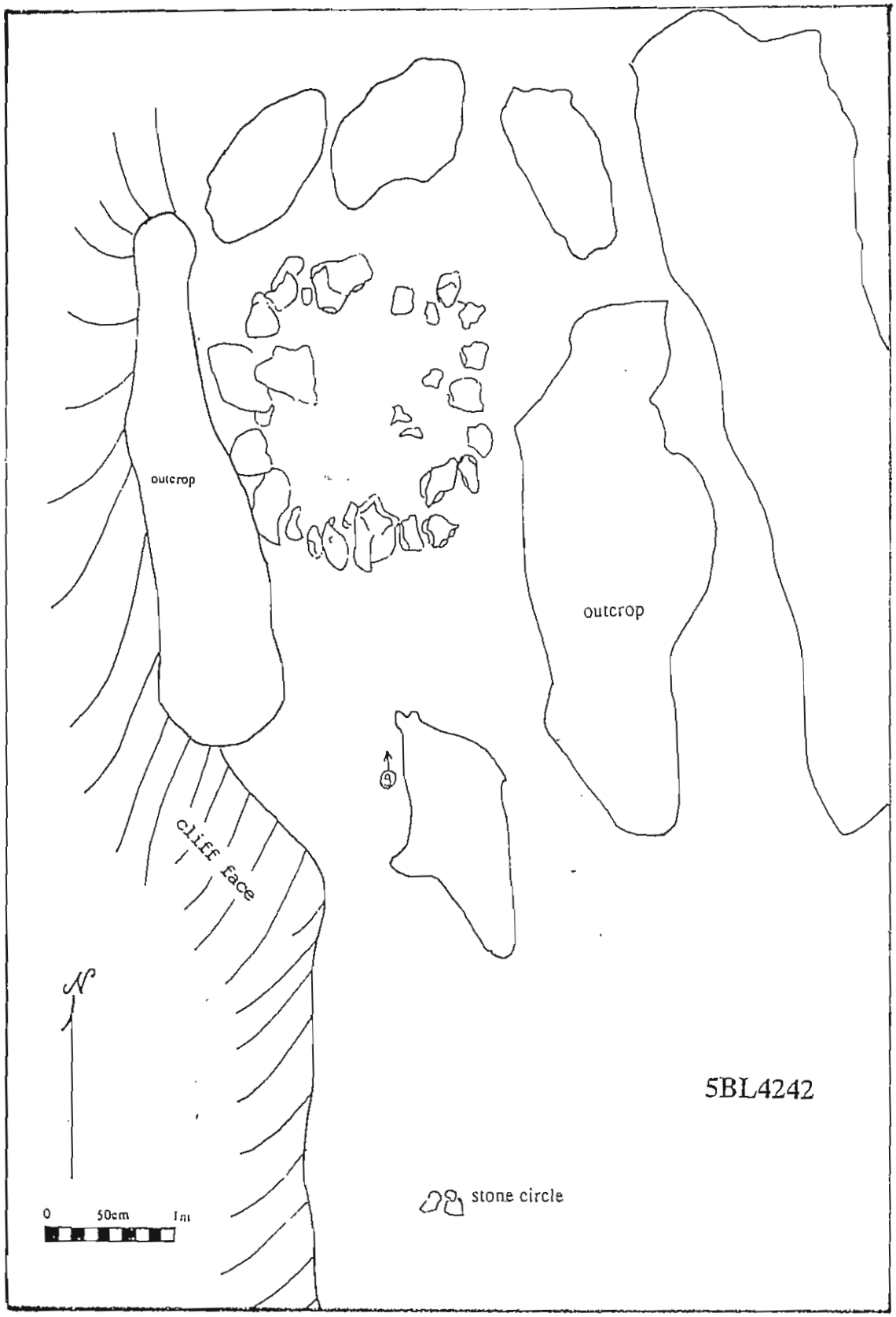

Figure 34 - Plan Map of Isolated Feature 5BL4242, stone circle, probably modern.

DISCUSSION

The survey methodology is believed to have assured that significant cultural resources visible on the ground surface would be located and recorded. Ground visibility throughout the project area was generally poor. A comparison between expectations and actual survey results indicates that expectations were, for the most part, realized. Few cultural resources were expected for the prehistoric period, and only one was observed. Historical resources were expected and were anticipated to represent agricultural and mining activities. Seventeen historic sites and 12 isolated finds have been documented on City of Boulder Open Space in the Mt. Sanitas Area. The area of this cultural resource inventory falls within the area defined for the Boulder Historic Context Project (Friedman 1989). We base the following discussion within the framework of the defined Boulder Historic Context themes and sub-themes.

This project contributes to the state archaeological research plan and to City of Boulder Open Space goals in further documenting remaining vestiges of sites and isolates representing seven historic themes. Six of the sites represent the mining and stone quarrying theme, four are apparently representative of agriculture, two represent the theme of health, two relate to recreation, two represent water resources, and one relates to transportation. One isolated find is from aboriginal prehistoric use of the area, and the rest are historic. Of course, many sites crosscut themes, and may be pertinent to several themes at once. The inventory also contributes to the city and state historic preservation goals by showing that many unrecorded historical sites still exist in Boulder County.

Aboriginal Prehistory, ca. 12,000 B.C. to A.D. 1880

Because of the intensity of recreation and development over the last century, few cultural resources were expected for the prehistoric period and no prehistoric sites have been documented in the study area. Prehistoric isolated artifacts have been found, however.

At the time of pioneer settlement, Boulder Valley was the winter home for the Southern Arapaho. The area is known to have a minimum of 6000 years of human use and occupation. Aboriginal sites undoubtedly existed in the study area, and buried prehistoric cultural material may be present in the area.

An historical account of a hostile Indian-pioneer encounter at the mouth of Sunshine Canyon is the story of Gyp and Gyp Rock (Fetter 1983:9,10). The story lacks credibility, and was probably made up to account for the letters GYP which are carved on a rock. The

rock is on private land south of the Mt. Sanitas Open Space. Supposedly a girl nicknamed Gyp and her family were part of a wagon train crossing the plains in 1852. Somewhere past Julesburg she was captured by Indians. Her father and others pursued the Indians for three days to the area of "the coal camp of Marshall", saw smoke a few miles away, and when they approached the "green rocks" near the mouth of Sunshine Canyon, they saw Gyp run toward the rocks. When the Indians saw they could not recapture Gyp, they shot her with an arrow. She died in her father's arms, and one of his companions carved the letters GYP into the rock.

The story has glaring historical inaccuracies. In 1852 Indians did not engage in hostilities against wagon trains crossing the plains. They attempted to abide by the Treaty of Fort Laramie of 1851, and this is confirmed by the reports of the Commissioner of Indian Affairs (Coel 1981:33). The first coal mining at Marshall was in 1859, so there was no "coal camp" in 1852. Settlement of the Marshall area took place in the later part of the 1860s (Simmons et al 1995).

Agriculture, ca. A.D. 1859 to Present

The theme of Agriculture covers a broad expanse of activity within Boulder Valley. Agricultural property types may include farms, flour and grist mills, gardens, orchards, livestock ranches, dairy industries, and fisheries (Friedman 1989:29).

Farming and ranching in the area began shortly after Euro-American settlement in the 1860s, and has been continually engaged in since. The demand for fresh produce to supply, first, the miners, and later, the growing towns, stimulated agricultural growth throughout Boulder Valley, including portions of the study area. The mountainous and rocky nature of the study area limited agricultural pursuits, however there are several sites in the study area which relate to this theme.

The area along the eastern base of the Dakota hogback was utilized for growing fruit, particularly after the turn of the century. Small farms raised apples, cherries, and grapes. For example, by 1882 John Brierly and his family owned the land that is now Settlers Park, adjacent to study area parcels. Brierly grew fruits, vegetables, and ornamental flowers in this area. Sites **5BL4178** and **5BL4179**, both consisting of historic features and artifacts, are probably remnants of portions of small farms.

The Sanitas valley was used for grazing dairy cattle by the Seventh Day Adventists, to supply milk to the Sanitarium. The ruins of the Sanitarium Dairy, **5BL6199.2**, relates both to agriculture and to serving the health seekers. It is unknown if the habitation at **5BL4171**, in the Sanitas valley, relates to agricultural pursuits or stone quarrying. The Wittemyer Ranch house was located just west

of Settlers Park. Fred and Hattie Wittemyer moved to Boulder from Nebraska in 1913. They lived first at 9th and Arapaho, then moved to the house at Red Rocks (1st and Canyon), where they lived until their deaths in 1936. Their sons John and Leonard homesteaded land in the Four-Mile Canyon - Sunshine area in the 1920s. Fred, John and Leonard were partners in a dairy. The Wittemyers ran cattle and horses on land outside the study area. After the Sanitarium ceased dairy operations about 1950, Wittemyer cattle grazed the Sanitas valley (John Wittemyer, personal communication).

It is also clear that grazing of livestock occurred on Flagstaff Mountain and around Enchanted Mesa. Site **5BL4180** consists of historic features and artifacts such as the remnants of stock sheds. It is known that the Reider family were still grazing stock here in the 1950s.

Mining, Minerals and Extractive Industries, A.D. 1858 to Present

Sandstone Quarrying, A.D. 1880 to Present:

The most visible extractive industry which took place within the study area is sandstone procurement or quarrying. Numerous sandstone quarries are present along the hogbacks of the Front Range between Ft. Collins and Boulder. Several major quarries were located near Lyons, up Left Hand Canyon, and at the town of Noland. Use of Lyons sandstone for sidewalks, foundations, sills, and walls is common in the Denver-Boulder area, and some of the large quarries shipped stone nationwide. The quarries near the City of Boulder were not as large as those in Lyons and Noland, but were important to local building.

The Mt. Sanitas Quarry, **5BL4173** was an important source of building stone for private and public buildings, including churches, residences, and several buildings at the University of Colorado.

Originally known as the Markley Building Stone Quarries, it was probably established by the late 1880s. Andrew Fraser and Donald Grant bought the quarry in 1897, and used the stone in their construction of many buildings in Boulder. Both were stone masons born and trained in Scotland. After Grant's death in 1919, the quarry was sold to the University of Colorado, and stone from this quarry and others was used in the Klauder buildings at C.U. Andrew Fraser supervised the stone work for the University's building program, from the 1920s until shortly before his death in 1947. Andrew Fraser was one of Boulder's preeminent stone masons.

The Shinkle Quarry, **5BL4172**, was somewhat unusual in being a Dakota sandstone quarry. Lyons sandstone was the preferred formation for procurement of building stone.

A note on file with a photograph dated ca. 1896 at the Carnegie Library in Boulder shows a house at 904 Mapleton. This was the house of Frank J. and Isabella Gardiner. The note is from Rudolph Johnson, Atty., to Jim Sandoe, a later owner. Johnson roomed in the house and recalled Gardiner saying "..it was built of Dakota sandstone, a very hard crystalline sandstone quarried up Sanitas Ravine back of the Sanitarium, a stone so difficult to work that the masons soon quit using it, taking instead the more easily worked Lyons sandstone. On this house Fraser was the mason.." It is probable that the quarry referenced with this photograph is 5BL4172, later owned by John Shinkle.

John and Clara Shinkle bought the land containing the quarry in 1906, and owned it until John Shinkle retired in 1937. John Shinkle helped build the Sanitarium in 1895, using stone from "nearby" for the foundation (Austin ND). This was stone from either 5BL4172 or 5BL4173.

John Shinkle was a stone mason and contractor, and had a reputation as being one of Boulder's finest stone masons. His brother (?), Oren, and his son Ralph were also stone masons.

John and Clara Shinkle also owned a Lyons sandstone quarry near Left Hand Canyon from 1905 to 1907. Site 5BL6495, known as the Ingersoll Quarry, is a large and important quarry that was worked sporadically from the 1890s to the 1970s. The land was homesteaded by Charles Ingersoll, who raised stock and engaged in extensive sandstone quarrying between 1890 and 1905. The Ingersoll Quarry was leased to the University of Colorado in 1946 and operated by C.U. in the 1950s and 1960s for stone for campus buildings.

It is interesting to note that several of the leading stone masons in Boulder, such as Andrew Fraser, John Shinkle, and Frank Wood quarried their own stone, at least in part, for the buildings they constructed.

Other local sandstone quarries include the Anderson (**5BL4943**), Woods-Bergheim (**5BL4936**), Third Flatiron (**5BL4949**), and Settlers Park (**5BL4933**) quarries on the Boulder Mountain Parks (Mitchell and Gleichman 1995). South of the Mt. Park, on City Open Space, are unnamed quarry **5BL3905**, and a quarry road (**5BL3904**).

Shelters made from stone alignments utilizing natural boulders and rock outcrops are also known from the hogback south of Boulder, such as **5BL3901, 5BL3903,** and **5BL1918** (Gleichman, Tucker, and Griffitts 1993). These are not dissimilar to **5BL4181**, a stone structure documented during this study. Structures such as this are often found near sandstone quarries, and are known to have been used by sandstone quarry workers in the Horsetooth Reservoir area (Mutaw et al. 1990, 1991).

Limestone Quarrying and Burning, ca. A.D. 1860 to ?:

Limestone was one of Boulder valley's earliest and most exploited mineral resources. Limestone is calcium carbonate, a sedimentary deposition made up of the bodies and shells of tiny marine creatures. As Boulder valley is a sink filled with sedimentary deposits, it is not surprising that limestone occurs in quantity here. Limestone comes in many forms, including chalk, oolite, dolomite, marl, travertine, and marble. While blocks of limestone are sometimes used as a building material, the limestone in the Boulder valley was more suited to producing lime for plastering, mortar, and cement. To produce lime from limestone, the stone is heated in a limekiln to 500 to 600 degrees Centigrade. This separates the carbon dioxide from the calcium oxide (lime) leaving lime powder as a product.

The quantity and quality of the area's limestone deposits were noticed early. A man by the name of Wheeler Hurlbut and his partner Sherman (first name not known) advertised in the first issue of the Boulder County *Pioneer* as having four kilns at the mouth of Two-Mile Canyon. That was February 10, 1869. Later that year, only Hurlbut is listed in the same advertisement. In 1870 Hurlbut advertised as having lime for sale for both plastering and grouting. Schooland, in *Boulder in Perspective*, noted that limekilns at the mouth of Two-Mile Canyon were at one time owned by Cain and Perry, but he does not give a date.

When E. S. Lyons arrived in Boulder County in 1880, he soon bought 160 acres for the production of lime and sand stones. In 1881 he formed the Lyons Rock and Lime Quarry Co. He mixed his lime with two local sands and marketed it as a mortar that closely matched the color of his sandstone. In 1885 William and James McConnel purchased the Lyons site, and worked it until 1894. In 1900 a new operation started up in Lyons, not far from the train depot, much to the consternation of the local citizenry.

Other kilns in the area include the Lee Hill kiln (5BL490) and a pot kiln located another couple of miles up Lee Hill. This is noted for the crudity of its construction, which led to much wastage due to under and over burned lime.

The Tomlinson/McCoy Lime Kiln and Quarry, **5BL4175**, operated from at least 1898 through the 1910s, and perhaps much later. The kiln was well made, and this was probably an important source of lime mortar for local construction.

Granite Quarrying:

While granite has been used for building stone and grave markers during the historic period and is readily available in and near Boulder, **5BL4176** is the only quarry which has been documented.

Granite procurement may have been more opportunistic, not needing formal quarries. Also, granite procurement may not leave much evidence it has taken place, unless there are associated features like wagon loading ramps, such as occurred at 5BL4176.

Water Resources, A.D. 1859 to Present

Some of the earliest water projects in Boulder were located on land which is now Open Space, undoubtedly due to the presence of Boulder Creek. One of the earlier water diversion structures, the Town of Boulder Ditch (**5BL4182**) was constructed in 1875 and brought water from Boulder Creek to the city's first reservoir located at Red Rocks. The Red Rocks Reservoir was completed in 1876 and provided water for fire protection, as well as for residential use. It was used until about 1906. The Sunshine Lake Reservoir (**5BL4932**) was another early water project. The reservoir was proposed in 1886 when the Red Rocks Reservoir no longer met the demand for city water. The location, currently on Mountain Parks land, was approved by the City Council in April 1890 and construction was completed in 1891. It was used until the 1950s (Schoolland 1980).

The Silver Lake Ditch (**5BL3813**) crosses both Open Space and Mountain Parks, winds around Anemone Hill, Red Rocks, and Sunshine Canyon, and was constructed by J.P. Maxwell and George Oliver. Water was originally appropriated for the ditch on February 18, 1888. At that time 20 c.f.s. were allocated to irrigate 1000 acres and provide for water storage at the Mesa Reservoir north of Boulder (Gleichman 1992). The ditch is still active.

Transportation, ca. A.D. 1540 to Present

Aboriginal and pioneer transportation routes undoubtedly passed through this area, though specific routes are unknown. The wagon road up the Sanitas Valley was used by the Mt. Sanitas Quarry, but may have originally been a pioneer road or trail. It may also have been a stagecoach road to Twomile Canyon. Dock Teegarden (personal communication) states that Bill Herzer had told him there were pioneer trails in the study area. One may have been the "7th Ave. Trail", now Hawthorn Ave., which provided access to the north end of the Sanitas valley.

Chapman Drive, **5BL4170**, (and Flagstaff Road) were established essentially to provide access to the Boulder Mountain Park.

Site **5BL515**, the Gordon-McHenry Road, was a federally financed military road built up Sunshine Canyon in the 1860s. It is named after the two head engineers of the project. The road followed Sunshine Canyon to Ritchie Gulch, then to Orodell in Four-Mile Canyon, west to Sugarloaf, and down Gordon Gulch to North Boulder

Creek. It was intended to cross Arapaho Pass into Middle Park, but was abandoned north of Caribou (Fetter 1983).

Recreation, A.D. 1859 to Present

Recreation has been the most important land use in the Boulder Mountain Parks. The park has supported a wide variety of activities, from hiking and camping, to community 'steak fries' and family picnics. Site types which reflect this long heritage of recreational use include hiking trails, shelter houses, golf courses, ski areas, camping areas, and picnic areas (Friedman 1989). Chapman Drive, **5BL4170** was built by the Civilian Conservation Corps between October 1933 and March 1935, to provide vehicular access up the west slope of Flagstaff Mtn.

Recreation has been historically less important in the Mt. Sanitas area, although it is now clearly the greatest use of the area. The construction of the Dakota Ridge Trail, **5BL4183**, ca. 1915, provided a route for hikers. Like many of the trails in the Mountain Parks, this was built by members of one of the local hiking clubs. Mitchell and Gleichman (1995:97-104) provide a discussion of the Civilian Conservation Corps and the local hiking clubs.

Health, ca. A.D. 1890 to 1961

The Boulder-Colorado Sanitarium: Boulder County's first hospital, the Colorado Sanitarium (usually called the Boulder Sanitarium or the Boulder-Colorado Sanitarium) was officially dedicated July 1, 1896 (Figures 35 & 36). The Mount Sanitas facility, constructed in 1895-96, was an expansion and replacement for the Sanitarium Boarding House, which was established by the Seventh Day Adventist Church in 1893 at 1105 11th Street in the University Place neighborhood in Boulder.

The Colorado Sanitarium and its predecessor were designed by the Seventh Day Adventists, and provided some of the earliest examples of a holistic approach to health care. Church doctrine supported a medical regimen for both church members and the general public that combined "supervised exercise, proper diet, and medical treatment" (Gladden 1978). Patients were primarily people suffering from tuberculosis (popularly known as "consumption" because of the weight-loss and general appearance of 'wasting away' that then occurred in the later stages of that disease), but included "non-consumptives"; the description of available services included both weight loss and weight gain.

The Boulder facilities were apparently only the second example in the United States of what would become a national health-care network. According to Gladden (1978), the term "sanitarium"

— derived from the Latin term for health - was coined by J.H. Kellogg, superintendent of the first Adventist facility, founded in 1866 in Battle Creek, Michigan. The intention was to shift the emphasis from illness to health. Mt. Sanitas was in turn named for the Sanitarium.

The Sanitarium was a frame building, with brick veneer. The foundation was made from "rock near at hand", laid by stone masons John Shinkle and Lee Orsen (Austin ND). The rock may have been from the Dakota Sandstone quarry which later became the Shinkle Quarry, or from the Lyons Sandstone Mt. Sanitas Quarry. The brick was from Eugene Austin's brick kiln, the Colorado Pressed Brick Co., located near the present site of Casey Junior High. Also part of the Sanitarium complex were two brick veneer cottages of 14 rooms each, called the East and West Cottages, a laundry, power house, a bakery and dairy. The Sanitarium also served as a nursing school between 1896 and 1945.

Colorado was already a destination for people seeking to improve their health. The opening of the Boulder Sanitarium and the later construction of several other sanitariums in Denver and Colorado Springs stimulated a migration of healthseekers to Colorado.

The 90-acre Mount Sanitas site of the Colorado Sanitarium allowed church managers to develop related services that supported the holistic-health church doctrine. Site **5BL6199.2**, the remains of the Sanitarium dairy, is an example. Consumption of milk was then considered an important part of therapy for tuberculosis. Exercise was also considered an integral part of therapy. Mount Sanitas itself provided recreational and fresh-air opportunities to Sanitarium patients; site **5BL4183**, the Dakota Ridge trail, was utilized in this fashion. The trash dump, **5BL4177**, consists of refuse from the Sanitarium and other sources.

The original 1896 main structure of the Colorado Sanitarium (Figure 35) was demolished and replaced by a new facility in 1952. The Colorado Sanitarium was renamed Boulder Memorial Hospital in 1961; it was sold by the Seventh Day Adventists to Boulder Community Hospital in 1989 and is now incorporated into that health-care system as the Mapleton Center.

Figure 35 - Historic photo of the Boulder-Colorado Sanitarium, J.B. Sturtevant photo, ca. 1900. Courtesy of the Carnegie Branch Library for Local History, Boulder Historical Society Collections.

Figure 36 - Historic photo of the Sanitarium Spring House, date unknown. Located where current shelter at trailhead now stands. University of Colorado Museum Photograph Collection III-6-25. Archives, University of Colorado at Boulder Libraries.

RECOMMENDATIONS

The inventory of the Mount Sanitas and related City of Boulder Open Space lands resulted in the documentation of fifteen historic sites, and 11 historic and one prehistoric isolated find. Two previously recorded sites are in the study area. The cultural properties in the study area were evaluated for their significance and eligibility to the National Register of Historic Places (NRHP) and the State Register of Historic Properties (SRHP), and for local Landmarking. The cultural properties and their significance are listed in Table 9.

Significance and Eligibility Assessments

NRHP eligibility is judged according the criteria set forth in 36CFR 60.4 below:

"National Register Criteria" means the following criteria established by the Secretary of the Interior for the use in evaluating and determining the eligibility of properties for listing in the National Register: The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

(A) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(B) That are associated with the lives of persons significant in our past; or

(C) That embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(D) That have yielded, or may be likely to yield, information important in prehistory of history.

The State Register of Historic Properties uses essentially the same criteria as above, with the addition of a fifth criterion, that being "geographical importance". City of Boulder Landmarking is designed to recognize cultural properties of local significance.

Table 9
Cultural Resource Inventory of the Mt. Sanitas Open Space and Related Parcels

Summary of Recorded Cultural Properties

Site Number	Manifestation	NRHP Eligibility
5BL4170	Chapman Drive	Yes
5BL4171	Historic Habitation	Need Data
5BL4172	Shinkle Sandstone Quarry	No*
5BL4173	Mt. Sañitas Sandstone Quarry	No*
5BL4174	Sandstone Quarry	No
5BL4175	Tomlinson/McCoy Lime Kiln & Limestone Quarry	No**
5BL4176	Granite Quarry	No
5BL4177	Partly Reclaimed Trash Dump	Yes
5BL4178	Historic Artifacts and Features	Need Data
5BL4179	Historic Artifacts and Features	Need Data
5BL4180	Historic Artifacts and Features	No
5BL4181	Historic Stone Structure	No
5BL4182	Town of Boulder Ditch and Red Rocks Reservoir	No
5BL4183	Dakota Ridge Trail	No**
5BL6199.2 5BL6199.3	Sanitarium Dairy Sanitarium Water Cistern	No No
Previously Recorded Sites		
5BL515	Gordon-McHenry Road	Not This Segment
5BL3813	Silver Lake Ditch	Yes
Isolated Finds		
5BL4184	Sandstone Cairn	N.A.
5BL4185	Segment of Stacked Stone Fence	N.A.

Site Number	Manifestation	NRHP Eligibility
Isolated Finds, continued		
5BL4186	Green Bottle Glass Fragment	N.A.
5BL4187	Three Pieces of Purple Glass	N.A.
5BL4188	Stone Lined Pit	N.A.
5BL4189	Earthenware Crockery Fragment with Brown & White Glaze	N.A.
5BL4238	Three Fragments of Groundstone	N.A.
5BL4239	Carved Boulder - with Indian Head Image	N.A.
5BL4240	Series of Three Cairns	N.A.
5BL4241	Leg-Hold Trap	N.A.
5BL4242	Circular Stone Alignment	N.A.
5BL7118	Stacked Stone Fence	N.A.

* May contribute to a non-contiguous NRHP historic district with a theme of sandstone quarrying. Eligible for local landmarking.
**Eligible for local landmarking.

Ten of the sites (**5BL4172**, **5BL4173**, **5BL4174**, **5BL4175**, **5BL4176**, **5BL4180**, **5BL4181**, **5BL4182**, **5BL4183**, and **5BL6199.2/6199.3**) and all of the isolated finds (**5BL4184-5BL4189** and **5BL4238-5BL4242**, and **5BL7118**) are considered not eligible for individual nomination to either the National Register of Historic Places or the State Register of Historic Properties. These sites either lack integrity due to subsequent alteration, or have little or no associational or architectural significance. Isolates are not eligible to the NRHP.

Sites **5BL4172 - The Shinkle Quarry**; and **5BL4173 - The Mt. Sanitas Quarry** are likely contributing elements to a non-contiguous historic district with the theme of sandstone quarrying, and as such are eligible to the NRHP and SRHP. These quarries are important for their association with building stone extraction and use. They are also associated with locally significant stone masons.

Site **5BL3813**, the **Silver Lake Ditch**, is considered eligible to the NRHP and SRHP, for its association with the development of water storage and irrigation agriculture in Boulder County. The ditch is significant at the local level as well. The ditch is not a pioneer ditch, but is relatively early, and is one part of a water

collection and distribution-storage system which includes several reservoirs. The ditch is also associated with J.P. Maxwell, a significant person in the early development of Boulder. The ditch is active, and should not be impacted by recreational use of the area.

Site **5BL4170**, **Chapman Drive**, is considered eligible to the NRHP and SRHP because of its association with the Civilian Conservation Corps and its representation of the type of construction methods used by the CCC during the Great Depression.

Three of the sites (**5BL4171**, **5BL4178**, and **5BL4179**) are potentially very informative for the archaeological information they may contain. Their information potential can only be determined through a sub-surface testing program. The portion of site **5BL4177 - Trash Dump** on City Open Space land appears to be eligible under criterion D, for its archeological data.

The **Gordon-McHenry Road**, **5BL515**, was deemed eligible to the NRHP by the original recorder in 1981, for its association with early transportation in Boulder County. While portions of the original road do still exist, the segment in the project area is now the paved Sunshine Canyon Road. This segment thus lacks integrity as the historic roadway, is not a contributing element to the site, and is not eligible.

The ruins of the **Tomlinson/McCoy Lime Kiln and Limestone Quarry** (**5BL4175**), and the historic **Dakota Ridge Trail** (**5BL4183**) are eligible for local Landmarking, for their association with the development of construction/building and recreation, respectively.

Any sites eligible for the NRHP are eligible to the SRHP and for local Landmarking.

Management Recommendations

The sites owned by Open Space which are eligible for listing on the NRHP, SRHP, or local Landmarking should be actively preserved and maintained. They should be protected from any disturbance by development.

Chapman Road is closed to public transportation but is used by City Open Space and Mountain Parks rangers. This use does not seem to represent an impact to the site. Any impacts to the site and its surroundings should be avoided and any future maintenance should be done in accordance with the techniques used by the C.C.C. in the 1930s.

Until their information potential is determined, the sites which need data to determine their archaeological potential should be preserved for future research by protecting them from disturbance. This includes the trash dump at **5BL4177**, which should be considered an archaeological resource.

Currently the protected and patrolled status of the project area helps constrain the opportunity for detrimental impacts to the cultural resources. The principal concern for site preservation should be to minimize the effects of trampling, vandalism, and collecting.

The Mount Sanitas Open Space trail brochure currently summarizes the history of the area. The additional historic information in this report may be useful for providing a more detailed history of cultural resources in the area, such as the Shinkle Quarry and the Dakota Ridge Trail.

Finally, additional, yet undetected, buried archaeological sites may be located within the project area. As such, it is important that if any artifacts or features are uncovered during any development in the project area, all work be temporarily stopped until an archaeologist is consulted.

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APPENDIX A

OTHER CULTURAL MANIFESTATIONS

Eleven cultural manifestations were noted in the project area which were not formally recorded as cultural properties, due to insufficient or indeterminable age, or ephemeral or ubiquitous nature, such as fragments of roads or prospect pits. The manifestations are briefly described and locations given. Map locations only are given for prospect pits.

1. A faint two-track road located in the NW 1/4 of the SW 1/4 of the NE 1/4 of Section 23, T.1N., R.71W. The track extends north along the east side of an intermittent drainage near the border of the open space property and private property to the north.

2. A small stone cairn located in the SW 1/4 of the SW 1/4 of the SE 1/4 of Section 23, T.1N., R.71W. The cairn is about 1 meter in diameter and was made from about one dozen stacked granite rocks.

3. A rectangular stone alignment located in the SW 1/4 of the NE 1/4 of the NW 1/4 of Section 24, T.1N., R.71W. The alignment measures about ten by ten feet and is made from roughly coursed native sandstone rocks. A large boulder forms the east side of the alignment. A adjacent to the alignment there is a small pile of two-by-fours and one-by-twelves with modern nails.

4. A road-like berm located in the SE 1/4 of the SE 1/4 of the SW 1/4 of Section 24, T.1N, R.71W. This is probably a segment of wagon road that has been replaced by the current road (Sanitas Valley Trail) which is to the west and above it. At the south end of the old road a dry laid stone wall has been built along the new road to provide a culvert for an intermittent drainage that runs from the west to the Sanitas Ravine to the east. However, no culvert pipe was visible in the wall. The old road grade is visible for about 75 meters to the north then it disappears.

5. An old road grade located in the NE 1/4 of the NW 1/4 of the NW 1/4 of Section 25, T.1.N., R.71W. This is probably another segment of wagon road that has been replaced by the current road (Sanitas Valley Trail) which is to the west and above it. Two-track ruts are visible for about 215 meters.

6. An old road grade located in the NE 1/4 of the NW 1/4 of the NW 1/4 of Section 36, T.1N., R.71W. At the south end there is a cable gate across the road and it runs north from here for about 800 feet.

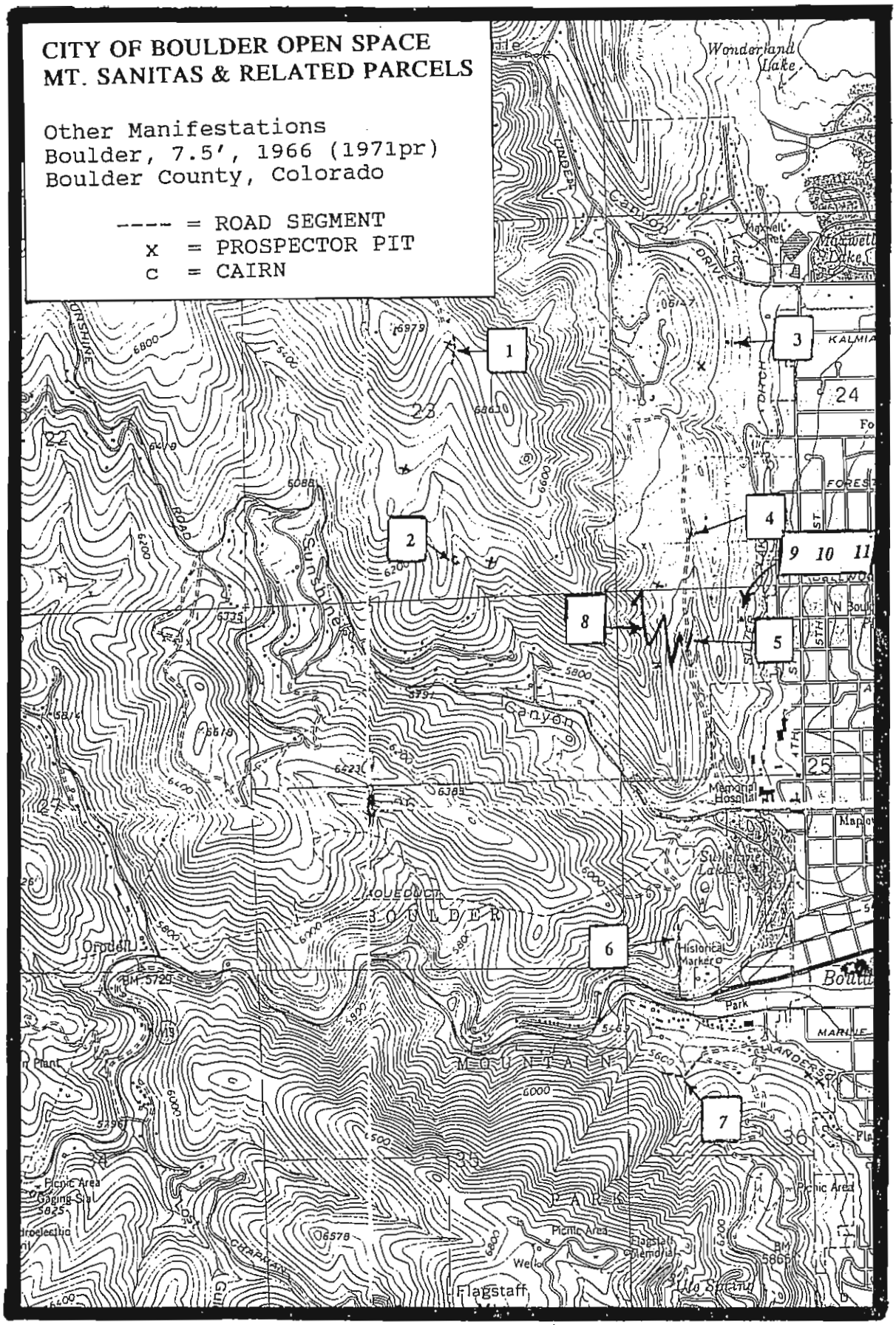
7. An old road located in the SE 1/4 of the NW 1/4 of the NW 1/4, and in the NE 1/4 and the NW 1/4 of the SW 1/4 of the NW 1/4 of Section 36, T.1N., R.71W. The road consists of two-track ruts that extend to the southwest from a two-track road that is shown on the USGS topographic map. The tracks cross an intermittent drainage and then continue to the west for about 400 feet and then disappear.

8. An old trail located in the NW 1/4 of the NW 1/4 of Section 25, T.1N, R. 71W. The trail begins in the Sanitas Valley near the current road, just south of OM 5. It zigzags up the mountainside to the west.

9. Nine seep-springs have been fenced off with barbed wire, wood, rock, and pipe. The fenced areas enclose several different types of trees. The trees were probably planted and protected by Bill Herzer.

10. A dugout 2x 4m, with a rock lined entry, with a superstructure of plywood and aluminum. Function unknown, probably a kids fort.

11. Well head, 6" diameter metal pipe, capped.


CITY OF BOULDER OPEN SPACE
MT. SANITAS & RELATED PARCELS
Other Manifestations
Boulder, 7.5', 1966 (1971pr)
Boulder County, Colorado
---- = ROAD SEGMENT
x = PROSPECTOR PIT
c = CAIRN
1
2
3
4
5
6
7
8
9 10 11
Wonderland Lake
Canyon
Sunshine
Canyon
Memorial Hospital
Historical Marker
Flagstaff
Flagstaff Memorial
Picnic Area
Gaping Gul
Orodell
BOULDER
MOUNTAIN
PARK
AQUEDUCT
Wells
Spring

NATIVE CULTURAL SERVICES

CULTURAL RESOURCES OF
CITY OF BOULDER OPEN SPACE

BEAR CREEK TO SOUTH BOULDER CREEK

BOULDER COUNTY, COLORADO

By

Peter J. Gleichman, David B. Tucker, and Janet L. Griffitts

With Contributions By

D.M. Teegarden

Prepared For

City of Boulder
Open Space/Real Estate

Prepared By

NATIVE CULTURAL SERVICES
4484 Hamilton Court
Boulder, Colorado 80303

April 1993

MANAGEMENT SUMMARY

Three separate cultural resource inventories were conducted by Native Cultural Services on City of Boulder Open Space, Boulder County, Colorado. The projects were completed for the City of Boulder Department of Open Space/Real Estate, in order to facilitate management decisions regarding the area between Bear Creek/Shanahan Hill and South Boulder Creek, as well as to add to the cultural resource database for the area.

The project area is entirely on City of Boulder Open Space land, and includes all Open Space land between Bear Creek/Shanahan Hill on the north, extending south to South Boulder Creek/State Highway 170; and from Highway 93 on the east, extending west to the boundary of the Boulder Mountain Park. This project area includes portions of Sections 7, 16, 17, 18, 19, 20, 21, 29, and 30 of Township 1 S, Range 70 W, of the 6th P.M., and portions of Sections 12, 13, 24, and 25 of Township 1 S, Range 71 W, of the 6th P.M.

The South Mesa Trailhead survey area includes approximately 341 acres, and an intensive pedestrian surface survey (Class III survey) was performed. The Phase I area, approximately 1486 acres, was also intensively surveyed. The Phase II area totals approximately 1639 acres, of which approximately 837 acres were intensively surveyed. Another 802 acres were surveyed at a Class II level (sample oriented survey).

A total of 33 sites and 28 isolated finds have been documented on City of Boulder Open Space between Bear Creek/Shanahan Hill and South Boulder Creek. While prehistoric (aboriginal) material is present, the cultural manifestations in this area are predominantly from the historic era, reflective of Euro-American settlement and occupation beginning about 1859.

The cultural manifestations documented in the project area relate to some of the historic themes developed for the Boulder Historic Context. The culture history of the area relates primarily to two major themes - agriculture and mining. Other themes represented by cultural resources in the area are aboriginal prehistory, transportation, water resources, and recreation.

The cultural properties in the project area are essentially archaeological - the ruins and remains of buildings, features, and associated material culture. A few standing buildings are present, including the Dunn House at **5BL3863**, several buildings at the DeBacker/Blake/Hedgecock Homestead (**5BL3864**), and a building at **5BL3897**. The majority of cultural resources are the result of an agricultural adaptation to the area, and are representative of the history of agricultural use of the foothills area of southern Boulder County. Agricultural use of the vicinity began about 1859 and is ongoing. However, the cultural resources are indicative of a fairly dramatic shift in the land use of the south Boulder foothills area. In addition to representing the agricultural use of the area, the cultural properties are a scientific resource which has the potential for explaining the historic developments in the area such as the shifts in land use. The sites contain the remains of buildings and features, with artifacts, which can be investigated archaeologically.

For management and research purposes, these cultural properties may be designated as a district. Deeming the area a district serves to acknowledge the interrelationship of the resources as a unified entity. Features and properties that lack individual distinction can be contributing elements to the district, thus the grouping of properties achieves significance as a whole within its historic context. This district is archaeological, from the historic period, with the unifying theme of Agriculture within the Boulder Historic Context.

We propose that the area be termed **The South Boulder Foothills Historic Archaeological District**. Geographical boundaries of the district are limits of Open Space property within the project area on the north, east, and west. Bear Creek/Shanahan Hill forms a well defined northern boundary. Highway 93 forms the eastern boundary. The western boundary is the boundary with the Boulder Mountain Park Historic District.

The southern boundary of the district is presently undefined. The Eldorado Springs Historic District, relating to a theme of recreation, forms the southwest boundary. It is known that agricultural activities extended south of Highway 170, into the Doudy Draw area. A cultural resource investigation is currently being completed for the Doudy Draw area, and the results of that inventory will help define the southern boundary of the South Boulder Foothills Historic Archaeological District.

The district and all its contributing elements is eligible for inclusion on the National Register of Historic Places under criteria A and D. The few sites which do not relate to agriculture and are thus non-contributing elements to the district are eligible or potentially eligible to either the National or State Registers, or the Boulder County Register in and of themselves. A few isolated artifacts are the only cultural properties which are not significant.

The sites should continue to be protected from disturbance. Any development in the area which would impact the integrity of feeling and association of the district should be prohibited, including any major construction in nearby areas which would impact the viewshed of the area. Agricultural improvements such as stock ponds or tanks should be constructed and placed in a manner that does not create adverse impacts to the historical integrity of the area.

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to Brent Wheeler and Luther Green of the City of Boulder Open Space Department for their assistance and interest in the project. D.M. (Dock) Teegarden also deserves many thanks - his contributions were multiple. Dock assisted with the fieldwork in all three survey areas, and his knowledge of the history of the area proved invaluable to our efforts.

The following residents or former residents of the area shared their knowledge with us, for which we thank them: Glen and Virgeen Hedgecock, Herman and Sylvia Manchester, Tim Shanahan, Edward Shanahan, and William Stengel.

The South Mesa Trailhead survey field crew consisted of Jerry Orback, Melanie Squire, Rebecca Taylor, and D.M. Teegarden. The Phase I survey field crew consisted of Garrett Bourque, Roger Echo-Hawk, Janet Griffitts, Sandra Karhu, Brian McKee, and D. M. Teegarden. The Phase II survey field crew included Roger Echo-hawk, Erin Finnegan, Sandra Karhu, Chris Imhoff, D. M. Teegarden, David Tucker, Bob Mutaw, and Ann Mutaw.

Sandra Karhu and Dave Tucker drafted the figures for this report. Dulaney Barclay prepared data on the geology of the area. Alan Kirkland assisted with report production.

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INTRODUCTION

This report is a compilation of data from three separate cultural resource inventories. The surveys were conducted by Native Cultural Services on City of Boulder Open Space, Boulder County, Colorado. The projects were completed for the City of Boulder Department of Open Space/Real Estate, in order to facilitate management decisions regarding the area between Bear Creek/Shanahan Hill and South Boulder Creek, as well as to add to the cultural resource database for the area. The city intends to alter the configuration of the trailhead facilities in the project area in order to increase the trails' effectiveness, address the concerns of local residents, and to limit the proliferation of informal "social trails" in the area. The three inventory areas are geographically contiguous, and exhibit similar cultural features. The three surveys are thus combined into a single final report, in order to provide a comprehensive inventory of the cultural resources of the area.

The project area is entirely on City of Boulder Open Space land, and includes all Open Space land between Bear Creek/Shanahan Hill on the north, extending south to South Boulder Creek/State Highway 170; and from Highway 93 on the east, extending west to the boundary of the Boulder Mountain Park. This project area includes portions of Sections 7, 16, 17, 18, 19, 20, 21, 29, and 30 of Township 1 S, Range 70 W, of the 6th P.M., and portions of Sections 12, 13, 24, and 25 of Township 1 S, Range 71 W, of the 6th P.M. (Figure 1).

The inventory of this area took place in three stages. The first portion is the area around the South Mesa Trailhead in Sections 29 and 30 including the extreme southern portion of Section 19 and the southwest quarter of Section 20. The remainder of the project area was divided along a line established by a high tension power line running approximately south-southeast to north-northwest. The survey was conducted in two phases, with Phase I covering the area to the east of this line, using the South Boulder Creek Trail as the southern boundary. Phase II covered the area to the west of the power line, as well as the portions not previously surveyed between South Boulder Creek and the South Boulder Creek Trail (Figure 1).

Peter J. Gleichman served as Principal Investigator for the project, and directed the field survey of the South Mesa Trailhead. David B. Tucker and Janet L. Griffitts were the Field Directors for the Phase I and Phase II surveys. The South Mesa Trailhead survey area includes approximately 341 acres, and an intensive pedestrian surface survey (Class III survey) was performed in January and February 1992. The Phase I area, approximately 1486 acres, was also intensively surveyed, in April and May 1992. The Phase II area totals approximately 1639 acres, of which approximately 837 acres were intensively surveyed. Another 802 acres were surveyed at a Class II level (sample oriented survey). The Phase II field survey took place from June to September, 1992. Archival research was conducted both concurrently and subsequent to the Phase II fieldwork.

Field notes and photographic negatives from this project are on file at the offices of Native Cultural Services, Boulder, Colorado. No cultural artifacts were collected.

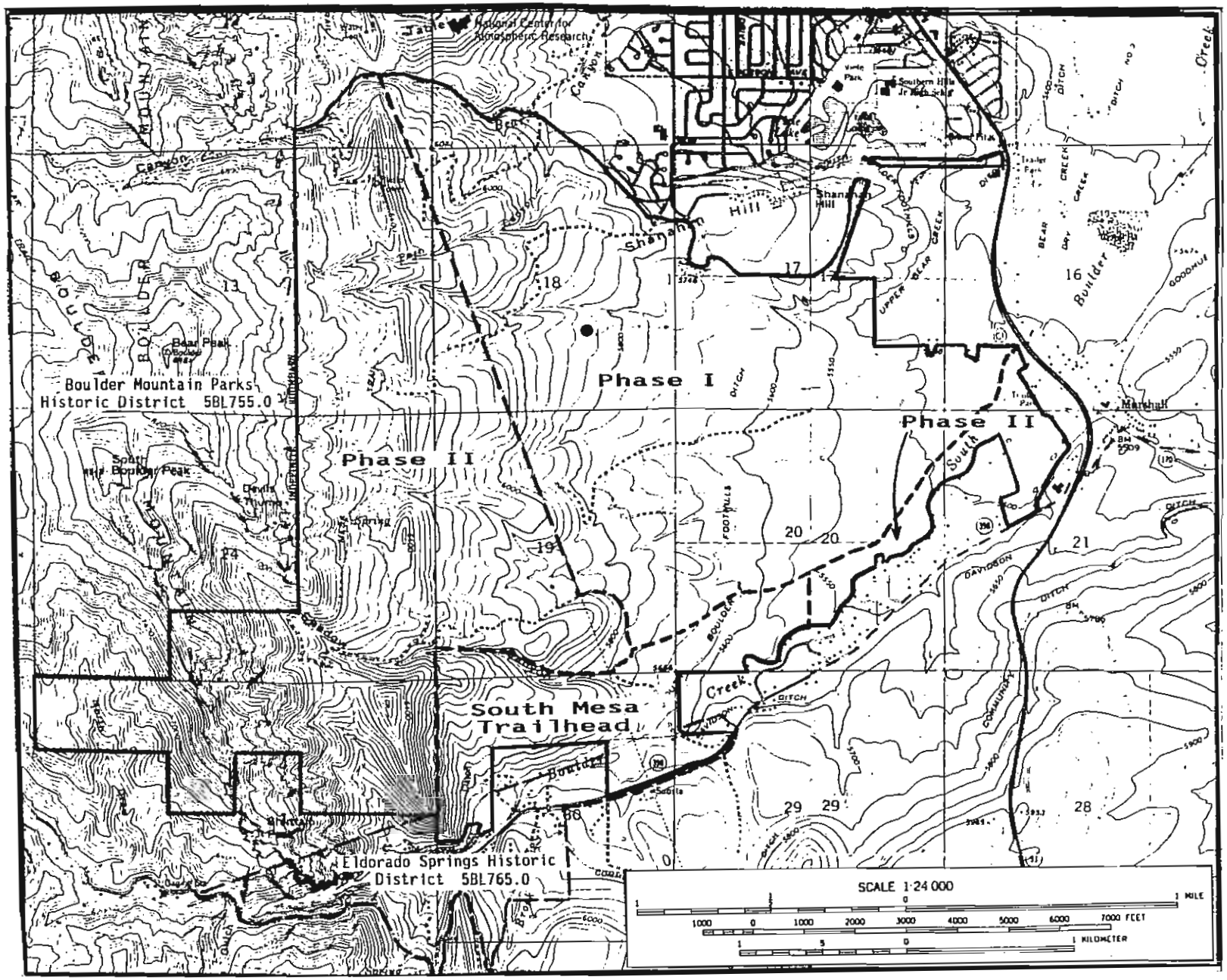

FIGURE 1 - Project Area Overview, Bear Creek to South Boulder Creek. Delineating Survey Areas within the Project Area. Map Derived from the Eldorado Springs (1965) and the Louisville (1965) USGS Quadrangles, 7½' series.

ENVIRONMENT

The project area is in the transition zone between the Great Plains and the foothills of the Front Range of the Rocky Mountains. The area includes South Boulder Creek and its floodplain, and the mouths of Bear, Fern and Shadow Canyons, with the steeply uplifted area around them. Gently rolling terrain with hogbacks, mesas and ridges slopes down to the east, with the eastern edge of the area being almost flat. Elevation within the project area ranges from 7000 to 5475 feet.

The project area contains several formations from the Precambrian to the Recent progressing from west to east. In the extreme western portion, the Precambrian outcrops mostly as a tan to gray, fine-grained quartz monzonite (igneous intrusive) and in a few places as a varicolored fine-to-coarse grained quartzite. Laying unconformably against that is the Pennsylvanian-Permian age Fountain Formation, a red to gray coarse-grained, conglomeratic sandstone with lenses and layers of siltstone and fine-grained sandstone. Laying against it is the Permian-Triassic age Lyons sandstone, a red to pink, fine- to medium-grained sandstone. The sandstone unit of the Fountain Formation forms the prominent Flatirons in this area while the Lyons sandstone forms a small hogback ridge. East of this ridge, the Lower Mesozoic is partially covered by Quaternary-age colluvial deposits. The Jurassic-age Morrison Formation occurs as a thin bed between these colluvial deposits and the Cretaceous-age Dakota Group formations. The Morrison is a varicolored, clayey, calcareous siltstone interlayered with a gray sandstone. The formations that make up the Dakota Group and form the prominent Dakota Hogback ridge are the Lytle and South Platte formations. The older Lytle Formation is a gray to tan, coarse-grained, conglomeratic sandstone interlayered with light-colored shales. The South Platte Formation is a gray to tan colored, fine- to medium-grained sandstone with interlayered dark-gray, carbonaceous shale. Occurring mostly as isolated patches east of the Dakota Hogback ridge along drainages are other Cretaceous-age units. These include the Benton Shale (light gray colored shale with interlayered dark-gray, earthy to crystalline limestone), the Niobrara Formation composed of the Smokey Hill Member (a gray, very thin bedded, calcareous shale) and the Fort Hays Member (gray limestone), and lastly the Pierre Shale (greenish-gray shale with a interbedded tan colored sandstone unit).

Three, successive, pre-Wisconsin, Pleistocene-age pediment surfaces veneered with gravel exist within the project area. From the highest (oldest) to the lowest (youngest) they are referred to as the Rocky Flats Alluvium (Early Pleistocene/Nebraskan-yellowish brown, bouldery gravel containing layers of clay, silt and sand), the Verdos Alluvium (Middle Pleistocene/Kansan-reddish brown, gravelly sand containing silt and clay layers), and the Slocum Alluvium (Late Pleistocene/Illinoian-reddish brown gravel containing clay, silt, sand, pebbles, and boulders). Late Pleistocene or Early Recent Piney Creek (Wisconsin) alluvial deposits occur just above the modern stream terraces. Recent deposits occur as stream terraces along South Boulder Creek and its tributaries and as colluvial deposits on the slopes of the mountains and hills along the mountain front and in the intervening gullies (Wells, 1967: 45-49).

Vegetation is diverse. Nineteen vegetation types have been identified and mapped within the area (ERO 1992). The natural vegetation of this area of the plains consists of tallgrass prairie, with mixed grass prairie, shortgrass prairie, meadows and shrublands. Broad tallgrass prairie is present in the southeast portion of the project area, and seeps and drainages in this portion of the area create wetlands and mesic tallgrass prairie. Riparian vegetation is present along

South Boulder Creek, Bear Canyon, Fern Canyon, and Towhee Draw/Shadow Canyon drainage. The narrow moist canyons support remnant elements of what is now considered eastern deciduous woodland flora (ERO 1992). Ponderosa pine savanna is present on First and Second Mesas and grades into woodlands in the northern part of the area and at the high elevations along the western edge of the project area.

The project area has a high wildlife value, with a diversity of birds, mammals, reptiles and amphibians. The reasons for the diversity and quantity of wildlife are the location of the area in the plains-foothills transition zone, with an associated diversity of vegetation and habitats, and the presence of two large scale wildlife movement corridors (ERO 1992). The uplift of the foothills and hogbacks creates protected valleys along a north-south corridor used by migrating birds. South Boulder Creek forms an east-west movement corridor which intersects the north-south corridor in the project area.

Soils within the general area are Nederland-Valmont association typified by cobbly to very cobbly soils on old, high terraces, alluvial fans and benches. Nederland very cobbly sandy loam (NdD) soils occur on mesa tops and alluvial fans. Baller soils (BaF) are shallow stony soils under ponderosa pine on steep slopes. Niwot soils (Nh) are deep, sandy, somewhat stony soils that occur along drainages. Soils in the Colluvial Land map unit (Cu) are on sloping land below mesas and hogbacks. Terrace Escarpments (Te) are shallow, stony soils present along and below mesa edges (Moreland and Moreland 1975, ERO 1992).

Current use of the project area centers on recreation, mainly hiking. The southern and eastern portion of the area is still used for livestock grazing.

CULTURAL BACKGROUND

The known cultural history of the northeastern plains/foothills transition zone of Colorado, which includes the present project area, has been summarized in several previous documents: the prehistory of the plains in Jeffrey Eighmy's (1984) "Colorado Plains Prehistoric Context", and the history in Steven Mehls' "Colorado Plains Historic Context" (1984a) and "The New Empire in the Rockies" (Mehls 1984b). The montane region has been summarized in Guthrie and others (1984) "Colorado Mountains Prehistoric Context" and Mehls (1984c) "Colorado Mountains Historic Context".

Prehistoric groups are known to have occupied northeastern Colorado since at least 11,500 years ago. The **Paleo-Indian Period** existed from ca. 9500 to 5500 B.C., during a cooler, moister climatic period. Although subsistence practices at this time are thought to have included both hunting and gathering of wild resources, most research in the Northwestern Plains emphasizes the procurement of Late Pleistocene megafauna. Most known Paleo-Indian sites are big game kill sites where large and occasionally fluted lanceolate projectile points are associated with the remains of extinct mammoth, horse, camel, or bison (Gleichman and Gleichman 1989).

The period from ca. 5500 B.C. to A.D. 1 in northeastern Colorado is known as the **Plains Archaic Period**. This period coincides with the extinction of large Pleistocene mammals and a general warming of the climate throughout North America. A significant change in subsistence appears to have occurred; to a more generalized broad-spectrum hunting-gathering strategy. The period is usually divided into the Early, Middle, and Late Plains Archaic (Frison

1978). It has been hypothesized that the foothills and mountains of Colorado were occupied during the Early Archaic as a refugium from a severe warming and drying climatic episode on the plains (Benedict and Olson 1978). Middle Archaic sites with McKean Complex tool assemblages are known for the region, as are some Late Archaic manifestations.

The Plains Archaic is followed by the **Ceramic Period** (A.D. 1-1550), also known as the **Late Prehistoric Period**. In the Central Plains, to the east, this period marks the replacement of a hunting and gathering lifestyle with a settled life, characterized by the occurrence of permanent houses, pottery, and the practice of agriculture. Although some of these changes are noted in northeastern Colorado, the population here appears to have remained nomadic hunters and gatherers who were contemporary and interactive with the more settled agricultural populations to the east.

Two major periods within the ceramic period have been identified in northeastern Colorado. The **Early Ceramic Period,** from A.D. 1 to 1000, is identified by the presence of cord marked pottery and small corner-notched arrow points. The **Middle Ceramic Period** (A.D. 1000-1550) is characterized by the presence of new ceramic types and triangular points along the South Platte and Foothills of northeastern Colorado. Side-notched projectile points are also characteristic of this latter period. Sites relating to these periods are known to be present in eastern Boulder County, including **5BL2712** along Rock Creek, which has been partially excavated (Gleichman 1991).

The **Protohistoric Period** refers to the era after European contact, and before widespread Euro-American settlement, ca. A.D. 1600 - 1800. European trade items began to be used by indigenous peoples, and horses became available. Acquisition of the horse altered the lifestyles of many tribal groups, allowing greater use of the plains, and extending the territory over which tribes ranged for hunting and other resource procurement.

The earliest evidence of a particular ethnographic group in northeastern Colorado is in an archaeological manifestation of the Plains Apache: The Dismal River Aspect, a semi-horticultural complex dating to approximately AD 1700 (Gunnerson 1960). The Comanche and Ute occupied Colorado during the 18th century, with the Comanche controlling the plains, and the Ute in the foothills and mountains. By the early 19th century the Cheyenne and Arapaho began to occupy most of the plains of eastern Colorado (Buckles 1968:56-7). Both of these tribes were semi-nomadic, depending primarily on the hunting of bison and other large game animals. Some horticulture was practiced by the Cheyenne. In the Treaty of Fort Laramie (1851) a vast area of land was assigned to the Cheyenne and Arapaho as a reservation, including all of Colorado east of the Rocky Mountains and north of the Arkansas River. Ten years later, however, the Treaty of Fort Wise was signed, requiring their removal from all lands in the earlier treaty except for a small reservation in east-central Colorado (Berthrong 1963:11, 121-150). This left the rest of the Colorado plains, including Boulder County, open for European settlement.

Although fur trappers were attracted to Boulder County in the early 1800s, their numbers were limited, and it was not until the discovery of gold in California in 1849 that large numbers of Euro-Americans began to migrate to the west. The first encampment of Euro-American settlers in Boulder County was in 1858; a small group in search of gold who camped at the mouth of Boulder Canyon. In 1859, the first major discovery of gold in Boulder County was made and soon hundreds of prospectors rushed into the area. At that time, Arapaho Indians inhabited the Boulder area. Agriculture and the irrigation associated with it, and ranching were underway by 1860 (Fetter 1983).

The productive soils of southern Boulder County were well suited to agriculture. By the 1860s scattered farms appeared on the plains east of Boulder City and man-made lakes and ditches were constructed to improve the agricultural productivity of the land. The need for hay and produce in the gold camps west of Boulder further stimulated agriculture (Dyni 1989). Agriculture is still practiced in the project area.

Coal was discovered at Marshall in the 1860s, and the mining of lignite coal soon became an important industry in southern Boulder County, spreading to areas that have since become the towns of Louisville, Lafayette, and Erie. The Overland Mail Stage Route went through eastern Boulder County between 1864 and 1870. The Colorado Central Railroad arrived in this portion of Boulder County in 1872-1873, improving transportation throughout the region and serving the various coal mines. Strikes and major gas explosions in the coal mines of Boulder County in the 1890s resulted in the consolidation of control of coal fields and railroads to a few corporations. Coal mining remained an important industry until the 1930s (Smith 1989).

Eldorado Springs was a popular resort by about the turn of the century, attracting visitors to the area for recreational use. The Crags Mountain Resort, slightly up canyon from Eldorado Springs was established shortly after the turn of the century and lasted until 1912, when it burned. The construction of the Moffat Road in 1904 (then called the Denver, Northwestern and Pacific Railway) served to bring tourists to the Crags Resort, and the extension of the Denver and Interurban train to Eldorado Springs in 1908/1909 stimulated further recreational use of the mouth of Boulder Canyon (Smith 1989). The establishment of Chatauqua, and the construction of the Mesa Trail in the early 1920s formalized recreational hiking between Boulder and Eldorado Springs.

PREVIOUS RESEARCH AND EXISTING DATA

Prior to beginning field research, the cultural resource files and master maps at the Boulder Open Space Department were examined for information on the cultural resources in the area. These files and maps were derived from the files at the Colorado Office of Archaeology and Historic Preservation (OAHP), Colorado Historical Society. In addition, a file search for the area was performed by OAHP on 29 June 1992. No archaeological projects have focused specifically on the land within the project area.

Four previously recorded linear sites cross the area: three irrigation canals, and one railroad grade. Two historic cabins, a stone house, and two isolated prehistoric projectile points have been previously recorded within the project area (Table 1). For the locations of these sites, see Map 3 in Appendix A. Several historic sites were known to exist within the area, some of which had been informally named, but had not been formally recorded.

Passing through the southeastern portion of the project area is site **5BL400**, the Colorado and Southern Railway grade. This site was recorded by Manuel Weiss in 1981 as part of the Boulder County Historical Site Survey. The portion of this site that was encountered by our survey is the remains of the grade of a spur that was constructed to connect Eldorado Springs with the main line at Marshall. Construction of this spur began in 1907 and was completed in 1909. The Denver and Interurban Railroad Company (a subsidiary of the Colorado and Southern) ran a trolley service along this spur, connecting Eldorado Springs to Denver and Boulder. This trolley service was discontinued in 1926, and the rails were removed in 1927.

Approximately 0.2 linear miles of the railroad grade passes through the project area, and was observed to be only lightly disturbed, though the grade was overgrown and had no associated rails or ties. The railway represents an important aspect of early mass-transportation efforts in Boulder County, and is therefore considered field eligible to the National Register of Historic Places (NRHP) or the State Register of Historic Properties (SRHP).

Site **5BL453** is the Davidson Ditch, which was recorded in 1981 by Manuel Weiss as part of the Boulder Historical Survey. The ditch was constructed in 1872 by William Davidson. It is 11 miles long, 12.5 feet wide at the headgate, and 10-12 feet wide elsewhere. The headgate for the ditch is present on South Boulder Creek, south of the Dunn House (Figure 2). The ditch was constructed at a cost of $13,000.00, to provide irrigation for agricultural purposes to 800 acres of land owned by the Davidson Coal and Iron Company. The Davidson Coal and Iron Company was formed in 1870 by Davidson, W.A.H. Loveland, and H.M. Teller.

Davidson was an early pioneer of the Boulder area, arriving in 1859. In 1860 he formed a partnership with S.M. Breath and they built a ditch in Arapaho and Jefferson Counties, one of the first ditches constructed in Colorado. Davidson was involved in hardrock and coal mining, merchandising, road building, and agriculture. The ditch was deemed eligible to the NRHP for its association with Davidson, a locally significant historic person, and for its association with the development of irrigation agriculture in the region.

Site **5BL765.1**, is the Dunn House. This two story stone house, constructed around 1875 by John DeBacker, was recorded by Weiss in 1981 as part of a proposed Eldorado Springs Historic District. The district was assigned 5BL765, and elements of the district were numbered sequentially as .1, .2, etc. The Dunn House is one part of the Doudy-DeBacker-Dunn Homestead, and while it is in proximity to Eldorado Springs, it should not be considered part of that district. The Eldorado Springs Historic District relates to a theme of recreation, while the Dunn House relates to agriculture. The site has been rerecorded, and assigned a new site number -**5BL3863.**

Site **5BL2719**, the Goodhue Ditch, passes through the southeastern portion of the Phase II project area. This ditch was previously recorded by Native Cultural Services as part of a trail corridor survey for the Boulder County Parks and Open Space Department (Carol Gleichman 1989). Approximately 0.2 linear miles of this ditch passes through the project area. It was observed to be in fair condition, and in active use. Dyni (1989:86) states that the ditch was constructed in the late 1860s, but was unregistered, so lost seniority to other ditches. Abner and Clara Goodhue are also important early pioneers of eastern Boulder County. The ditch is not considered eligible to the NRHP or the SRHP.

Site **5BL3870**, the Bear Creek Ditch, was recorded by Native Cultural Services during the inventory of the Rolling Rock Ranch for City of Boulder Open Space (Griffitts 1992). Approximately 0.6 linear miles of this ditch pass through the western portion of the project area. It was observed to be a large, actively flowing ditch. Another active ditch branches off from the Bear Creek Ditch within the project area, and is referred to as the Upper Bear Creek Ditch on the USGS maps of the area. This branch flows north through the Shanahan Ranch and rejoins the main ditch northeast of Shanahan Hill.

Both the Bear Creek Ditch and the Upper Bear Creek Ditch are part of the same ditch, with the correct name being the "South Boulder Bear Creek Ditch". It has an appropriation date of 1862, an adjudication date of 1882, and is considered a pioneer ditch and is potentially eligible to the NRHP and SRHP. The branch termed the "Upper Bear Creek Ditch" was documented on a Reevaluation Form for **5BL3870**.

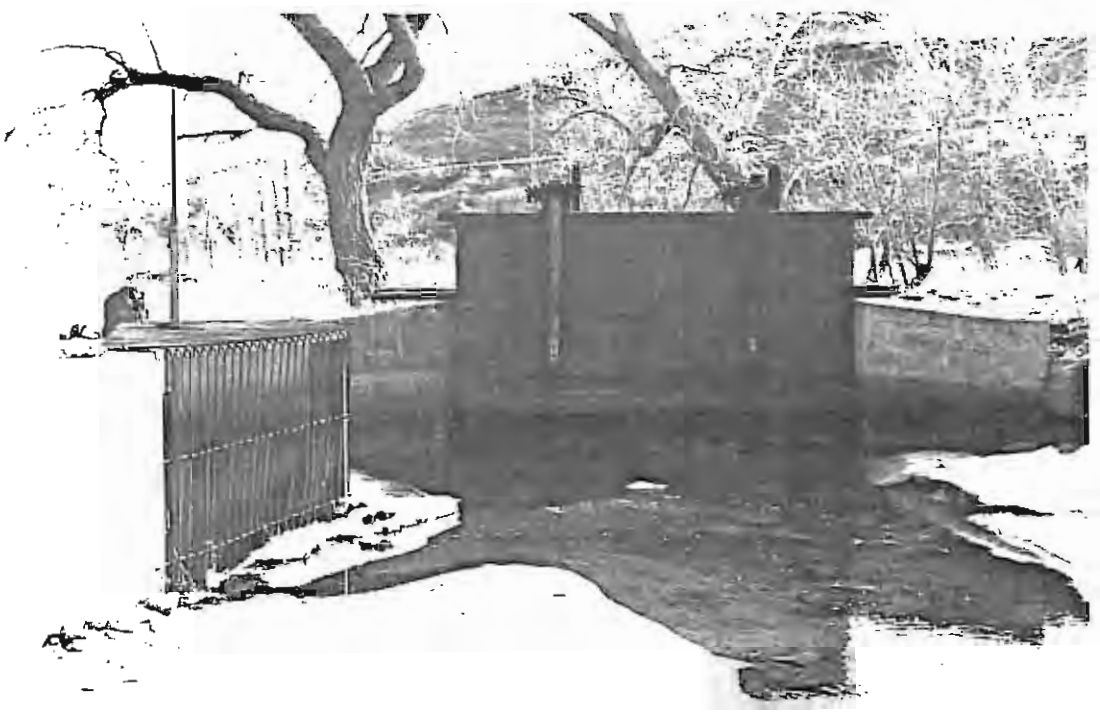

FIGURE 2 - **5BL453**: Looking East-Southeast at Headgate for Davidson Ditch.

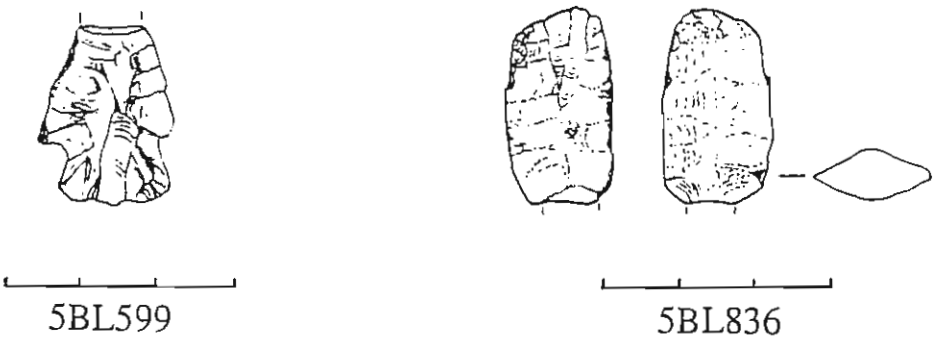

FIGURE 3 - Line Drawings of Previously Recorded Isolated Finds, **5BL599** a Late Prehistoric Projectile Point (AD 1-1550), and **5BL836** a Mid-Section of an Eden Point (6000-7000 BC). Scales in Centimeters.

The McGilvery Cabin, site **5BL3459**, is a small home site consisting of a cabin, outhouse, small corral, and other small features. This site was recorded in 1991 by members of the Indian Peaks Chapter of the Colorado Archaeological Society. The original cabin architecture was identified as being of a type that was commonly built from 1870 to 1885. A homestead patent was given to Marie Pruden in December 1902, though the homestead had probably been in existence for some time prior to this date. The McGilverys purchased the property in 1906, and an addition was added to the cabin in 1917 - 1920. The outhouse on the site was originally a milking shed that was moved to replace the original outhouse. This site was considered field eligible to the NRHP, and Boulder Open Space plans to stabilize and preserve the property.

The Stockton Cabin, site **5BL3812**, is another small home site that was also recorded by members of the Colorado Archaeological Society in 1991. The site consists of a cabin, outhouse and other associated features. The cabin is a one-room frame dwelling, lightly constructed, probably for summertime occupation. The cabin may have been built originally as a miners cabin, judging from the presence of mine shafts in the area (recorded as **5BL3906** and **5BL3907** in this report). Lincoln and Jessie Stockton were known to have homesteaded in the area sometime prior to 1910, possibly as early as 1890. The Stocktons were known to be active in mining in the 1870s, 80s, and 90s. This site was also considered field eligible to the NRHP, and Boulder Open Space plans to stabilize and preserve the property.

Isolated Find **5BL599** is a Late Prehistoric, corner-notched projectile point. The point is almost complete, with only its tip missing (Figure 3). It was collected by an Open Space Junior Ranger. The point was found laying on a large rock at the juncture between two heavily used trails. This suggests that the artifact had been collected by a hiker on the trails, and transported to that rock. The original provenience of the point is unknown, and it could have been transported from between a few feet to several miles away.

Isolated Find **5BL836** is a mid section of an Eden projectile point, which was excavated and collected by an Open Space Junior Ranger while installing a water bar in a trail on Shanahan Hill (Figure 3). It is intriguing that this point fragment was found below the surface, suggesting the high potential for a buried archaeological component. However, there is some question as to whether the soil in this area is original or was brought in as fill dirt from elsewhere. We subjected the area where this point had been found to an intense and thorough survey, but were unable to locate any additional cultural evidence, even though the area is incised by several informal trails.

In the South Mesa Trailhead area, The DeBacker-Blake-Hedgecock Homestead was known to have historic buildings. The site is east of the Dunn House, and while owned by Open Space is still occupied as part of a life estate. The homestead had not been previously documented and was recorded as site **5BL3864**.

Two home sites that had not been formally recorded were known to exist in the Phase I portion of this survey. One was the home site of the Manchester Family, known to have lived in the area for a short time at the beginning of the 20th century. We recorded this site as **5BL3883**. The other was the cabin and small cattle ranch of an unnamed person who had been a rider in the rodeo, and lived in the area sometime after World War I. This site was recorded as **5BL3880**.

Many sites recorded during the Phase II portion of the survey were previously known, but undocumented. This was to be expected, considering the heavy recreational use the area receives. Two sites in particular are located immediately on well used recreational trails. The first site is informally known as the "Schoolmarm's Cabin". This cabin was known to be

occupied by a Denver schoolteacher during the 1920s. This site was recorded as **5BL3898**. The second site is the Brammeier Homestead, recorded as **5BL3899**.

TABLE 1
List of Previously Recorded Cultural Resources within the Project Area.

Number	Site/IF	Field Eligibility
5BL400	C & S Railway, Denver & Interurban	Eligible
5BL453	Davidson Ditch	Eligible
5BL599	Late Prehistoric Projectile Point	N/A
5BL765.1	DeBacker-Dunn House	Eligible
5BL836	Eden Point Fragment	N/A
5BL2719	Goodhue Ditch	Not Eligible
5BL3459	McGilvery Cabin	Eligible
5BL3812	Stockton Cabin	Eligible
5BL3870	So. Boulder Bear Creek Ditch	Need Data

Cultural resource inventories conducted in areas near the current project area provide comparative information on the human use and occupation of southern Boulder County:

Historical Site Survey: Manuel Weiss (1981), on behalf of the Boulder County Historical Society and Boulder County Parks and Open Space, did initial documentation on numerous historical sites in Boulder County. The focus was on standing buildings and structures, and homes, schools, churches, mine buildings and kilns were recorded. This documentation serves as the baseline for historical studies in the county. Two historic districts have been recorded adjacent to the project area, **5BL755.0**, the Boulder Mountain Parks Historic District to the west of the project area, and **5BL765.0**, the Eldorado Springs Historic District to the southwest of the project area. The Eldorado Springs Historic District, as defined by Manuel Weiss, included the Dunn House, but as discussed above, the Dunn House should not be considered part of the Eldorado Springs Historic District.

Rock Creek/Coal Creek Corridors: A survey of 13.3 miles of the proposed Rock Creek/Coal Creek trail corridors in eastern Boulder county was conducted by Native Cultural Services on behalf of Boulder County Parks and Open Space. Fourteen sites were located in the project area, including irrigation ditches, bridges, railroads, mine dumps, and two prehistoric sites. The two prehistoric sites, **5BL239** and **5BL2712**, as well as the Rock Creek Farm (Stearns Dairy) **5BL787** are eligible or potentially eligible to the National Register (C. Gleichman 1989).

South Boulder Creek BLM Parcels: An inventory of BLM tracts near South Boulder Creek, west of the current project area, was also conducted by Native Cultural Services on behalf of Boulder County Parks and Open Space. Eight historic sites and one prehistoric isolated artifact were located in the 1133 acres surveyed. Railroads, a cabin foundation, roads, the Crags Mountain Resort, a flume, and the South Boulder Diversion Dam and Conduit were evaluated. The Denver & Rio Grande Western Railroad, **5BL445**, and the flume, **5BL2372**, are regarded as potentially eligible to the National Register. Site **5BL2375**, the South Boulder Diversion Dam and Conduit is eligible to the National Register (Gleichman and Gleichman 1988).

Eldorado Canyon State Park: An inventory of the Castlewood acquisition, west of Eldorado Springs, resulted in one prehistoric site (Woodland Complex), two prehistoric isolated artifacts and two historic complexes being located and recorded (Hand 1981).

Walker Ranch: A survey of the Walker Ranch, in the mountains west of the current project area, resulted in the ranch, **5BL235**, being listed on the National Register as an Historic District (Kranzush 1980).

Southern Open Space: A survey of 1,210 acres of City of Boulder Open Space in Sections 32, 33, and 34, T1S, R70W was conducted by Native Cultural Services (Gleichman and others 1991). The area contained 16 cultural resources, consisting of three irrigation ditches, four historic structures, an historic rock shelter, a railroad, a wagon road, two prehistoric sites, and four isolated finds. Sites **5BL3141** (McKenzie Ditch), **5BL3142** (Eggleston Filler Ditch No. 3), **5BL3145** (Eggleston Filler Ditch No. 4), **5BL3144** (historic ruin), and **5BL3153** (prehistoric stone circle complex) are eligible to the National Register. Sites **5BL3139, 5BL3140,** and **5BL3428** (all historic structures) are potentially eligible to the National Register.

STATEMENT OF OBJECTIVES

The inventory of Boulder Open Space property between Bear and South Boulder Creeks has several related objectives. The primary objective of the present project is to provide the City of Boulder Open Space Department with a complete inventory of archaeological and historic sites in the project area, with an evaluation of the significance of the sites. To accomplish this, the project area was intensively surveyed to insure that all visible cultural resources were documented and assessed. A literature search was conducted, combined with archival research to attempt to trace the major documents and collections which pertain to the project area.

All cultural resources will be evaluated for their significance in terms of eligibility for inclusion on both the State Register of Historic Properties and the National Register of Historic Places (see the Management Recommendations section below for criteria of eligibility). Cultural resources which do not meet the criteria for inclusion on the State or National Register may still be locally significant, albeit informally, in that they provide the opportunity for education regarding the history and prehistory of Boulder County. This can be achieved through the use of interpretive signs or trail maps/brochures discussing points of interest of the cultural landscape, or through on-site programs involving the public. An additional objective is to produce recommendations on how to protect the cultural resources from adverse impacts due to the use of the area for recreation and other purposes, and to assess other threats to the resources. In addition, an attempt has been made to further our understanding of the prehistory and history of the area through the development of a set of expectations based on findings during previous investigations in the vicinity.

It was expected that if prehistoric cultural resources were located within the project area, information obtained from these resources would be applicable to a number of research concerns such as regional chronology, settlement patterns, resource utilization, site function, and cultural affiliation. Many of these issues are outlined in Eighmy's (1984) "Colorado Plains Prehistoric Context". Data concerning historic sites could provide information regarding mid to late 19th

and early 20th century homesteads, farming and ranching in Boulder County, as defined in the Boulder Historic Context Project (Friedman 1989; see also Mehls 1984a, 1984b).

Archaeological site density in this part of eastern Colorado is variable. Previous cultural resource surveys in the immediate area have identified historic resources (generally associated with irrigation, and mining endeavors), a few prehistoric sites, and isolated artifacts. The low number of aboriginal sites known for this area is perhaps in part accounted for by the heavy vegetation growth leaving ground visibility poor. Prehistoric camps tend to be located near water sources in areas of low slope such as terraces or ridge tops. The proximity of perennial water sources such as South Boulder Creek and Bear Creek, and the presence of Tall Grass Prairie, appear to have attracted prehistoric peoples to the area, especially during the Ceramic Period (A.D. 1-1550). Yet, areas immediately adjacent to South Boulder and Bear Creeks within the project area were expected to contain little surface evidence of prehistoric occupation or use due to the number of floods which have occurred, and to problems of surface visibility.

Historic Euro-American remains were known to be present in the project area, and exhibit much higher visibility than prehistoric sites. Because of the history of farming, ranching, mining, and recreation within and adjacent to the project area, resources related to these activities were expected, such as house foundations, animal enclosures, irrigation ditches, farm machinery, and trash deposits.

FIELD METHODS

South Mesa Trailhead

Fieldwork for the South Mesa Trailhead portion of this cultural resource inventory was completed during January and February of 1992. A Class III cultural resource inventory (intensive pedestrian survey) was completed of approximately 341 acres in Sections 19, 20, 29 and 30 of Township 1 S, Range 70 W, of the 6th Prime Meridian. This survey area included flat and rolling grasslands, and low foothills and mesas of the Colorado Front Range. A crew of four to five field archaeologists conducted the fieldwork, under the direction of Peter Gleichman.

The inventory was conducted by a crew walking adjacent linear transects, with individuals spaced at 15 to 25 meter intervals. Transects varied according to the terrain. In more level areas transects followed straight lines, generally north-south or east-west. For steeper areas, transects followed the contour of the slope.

Due to vegetation, surface visibility tended to be minimal in most locations in the project area. Therefore, exposed ground surfaces such as erosional areas, drainage cutbanks, incised livestock and pedestrian paths, rodent burrows, ant nests, and unmodified two-track roads, were carefully examined for the presence of cultural material. Evidence of cultural resources was sought in the form of prehistoric and historic debris, structural remains, or any unusual surface disturbances. When an artifact or cultural feature was encountered, the immediate area was carefully surveyed for additional cultural manifestations, so the area could be defined as a site or isolated find.

Areas with fewer than four prehistoric or historic artifacts, or with a single cultural feature, but no associated artifacts, were recorded as Isolated Finds, while anything more was recorded as a site. The Colorado Cultural Resource Survey Isolated Find Record was completed for each isolated find. Isolated finds were sketched or photographed.

Historic sites were defined by the presence of an historic feature with associated artifacts, or by more than one historic features, or by the presence of substantial structures, such as foundations, ditches, or substantial amounts of diagnostic historic trash. The Colorado OAHP Management Data Form and Historical Archaeological Component Form and Historic Building/Structure Form (where applicable) were completed for historic sites. Continuation Sheets were also completed where appropriate. Historic sites were documented with sketch maps and black-and-white photography. The sites were located on appropriate USGS 7.5' quad maps. For an artifact to be considered historic, it had to be determined to be at least 50 years old. Isolated occurrences of discarded refuse artifacts that could not be identified as strictly historic were considered modern, and were not recorded.

No prehistoric or aboriginal cultural material was encountered on this portion of the survey.

Phase I

Fieldwork for the Phase I portion of this cultural resource inventory was completed during April and May, 1992. As with the South Mesa Trailhead portion, a Class III cultural resource inventory (intensive pedestrian survey) was completed of approximately 1486 acres in portions of Sections 7, 16, 17, 18, 19, and 20 of Township 1 S, Range 70 W, of the 6th Prime Meridian. This survey area included flat and rolling grasslands, and, in the northern portion of the project area, low foothills and mesas of the Colorado Front Range. A crew of four to five field archaeologists conducted the fieldwork, with David Tucker and Janet Griffitts serving as field directors. Peter Gleichman was the Principal Investigator.

The inventory methods and procedures were the same as described above for the South Mesa Trailhead. Isolated find and historic site definitions were the same as for the South Mesa Trailhead.

Prehistoric sites were minimally defined by the presence of four or more artifacts, or one or more cultural features, such as a hearth or circular stone alignment, with associated artifacts. The Colorado OAHP Management Data Form and Prehistoric Archaeology Component Form were completed for each prehistoric site. Artifacts and features were marked with pinflags so that the distribution of materials could be observed and mapped easily. Locations of artifacts and features were mapped from an arbitrary datum by compass and measuring tape or foot pacing. Maps included nearby topographic or cultural features, such as ridges, slopes, or fences. Each site was carefully located on a topographic map (Eldorado Springs 1965 [1971, 1975] and Louisville 1965 [1979] Quadrangles, 7.5 minute series).

Phase II

Fieldwork for the Phase II portion of this inventory was completed between June and September, 1992. The Phase II project area totals approximately 1639 acres. A Class III cultural resource inventory (intensive pedestrian survey) was completed of approximately 714 acres between the powerline on the east and the Mesa Trail on the west. The area to the west

of the Mesa Trail, as part of the uplift of the Front Range, tends to be extremely steep, and in places vegetation is quite dense (e.g., the bottom of Shadow Canyon). For these reasons, archaeologists did not walk systematic transects covering the area. Instead, the slopes were visually scanned with binoculars from opposite ridges. Known sites were visited and recorded, and areas deemed likely to contain sites were checked. This constitutes a Class II inventory (sample survey). Approximately 802 acres were surveyed at a Class II level. This area, between the powerline and the Boulder Mountain Park, includes portions of Sections 7, 18, and 19, Township 1 South, Range 70 West, 6th P.M., and portions of Sections 12, 13, 24, and 25 of Township 1 South, Range 71 West, 6th P.M. An additional area was intensively inventoried (Class III). Open Space in the west 1/2 of Section 20, T1S, R70W, between the South Boulder Creek Trail and South Boulder Creek, and Open space in the northwest 1/4 of Section 21, between South Boulder Creek Trail and Eldorado Springs Drive was inventoried, an area of approximately 123 acres. A crew of four to five field archaeologists conducted the fieldwork, with Janet Griffitts and David Tucker serving as field directors. Peter Gleichman was the Principal Investigator.

Inventory methods and procedures for the Class III inventory are the same as those employed for the South Mesa Trailhead and Phase I. Isolated finds and sites were defined using the same criteria as employed during the South Mesa Trailhead and Phase I surveys.

RESULTS: FIELD RESEARCH

South Mesa Trailhead Field Results

As a result of this field inventory, nine cultural resources were documented as being wholly or partially in the project area. Four sites and three isolated features were recorded. These consisted of the DeBacker-Blake-Hedgecock Homestead, an historic irrigation ditch, a water pipeline, and a developed spring, a stone wall, and a road/wall. The Doudy-DeBacker-Dunn Homestead, previously recorded as site 5BL765.1, was rerecorded. The Davidson Ditch, 5BL453, originates in the South Mesa Trailhead area. The Mesa Trail has one terminus at the South Mesa Trailhead. The Mesa Trail was documented as site 5BL3924, and is described in the Phase II section of this report.

For the locations of these sites, see Map 4 in Appendix A. These cultural resources are summarized below, as are other cultural manifestations noted on the survey. The Colorado Cultural Resource Survey Forms with more detailed information may be found in Appendix B of this report.

Sites

Two large and complex homestead sites are in the South Mesa Trailhead project area. The Doudy-DeBacker-Dunn Homestead (**5BL3863**) and the DeBacker-Blake-Hedgecock Homestead (**5BL3864**) present a problem in site definition. We are unsure of what the original homestead established by Doudy encompassed. While there are some records of the land DeBacker and Dunn owned, some of that land is outside the project area, and some of it is now privately owned. The land owned by DeBacker and Dunn changed over time. In addition, the Hedgecock Homestead (**5BL3864**), to the east of the Doudy-DeBacker-Dunn Homestead, was

originally owned by DeBacker and subsequently by his sister and brother-in-law, the Blakes. Cultural features between the two habitations may have been constructed by either family, or both in cooperation.

Site **5BL3863** as defined here includes land which is now Open Space, which was owned by both DeBacker and Dunn, and apparently Doudy (purchased by one Henry Matthys from Doudy, and sold by Matthys to DeBacker in 1869) without intervening owners. It includes the habitation complex and several features which are some distance from the dwelling area. Several stone walls/fences are in the area, including one (Wall No. 1) which is continuous from west of the **5BL3863** dwelling area to east of the **5BL3864** ranch complex. Since the only historical documentation regarding the construction of the stone walls involves John DeBacker, Wall No. 1 has been described and documented as part of **5BL3863**, even though it extends beyond the boundaries of the site as presently defined.

Site **5BL3864** is defined to include the ranch complex and associated features. While the Blakes owned more land than is included in the site, some of that land is now private. All cultural manifestations which can be attributed to the Blakes and Hedgecocks are included in the site area. The westernmost portion of Wall No. 1 forms the northern boundary of the site. This portion of the wall has been maintained by the Hedgecocks, and is described and documented with both **5BL3863** and **5BL3864**. Irrigation features present in the floodplain of South Boulder Creek east of the Dunn House have been recorded as part of the DeBacker-Blake-Hedgecock Homestead.

Site **5BL3863** is the Doudy-DeBacker-Dunn Homestead (Figure 4). The primary manifestation of the homestead is a two story building constructed of roughly shaped, irregularly coursed fieldstone, built by John DeBacker in 1874 or 1875 (Figure 5). This building, commonly called the Dunn House, is the remaining portion of the dwelling which included a log house constructed by Doudy. The log portion of the house and all associated out buildings have been demolished, however a number of features and structures remain. Foundations are present for at least two rooms on the south side of the Dunn House, and a ditch is evident which brought water to the house. Four segments of stone walls are directly west of the house, as is a barn foundation slab. Several depressions and concrete slabs are near the house.

South of the house an apple orchard extends to the terrace edge. A wagon road traverses the terrace slope, between the floodplain and the top of the terrace. Two structures are present on the terrace slope, cut into the terrace bank. Structure 1 is a stone-walled room 10 x 14', with coursed walls up to 44" high (Figure 6). A deposit of coal dust is on the ground surface within the room. Structure 2 is a storage structure, 46 x 56 x 24" high, with earthen walls and a roof of corrugated metal with soil on top (Figure 7). Stacked rocks on either side of an entry framed with milled wood forms the front of the structure. A small deposit of trash is present near Structure 1, consisting mainly of cans, probably dating to the 1940s or 1950s. A large dump of building material and artifacts, 12 x 10 yards and several yards deep, is on a terrace southwest of the Dunn House. The dump contains axe cut v-notched logs, milled lumber, wire nails, sheet metal, several kinds of wire, and leather harness.

South Boulder Creek also contains cultural features including check dams of boulders, probably placed to create fords, and a concrete spillway or lip some 50 yards long which leads to the Davidson Ditch diversion structure. Three wooden posts protrude from 5 to 6 feet out of the ground on the south edge of the creek, possibly used to anchor some sort of cable or conveyance to transport material across the creek. Another road segment extends from the

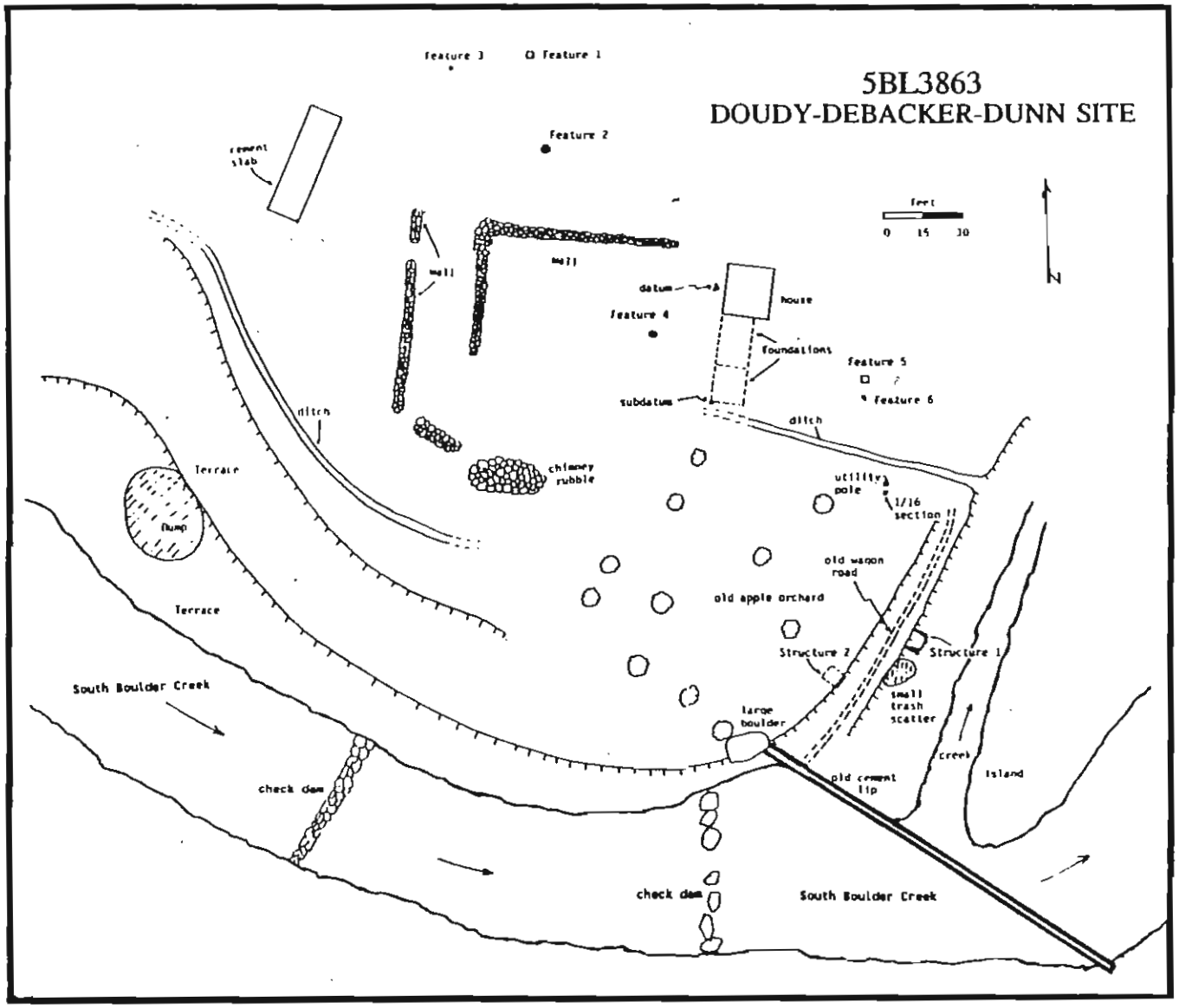

FIGURE 4 - Plan View of Site **5BL3863** Showing Major Cultural Features in Habitation Area.

FIGURE 5 - **5BL3863**: Looking West at DeBacker-Dunn House.

FIGURE 6 - **5BL3863**: Looking Northeast at NE wall, Structure 1.

FIGURE 7 - **5BL3863**: Looking Northwest at Entry to Structure 2, Storage Structure in the Creek Bank/Terrace Slope.

FIGURE 8 - **5BL3863**: Looking Southeast at Segment of Wall #1.

floodplain south of the creek, to the west, sloping up to the top of the terrace where the current Eldorado Springs Drive is. The road has a foundation of stacked stones and is 79 yards long.

Two small feeder ditches are visible south of the creek, both with milled wood and wire nail headgate boxes. Other small ditches used by the Dunns were not visible, either because they no longer exist or because they were obscured by heavy vegetation.

Several stone walls or fences are evident. Wall No. 1 is the longest, and is located north of the Dunn House (Figure 8). From the Section 29/30 boundary it meanders to the southwest for about 437 meters and joins Wall No. 2 west of the powerline. It also is continuous to the north, through private land in Section 29, and then turns northeast on Open Space land in Section 20, running along the terrace edge for about 930 meters to a point north of 5BL3864.

Wall No. 2 runs southeast from its intersection with Wall No. 1 for about 105 meters, ending about 26 meters from the creek. Wall No. 2 also runs due west from its intersection with Wall No. 1 for 110 meters, terminating at private land just south of Wall No. 3. Wall No. 3 runs east-west along the boundary between the SW1/4 of the NE1/4 (now private land), and the NW1/4 of the NE1/4 (Open Space), a distance of about 404 meters. Wall No. 4 is south of south Boulder Creek, running north-south along the Section 29/30 line, which is the east edge of a former floodplain hay field. The wall runs south from the creek up to the top of the terrace edge, where it turns southwest and runs parallel and north of Eldorado springs Drive almost to the powerline. Walls 5, 6, and 7 are on **5BL3864.**

Site **5BL3864** is the DeBacker-Blake-Hedgecock Homestead (Figure 9). This site consists of an operating ranch with nine standing historic buildings. Building 1 is a log barn, constructed in 1859 (Figure 10). The logs are V notched, and square cut nails were used. The barn's roof has collapsed, and the walls are deteriorating. A plank floor is present, and planks with wire nails have been added for the doorway. Stanchions and a manger are present. Building 2 is a two room building of vertical planks and square cut nails (Figure 11). One room was a granary, and the other a blacksmith shop. The building was probably built before 1890. Building 3 is a chicken coop of coursed dressed stone and cement, with rough cut lumber, plastered on the inside, and constructed in 1892 (Figure 12). A concrete room has been added on to the east end. A privy is adjacent to the east end of the add on. Building 4 is a milk house/summer kitchen of dressed stone and cement, with lath and plaster on the interior, constructed in 1896 (Figure 13). Building 5 is an ice house, also built of coursed dressed stone and cement, with a cement interior and floor, with a well formerly located in the floor (Figure 14). The ice house was built in 1896. Buildings 6 and 7 include portions of the remnants of a large stone barn. The barn was built in 1913 and burned down in 1958. Concrete pads still exist marking the barn floor. Building 6 is a stone-walled garage of undressed stone, with the concrete and rock at the north end being the remains of the barn entry (Figure 15). The building was used for storage of wood, implements, and harnesses. It has been modified fairly recently with the roof line raised and construction of a new roof. Building 7 is a hay shed/dairy barn, built in 1913 as a part of the original barn. The building has metal sheathing on the sides and roof, a concrete floor and trough, and contains nine stanchions and a manger. Building 8 is a calf shed abutting Building 3 on the west (Figure 12). The shed has a metal roof, and was probably built at the same time as the barn (1913). Building 9 is the house, a 1 1/2 story brick building built in 1918, with a dormer and room added in 1958.

A garden area is present on the west edge of the ranch complex, and recent loafing sheds and a new log home are also present. A subsurface irrigation system brings water to the ranch yard area, reportedly consisting of earthenware pipe and constructed in the 1890s. Several stone walls are present in the ranch complex, and as previously stated, stone walls are present west of the

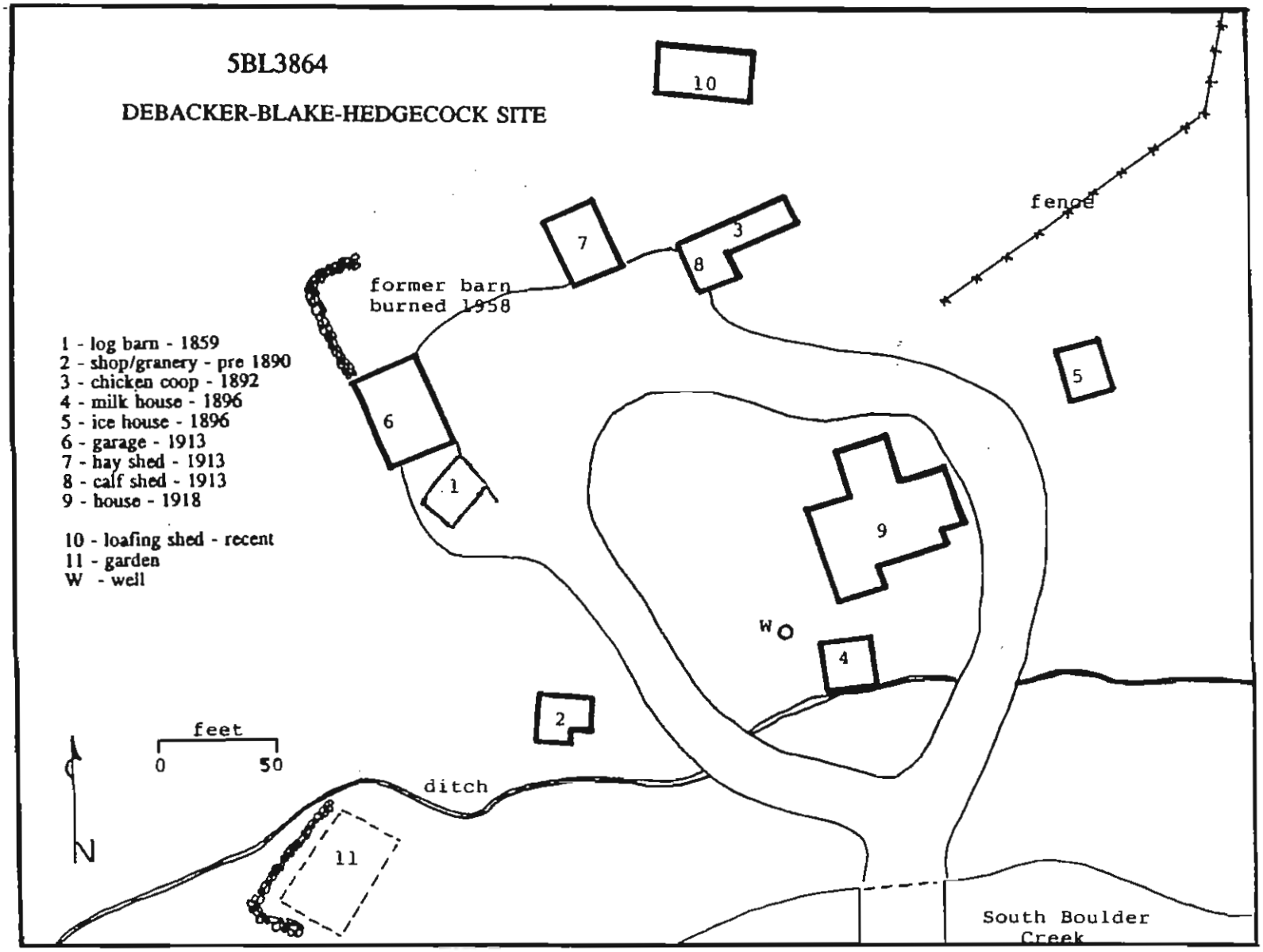

FIGURE 9 - Plan View of Site **5BL3864** Showing Major Cultural Features in Habitation Area.

FIGURE 10 - **5BL3864**: Looking North at Building 1, a Log Structure Constructed in 1859.

FIGURE 11 - **5BL3864**: Looking West at Building 2. This Building was Constructed Before 1890.

FIGURE 12 - **5BL3864**: Looking North at Buildings 3 and 8. Building 3, the Stone Walled Structure in the Center, was Constructed in 1892. Building 8 is to the Left, and was Probably Constructed in 1913.

FIGURE 13 - **5BL3864**: Looking East at Building 4, Constructed in 1896.

FIGURE 14 - **5BL3864**: Looking East-Southeast at Building 5, Constructed in 1896.

FIGURE 15 - **5BL3864**: Looking North at Building 6.

complex, and north of the ranch. The eastern segment of Wall no. 1 forms the northern boundary of this site. It runs southwest toward the Dunn House. Wall No. 5 approaches Wall No. 1 at a right angle about 409 meters west of the eastern terminus of Wall No. 1. Wall No. 5 does not abut wall No. 1, but begins about 21 meters to the south, and runs southeast for about 49 meters to the terrace edge. Wall No. 5 and the segment of Wall No. 1 northeast of Wall No. 5 are in much better condition than the wall segment to the southwest, having been actively maintained by the Hedgecocks. These segments are up to 4.5' high. Wall No. 6 runs north-south, beginning about 82 meters south of Wall No. 1 and about 50 meters west of the eastern end of Wall No. 1. Wall No. 6 runs south to the Hedgecock ranch complex. Wall No. 7 is in the southern part of the floodplain, west of the ranch complex, and south of and in apparent alignment with wall No. 5. Wall No. 7 is about 60 meters long, and is a maximum of 2 feet high, and lower in spots.

Several water control features are located in the floodplain of South Boulder Creek west of the ranch complex. The floodplain extends from the creek north to a prominent terrace. The remnants of a rock and earthen dam are along what appears to be a former stream channel. The dam is four to five feet high, ca. 100 feet long, and has been breached. It had a gate at the north end at the terrace edge, of rocks and concrete, a piece of which is washed 30 meters to the north. This dam served to pool water on the southwest side, and funnel it into a small irrigation ditch which runs northwest along the base of the terrace. Approximately 88 meters southwest of the dam is a small deep pond, with a pool area 21 by 36 feet. The pond is formed of dirt berms with a concrete and rock wall along the north side. The pond is fed by a ditch from the southwest, entering through a concrete and rock headgate, with fish outlines incised into the edges of the headgate. A gate opening for outflow is present in the concrete and rock wall, made of concrete with angle iron for the gate edges. No gate remains. This pond and the larger dam and pond to the north were used to rear trout, but were flooded out in 1938. A small, active feeder ditch runs along the south edge of the floodplain towards the Hedgecock Site. It appears recently made. Other inactive feeder ditches are present on the floodplain.

Site **5BL3865** is the South Boulder Foothills Ditch. The ditch is formally abandoned (court case 84-CW204). It had a fee appropriation date of December 31, 1883, and an adjudication date of June 21, 1926 at 20 cfs. It was abandoned February 3, 1988. The ditch began on South Boulder Creek, on what is currently private land. It flowed in a northeasterly direction, and appears to have been the filler ditch for Viele Lake (Ballinger Hollow Reservoir). The ditch is approximately 7.1km long, 1.7m (70 inches) wide, 0.7m (30 inches) deep. Within the South Mesa Trailhead project area, the Shadow Canyon drainage has been diverted to flow into the South Boulder Foothills Ditch. The ditch continues north through the Phase I project area.

Site **5BL3866** is the Lafayette Water Pipeline. Lafayette does not have records on the precise dates of construction, but according to Book 702, Pages 17-25 of the public records of Boulder County, the pipeline rights-of-way were granted in the spring of 1928, with the stipulation from the Eldorado Springs Development Co. that the "pipeline will be done by May 15, 1928" (Book 702, Page 17). The pipeline consists of 12 inch steel pipe which was buried, but in places is only 6 inches deep. It is still active. The pipeline begins at a diversion structure in South Boulder Creek canyon, up canyon from Eldorado Springs, west of the project area. It flows to the Lafayette water treatment plant just south of the City of Boulder Open Space Operations Center, east of the project area. Circular metal hatches along the pipeline right-of-way are air (pressure) relief valves. Three of these hatches are present in the South Mesa Trailhead project area, and one in the Phase I project area. They are 30 inches in diameter and extend 12-14 inches above the ground surface.

Isolated Finds

5BL3867 is a developed spring (Figure 16). The spring consists of a pipe driven horizontally into the slope of a low hillside, directing the flow of water into two troughs converted from boilers. The boilers are set on their sides (horizontal) and have had the top side cut out to form the troughs. The boilers are 1/4" boiler plate, and may be from the Marshall coal fields. They are aligned north-south, and both are 2 ft wide, with one 62.5 inches long, and one 95 inches long.

5BL3849 is an isolated segment of stone wall or fence (Figure 17). The wall is constructed of field stones, and is 19 yards long, averages 2' wide and 2' high, and is 28" high at its highest point. The wall runs east-west along the crest of a ridge south of Shadow Canyon. It appears to be marking the section line here.

5BL3850 is a segment of road and stone wall. The road begins on private land just north of Eldorado Springs, and runs north on Open Space, along the base of the hill. The road is 67 yards long and 2 yards wide, consisting of a piled field stone foundation on the east (downhill) side. The road may have been a stone wall which was later used to create a level corridor by cutting into the slope uphill from the wall and piling the soil against the wall, forming a narrow road. The road apparently terminates at a quarry pit, 15 x 25 yards, cut into the hillside. This pit may be fairly recent. It is directly south of the large "claypit" indicated on the USGS quad, which is recent, and has several smaller pits adjacent. The stone wall continues to the north, along the base of the hill, and curves east. The wall extends about 75 yards past the road.

Other Manifestations

Several cultural manifestations were noted in the project area which were not formally recorded as cultural resources, generally due to insufficient age (less than 50 years old). Evidence of "moss rock" quarrying is prevalent in the area, consisting of numerous small depressions where rocks were removed. Much of this rock gathering is recent, dating to around the 1960's.

The claypit and access road depicted on the USGS quad in the southwestern portion of the project area, north of Eldorado Springs, consists of a large pit and backdirt piles, with several smaller pits and backdirt piles adjacent. The claypit was owned and quarried by the Colorado Brick Company, and most activity there was in the last 20 to 30 years.

A can dump was found on the top of First Mesa, under a low overhanging rock. Some 30-40 cans are concentrated in an area 60 x 84". A variety of sizes of steel cans are present, most without labels. No aluminum cans are present. Two partial labels remaining are from a Campbells soup can and a can of evaporated milk. The cans were opened with a knife. Several have wire bails added, as if they were used over a fire, but they show no evidence of exposure to fire. There may have been several episodes of deposition of cans here, possibly from Boy Scouts camping, or from ranch hands involved with livestock. The cans probably post-date World War II.

Two cables (upper and lower) had been strung across South Boulder Creek where the powerline passes over. The cables are anchored to a tree on the south bank, and to a section of pole similar to telephone pole on the north bank. The cables probably functioned to transport objects across the creek, possibly equipment and material related to the powerline. They are fairly recent.

FIGURE 16 - **5BL3867**: Looking East-Southeast at Spring Pipe and Two Boilers Converted to Water Troughs.

FIGURE 17 - **5BL3849**: Looking West-Northwest at Segment of Stone Wall/Fence.

The bridge which crosses South Boulder Creek between the trailhead and the Dunn House is of recent construction. It is unknown who or when the bridge was built, but it may have been built by the Public Service Company to provide access to the powerline which runs NNW to bear Canyon.

The powerline which runs from the substation south of Eldorado Springs Drive northeasterly to Bear Canyon runs through the South Mesa Trailhead area. This powerline also forms the division between the Phase I and Phase II project areas. It is discussed with the Phase II Other Manifestations.

Phase I Field Results

Phase I of the inventory of City of Boulder Open Space between Bear and South Boulder Creeks resulted in the location and documentation of eight new sites and five isolated finds. Two of these sites had previously been known to exist, but had not been recorded. One previously recorded site, the South Boulder Bear Creek Ditch (**5BL3870**), has a branch that crosses the project area, which was documented. One previously recorded Isolated Find, **5BL836**, a mid section from a Paleo-Indian projectile point (Eden Point) had been recovered from the area. Two linear sites recorded during the South Mesa Trailhead survey extend through the Phase I project area: The South Boulder Foothills Ditch (**5BL3865**) and the Lafayette Water Pipeline (**5BL3866**).

For the locations of the newly recorded cultural resources, see Map 6 in Appendix A. These cultural resources are summarized below, as are other cultural manifestations noted on the survey. The Colorado Cultural Resource Survey Forms with more detailed information may be found in Appendix B of this report.

Sites

Site **5BL3880** (Rodeo Rider's Camp) is a historic home site consisting of the remains of three structures and other associated features and artifacts. The site rests on either side of an Open Space access road, on the top of a high east-west trending ridge (Figure 18).

Structure 1 is a square foundation, 7 x 7 yards, associated with a light scatter of historic trash, including clear and brown glass fragments, fragments of ceramics, and a single square cut nail. Down slope of this structure are the remains of a short section of stone fence. Structure 2 is a polygonal stone walled livestock enclosure, 17 yards wide (Figure 19). Adjacent to this structure is Structure 3, a somewhat enigmatic dugout structure with dry-laid stone walls, 6 x 5 yards.

Assuming that all of these structures and features are contemporaneous, this site would appear to be a habitation site associated with a small scale animal husbandry operation. Structure 1 probably served as the foundation for a house or tent that has since been dismantled. The domestic nature of Structure 1 is supported by the domestic trash in the vicinity.

Site **5BL3881** is a small stone livestock enclosure, 8 x 11 yards (Figure 20), that may be associated with **5BL3880**. It is built on the top of the same, high, east-west trending ridge, approximately 400 yards east of **5BL3880** along the Open Space access road. The only artifact

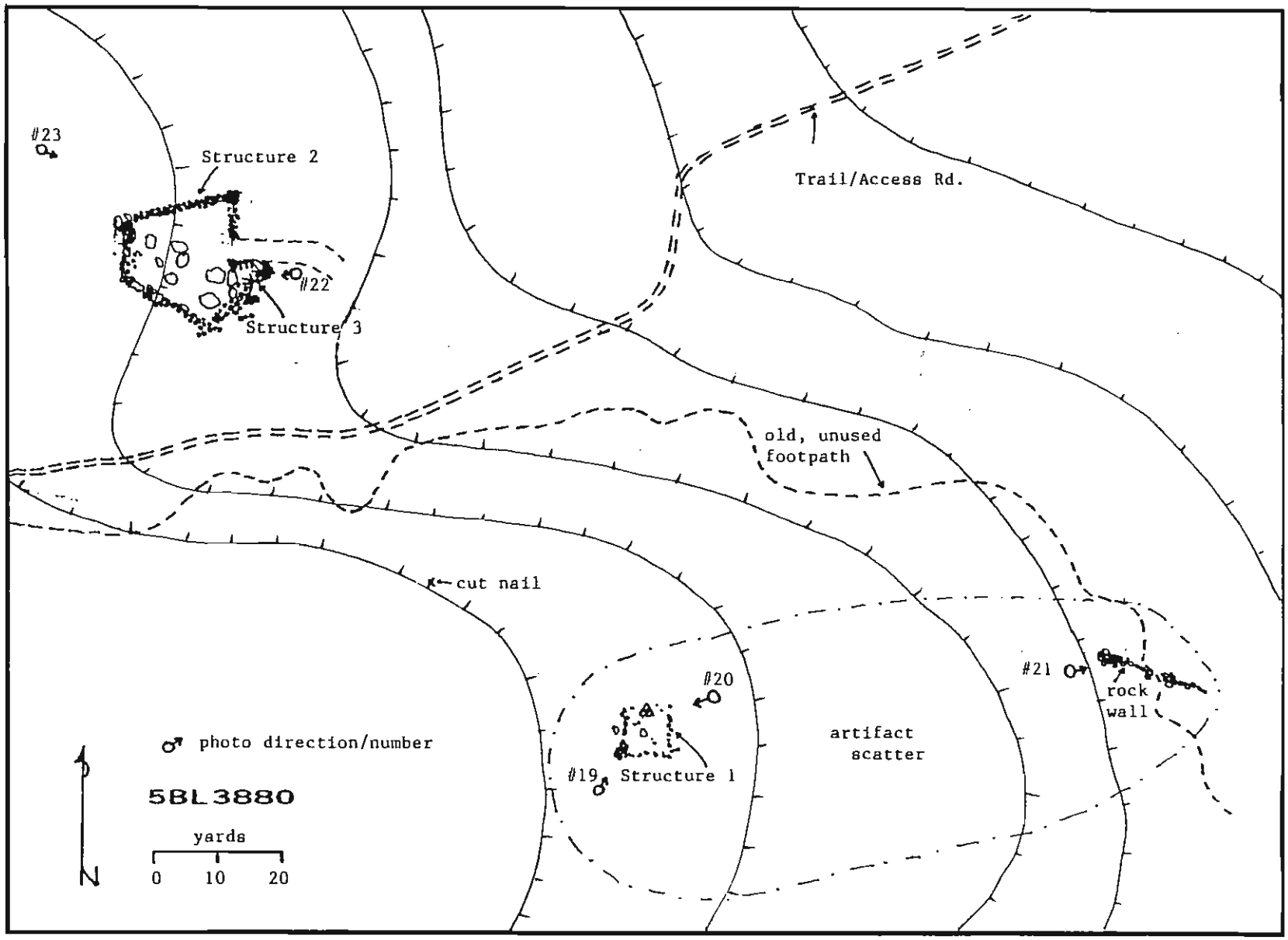

FIGURE 18 - Plan View of Site **5BL3880**, the Rodeo Rider's Camp.

FIGURE 19 - **5BL3880**: Looking Southeast at Structure 2.

FIGURE 20 - **5BL3881**: Looking East at Enclosure Structure.

noted was a rusted metal bucket, found about 50 yards to the south of the enclosure. The enclosure itself is overgrown and in a state of general disrepair.

Site **5BL3882** is a prehistoric lithic scatter exposed in the eroding path of a recreational hiking trail. There were a total of five lithics found: two contiguous fragments (found 22 meters apart) of a single tan fossilferous chert flake, one small quartzite flake, and two fragments of probable fire-cracked rock. All areas adjacent to the trail had extremely poor surface visibility due to ground vegetation and pine duff. This suggests that these artifacts may represent a slightly buried prehistoric component, as well as the possibility that the site may be more extensive than can be seen along the foot path.

Site **5BL3883** (Manchester Home Site) is a historic home site that consists of a large stone wall enclosure and the remains of six other structure foundations (Figure 21). Structure 1 is the large dry-laid stone walled livestock enclosure, measuring 44 x 56 yards. Structures 2 and 5 appear to have been dugouts (Figure 22), while Structure 3 is more difficult to identify, consisting only of stone rubble, 3 x 9 yards. Structure 4 is the foundation of a habitation structure, 7 x 8 yards, which had cement and native rock walls. Structure 6 is a small cement and rock pad or base to an unknown structure. Structure 7 consists of parallel stone alignments that may have been associated with nearby seep springs.

Artifacts at this site consist of brown, clear and purple glass, fragments of porcelain, and various barbed wire fragments. Most artifacts were found concentrated in the vicinity of Structures 2 and 4. The presence of purple glass at this site indicates a date prior to 1918. This site seems to represent a habitation site and ranching operation. The Manchester Family was known to have lived here in the late 1900s and early 1910s.

This site may be associated with two historic stone walls or fences located nearby, **5BL3891** approximately 100 yards to the north, and **5BL3890**, approximately 300 yards to the south.

Site **5BL3884** is a stone livestock enclosure and two other stone structures located next to a man-made stock pond (Figure 24). Structure 1, 4 x 7 yards, was partly destroyed when the stock pond was excavated or enlarged. Dry-laid stone rubble is all that remains. Structure 2 is a stone-walled livestock enclosure, about 18 yards to a side. Enigmatic stone rubble alignments make up Structure 3 (Figure 23), adjacent to the northwest corner of Structure 2. These three structures may represent a herd camp or a small living site that included some animal husbandry. It may have been associated with a seep spring or stock tank located where the present stock pond is, but the stock pond has clearly been modified sometime after the occupation of the site.

Site **5BL3885** is a historic home site with associated features and artifacts (Figure 25). The site covers a large area, approximately 200 yards by 180 yards, which contains the remains of three structures, many sections of stone walls or fences, and a light artifact scatter that includes square cut nails, purple and clear glass fragments and fragments of ceramic trash.

Structure 1 is a standing wooden livestock pen and loading chute that is still in use, through which an access road/recreational trail passes. Structure 2 is a depression, 8 x 12', filled with the remains of a rock and cement structure, which had probably been intentionally demolished (Figure 26). Structure 3 is the stone foundation to a rectangular, two-roomed structure that may have been a dwelling, 22 x 30'. Located near Structure 3 is a rock lined hole that probably represents a water well.

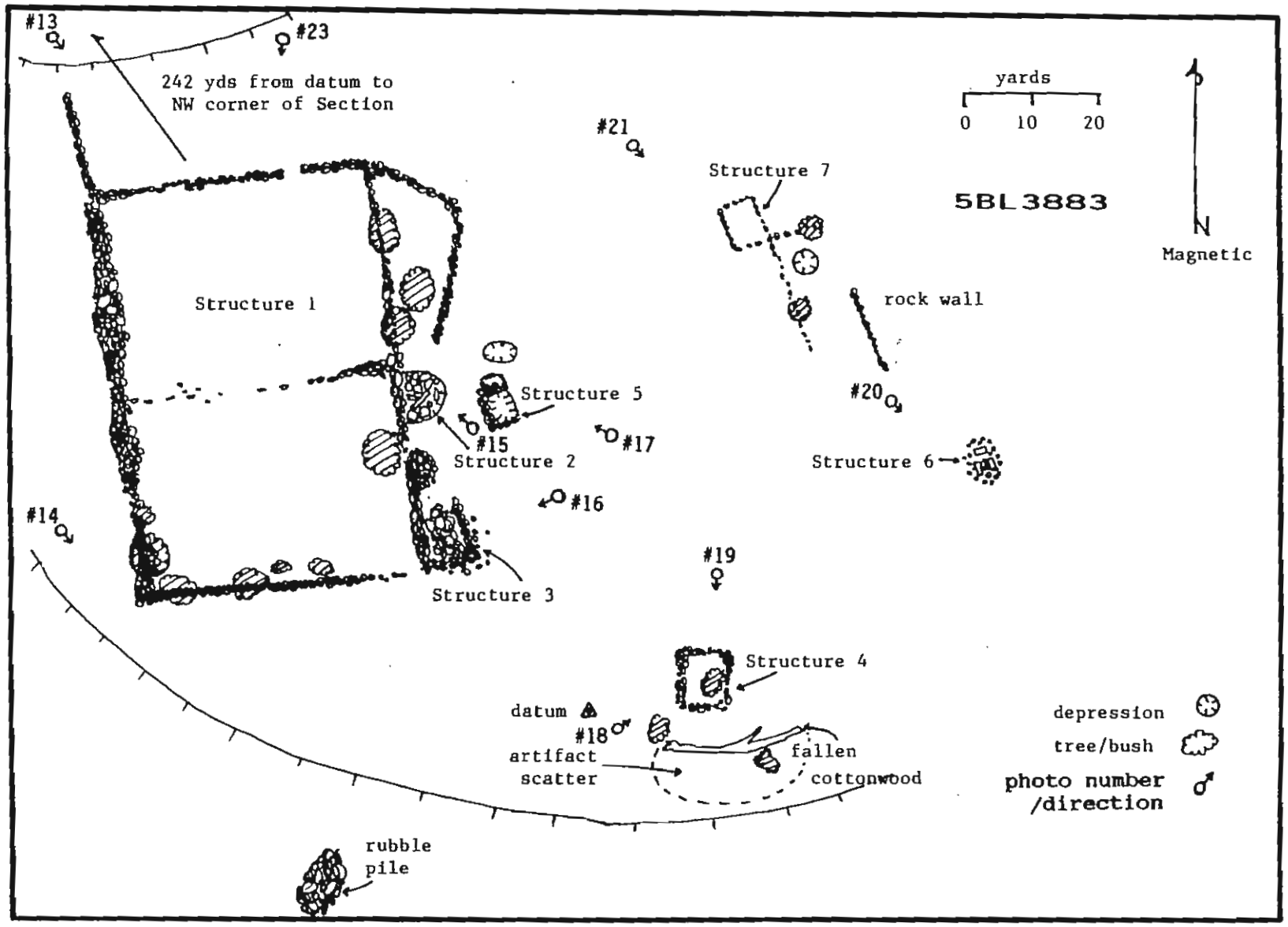

FIGURE 21 - Plan View of Site **5BL3883**, the Manchester Home Site.

FIGURE 22 - **5BL3883**: Looking Northwest at Structure 5 in Foreground, and Structure 2 in Background. Both Appear to have been Dugouts.

FIGURE 23 - **5BL3884**: Looking Northeast at Structure 3.

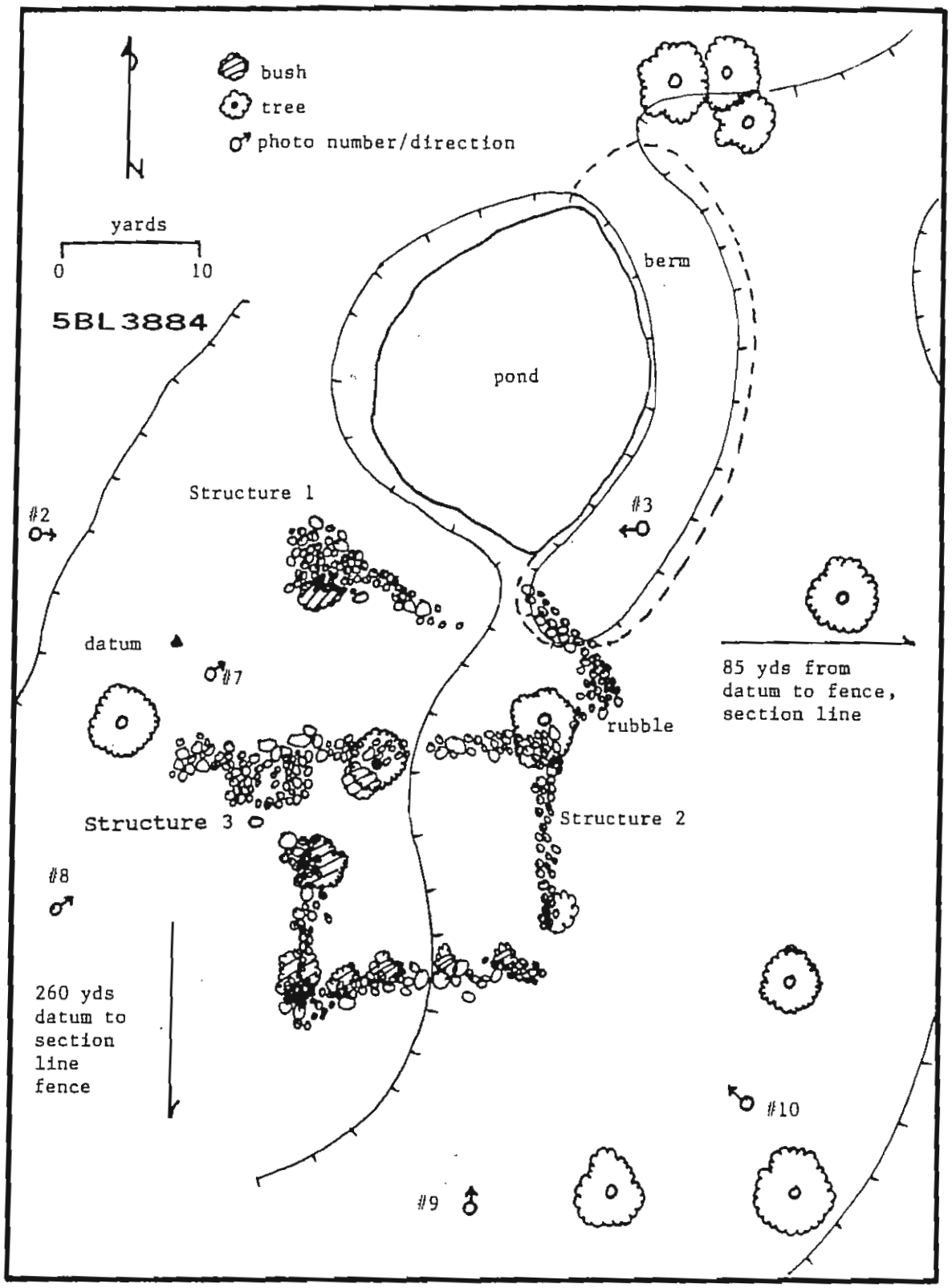

FIGURE 24 - Plan View of Site **5BL3884.**

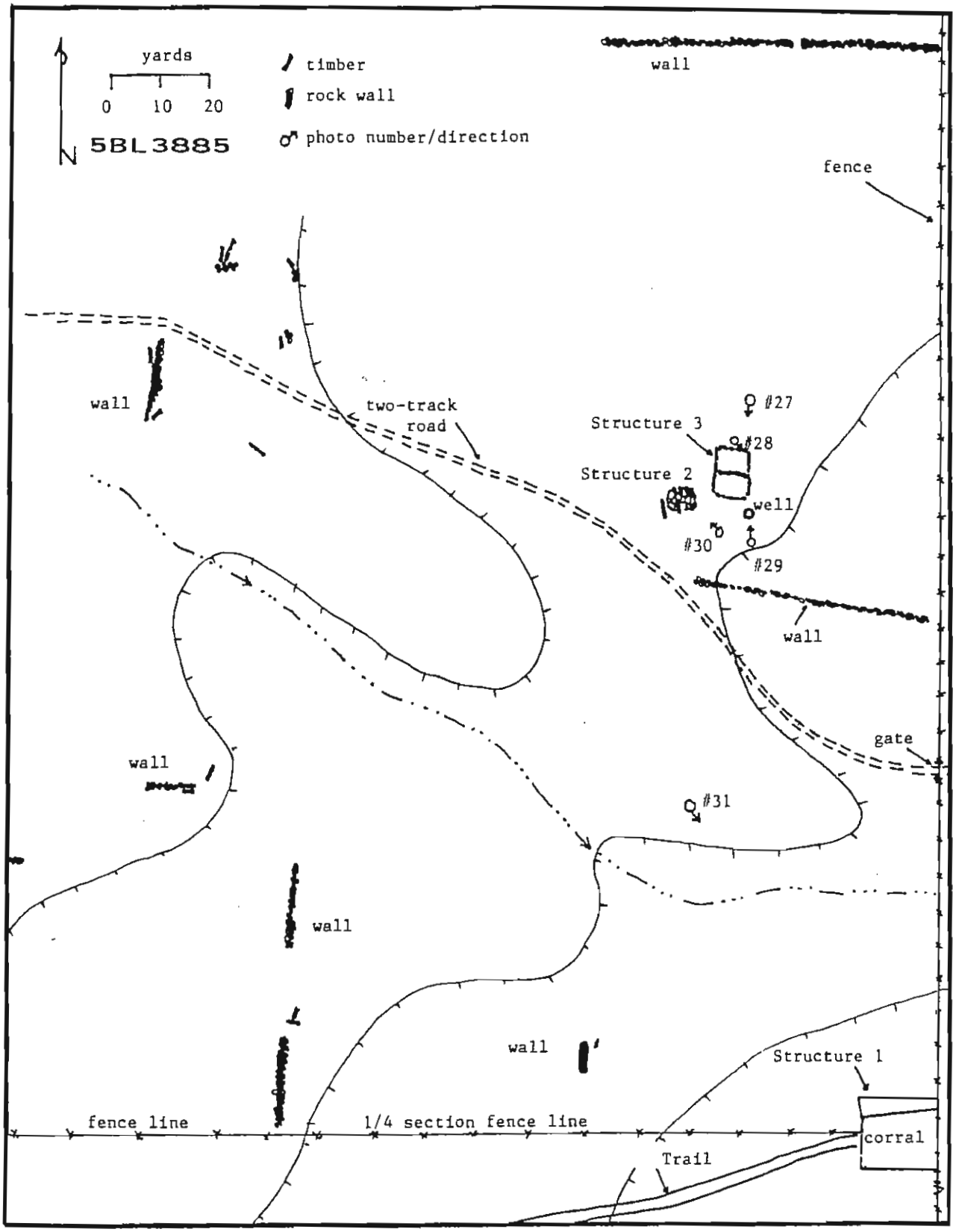

FIGURE 25 - Plan View of Site **5BL3885**.

It is unknown whether the stone fences, stone structures and wooden livestock pen are all contemporaneous. All of these structures are consistent with this being a historic home site where ranching and agricultural operations took place.

Site **5BL3886** (Jones Home Site) is a historic home site located on a low terrace just northwest of a creek (Figure 28). It consists of three low structural foundations, two small, circular depressions, and a light scatter of historic trash which includes purple and clear glass, and fragments of ceramics. Several small rock alignments may represent drainage control efforts.

Structure 1 is a rectangular foundation, 20 x 32.5', made of low stone and earth berms. This was probably the foundation of a house or dwelling. Structure 2 is a much smaller foundation, 10.5 x 12' (Figure 27), located just three yards from the entrance to Structure 1. Structure 2 may have served as a tack shed or storage pantry. To the east, near Structure 2, and again a short distance to the west, are two small circular depressions that may have been wells or latrines. Structure 3 is a rectangular stone foundation, 10 x 16', that may have served to house livestock.

This site is possibly located in the flood plain of the creek, which may provide some explanation for the structure foundations appearing partially buried. Alternatively, if these stone foundations supported sod or mud brick walls, then the decay of the walls would serve to bury the foundations. Nevertheless, post occupational deposition may have preserved floors and significant floor-context artifacts that test excavations might discover. The site appears to represent a small habitation that included farming or ranching activities.

Site **5BL3887** is a historic home site (Figure 29). This site consists of three structures and associated features with a light scatter of historic trash which includes purple, clear, and aqua glass, fragments of ceramics, tin cans, a bucket, and square cut nails.

Structure 1 is a stone-walled livestock enclosure. Associated with this structure is a shallow linear depression that may have served to control drainage. This depression leads to Structure 2, a stone foundation that may have been a small dwelling or shed. Structure 3 is a dugout structure on the banks of a small drainage that may have been a milk shed or pantry.

This site may be associated with isolated find **5BL3892**, a stone wall or fence located approximately 200 yards to the north.

Isolated Finds

5BL3888 is a prehistoric artifact, a small, fragmentary, well worn, white quartzite flake found in the cutbank of a small drainage that runs along the south side of an access road/recreational trail.

5BL3889 consists of two small rock alignments that may represent historic or prehistoric hunting blinds, located on the top, and northwest slope of a small mesa (Figure 30). The upper rock alignment is L-shaped and opens toward the east and south. Down the slope to the northwest approximately 14 meters is another small rock alignment with four sides. Off the northwest corner of this enclosure is a very ephemeral stone alignment that trends down the slope for 7 meters and terminates at a living ponderosa pine.

5BL3890 is a long, isolated stone wall or fence line. It is a compound wall, constructed of two parallel rows of native rock with a rubble fill. The wall lines up with the west wall of Structure

FIGURE 26 - **5BL3885**: Looking North at Structure 2.

FIGURE 27 - **5BL3886**: Looking South-Southeast at Structure 2.

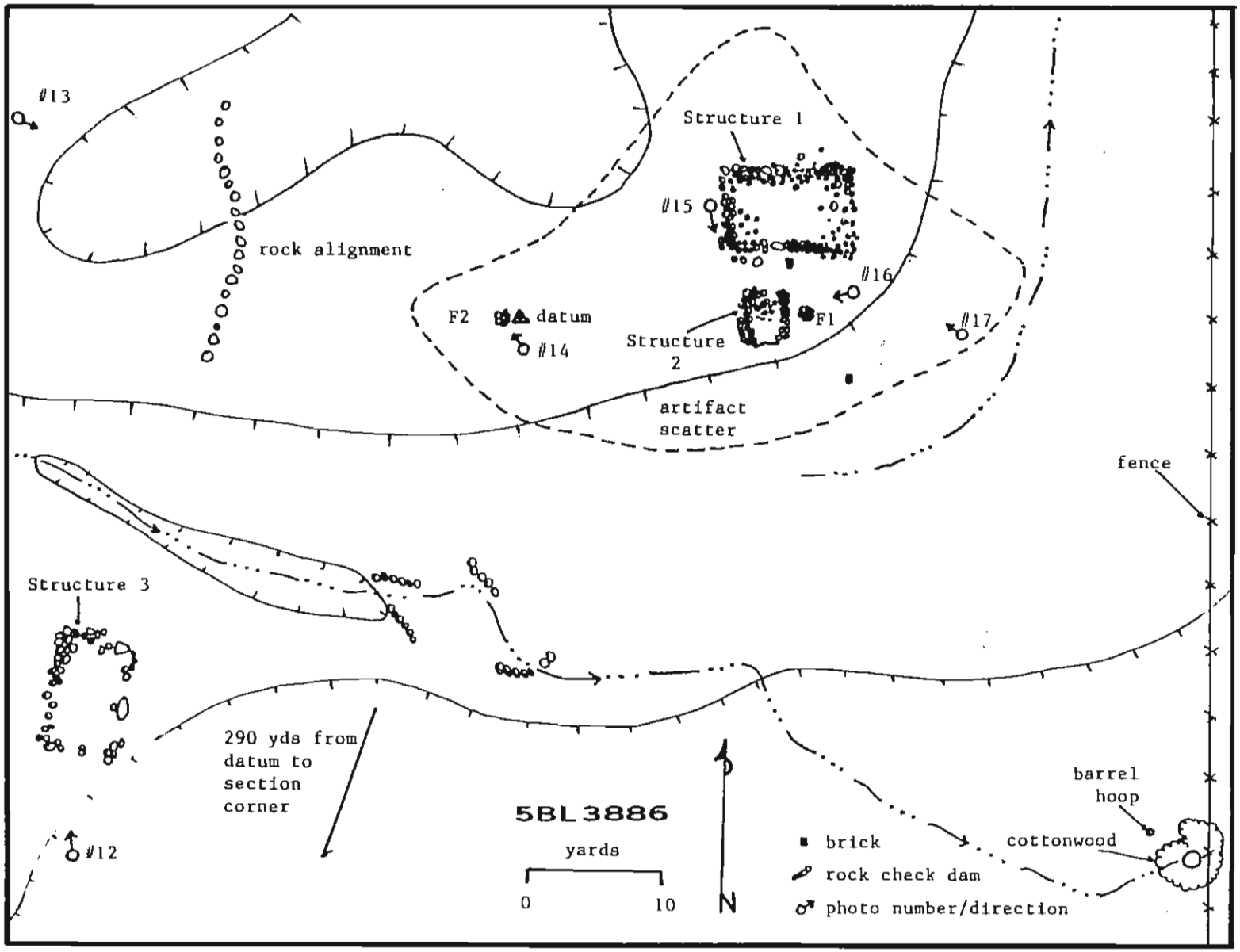

FIGURE 28 - Plan View of Site **5BL3886**, the Jones Home Site.

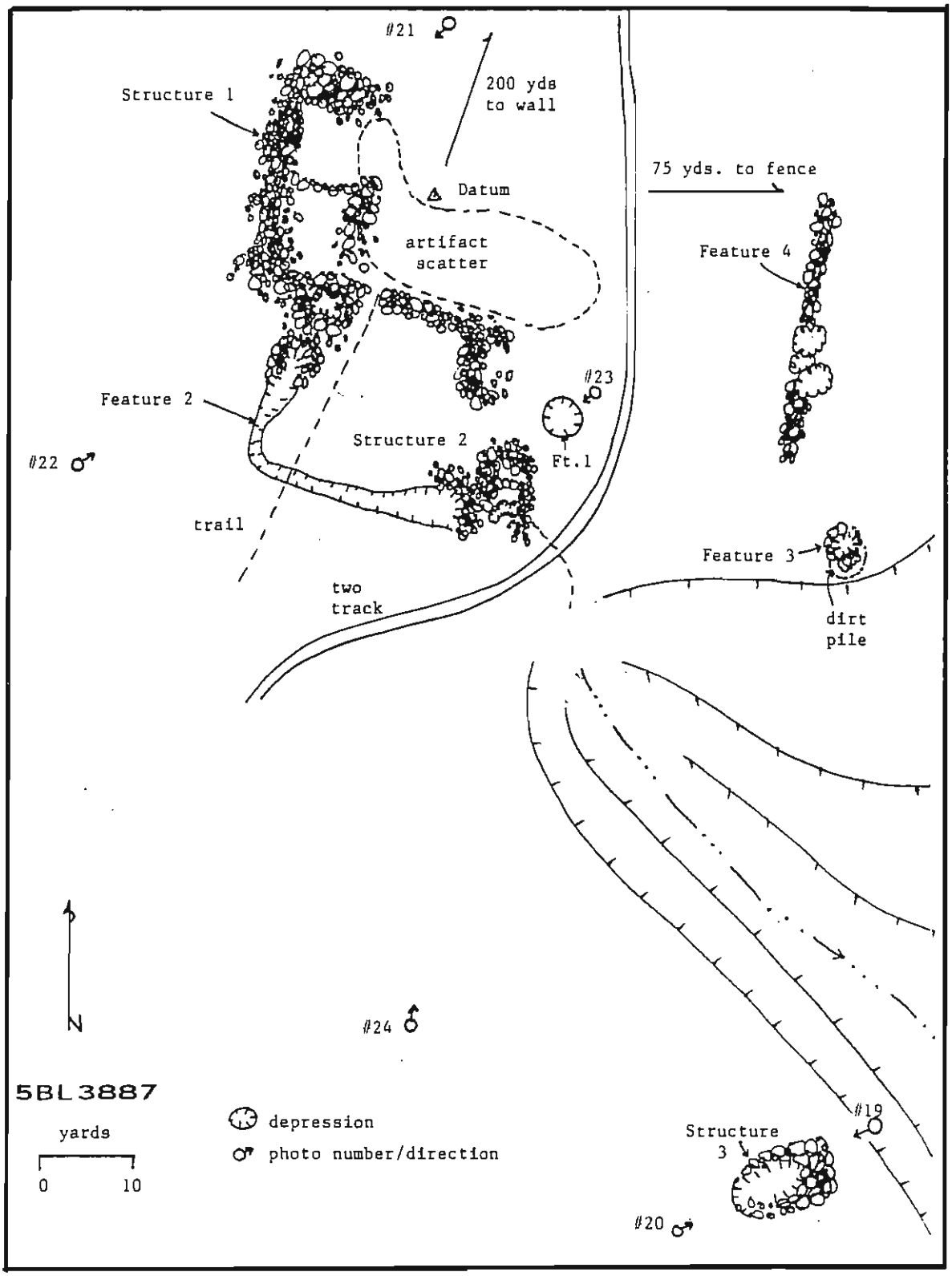

FIGURE 29 - Plan View of Site **5BL3887**.

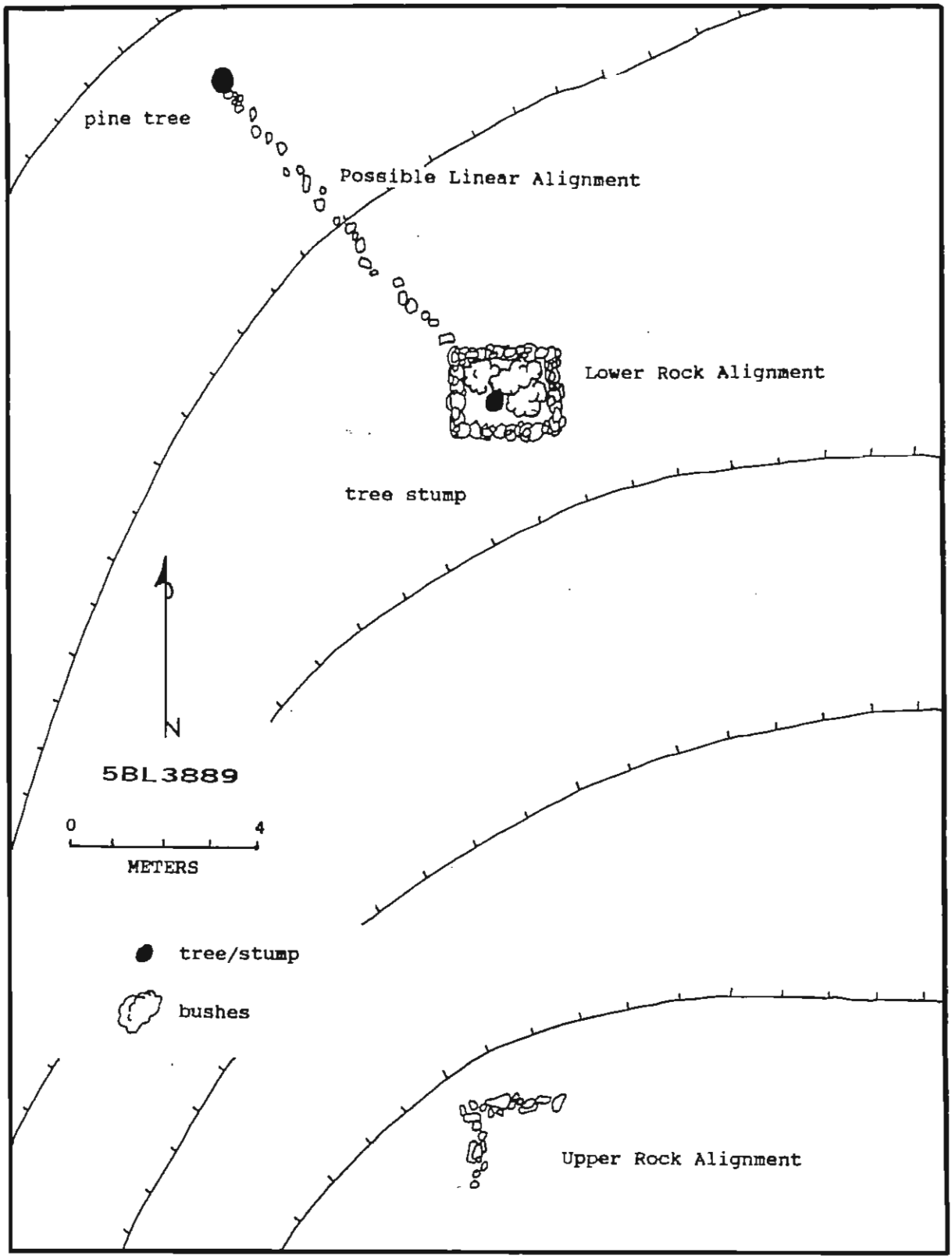

FIGURE 30 - Plan View of Isolated Find **5BL3889**, Two Possible Hunting Blinds.

1 of site **5BL3883** across the valley, but lies considerably to the south. It is approximately 200 yards long.

5BL3891 is another stone fence that runs approximately east-west, adjacent to the present north section line fence of section 20. It is constructed similar to **5BL3890** and is 250 yards long. This stone fence runs at a slight angle to the actual section line with the west end starting 32 yards south of the present fence, and the east end ending 15 yards south.

5BL3892 is an east-west running rock alignment, representing another old fence. The fence runs for approximately 90 yards to the west, where it is bisected by a two track road, then runs for approximately 100 yards further, curving to the southwest. This fence may be associated with the home site **5BL3887** to the southwest.

All three of the above stone fences may have been used in conjunction with wooden fence posts and wire, but no post or wire remains were noted. The rocks may have been placed at the base of the fence in order to shore up the posts and fill in the lowest part of the fence. Additionally, the rocks may have been derived during the process of field clearing. It is also possible that they were standing rock walls without posts or wire, but there does not appear to be enough surrounding rock rubble to have formed tall walls.

Other Manifestations

Several cultural manifestations were noted in the project area which were not formally recorded as cultural resources, generally due to insufficient age (less than 50 years old). These cultural occurrences warrant mention here, but were not considered significant enough to be documented as sites or isolated finds. Many of these occurrences are of indeterminate age, such as small trash scatters that may have been left by recreational users of the area.

Numerous two track roads were noted within the area, but these are probably associated with relatively recent activities such as cattle tending, Open Space access, and moss rock procurement. Moss rock was extensively harvested in the area before and during the 1960s. There is much evidence for this activity in the form of small depressions left in the ground where a rock was removed. One large rock was noted propped up by smaller rocks with a broken cable underneath, obviously a failed attempt.

A small number of possible cairns were noted. These may be associated with moss rock procurement, or may mark some old boundaries. A grouping of seven very small cairns was found on the slope of a small drainage just south of Bear Creek. These seemed to roughly line up in an acute "V" shape along the slope. Across the small drainage, on the top of a northeast trending ridge, there was an isolated cairn, measuring 52 x 48 inches, and is 30 inches tall. The rocks of these cairns have lichen growing on random sides. In all cases, the function of these small rock piles could not be determined.

A few small stock ponds were noted, besides the one recorded with **5BL3884**. Two ponds are depicted on the USGS quad in Section 18. Another pond is east of **5BL3887**. Some of these may be more than fifty years old, but it seems unlikely and their age could not be determined. Some stock ponds may be associated with specific sites, such as a pond down slope from **5BL3880**, and one to the east of **5BL3887**. Two watering troughs in the SW1/4 of the SW1/4 of Section 17 are made from large, iron boilers, laid horizontally with a large hole cut in the side. The troughs are about 90 meters apart.

Two small structures were noted, made of local wood and brush, and built next to rock overhangs in small drainages on Shanahan Hill. These were determined to be of modern manufacture, and had probably been intermittently occupied by homeless people in Boulder.

Several check dams were noted in the small drainages in the area. One such dam in the Fern Canyon drainage was associated with a rusted, cast iron hand axe with a decaying rubber handle. Such check dams probably represent drainage control efforts made by the City of Boulder Open Space. Other such drainage control efforts are represented by rock alignments along the sides of trails. It was noted that these rock alignments continue to be constructed, for example along the lower Big Bluestem trail connection to the Mesa Trail, which was being modified during the summer of 1992.

Barbed Wire and Fences

Many of the wire fence lines in the area make use of old posts (some with square cut nails), railroad ties, and old, spliced together barbed wire. While all fence lines had at least one strand of modern, two-barbed, two-strand barbed wire, usually running along the top of the fence, much of the barbed wire is of a four-barbed variety, though at least five other types of non-modern barbed wire were noted (Figure 31). It seems possible that at least some of these fence posts and barbed wire may have been scavenged from the many abandoned home sites in the area. This would account for the relative lack of wooden construction material associated with the structure foundations, as well as the absence of wire and posts associated with all of the stone wall bases in the area. The railroad ties used as fence posts may have been acquired from any of the many railroads that passed through the Marshall area.

The historic wire types noted on this survey (illustrated in Figure 31) can be identified along with their patent dates. These dates provide an idea of when the wires were first introduced. Unfortunately, there is no reference available that provides the date for when various wire types ceased production. Therefore, barbed wire can only provide a beginning date of use, but no end date. Most of the historic wire noted on this survey appeared somewhat rusted and pitted, suggesting that it is quite old.

The earliest patented wire found is that designated type A in Figure 31. Called Kelly's Thorny Fence, Common Variation by Clifton (1970:169), it was patented on 11 February, 1868 by Michael Kelly (No. 74379). It was the first wire to use two strands twisted together, thus adding strength, preventing sagging or breaking during changing temperature conditions, and helping to secure the barb. The barb was made of sheet metal cut in an elongated parallelogram shape, with a center perforation, which is threaded onto one strand of wire. This wire is considered "vicious" by McCallum and McCallum (1965:242-243), and would cause serious damage to unknowing livestock that was unused to being penned in by fences.

Type B is a variety of the most common barbed wire found at any point in history. Called The Winner, it was patented 24 November 1874 (No. 157124) by Joseph F. Glidden (Clifton 1970:99; McCallum and McCallum 1965:244). It is a simple double twist wire with a single wire barb wrapped twice around one of the two wires. While much of the wire in the project area is a modern variety of this type, there was a small amount found at **5BL3883** that was of a variation with a shorter barb. There is no specific date associated with the shorter barb, but this variety appears older because the wire was rusted and slightly pitted.

Type C is called Stover's Barb, Corsicana Clip Variation, patented 29 June 1875 (variation of No. 164947) by Daniel C. Stover (Clifton 1970:175). This wire is a twisted double strand with

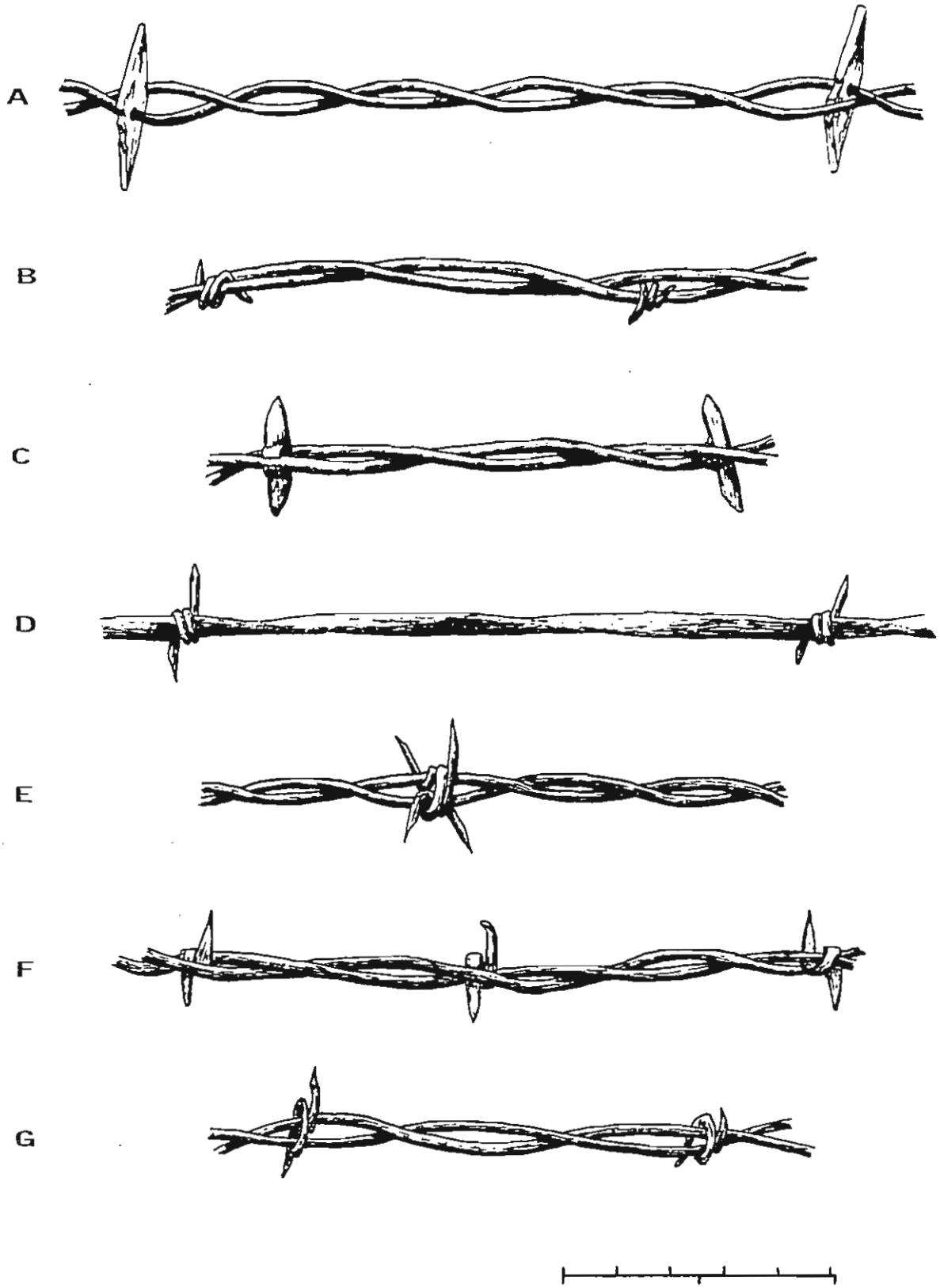

FIGURE 31 - Illustrations Made in the Field of Seven Uncommon, Older Types of Barbed Wire Noted Within the Survey Area. Top Scale in Centimeters, Bottom Scale in Inches.

unusual separate barbs. The barbs were cut with dies and were meant to be heated before attaching them to fences already in use, or the wire was heated if the barbs were attached by the factory (McCallum and McCallum 1965:244-245).

Type D is Glidden's Twist Oval, patented 22 August 1876 (No. 181433) by Joseph F. Glidden (Clifton 1970:31-32). Type D has the same type of barb as Glidden's "Winner", but it is wrapped around a single strand of twisted, oval wire. The oval wire was meant to help keep the barbs from slipping, but many of the barbs on the observed sections had slipped and bunched together (McCallum and McCallum 1965:247-248).

Type E is Burnell's Barb, patented 19 June 1877 (No. 192225) by Arthur S. Burnell (Clifton 1970:150). This is a twisted, double strand of wire with a wire barb wrapped around each strand, then around both strands and interlocked, forming a four point barb. This wire was the most successful of the four point wires and has been observed in Kansas, Missouri, Texas, and Colorado by McCallum and McCallum (1965:251-252). This type of wire was seen on almost all of the fences in the survey area.

Type F is Baker's Barb, Perfect Variation, patented 27 February 1883 (No. 273219) by George C. Baker (Clifton 1970:90). It is a twisted double strand with a flat wire barb. It was one of the three biggest in sales, second to The Winner (McCallum and McCallum 1965:260-261). Some of this wire was noted at Site **5BL3883**, as well as in small amounts in some of the fences within the survey area.

Type G is Edenborn's Point Lock, Double-strand Variation, patented 17 March 1885 (variation of No. 313929) by William Edenborn (Clifton 1970:114). It has a wire barb that passes through and around the two twisted strands of wire. This wire was found in small amounts in various fences within the survey area.

Of the above wire, types A, C, and D were only found in a short section of fence running south of Site **5BL3885**. All of the above wire that was incorporated into the fencing in the project area appeared spliced together out of shorter sections of wire. This implies that the wire is not in its original location, supporting the idea that the wire had been scavenged from elsewhere, possibly from the fences of the nearby home sites.

Phase II Field Results

Phase II of the inventory of City of Boulder Open Space between Bear and South Boulder Creeks resulted in the location and documentation of 15 sites and 18 isolated finds. Five previously recorded sites are in the Phase II area. The McGilvery Cabin (**5BL3459**), the Stockton Cabin (**5BL3812**), and a prehistoric isolated projectile point (**5BL599**) were recorded in the survey area. The Denver and Interurban Railway (**5BL400**) and the Goodhue ditch (5BL2719) pass through the southeastern portion of the Phase II area.

For the location of the newly recorded cultural resources, see Appendix A, Maps 7 and 8 for sites, and Map 9 for isolated finds. These cultural resources are summarized below, as are other cultural manifestations noted on the survey. The Colorado Cultural Resource Survey Forms with more detailed information may be found in Appendix B of this report.

Sites

Site **5BL3895** is a small historic site consisting of the remains of one structure and one feature. Structure 1 is indicated by raised berms of dirt and local field rock, outlining a horseshoe-shaped foundation, 11.5 x 13'. To the southwest of this foundation is a circular depression. A line of rocks is visible to the west on nearby private land. The function of this site remains unknown due to the absence of artifacts or identifiable features.

Site **5BL3896** is a historic trash dump located on the grade of the Denver and Interurban Railroad (**5BL400**). The site consists of a small scatter of historic artifacts and a pile of broken sandstone slabs. Both historic and modern trash are found, including purple, aqua, and clear bottle glass, fragments of ceramics, and the sole of a shoe made from an automobile tire tread. Fragments of thick, flat clear glass may be remnants of the glass jar from a wet cell battery. Also present are fragments of flat automobile window glass, from prior to the introduction of safety glass. A pile of sandstone slabs is located to the north of the trash scatter.

Some of the artifacts suggest a possible date for the deposition of this trash. Purple glass indicates a pre-1918 date of manufacture, although this is not necessarily the date of use and discard. Automobile windows of safety glass were introduced in 1923. Wet cell batteries, using a glass storage jar, are offered in the Sears Roebuck Catalogs of 1898 and 1908.

The Denver and Interurban line of the Colorado and Southern Railway (**5BL400**) was in operation between 1908 and 1926 (Smith 1989). Assuming material has not been redeposited, the site probably dates to some time soon after the abandonment of the line, in the late 1920s or early 1930s.

Site **5BL3897** is a historic home site (Figure 32). This site consists of a stone and cement dugout building, an open well, and a set of rock and cement alignments. The site is located at the base of the northwest side of a hill, along the north bank of the Goodhue Irrigation Ditch (**5BL2719**). The site is heavily disturbed, and littered with a very light scatter of modern and historic trash, including one fragment of purple glass and one square cut nail.

Building 1 is a standing dugout building, 9 x 12' (Figure 33), of unknown depth, constructed of cement and sandstone, partially excavated into the bank of the Goodhue Ditch (**5BL2719**). The building is cement roofed and shows signs of being burned inside. Structure 1 is a rectangular alignment of cement and local rock. The alignment probably represents the foundations of a building, 25 x 30'. On the southeast side the rocks of the alignment reinforce the bank of the ditch. Adjacent to this structure is Feature 1, an open pit or well. The square hole is lined with uncut, local rock and cement, and filled with trash.

The Goodhue ditch, **5BL2719**, was constructed in the 1860's. The dugout building appears to have been excavated into the bank of the ditch, and should either post-date or be concurrent with the construction of the berm. However, it is possible that the structures pre-date the ditch and were partially covered when the ditch was constructed.

Site **5BL3898** (Schoolmarm's Cabin) is a historic home site consisting of a cabin and other associated structures and features (Figure 35). The site is located along the heavily used Mesa Trail (**5BL3924**). A light scatter of historic trash is distributed across the site, consisting of white, clear and purple glass, sanitary top cans, fragments of sewer pipe and ceramics, and parts of two bed springs.

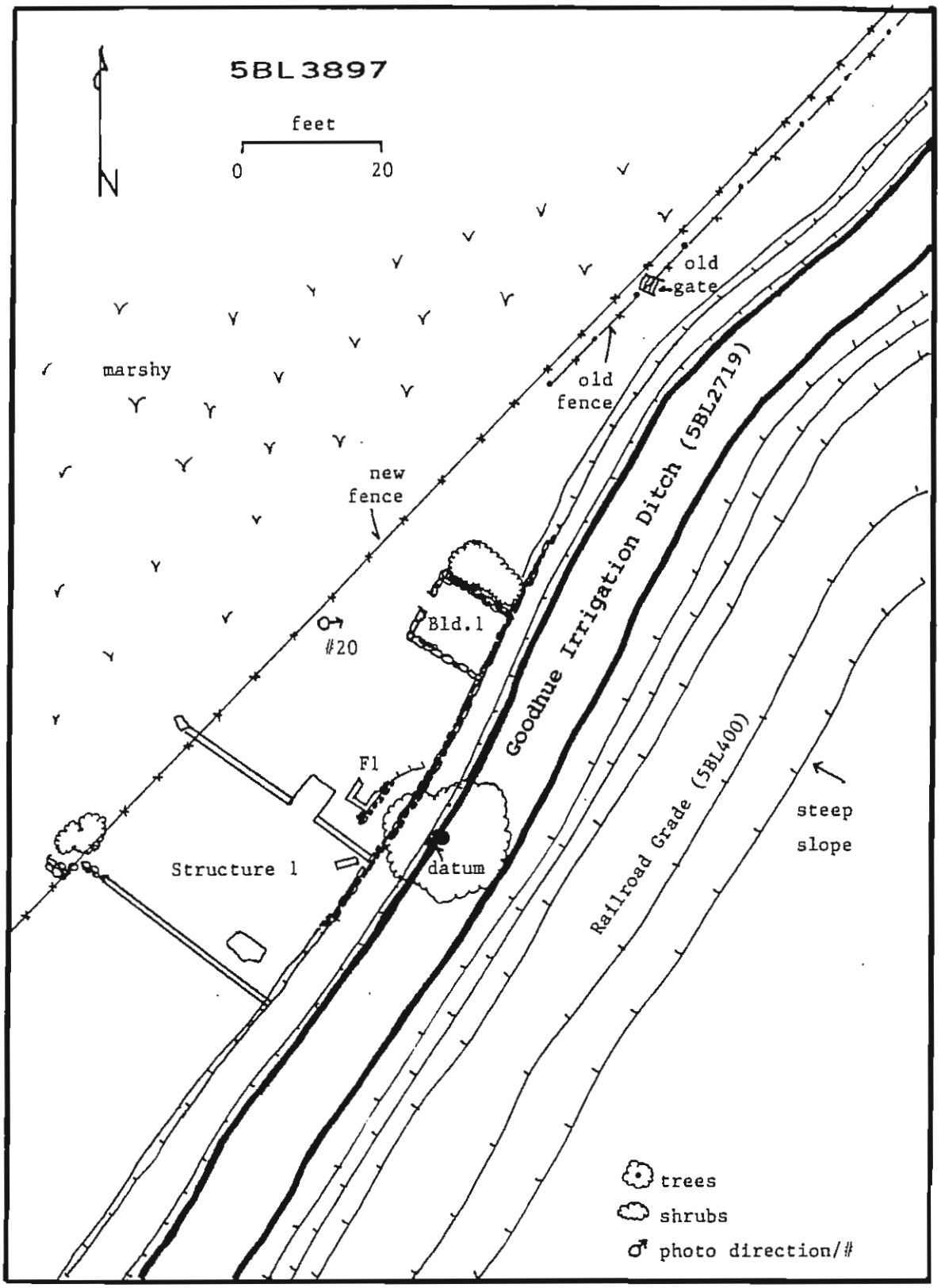

FIGURE 32 - Plan View of Site **5BL3897**.

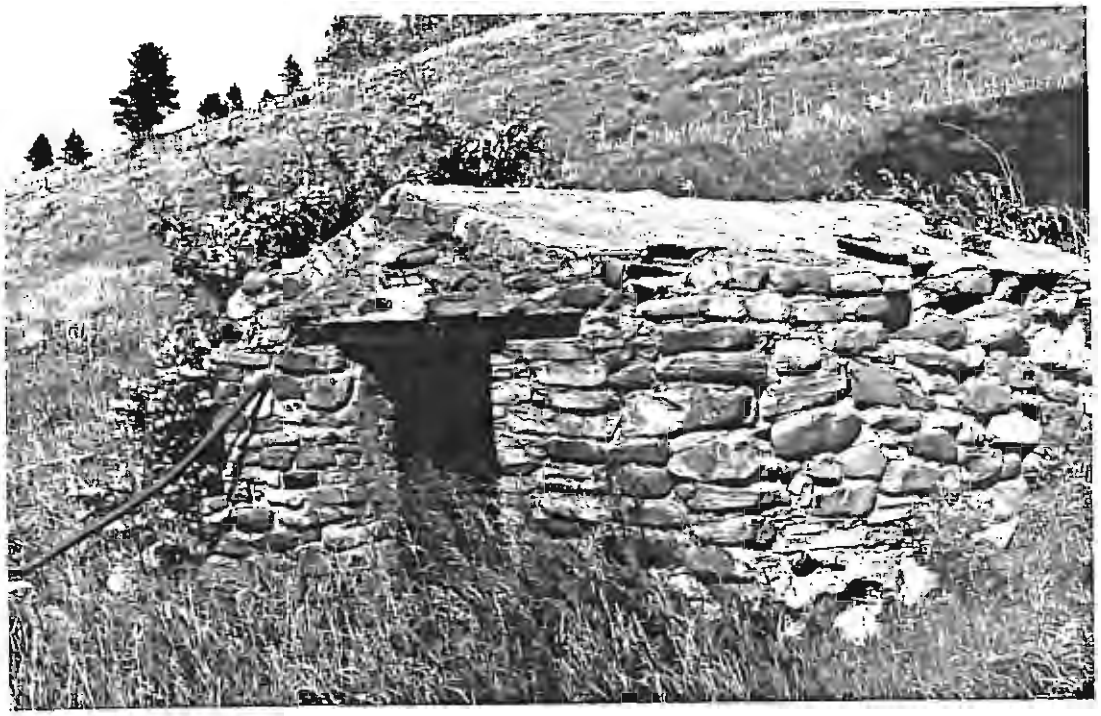

FIGURE 33 - **5BL3897:** Looking East-Southeast at Building 1.

FIGURE 34 - **5BL3898:** Looking Southeast at Structure 1.

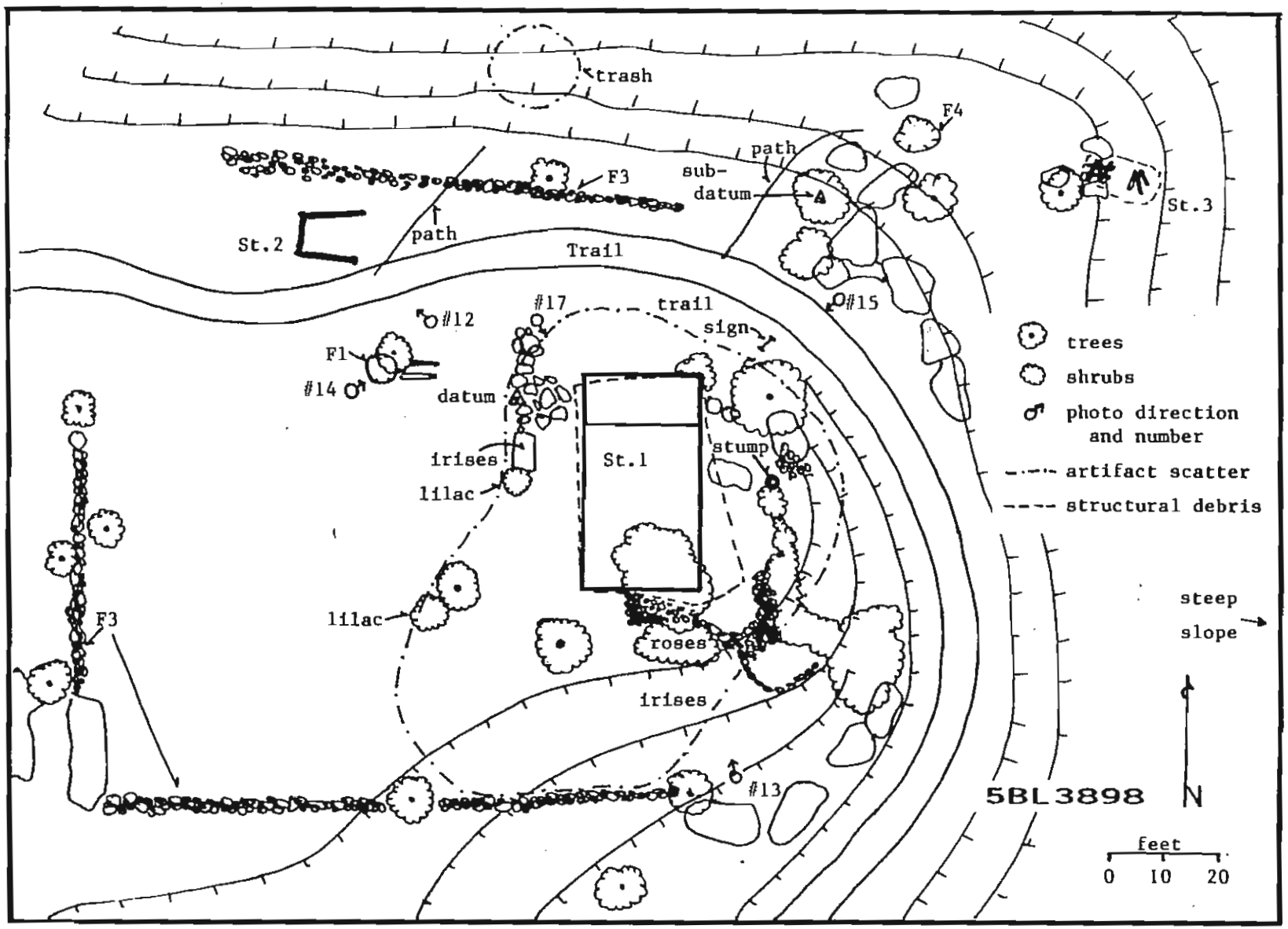

FIGURE 35 - Plan View of Site **5BL3898**, the Schoolmarm's Cabin.

Structure 1 is a collapsed wooden cabin, 23 x 30', with a porch on the north side (Figure 34). The floor is milled wooden planks over log supports resting on one to two courses of large uncut sandstone blocks. Wooden planks, split shingles and tar paper formed the fallen roof. Around the house are the remains of an abandoned garden indicated by the presence of domesticated irises, roses and lilac bushes. Structure 2 is a standing wooden framework, 8 x 10', that was probably a garage. The roof is covered with green tar paper. Within this structure is a spring seat cushion, possibly from a car from the 1920s or 30s. Structure 3 consists of a pile of boards located to the northeast of Structure 1, possibly representing the outhouse.

Feature 1 is a circular, cement-lined well or cistern. Feature 2 is a stone fence line located across the Mesa Trail, northeast of Structure 1. Feature 3 is another fence line located to the southwest of the west end of Feature 2. Feature 4 is a short path paved with sandstone slabs northwest of Structure 1.

The purple glass found on the site indicates a date of manufacture prior to 1918. However, this site is known to have been occupied in the summertime, during the 1920s and 30s by Miss Lane, a Denver schoolteacher.

Site **5BL3899** (Brammeier Home Site) is a historic home site located at the foot of an east-west trending ridge near a running creek. The home site consists of a log cabin and associated stone fences and buildings (Figure 36). The site is bisected by a recreational trail. The site is surrounded with various stone wall or fence features. Due to vegetation very few artifacts were noted, save for some square cut and wire nails, occasional cast iron stove parts, and a partially buried set of bedsprings.

Structure 1 is a partially collapsed log cabin, 9 x 36' (Figure 37). Logs are corner notched in two ways: the southeast corner uses a box corner, while other corners use a "V"-saddle with flat mortise. Structure 2 is 12 x 20', constructed of both logs and stone, and may have a depressed interior, but is heavily overgrown. Structure 3 is a dugout, 15 x 20', surrounded by low stone walls and logs (Figure 38). A wooden door frame leans inward at the south end. The north wall of this structure forms part of a stone wall or fence line (Feature 2). Structure 4 is a horseshoe-shaped rock alignment, built around a possible dugout (Figure 38). Structure 5 is a four sided stone enclosure constructed on the edge of a ridgetop.

John Brammeier was issued a homestead patent for this land in October of 1902, but according to Inez Twa, who interviewed Julian Brammeier, the home site was occupied several years earlier (personal communication to D.M. Teegarden).

Site **5BL3900** is a historic home site. The site consists of a dugout structure, several depressions, fences, and foundations (Figure 39). A stone fence feature marks the eastern boundary of the site, and three other small depressions are scattered around the site. No artifacts were noted due to heavy ground cover.

Structure 1 is a rock alignment surrounding a flat shelf at the base of a ridge (Figure 40). This alignment, about 20 yards long, appears to be the remains of a building foundation. In the northwest corner of the shelf area a well defined square dugout is excavated and lined with slabs of local rock. Structure 2 consists of a series of rock alignments in the shape of an "E", 55 x 28', possibly representing building foundations (Figure 40).

A drainage located about one hundred yards to the south may have been bridged using large rocks and earth. There are no clearly visible signs of any road in this vicinity, but the area is

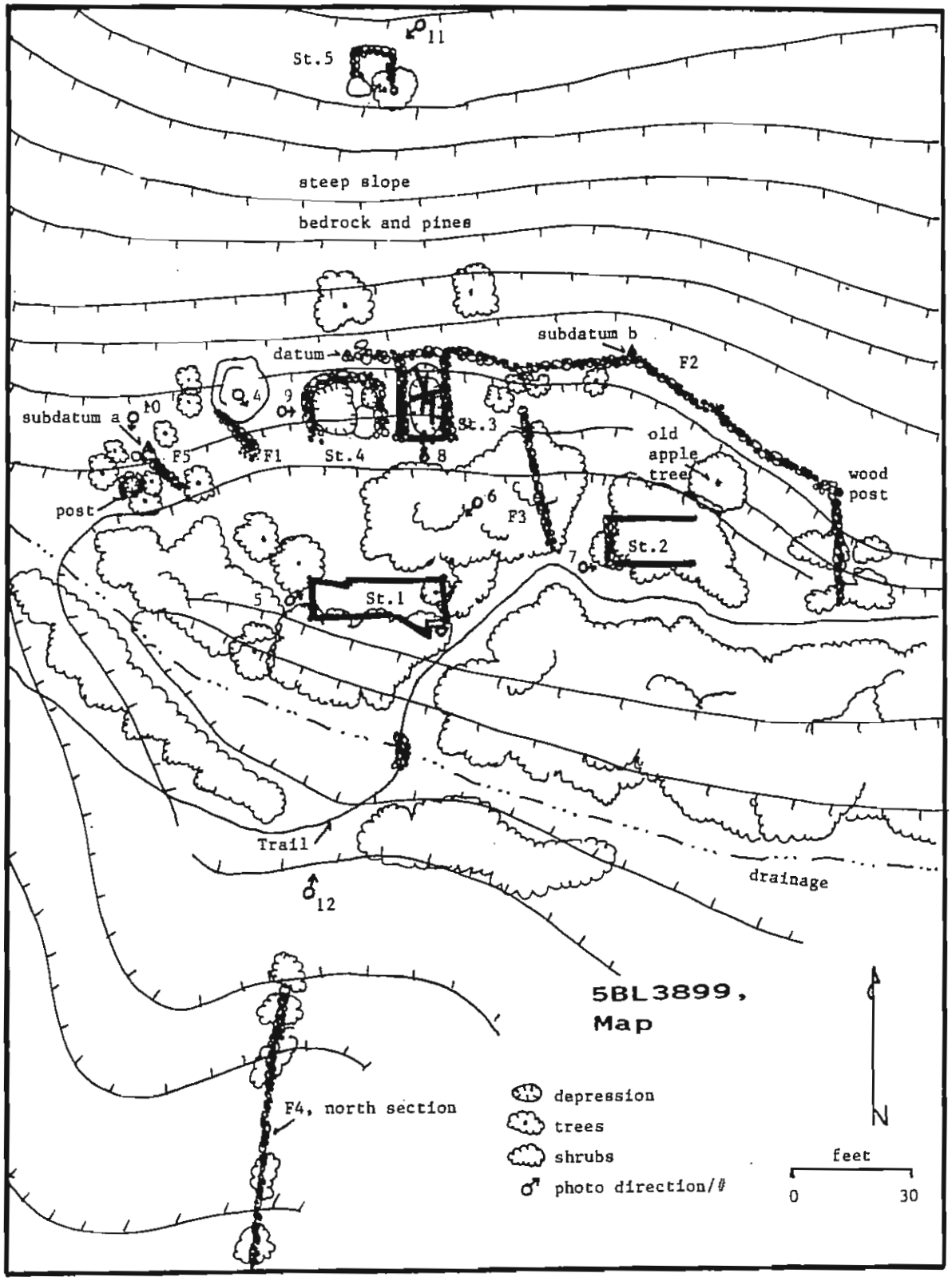

FIGURE 36 - Plan View of Site **5BL3899**, the Brammeier Home Site, Showing Major Cultural Features in the Habitation Area.

FIGURE 37 - **5BL3899**: Looking Southwest at Structure 1.

FIGURE 38 - **5BL3899**: Looking East at Structures 3 (Background) and 4 (Foreground).

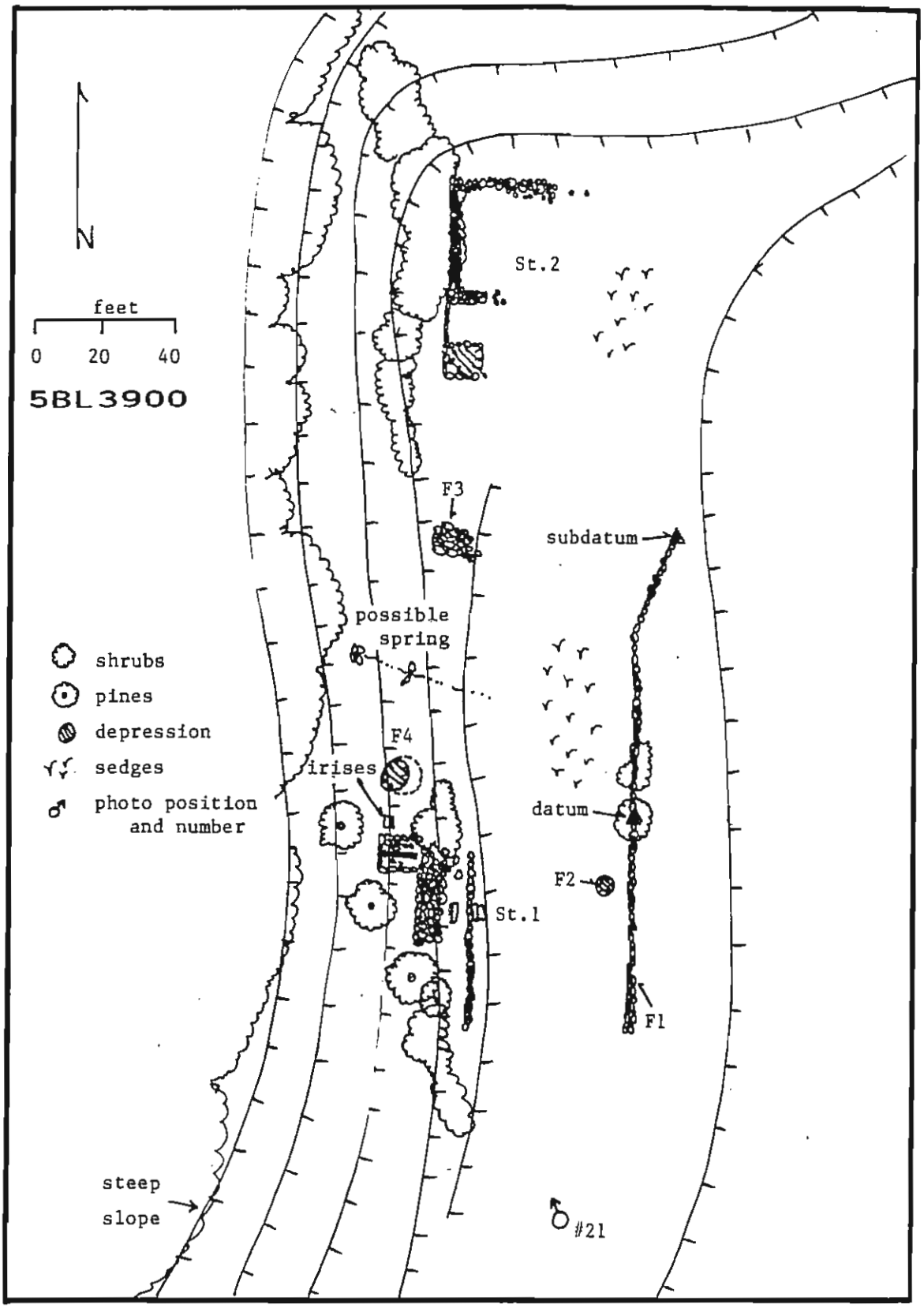

FIGURE 39 - Plan View of Site **5BL3900**.

heavily overgrown. This heavy ground cover may also account for the fact that no artifacts were found.

Site **5BL3901** is an enigmatic historic site consisting of three stone walled structures (Figure 42). The site and surrounding areas appear to have been cleared of historic artifacts or fallen building materials. A recreational trail passes nearby to the south of the site.

Structure 1 consists of three standing dry laid stone walls, two of which abut a large boulder, forming an enclosed square, 8 x 12' (Figure 41). Two stone-lined, semi-circular fireplaces have been constructed within the structure, probably at different times. Structure 2 also uses the large boulder to provide one wall, forming a three-sided enclosure, 8 x 14'. Structure 3 is a heavily overgrown stone enclosure. A possible dry spring is located about ten feet to the northwest of the northwest corner of Structure 1. The spring may have been improved by the addition of a row of rocks for a check dam, but this is not certain.

These structures may represent informal livestock enclosures or vagrant encampments. Alternatively, this site may have been used by people working one of the nearby sandstone quarries, or by miners. The South Shanahan Trail may have been a quarry road at one time. The steep slopes of the surrounding land are not suitable for agriculture.

Site **5BL3902** is a possible historic rockshelter with associated rock alignments (Figures 43 and 44). The site consists of a rock alignment enclosing the overhang of a large boulder, with a three sided rectangular rock alignment or fence to the south, 40 x 40'. One board was found in the rock alignment, with ten square cut and two wire nails pounded into it. There may be additional features or artifacts hidden beneath the dense sumac and raspberry bushes. This site is located above the McGilvery Cabin (**5BL3459**) and may have been built by children from this cabin. The site could also have been a livestock enclosure.

Site **5BL3903** is a rockshelter with stone walls built under an overhanging boulder (Figure 45 and 46). The overhang on the east side, facing down slope, and has been enclosed by a stone wall. There are at least two chambers within the enclosed space that show signs of human occupation, including modern trash, as well as shelves, fireplace, and a ledge inside the rockshelter. The main chamber is 6 x 9' and 5' high. Smoke blackening is present both in and outside of the rockshelter. An 11' long stone fence or wall is located 2 feet to the north of the boulder. A semicircular rock alignment, which has been used recently as a fireplace, is found to the east of the rockshelter.

The rockshelter is below a talus slope that was a "quarry", i.e., loose sandstone from the talus was procured. Access to this site is along an old quarry road, very well constructed with a dry-laid stone masonry foundation. The road has been incorporated into a modern recreational trail.

Site **5BL3904** is a sandstone quarry road. The site consists of a winding quarry road which follows the contours of a steep, east facing talus slope (Figure 47). The road provides access to a talus slope from which sandstone was procured. Many of the small pieces of broken rock surfacing the road show chisel marks. A flattened area is also surfaced with broken sandstone. A few pieces of milled lumber with galvanized nails may represent the remains of a possible pallet, these were noted down slope from the road. It is not known whether this is associated with the original quarrying. A cairn has been built in the center of the road, apparently of recent construction. One aluminum pop-top Coors can was also found on the

FIGURE 40 - **5BL3900**: Looking West-Northwest at Structures 1 (Left) and 2 (Right)

FIGURE 41 - **5BL3901**: Looking East at Structures 1 (Left) and 2 (Right).

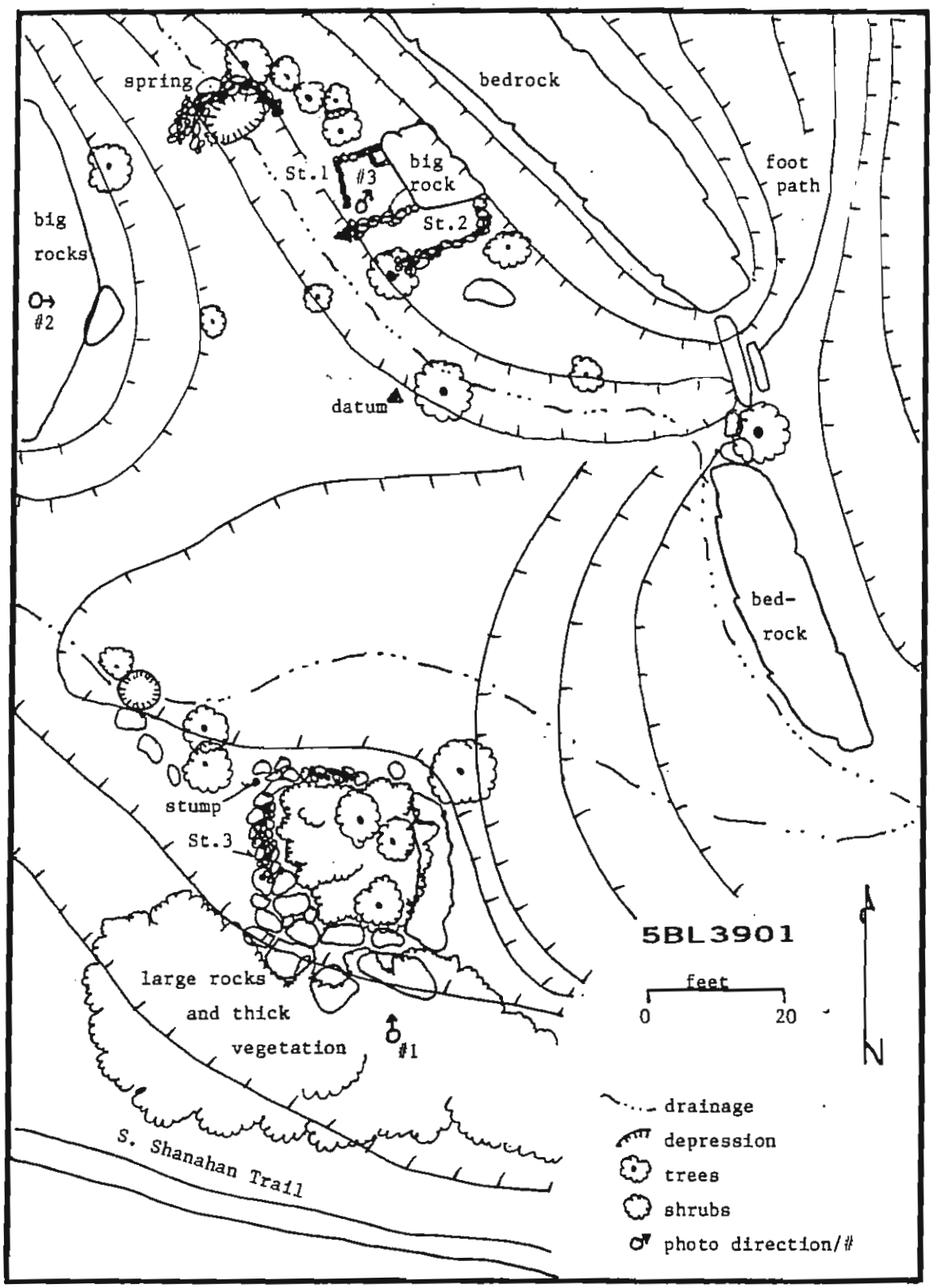

FIGURE 42 - Plan View of Site **5BL3901**.

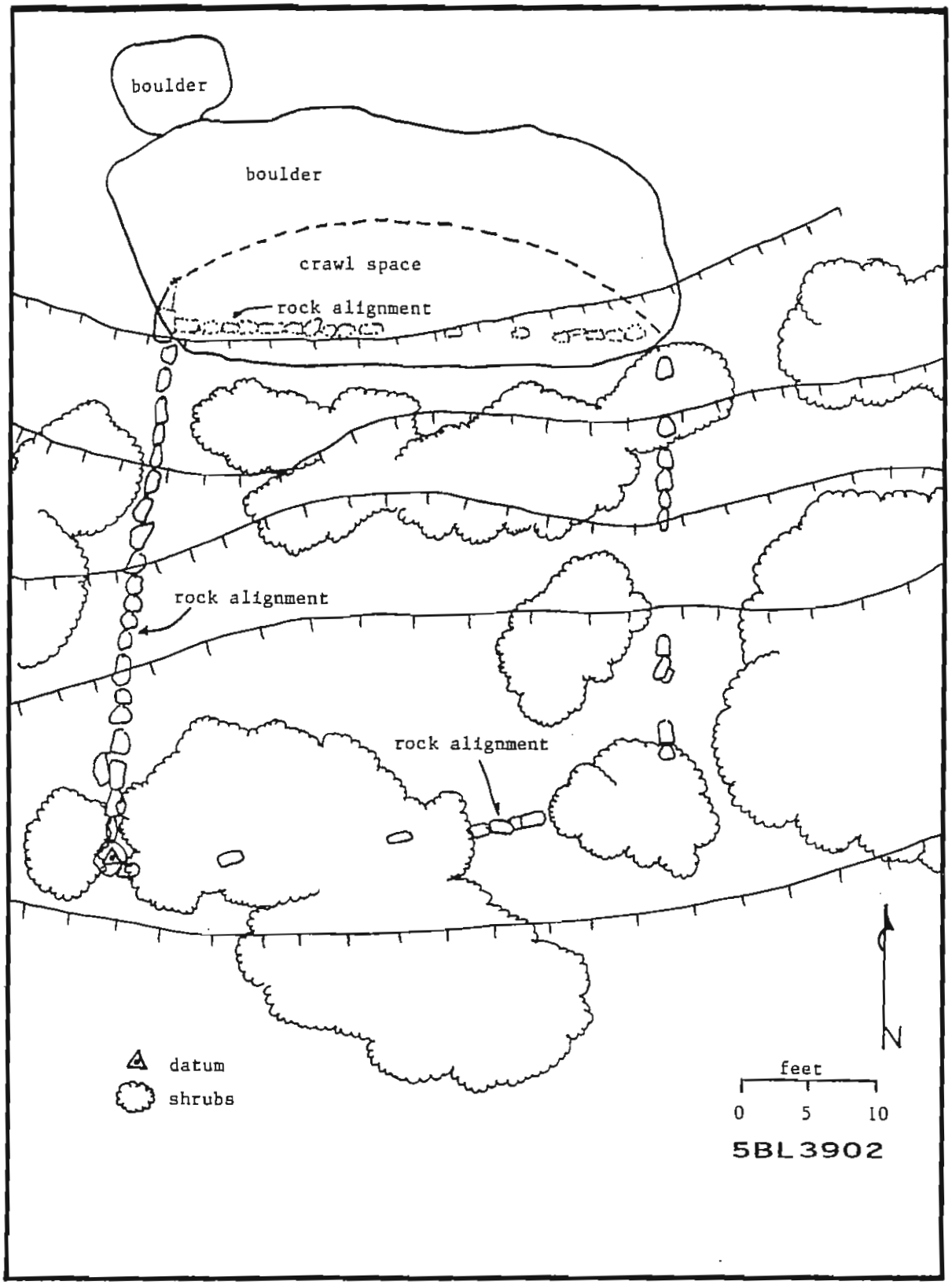

FIGURE 43 - Plan View of Site **5BL3902**.

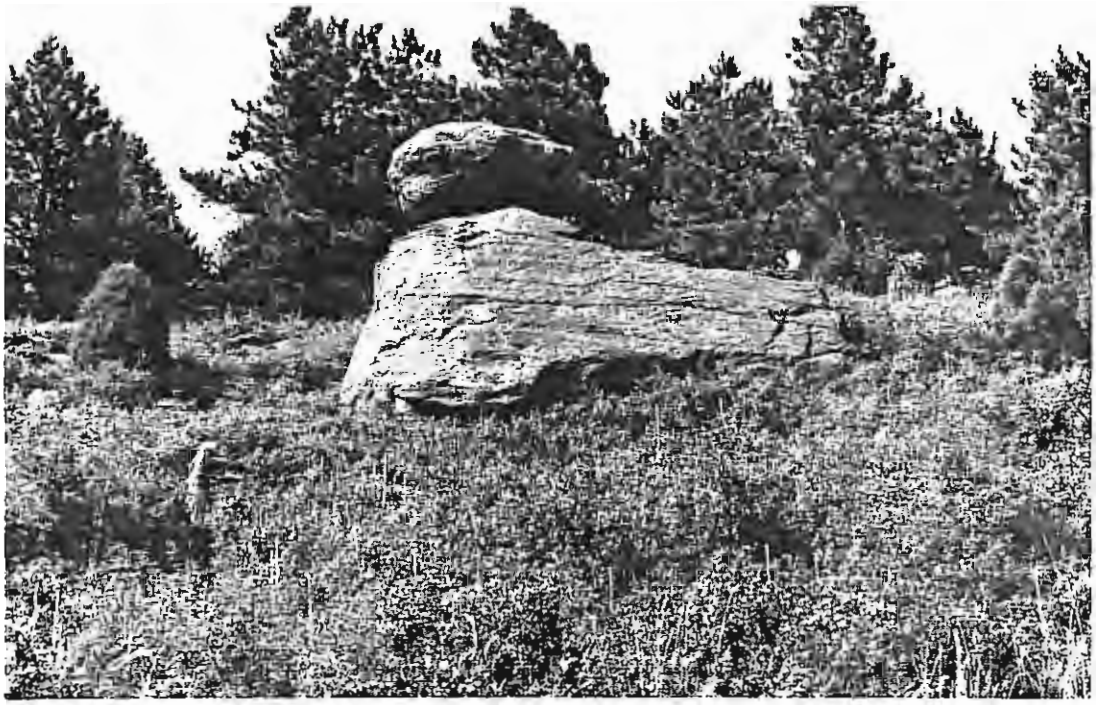

FIGURE 44 - **5BL3902**: Looking North at Large Boulder with Overhang. Figure Stands at Mapping Datum at Corner of Rock Alignment.

FIGURE 45 - **5BL3903**: Looking West at Rock Shelter Entrance.

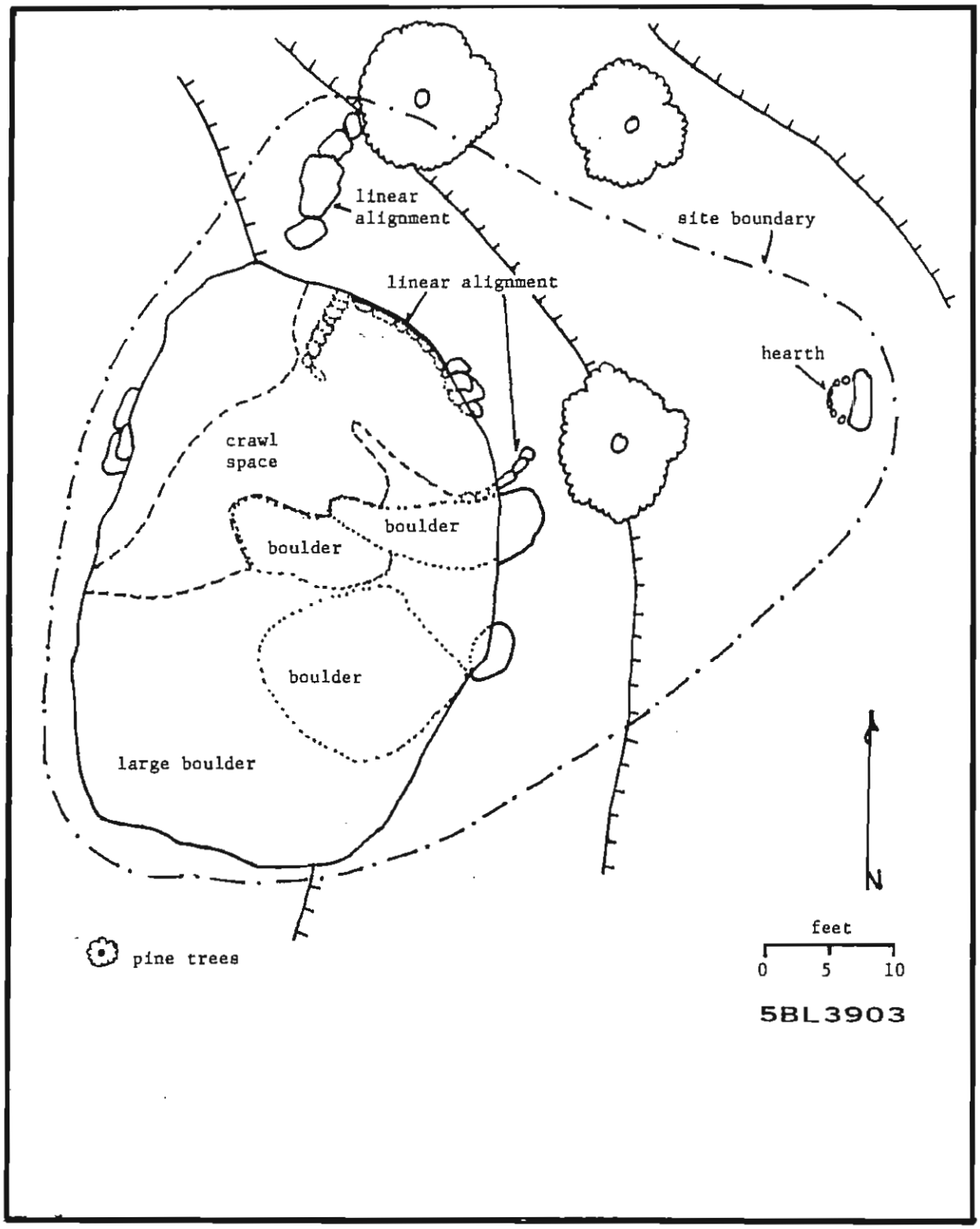

FIGURE 46 - Plan View of Site **5BL3903**.

FIGURE 47 - **5BL3904**: Looking South Along Quarry Road.

Site **5BL3905** is a sandstone quarry (Figures 48 and 49). This site is connected to **5BL3904** by an overgrown two track road. Steep talus slopes are found both above and below the site. This site consists of two adjacent level platforms, a road, and a sightly excavated area. The flat platforms are built up with waste rock, ranging from three to six inches long. Chisel marks are found along the edges of many of the waste rock fragments. An access road runs to the northwest. Traces of a road are also visible to the southeast. Both roads are becoming grown over with small pine trees and shrubs.

5BL3924 is the Mesa Trail. This trail is currently a six mile long hiking trail and Open Space access road that connects Chautauqua Park with Eldorado Springs Drive. Approximately 4.5 miles of this trail are within the project area. The trail was observed to be a well developed foot path, three to five feet wide, with occasional steps and water bars installed in the trail. The southernmost 1.5 miles of the trail is a crowned-and-ditched access road. This road forks, continues into the Shadow Canyon drainage, and eventually connects with the Shadow Canyon Trail, but the road also switches back to meet itself. This small network of roads is considered a part of the Mesa Trail. Within the Bear Canyon drainage, the trail follows for a short distance another Open Space access road. The road is shared at this point by both the Mesa and Bear Canyon Trails.

An additional foot trail was recorded as another section of the Mesa Trail. Though presently unnamed, this trail may have been the original southern end of the Mesa Trail. It runs from the road in Shadow Canyon, down the steep valley between the Dakota Hogback and Boulder Mountain, and directly into Eldorado Springs.

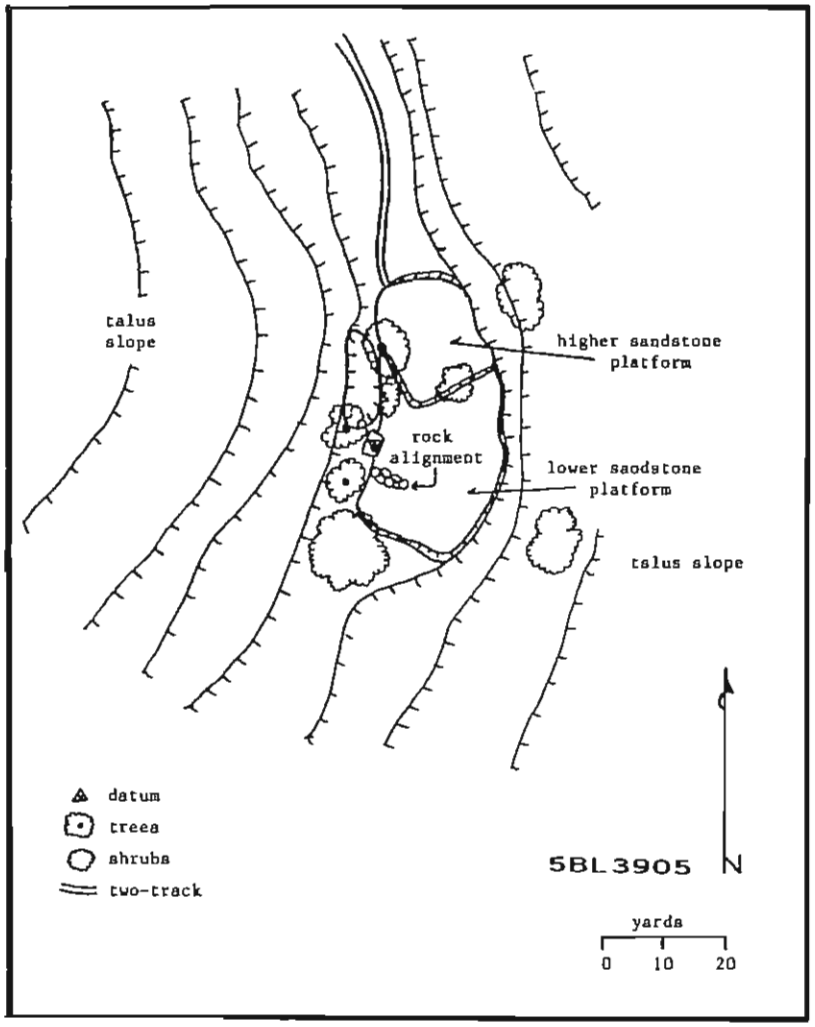

FIGURE 48 - Plan View of Site **5BL3905**.

FIGURE 49 - **5BL3905**: Looking Northwest at Quarry Area.

An old trail sign made from a round coffee can lid, was found along the Mesa Trail nailed to a ponderosa pine. The lid is 6.5 inches in diameter, with an "M" is painted in black, presumably standing for "Mesa Trail".

5BL3925 is the Bear Canyon Trail. The trail runs along an old road bed from the end of Table Mesa Drive, up through the Bear Canyon drainage, to Flagstaff Road at Kossler Lake. The trail is approximately 5.5 mile long, but only 0.5 miles of this is within the project area. This portion of the trail was observed to be a crowned-and-ditched Open Space access road. Part of this road is shared with the Mesa Trail. Most of the Bear Canyon Trail is within the Boulder Mountain Park.

5BL3926 is the Fern Canyon Trail. This trail starts from the Mesa Trail near the microwave radio tower and follows the Fern Canyon drainage up to the top of Bear Peak. It is a steep, improved foot trail, approximately 1.3 miles long, but only 0.3 miles are within the project area. The rest of the trail is in the Boulder Mountain Park.

5BL3927 is the Shadow Canyon Trail. This trail starts from two places on the Mesa Trail, eventually meeting and following the Shadow Canyon drainage up to the saddle between Bear Peak and South Boulder Peak. The southern fork of the trail is an old road bed that leads up to the Stockton Cabin (**5BL3812**). Otherwise, the trail is an improved foot trail. This trail is approximately 1.3 miles long, and except for the two branches to the Mesa Trail, is almost entirely within the Boulder Mountain Park.

Isolated Finds

5BL3906 is a small mine adit and waste pile, the adit is excavated about twenty to thirty feet into a steep, east-facing slope. The site is located above the previously recorded miner's cabin, the Stockton Cabin (**5BL3812**). No artifacts are present, however, two window frames were noted leaning against the walls of the adit. These are assumed to have been removed from the cabin site below.

5BL3907 is a historic mineshaft. This shaft is located in a fault zone on an east-west running ridge above the Stockton Cabin (**5BL3812**). The shaft was filled in by Open Space in 1987 or 1988 for safety reasons. At this time, all that remains of the mine itself are the mouth of the shaft and mine dump or tailings. Four historic tin cans were found down slope from the tailings, one of which has a press off cap embossed with "TRADEMARK UNION CARBIDE".

Both mine shaft sites, **5BL3906** and **5BL3907** are located in an area that is geologically faulted. The mines are both excavated into sedimentary rock of the Lykins Formation. It may be that these locations were selected because of the unusual appearance of the faulted areas, and may simply be prospecting excavations.

5BL3908 is a fence segment constructed of local field cobbles. The fence is about 27 inches wide by 9 feet long, and is 30 inches tall at the highest point. This fence could be related to either **5BL3899**, the Brammeier homestead, which is located about 500 feet to the east-northeast, or to the quarry road which follows the Big Bluestem Trail for a short distance and continues further to the west.

5BL3909 is an improved pond and spring in an open meadow bordered by two north-south running ridges. Water from the spring is channelled through a horizontal pipe of heavily rusted galvanized iron. The improved pond measures about 30 feet across. A pile of boards with

wire nails is located to the north of the pipe and west of the pond. This may have been a watering trough. Ground cover approaches 100%, which obscures exact measurement of the total length of the pipe.

5BL3910 is a monument located on a south-facing slope at the corner of the remains of a barbed wire fence. The fence consists of a few wooden fenceposts and living trees with strands of both four-pronged and two-pronged barbed wire. The marker is a lichen covered, shaped block of grey Dakota sandstone, 10.5 inches x 10 inches x 6.75 inches, and is inscribed with "L.45. 18" or "L.4S. 18". The fence extends 14 yards up slope to the southwest, and appears to extend to the east, for an indeterminate distance. It is unknown what the inscribed letters and numbers represent. Monuments of this sort were often used to mark section corners (William Stengle personal communication 1992), and this monument could mark a quarter-corner in the section.

5BL3911 is a possible hunting blind or cairn located on a ridgetop, overlooking valleys to the north and south (Figure 50). Sandstone slabs have been placed in a "L"-shaped alignment. A living ponderosa pine currently grows in the corner. The two walls of the alignment measure 175 cm to the west, and 120 cm to the east. The alignment measures one meter from the southern end of the west wall to the southern end of the east wall. The highest point measures 65 cm Rocks used in construction range from 66 x 110 x 27 cm to 175 x 250 cm. The alignment now stands two to three courses high, and shows signs of having collapsed inward. Collected layers of pine duff inside of the alignment are over 25 cm deep. Rocks are covered with a heavy lichen growth.

5BL3912 consists of two shallow pits representing limestone quarrying. The pits have been excavated from limestone outcrops along an east-facing slope. The upper pit is oval in shape, measuring about eight yards by five yards. A smaller excavation, is located approximately 15 yards below. This pit is circular, measuring about six feet by eight feet. No artifacts were noted.

This general area is shown as a known limestone source on an 1873 map of Boulder and the surrounding area (Schoolland 1980). The first lime kiln was constructed in Boulder in 1860 (Ubbelohde et al. 1976). The quarrying activity which produced these pits probably did not take place prior to this time.

5BL3913 consists of two parallel stone fences, both running roughly east-west on a pine covered, east-facing slope. Stones used in construction are uncut blocks of local sandstone. Both fences incorporate outcropping bedrock. The larger, northernmost fence is about 60 feet long. The rock is carefully stacked up to 40 inches high and two feet wide. A second fence is located 196 feet due south of the east end of the first fence. The second fence is 26 feet long, and the width and height are that of the single stones.

5BL3914 is an intermittent rock alignment extending along the top of a segment of the Dakota Ridge. Sandstone slabs have been piled along the ridgetop, connecting existing bedrock outcrops. The alignment stands up to 30 inches tall, but the height is very variable. About 167 yards from the northern end of the alignment is a cairn of seven sandstone slabs, standing 34 inches high. No artifacts were found associated with this alignment. Rocks used in construction are all local materials, with lichen covering the upper sides of most exposed surfaces. This alignment may be a possible property boundary marker.

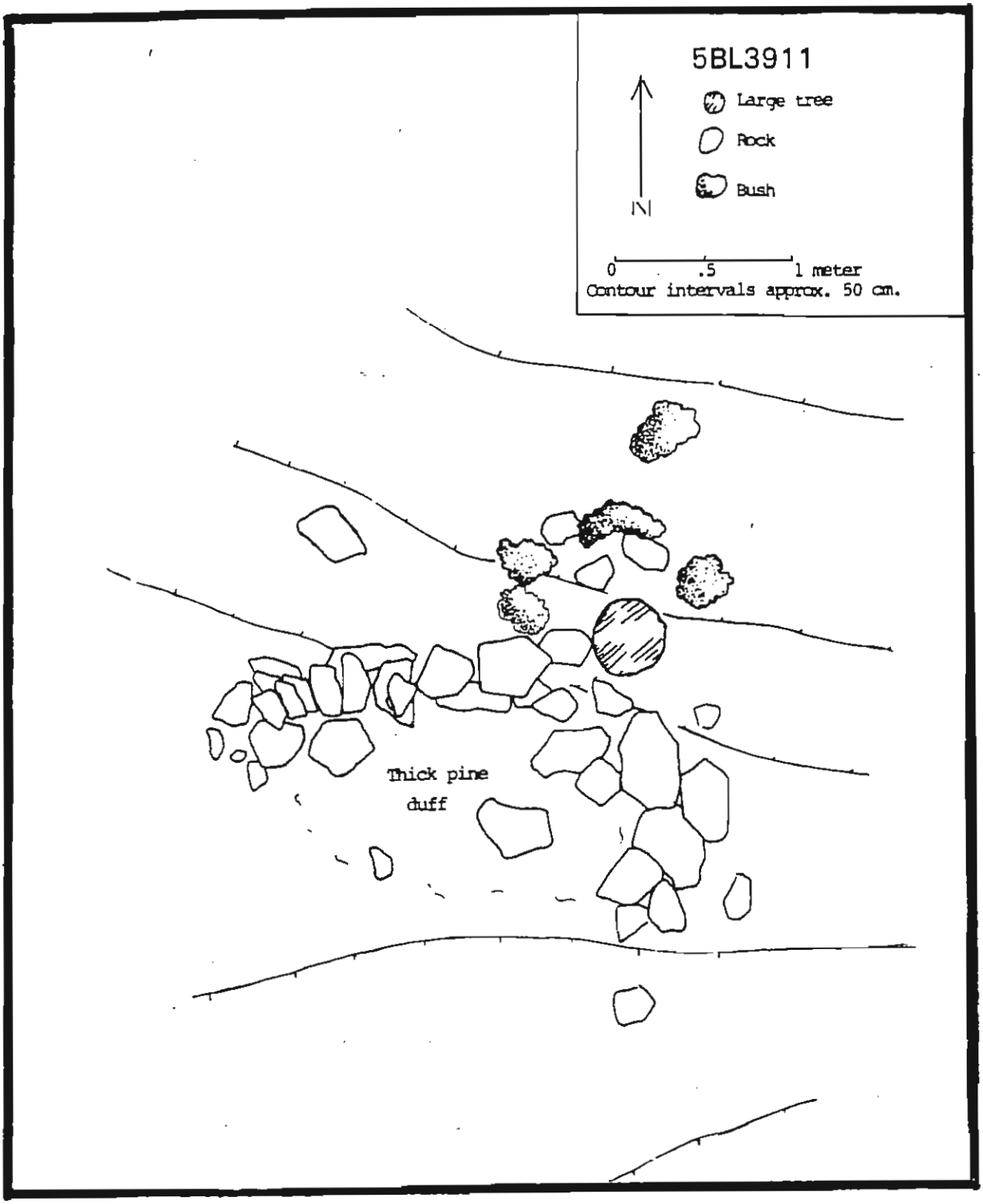

FIGURE 50 - Plan View of Isolated Find **5BL3911**, a Possible Hunting Blind.

5BL3915 is a brass gun shell, found beneath a small rock overhang above a steep south facing slope. It is inscribed with "WINCHESTER REPEATER No. 12", and would have had a paper cartridge.

5BL3916 is a fragment of purple bottle glass found in the Mesa Trail. The glass has probably washed down slope from ridges to the northeast, east or west. The fragment is a bottle side embossed with "-ENVER".

5BL3917 is a rock alignment running east-west along a south facing slope to the northwest of the McGilvery Cabin. Piled rock alignments connect three boulders using sandstone slabs, up to four stones high. The alignment measures 16 to 18 inches high, is about 30 feet long, and 20 inches wide. Rocks used in construction are lichen covered.

5BL3918 is an historic feature consisting of an excavated area and a rock retaining wall. An area measuring about 12 feet square is excavated into a 20 to 30 degree slope. The east side has been reinforced with sandstone slabs set into the embankment. This retaining wall is, on the average, 11 inches, and two to three courses high. The excavation is up to three feet deep along the south wall and southwest corner. The southern wall shows damage from erosion. A dense growth of juniper and other shrubs covers the backdirt pile, which measures about 11 feet across. On top of the juniper were found a cast iron grate probably off of a grill and four steel Coors beer cans, all unopened, still containing liquid. Steel cans were used between 1935 and around 1959. However, the location of the grate and beer cans indicates that they were deposited at some point after the original construction and occupation. The feature is located at the base of a talus slope, below **5BL3905**, a sandstone quarry. The excavated area may have once provided shelter for quarry equipment, food or workers.

5BL3919 consists of two square nails and one square spike found in the Mesa Trail about 40 feet below a modern stock tank. According to D. M. Teegarden, the stock tank was replaced within the last five years. These nails may be associated with either the old tank, or with the quarry up slope.

5BL3920 is a possible hunting blind located on a northwest facing slope, near the top of a segment of the Dakota Ridge. A natural projection of large boulders is built up into a "L" shaped alignment (Figure 51). Sandstone slabs used in construction are piled up to four courses high. The walls of the "L" measure about 60 cm across. The west wall measures 2.9 meters long, while the north wall measures 2.2 meters from the point of the "V". Between the east end of the north wall and outcropping bedrock there is a gap of 1.8 meters. There is medium heavy lichen growth on exposed surfaces.

5BL3921 is a 3"- diameter iron pipe with traces of silver paint, found cropping out of a south-facing slope. Approximately 10 inches of the pipe are exposed, apparently running in a roughly north-south direction. The pipe may be covered with slabs of local sandstone as it runs downhill. The pipe may be associated with the McGilvery Cabin (**5BL3459**), which is located below this feature, and to the southeast.

5BL3922 consists of two short sections of low, crude rock walls or stone fences constructed of fairly large native rocks piled on larger outcropped bed rock. They are located on a south facing slope along a small drainage. The alignments were probably built to augment a post and wire fence that has since fallen or been removed. They would serve to keep livestock within the canyon, but would not prevent animals from crossing the wall and moving down slope. Two upright posts are positioned just to the east end of the second wall. These posts have old two-prong barbed wire attached.

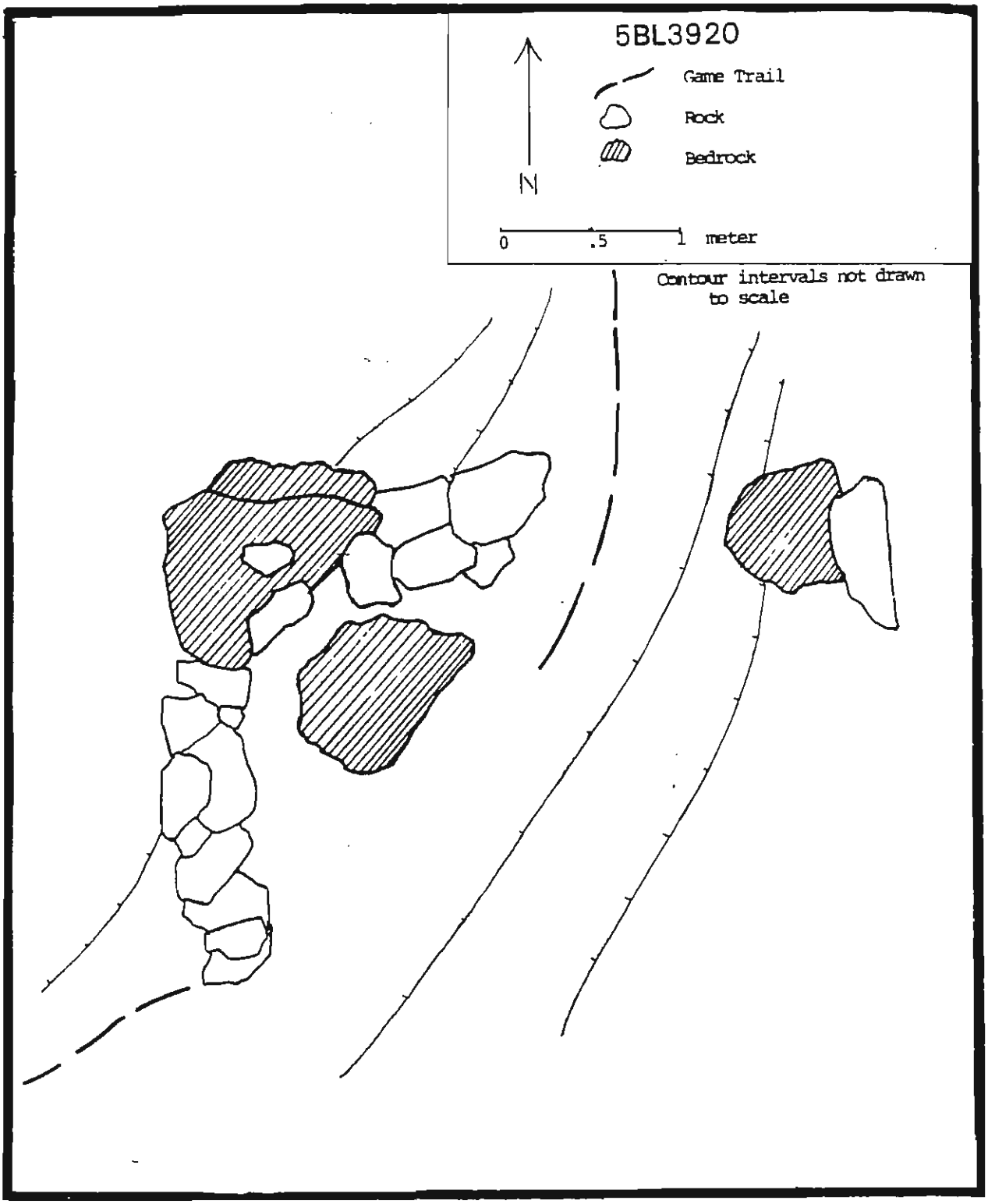

FIGURE 51 - Plan View of Isolated Find **5BL3920**, a Possible Hunting Blind.

5BL3923 is a scatter of milled lumber with square and round nails. This scatter features 9 boards aligned parallel to each other, each 1 x 3", about 5' long. A small number of round and square nails remain in these boards, mostly pointing up. A large plank, 2 x 6", 12' long, is positioned perpendicular to the nine boards near one end, with another large plank with the same dimensions, lying on the other end of the parallel boards. This plank has a few large square nails embedded in it. Seven other partial boards are scattered around the area, each 1 x 3".

This concentration of lumber likely represents part of an old wall, floor or roof to some deteriorated structure. It is located above the same valley that contains both the Stockton (**5BL3812**) and McGilvery Cabins (**5BL3459**), and may be associated with them.

Other Manifestations

The remains of a number of barbed wire fences were noted throughout the survey area. These often consist of isolated wooden, or metal fenceposts with short strands of barbed wire. Living trees are frequently incorporated into the fences. At times lengths of barbed wire are present with no visible post. Both four pronged and two pronged barbed wire are common, with occasional strands of smooth wire. As with Phase I, old railroad ties were recycled as fence posts.

The powerline which forms the boundary between the Phase I and Phase II project areas is known as the Boulder Hydro Denver Line. The line was constructed by the Eastern Colorado Power Company, with an easement granted in 1909 and construction in 1910. The Eastern Colorado Power Company became the Central Colorado Power Company in 1910, and later became the Public Service Company. The Eldorado Springs sub-station was constructed in 1962, at which time the line was replaced. Some towers were replaced in 1973. The line runs northwest from the Eldorado Springs sub-station to Bear Canyon, then up Bear Canyon toward Kossler Lake, where it turns north to the hydroelectric plant in Boulder Canyon. The remains of wooden telephone poles, removed from the ground and sawn into sections, were noted lying along the line. This telephone line ran adjacent to the power line, and was used for communication regarding maintenance of the power line.

As in Phase I, a number of two track roads were noted throughout the Phase II area. Roads that are identifiably historic, generally those that exhibit considerable effort in their construction and upkeep, with dry-laid stone masonry foundations, have been formally documented (e.g., the quarry road which is part of **5BL3903**, and the quarry road which is site **5BL3904**). Other, less substantial roads may be the result of recent beetle control or fire fighting activities. These two track roads may be associated with quarrying, mining, stock tending, homesteading, beetle control, or fire control.

A number of standing cairns were noted, as well as several possible toppled cairns. The majority of these cairns are located along recreational trails, particularly the Mesa Trail. In addition to the cairns built by Ernest Greenman and his associates, other cairns may have been constructed by hikers over a number of years, may have been built by the Mountain Club, or may be of aboriginal construction. The age of the cairns is unknown. Many have medium to heavy lichen growth. Other cairns were recorded along ridgetops, possibly as property boundaries. Two cairns were found located together on a portion of the Dakota Ridge built alongside an old two track road. One cairn is located on the top of another segment of the Dakota Ridge. This cairn is larger and more elaborate then most, it is constructed of local,

uncut sandstone, with a medium growth of lichen on upper exposed surfaces. It stands approximately 4' high, is 4' in diameter at the base, and has a hollow center.

An old trail sign was noted nailed to a ponderosa pine. Located on South Shanahan Trail, it has been almost completely covered by the growth of the bark of the tree. Measurements of the sign are impossible to ascertain at this time, only one corner of the iron sign is still visible. The sign was apparently made from iron coated with tin. A painted arrow and two straight lines are barely discernible.

Evidence of water control efforts was apparent in Phase II as well as Phase I. One possible check dam was noted, located on an east-facing slope between two generally east-west running ridges. The dam stands 3.5' high at its highest point, and is approximately seven yards long by two wide. Construction is of local field cobbles. This feature is located to the east and below a currently dry spring between the Big Bluestem and South Shanahan Trails. The age of this feature is not known.

Within the Phase II survey area, there are many large boulders which form overhangs. These were visually investigated for signs of habitation, rock art, or other uses. For the most part, no cultural materials or signs of use were visible. A few boulders appeared to have provided shelter for recent fires.

Remains of two recent wooden structures were noted along side slopes of a segment of the Dakota Ridge. These are interpreted as signs of recent campers, transients, children or adolescents. A partially empty bottle of vodka was observed under the boards of one of these.

Other cultural manifestations include excavated holes, and rock piles of indeterminate purpose. Signs of recent camping and fire building were frequent.

TABLE 2
Sites Recorded in the Present Survey

Number	Site
5BL3863	Doudy-DeBacker-Dunn Homestead
5BL3864	DeBacker-Blake-Hedgecock Homestead
5BL3865	South Boulder Foothills Ditch
5BL3866	Lafayette Water Pipeline
5BL3880	Rodeo Riders Camp
5BL3881	Stone Enclosure
5BL3882	Prehistoric Lithic Scatter
5BL3883	Manchester Home site
5BL3884	Stone Enclosure near Stock Pond
5BL3885	Home site and Wood Animal Pen
5BL3886	Jones Homestead
5BL3887	Home site
5BL3895	Structure Foundation, Rock Pile
5BL3896	Historic Dump
5BL3897	Home site
5BL3898	Schoolmarm's Cabin
5BL3899	Brammeier Homestead
5BL3900	Home site
5BL3901	Three Stone Walled Structures
5BL3902	Rockshelter with Enclosure
5BL3903	Rockshelter with Rock Walls
5BL3904	Sandstone Quarry Road
5BL3905	Sandstone Quarry and Platforms
5BL3924	Mesa Trail
5BL3925	Bear Canyon Trail
5BL3926	Fern Canyon Trail
5BL3927	Shadow Canyon Trail

TABLE 3
Isolated Finds Recorded in the Present Survey

Number	Isolated Find
5BL3867	Developed Spring
5BL3849	Stone Fence Line
5BL3850	Road/Stone Fence
5BL3888	Single Prehistoric Flake
5BL3889	Possible Hunting Blinds
5BL3890	Stone Fence Line
5BL3891	Stone Fence Line
5BL3892	Stone Fence Line
5BL3906	Horizontal Mine Adit
5BL3907	Vertical Mine Shaft
5BL3908	Stone Fence Line
5BL3909	Improved Pond and Spring
5BL3910	Survey Monument
5BL3911	Possible Hunting Blind
5BL3912	Two Limestone Quarry Pits
5BL3913	Two Parallel Stone Fence Lines
5BL3914	Long, Intermittent Stone Fence Line
5BL3915	Gun Cartridge
5BL3916	Fragment of Purple Bottle Glass
5BL3917	Stone Fence Line
5BL3918	Excavated Area with Stone Retaining Wall
5BL3919	Two Square Nails and a Square Spike
5BL3920	Possible Hunting Blind
5BL3921	Iron Pipe
5BL3922	Two Short Stone Fence Lines
5BL3923	Scatter of Lumber with Square Nails

RESULTS: ARCHIVAL RESEARCH

Archival Research for this project was conducted both concurrently and subsequent to Phase II of the survey. Due to the preponderance of historic sites recorded on this survey, the archival research was extensive, but by no means exhaustive. Sources consulted include the records and files of the Boulder County Records and Assessors offices; tax assessment records at the Western Historical Collections at the University of Colorado in Boulder; maps and other county records at Boulder's Carnegie Branch Library for Local History; and genealogical and census data from the Boulder Genealogical Society. Tables 4 and 5 are compilations of land ownership information for each quarter-quarter section where a historic site was located in the Phase I and Phase II areas.

South Mesa Trailhead Archival Research Results

5BL3863, 5BL3864 - The Doudy/DeBacker/Dunn and DeBacker/Blake/Hedgecock Homesteads

John DeBacker (1827-1907) arrived in the Boulder area in 1859. Originally from Morekerke Belgium, DeBacker sailed to New York City in 1855 to help install new machinery patented by his family in a flour mill. In 1857 he moved to a farm in Iowa, but soon left for the gold fields of California. At Fort Laramie he heard a speech by Horace Greeley which convinced him to proceed to Colorado. DeBacker engaged in placer mining near Gold Hill, then built a quartz mill with a water wheel on Left Hand Creek. The mill failed, and by 1860, perhaps slightly earlier, DeBacker homesteaded along South Boulder Creek, engaging in dairy ranching (DeBacker n.d.). The homestead was in the southern part of Section 20, T1S, R70W.

The DeBacker homestead was to the east of an existing homestead occupied by a man named Andrew Doudy (aka Dowdy, Doughty, Douty). Doudy was apparently the first Euro-American to settle in the South Boulder Creek area, arriving in 1859 or 1860. Doudy constructed a log house, and "built a sawmill in 1861 and a gristmill in 1862" (Boulder County News 20 May 1874). The gristmill was the first built in the county, and Doudy carved the grinding hubs himself, from native stone (Smith 1981:20). South of the house and parallel to the creek the Doudy family had a garden but during the flood of 1864 the garden, sawmill, and gristmill were washed away (Helart, Oral History 66). John DeBacker recalled how flour sacks were washed down the river for miles during the flood (Robinson n.d.). In 1866, Doudy and his son Sylvester moved from South Boulder to build a flour mill "along Farmer's ditch under the Red Rocks" (Smith 1981). The mill was known as the Red Rocks mill and later in 1878, the Yount mill was built on the same site (Smith 1981). Smith (1981) recognizes that there is little documentation of Doudy's name in the area after 1866.

John DeBacker went to Pueblo and acquired stock, continued ranching, and sold butter, milk, eggs, meat, and vegetables to the miners in Central City and Blackhawk. His wife Marie Fousse, whom he married in New York, died in childbirth in 1865, and was buried in an unmarked grave on Marshall hill (Helart and Dunn 1979). Three of their five children survived to adulthood and were named Louise, Della Laya, and Frank. John DeBacker married Marie Dehn around 1868, and had four more children, named Edith (who died in infancy), Martha, Mary and Emma (Huth 1989). In 1866 the DeBacker family moved to Valmont. John DeBacker and a partner, Peter M Housel, constructed a flour mill with a large water wheel, and a huge ditch. "The headgate was located south of where the railroad bridge is now" (Huth 1989). The Housel Mill was a success, and farmers from as far away as Fort Collins brought

their wheat to the mill. After two years of the mill business, John DeBacker sold his interests to Peter Housel and moved to Denver "so the children could get a better education" (DeBacker n.d., Huth 1989). In 1869, after six months of conducting business in the feed, grain and freight industries in Denver, DeBacker moved back to South Boulder Creek.

DeBacker sent tickets for his parents in Belgium to come to the United States but they did not want to leave their homeland and family. His parents gave the tickets to their daughter Clemency (aka Glowmacy) and their son-in-law Carl Blake who emigrated and settled on the original homestead (**5BL3864**) in Section 20 (Helart and Dunn 1979).

DeBacker then bought the land to the west (**5BL3863**) including the original log house built by Doudy (Dunn 1970). According to the Title Abstract, "all that portion of the E 1/2 of Section 30, T1S, R70W known as the ranch now occupied by the said Henry Matthies and formerly purchased by him from Sylvester Doutty..." was sold to DeBacker on July 14, 1869 for $500.00. The abstract does not specify how much of the E 1/2 of Section 30 was involved. Helart and Dunn (1979) state that DeBacker bought 120 acres, however on Oct. 30, 1874 DeBacker was granted a patent on 160 acres in Section 30, consisting of the NE 1/4 of the NE 1/4, the S 1/2 of the NE 1/4 and the NE1/4 of the SE 1/4. It is not clear when Matthies (aka Matthys) bought the house and land from Doudy, nor is any information currently available about Henry Matthys. On July 3, 1871 DeBacker sold the W 1/2 of the SE 1/4 and the E 1/2 of the SW 1/4 of Section 20 (160 acres) to Clementia Blake for $800.00.

DeBacker initiated many interior and exterior changes to the Doudy house and land. Soon after DeBacker bought the house he constructed a stone addition on the west of the original log structure (Dunn 1970) (Figures 52 and 53). The new stone area was the kitchen and it contained "a stove, table, flour bin, huge dish cupboard, and a pie safe" (Helart & Dunn 1979). He dug an irrigation ditch from the creek to water his fields. The water from the ditch powered a wheel to run a cream separator and a washing machine in the kitchen area (Helart & Dunn 1979). DeBacker expanded his land holdings to the north, south, and east.

Thomas Dunn (1970), grandson of John DeBacker, remembers hearing that the stone walls north of the house were built by "a man eager to do the job for a yoke of oxen." In 1874 or 1875, construction began for the two story stone addition adjoining the original log house on the north side (Dunn 1970). It is said that the stone structure was built to protect the DeBacker family from Indians, although the threat would have been very minor by the mid 1870s. Frank DeBacker, son of John DeBacker recalls the several losses of horses by raiding parties of Indians: - "The first several years we lived on the South Boulder Ranch several parties of raiding bands of Indians called at the ranch and demanded eats which Father and Mother gladly gave them, and we were never molested other than the loss of several good cow horses at times" (DeBacker n.d.). Frank DeBacker (n.d.) states that from 800 to 1500 head of cattle were grazed in the open territory to the south, with the range being so productive that no extra feed was given to the cattle; however, cattle rustlers were a problem.

The stone house was originally built with a flat roof which leaked. Consequently a pyramid roof was added in the 1880's to stop the leaking during storms (Dunn 1970). The interior of the stone structure consisted of a parlor on the lower floor and two plastered bedrooms on the second floor, accessible only by an exterior staircase on the west side of the house. There was no heat provided in the new stone addition.

Clemency and Carl Blake continued to farm and ranch at **5BL3864**. They had several children - Mary, John, Mathilde, Louise (a male), and William. At some point Clemency remarried,

FIGURE 52 - **5BL3863**: Looking West at DeBacker-Dunn House, Photo by J. B. Sturdevant, Taken Around 1880.

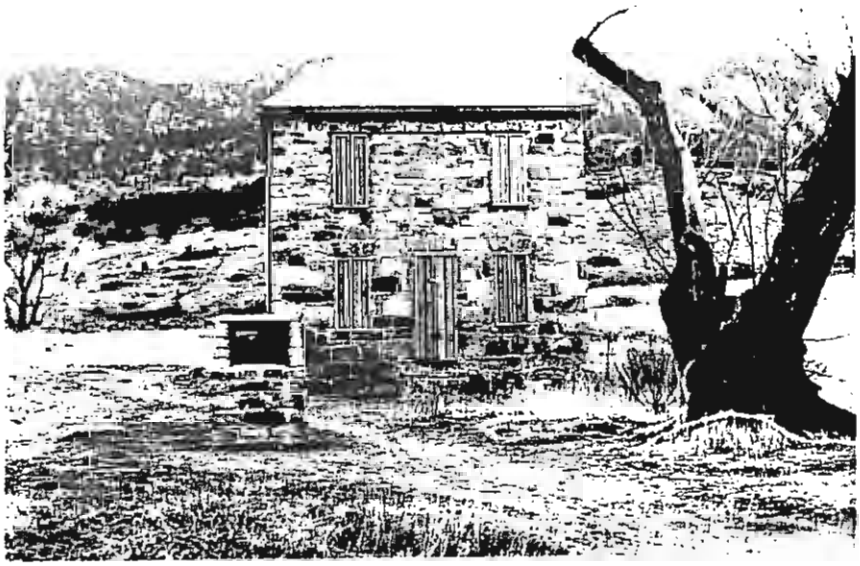

FIGURE 53 - **5BL3863**: Looking West at DeBacker-Dunn House, 1992.

to a man named Jim McGinn. A log building, currently a horse barn, was reportedly built in 1859. This may have been the original dwelling of John DeBacker, or possibly an outbuilding. William Blake (1868-1950) was born on the homestead, ran the ranch, and lived there until his death. Several stone buildings - a chicken coop, an ice house, and a milk house -were constructed in the 1890s, and still stand.

The Eldorado Springs School District (District 36) was formed around 1875. John DeBacker donated a portion of his land, south of his home (where the present Public Service sub-station stands), and a one-room log school house for his and other neighboring children was built around 1877 or slightly later, called the South Boulder School. The school building and land upon which it was built was to be given back to the DeBacker family when no longer used. The log school was heated by a large black stove and drinking water was collected from the creek. The old log school was moved west of the DeBacker's house for a chicken coop; and between 1890 and 1894, a stone building was constructed on a short acre donated by William Blake (Gibson 1983, Dyni 1991). This stone building was the Hawthorne School, still standing east of the DeBacker/Dunn home, and west of the DeBacker/Blake/Hedgecock home.

DeBacker was fond of reminding his daughter Emma that they were not the first people in the area. When DeBacker irrigated his fields north and west of his house he found many traces of Indian encampments such as tipi rings, cooking fire locations and arrowheads (Dunn 1970).

In 1901, John DeBacker retired and moved to Boulder. He sold the land and house to his daughter Emma (born in 1877), and son-in law John Dunn for one dollar. John Dunn (1879-1953) was born in the Marshall area, the son of an Irish immigrant who arrived in Marshall around 1866. The Dunn family continued the dairy business and remained in the house until John Dunn died in 1953. Between 1901 and 1953, the Dunn's changed structural aspects of the interior of the house. In 1905, a Mr McGrew built an inside staircase to the second floor in the stone structure. A fireplace was constructed in the parlor in 1924 by an unknown person (Helart and Dunn 1979). The Dunn's had three children who were named Thomas, John and Ruth. The interior of the house was described as follows: The parlor was furnished with a love seat, four mahogany chairs, one mahogany rocking chair, an organ, and a Brussels carpet. In the center of the room there was a stand with a Bible on it. The Dunn's wedding pictures and the DeBacker's pictures in gold frames adorned the walls. In the dining room there was a square oak table that stretched out for Sunday dinners. A phonograph was along the wall. The downstairs bedroom had a bed, dresser, and two wash stands (Helart and Dunn 1979).

At the Blake homestead, a large barn was built in 1913. The house, which is still occupied, was built in 1918. What type of dwelling it replaced is unknown. Lou Stengel purchased the western portion of the homestead, east of the Dunn house. Glen and Virgeen Hedgecock purchased 154 acres of the homestead in the fall of 1947, and cared for Bill Blake until his death in 1950. The barn burned in 1954. The Hedgecock family continue to live at **5BL3864** under a life estate, and the ranch is still active, with livestock raised. The historic buildings are being preserved.

In 1969, Boulder City Open Space bought the house and land comprising **5BL3863**. The poor remains of Doudy's original wooden structure were razed by the city due to unsafe conditions. Jack Kissel, an open space ranger, recalls that the building was constructed of notched logs securely attached to one another, and later covered with siding. The two story stone addition to the house remains standing.

Phase I Archival Research Results

5BL3880, 5BL3881 - The Rodeo Rider's Camp

Both **5BL3880** and **5BL3881** are within the same quarter/quarter section, and the land ownership of the area does not appear to have been further subdivided. As such, sites **5BL3880**, a rectangular foundation and stone walled corral, and **5BL3881**, a small stone walled enclosure, are considered together here. This parcel has been utilized for livestock grazing since it was first acquired, and it should be acknowledged that any of the landowners prior to the City of Boulder could have built, used, or reused the two stone enclosures at various times. Therefore, research focused on determining who the builder(s) and occupant(s) of the structure foundation may have been.

Tim and Edward Shanahan both remember a person who lived at this site, and Tim Shanahan positively identified the site as being in the area of the 1989 forest fire. They knew the man to be an old rodeo rider, who lived on the ridge and looked after cattle during the summers. The Shanahans do not remember the man's name, but know he lived there sometime after World War I. The rodeo rider's name was neither Honohan or Ball. This implies two possibilities: that he owned that property during the gap in ownership information, between 1918 and prior to when Elizabeth Downer Ball sold the property in 1924 (Table 4). The other possibility is that the "Rodeo Rider" was living there while someone else owned the land. He may not have had a lease, or the lease was recorded in an obscure location.

It appears confusing that Elizabeth Downer Ball should have had possession of the land prior to selling it to James Honohan. The land was originally purchased in 1891 by Timothy Shanahan, and James Honohan was Timothy and Mary Shanahan's adopted son. It would have been reasonable for the land to have passed directly to Honohan. One possible explanation is that Elizabeth Downer Ball may have been a Public Trustee holding an expired Promissory Note for the "Rodeo Rider", if the Rider had failed to pay it or had died. This seems a reasonable role for Ball, given that her father, Sylvester Downer was a prominent lawyer and judge in Boulder, and her mother, Dorothy Hardin Downer, was the first female bank executive in Colorado.

5BL3883 - The Manchester Home Site

Field research at **5BL3883** revealed indications of seven structures. The Tax Assessment lists of the County of Boulder for the year 1875 show that Carl Dehn was assessed $18.00 for a homestead in this parcel. Carl Dehn paid the tax in June of 1876 and officially purchased the property in September of 1876. Carl August Dehn married Mary Matison or Martin on 15 June 1876 (Boulder County News 16 June 1876 2:5, and 23 June 1876 2:7). C. Dehn is erroneously shown as owning property in the adjacent section on a 1880 Eastern Boulder County Property Owners map. Carl Dean (sic) is listed in the 1880 census for the Marshall Precinct. At that time he was 35 years old, was born in Germany, and is listed as a farmer. His wife Mary, was also 35 years old, and was born in Sweden, and they had a two year old son named Charles, born in Colorado. The 1885 census for the Marshall Precinct shows a 43 year old Carl Delm (sic), with his wife Mary, 37 years old, and their seven year old son Charles, who is listed as having been born in Wisconsin. It can be assumed that Carl Dehn, Carl Dean, and Carl Delm are all the same person. The Dehns had sold this property to Elizabeth Sweeting in 1881. By 1892, Carl and Mary Dehn were divorced, and had moved onto land where Baseline Reservoir is now located. Carl Dehn died 18 May 1927 (Daily Camera, May 18, 1927:6) in Boulder.

Around 1868 John DeBacker married Marie Dehn or Dane. The relationship between Carl Dehn and Marie Dehn is currently unknown.

Sometime between 1881 and 1906, this property passed from Elizabeth Sweeting to George F. Chase, who was an important early pioneer in Boulder, arriving in 1859 and having figured in the founding of the University of Colorado (Boulder Daily Camera, 28 Oct 1918:8-9). The 1892 Boulder County Directory shows George F. Chase as owning land in this section but living at 1201 Hill (Mapleton) in Boulder. As Chase didn't officially acquire the parcel where **5BL3887** is located until 1902, it seems likely that he had acquired this west half prior to 1892. Chase lived at the corner of Broadway and Mapleton during the time that he was raising his children (Boulder Daily Camera, 28 Oct 1918:8-9), and therefore probably did not modify the land of **5BL3883** or **5BL3887** beyond grazing or farming.

Most of the structures at **5BL3883** may be securely attributed to the Manchester Family. This is based on a variety of sources, including an oral history interview with Herman Manchester and his wife Silvia, taken in 1983 by John Hess, as well as information gathered by Jack Kissel (personal communication 1992), who attended the Manchester Family reunion which took place in the early 1980s at the location of the family home site.

John Elliot and Sarah Reidenhour Manchester moved to Eldorado Springs from Michigan in 1903, bringing their five children with them. John's asthma had forced the move, and his health greatly improved in Colorado. John worked with a local ditch company, the Coal Creek Ditch Company, and worked the concession stands in Eldorado Springs on the weekends. According to the Public Records of Boulder County, John Manchester purchased the parcel on 1 February, 1906.

The Manchester family often referred to their South Boulder home site (**5BL3883**) as "the Old Plantation." They lived in a small dugout structure (Structure 2) while they were building the main house (Structure 4). The main house was built of poured cement with rubble. John Manchester planted a cottonwood tree near the back door. This tree has since died and fallen, resting near the southwest corner of Structure 4. A photograph, probably dating to about 1911 or 1912, shows the family standing in front of the main house (Figure 54). The house appears to have been constructed with a wooden frame filled with poured cement and field stones. Windows are simple wooden frames mounted on the studs. Details of the roof and foundation are not visible.

The photograph shows almost the whole Manchester family. The individuals in the photograph were identified by Herman Manchester (personal communication 1992). The only ones not present are the parents, John and Sarah, and the oldest son Rodney, who would have been 13 years old, and was off playing with the neighbors son when the photograph was taken. Assuming the photograph was taken in 1912, then it pictures from left to right, Doris, age 21 (later Mrs. Henry Jenkins), Vera, age 10 (later Vera Teets), Elsie, the baby (later Elsie Wenlquist), Bernice holding the baby, age 19 (later Mrs. Frank Winkler), Zelma, age 15 (later Zelma Johnson), Herman, age 3, and Lester, age 6.

Another photograph taken at about the same time shows a structure with Herman, Elsie and Lester sitting in front (Figure 55). The structure has walls that appear to be constructed of roughly shaped stones set in uneven courses. The walls are about four to five feet high, with a doorway in the center of the wall. The structure has a gable roof with milled wooden planks. It remains unclear which structure this is a photograph of, but a stone wall can be seen in the background, as well as a small mountain and a mesa. The wall in the background is similar to the walls of Structure 1. This photograph may be of Structure 2, 3, or 5.

FIGURE 54 - **5BL3883**: The Manchester Family Standing in Front of the Main House (Structure 4). Photo Taken Around 1911 or 1912.

FIGURE 55 - **5BL3883**: Looking Southwest of the Youngest Manchester Children in Front of an Unidentified Structure on Their Home Site. Photo Taken Around 1911 or 1912.

Two anecdotes are told about life on the Old Plantation. Once when the parents had to go into town, they left the oldest daughter, Doris, in charge of the children. Forgetting something, they returned to find all the children sitting on pillows. Apparently, Doris had told them that lighting couldn't strike them if they were sitting on feathers. Another time, the youngest boy, Herman, was traveling to visit a woman who lived nearby, when he got lost in an irrigation ditch. He wondered around crying, but finally climbed out of the ditch to discover that he had been about a hundred yards from his house the whole time.

This second story is of interest. The ditch the boy was lost in was probably the South Boulder and Foothills Ditch (**5BL3865**) just to the west of **5BL3883**. He was headed for a house a short distance away where a woman lived. Herman Manchester (personal communication 1992) believes that this family may have been the Saunders, who are listed in the 1910 census as living in the Marshall area, and were good friends of the Manchesters. There are two home sites nearby to the west, **5BL3885** and **5BL3887**. The property that the Manchesters owned included the land where **5BL3887** is found. No mention or record has been found indicating that the Manchesters shared their property with anyone else. Therefore, the boy may have been headed for **5BL3885**, which would mean that that site was contemporaneous with **5BL3883**, and was occupied by the Saunders.

The Manchesters had a few cows and chickens on their property, but John continued to work for the ditch company and in Eldorado Springs. They may also have cut hay and raised potatoes, though the land was very rocky (Stengel 1983). They later sold the property to Charles A. Bouton on 19 December 1911, though they did not move until the spring of 1912. After moving to Valmont, they ran a small dairy farm. The youngest son, Herman, still lives in Valmont.

Louis Stengel purchased the property from Bouton in 1917 for grazing. He would graze cows on the land from April to November, checking them once a week. He had his sons tear down all the structures at **5BL3883** so the cattle could not hurt themselves (Stengel 1983).

Small discrepancies aside, it is apparent that the Dehns were an early farming family living on land later owned by the Manchesters. Besides **5BL3883**, the only cultural traces on the 80 acres that had been owned by Carl Dehn were two stone fences, **5BL3890** and **5BL3891**, which could equally have been built by the Manchesters as by the Dehns. It is possible that the Manchester home site destroyed any traces of the Dehn Homestead, if anything remained in 1906. Alternatively, it can be assumed that since the Dehns were homesteading on the land prior to the construction of the South Boulder and Foothills Ditch (**5BL3865**) in the early 1880s, they would have had to utilize the seep springs in the area for water and cultivation. The Dehns may therefore be responsible for the construction of Structure 7 and nearby alignments, which appears to control and direct the seep spring water.

5BL3884

The land on which site **5BL3884** rests was originally purchased by Mary Shanahan in 1891. Even though records are not clear who owned the land from that time until 1938, when Timothy Shanahan passed it on to his son, it most probably remained in the Shanahan family the entire time. A land ownership map dated 1927 shows the parcel owned by T. and E. Shanahan (Drumm 1927). In 1941, the Shanahans sold the property to Sam and Henry Eberharter. Today, this site mainly consists of a stone walled enclosure and a rectangular stone structure that has been impacted by the construction of a stock pond. The site was probably associated with cattle, and may have been a short term residence or line camp. Tim Shanahan is not

aware of this site (personal communication 1992), but it could have been built and used either by his grandparents or by the Eberharters after the Shanahans sold the property.

5BL3885

Site **5BL3885** consists of a standing wooden livestock pen, two structure foundations, a stone-lined well, several stone fence lines and a light scatter of household refuse. Tim Shanahan, who was born in 1920, remembers the foundations and the structure rubble in the depression from when he was young. The land that this site is situated on was originally purchased in 1869 by the Denver Pacific Railway and Telegraph Company, which was later incorporated by the Union Pacific Railway Company. These railway companies owned many parcels of land that they never developed, and held them presumably for investment reasons.

In 1896, three people, Jesse B. Smith, Temperance A. Walsh, and Mary E. Walsh, purchased this land. Very little could be found concerning the Walshes. Jesse Smith is listed in the 1870 Boulder County Census as a farmer living in Burlington. From 1880 on, he is listed as living in the town of Pello, near Hygiene. Mary Walsh is not listed in the 1900 Census, but Temperance Walsh is shown to be living at 1128 Bluff in Boulder. She was 40 years old in 1900, had been married for 23 years to J. J. Walsh, and had had eight children, six of whom were still alive. None of her children were named Mary.

Sometime between 1896 and 1902, Andrew Clarkson and John Hutchinson gained possession of the land. The 1900 census shows Andrew Clarkson, 35 years old, to be working as a coal miner and living in Louisville with his wife and eight year old daughter. His wife's name was Priscilla Hutchinson, and was probably an elder daughter of John Hutchinson, 52 years old, who was living in Lafayette with his wife and three of his children. It is unclear whether Andrew Clarkson owned the land with John Hutchinson Sr., or John Hutchinson Jr., who was 23 years old in 1900 and was working as a coal miner while living with his parents.

In 1902, John Hutchinson and Andrew Clarkson leased the land for unspecified purposes to J. D. Morris and Robert Loch until 1912 when Louis Stengel bought the land. There is currently no information on J. D. Morris or Robert Loch.

Louis Stengel bought the property in November 1912. He ran cattle on the land from April to November, checking on them once a week (Stengel 1983). Louis Stengel Jr. used the loading chute in the stock pen to load and unload his horse when making these checks in later years (Jack Kissel, personal communication 1992). William Stengel is Louis Stengel Jr.'s cousin and a land surveyor who has surveyed much of Boulder's Open Space lands. He does not know who built the wooden stock pen at **5BL3885** (Structure 1) but agrees that it was probably Louis Stengel or Louis Stengel Jr. (William Stengel, personal communication 1992).

It remains unclear which group of people were responsible for building the structures at **5BL3885**. The Manchester family tell a story about one of their boys becoming lost while on his way to visit a neighboring woman. He was headed for a house a short distance from the Manchester home sites (**5BL38834**). There are two home sites nearby to the west, **5BL3885** and **5BL3887**. The Manchesters owned the property containing **5BL3887**, and no mention or record has been found to indicate that the Manchesters shared this property with anyone else. Therefore, the boy was probably headed for **5BL3885**, which would mean that this site was contemporaneous with **5BL3883** and that a woman lived there who was friends with the Manchesters. The Manchesters occupied their home site from 1906 to 1912. This suggests that the home site at **5BL3885** was in operation during the time when either Smith, Walsh and Walsh, or Hutchinson and Clarkson owned the property. However, Louis Stengel Jr.

remembers this site as belonging to the Reames family during this period (Jack Kissel, personal communication 1992). Unfortunately, no other information is available on the Reames family. Herman Manchester (personal communication 1992) believes that their neighbors were the Saunders. The Saunders are listed in the 1910 census as living in the area.

5BL3886 - The Jones Home Site

William P. and Elizabeth P. Jones were the original owners of the property which includes site **5BL3886**. They sold the property in 1867 to William L. Lee, who was involved with the Marshall Coal Mining Company. While the property was never mined, it underwent several changes of ownership within the company as investors came and went. The various owners include William L. Lee, Deborah P. Lee, Mylo Lee, Margaret R. Lee, Augustine G. Langford, Nathaniel P. Langford, Joseph Marshall, William R. Marshall, Abby L. Marshall, Marcus Walker, Robert Spenser, William N. Byers, Nathaniel Hill, and John S. Prince. These internal company transactions lasted until at least 18 April 1882. Sometime after this, the Rocky Mountain Fuel Company acquired the land, which began buying up property in the northern coal fields around 1890 (Smith 1989:62). By 1913, the Rocky Mountain Fuel Company was bankrupt and sold this property to W. J. Thomas and Paul J. Kane.

Site **5BL3886** consists mainly of three rectangular stone foundations that appear well buried and are associated with a light scatter of household refuse. Tim Shanahan, who was born in 1920, remembers seeing the square foundations of **5BL3886** "Out behind the Thomas place" when he was a boy (Tim Shanahan personal communication 1992). They were only square foundations even then, suggesting a 19th or early 20th century date for this site. It is possible that W. J. Thomas or Paul J. Kane could have built and abandoned home site at this location after 1913, or that miners associated with the companies that owned this plot had permission to live there. However, it seems most likely that William and Elizabeth Jones were the ones who built the site and lived there from 1864 to 1867. Additional information on the Jones Family comes from the 1870 Boulder County Census, which lists William Jones (52 years old) as a peddler living in the Left Hand District and his wife Elizabeth (51), who were both born in Wales. They had three offspring, William (14), Watkin (12), and Rose (10) who were all born in Wisconsin.

5BL3887

Site **5BL3887** consists primarily of the remains of a dugout, a rectangular stone foundation, and a series of stone enclosures. Official documentation regarding the ownership of the land on which this site rests begins in 1902, when George F. Chase purchased the property with a deed that is signed by President Theodore Roosevelt. It is possible that George F. Chase built the structures on this land, though he and his family were living at 1201 Hill in Boulder at the time. The land was later purchased by John E. Manchester, who was living at **5BL3883**, and then by Charles Bouton, and then by Louis Stengel, whose son mentions tearing down the Manchester home site, but makes no mention of this site (Louis Stengel [Jr.], Oral History 1983). Charles Bouton made no known modification of this land, and the Stengels used it exclusively for grazing.

Prior to 1902, two other names are connected with this land. A 1879 tax assessment ledger (Laws 1879) shows F. Ran as having made improvements on this land (the handwriting is difficult to read, and the last name may be Rau, Raw, or Row). The 1885 Census shows a German coal miner living in Marshall named Frederic Raw (55), with his wife Elizabeth (52), and a daughter Ida, who was 19 years old and is listed as being born in Illinois. If Frederic Raw was living in Illinois when his daughter was born, the earliest that his family could have

moved to Boulder County would have been in 1867, which would have been plenty of time for him to attempt to homestead in 1879. But that attempt may have failed the next year. A 1880 Eastern Boulder County Property Owners map shows H. (or M.) Zimmerman as owning the property of **5BL3887**. Unfortunately, the 1880 census does not list a Zimmerman (or any other similar name) in the Marshall District.

TABLE 4

Results of title search for historic habitation sites in the Phase I portion of the survey. Compiled from the Public Records of Boulder County. A question mark (?) represents incomplete information.

Date	Grantor	Grantee
5BL3880		
08 Jul 1891	-	Timothy Shanahan
?	?	Elizabeth Ball
22 Dec 1924	Elizabeth Ball	James Honohan
17 Nov 1939	Honohan Estate	Stella Honohan
11 Mar 1942	Stella Honohan	Sam and Henry Eberharter
02 Jan 1972	Sam and Henry Eberharter	City of Boulder
5BL3883		
26 Sep 1876	-	Carl Dehn
26 Mar 1881	Carl Dehn	Elizabeth Sweeting
?	?	George F. Chase
01 Feb 1910	George F. Chase	John E. Manchester
19 Dec 1911	John E Manchester	Charles A. Bouton
28 Feb 1917	Charles A. Bouton	Louis Stengel
21 Jan 1944	Louis and Barbara Stengel	Louis Stengel Jr.
27 Dec 1974	Louis Stengel Jr.	City of Boulder
5BL3884		
11 Nov 1891	-	Mary Shanahan.
21 Nov 1916	Mary Shanahan	Ed. and Timothy Shanahan
21 Nov 1916	Edward Shanahan	Timothy Shanahan
10 Aug 1938	Timothy Shanahan	Edward Shanahan
11 Aug 1938	Edward Shanahan	Tim and Lucy Shanahan
22 Aug 1941	Tim and Lucy Shanahan	Sam and Henry Eberharter
03 Jan 1967	Sam and Henry Eberharter	City of Boulder

TABLE 4 (Continued)

5BL3885		
10 Aug 1869	-	Denver Pacific Railway
11 Apr 1896	U.P. Railway Co.	Jesse B. Smith, Temperance A. Walsh, and Mary E. Walsh.
04 Oct 1897	Jesse B. Smith, Temperance A. Walsh, and Mary E. Walsh	John Hutchinson and Andrew Clarkson
23 Jan 1902	John Hutchinson & Andrew Clarkson	J. D. Morris and Robert Loch (lease)
01 Nov 1912	John Hutchinson & Andrew Clarkson	Louis Stengel
21 Jan 1944	Louis and Barbara Stengel	Michael L. Stengel
27 Jul 1972	Michael L. Stengel	Boulder Greens Venture
?	?	City of Boulder.
5BL3886		
22 Apr 1864	-	Wm. P. Jones
22 Apr 1864	Wm. and Elizabeth Jones	Patrick Shanahan
23 Apr 1864	Patrick Shanahan	Elizabeth P. Jones
23 Aug 1867	Wm. and Elizabeth Jones	William L. Lee
?	?	Rocky Mountain Fuel Co
01 Apr 1913	Rocky Mountain Fuel Co.	W.J. Thomas and Paul Kane
19 Oct 1973	W.J. Thomas & Paul Kane	City of Boulder
5BL3887		
20 Dec 1902	-	George J. Chase
01 Feb 1906	George F. Chase	John E. Manchester
19 Dec 1911	John E Manchester	Charles A. Bouton
28 Feb 1917	Charles A. Bouton	Louis Stengel
21 Jan 1944	Louis and Barbara Stengel	Louis Stengel Jr.
27 Dec 1974	Louis Stengle Jr.	City of Boulder

Phase II Archival Research Results

5BL3895, 5BL3896, 5BL3897

Three sites are present in this parcel. They include **5BL3895**, a depression and a rock alignment; **5BL3896**, a small dump; and **5BL3897**, a stone and cement dugout structure and rectangular foundation. These sites are all small and are probably unrelated. Site **5BL3895** is in ruins, buried under dense vegetation. Site **5BL3897** appears to be more recent. The cement used in construction is in good condition, and it must have been constructed after the Goodhue Ditch was built in the 1860s. Site **5BL3896**, the dump, is from a later time period, minimally from the 1920s, and can have nothing to do with the early owners.

The parcel went through repeated changes in ownership. The first listed owner is Frank Sweeny. The land was sold to Augustin Langford in 1865. Langford was a partner of Joseph Marshall, a prominent figure in early iron and coal mining in the area. Marshall, and other partners in Marshall Coal Mining Company, William and Mylo Lee, each acquired one quarter interest in the land. Nathanial P. Hill, an important figure in gold mining, at one time also owned a quarter interest in this parcel. Hill was a professor of chemistry at Brown University who perfected the method of separating elements in concentrated ore. He eventually became a Colorado State Senator (Ubbelohde et al. 1976). David Moffat purchased the land in 1885. Moffat, another figure prominent in early gold mining and railroading, made several attempts to construct a railroad through southern Boulder County and the Rockies, to reach the Pacific. He constructed the Moffat Road, serving the Denver, Northwestern and Pacific Railway, later named the Denver and Salt Lake Railroad, absorbed by the Denver and Rio Grande Western Railroad in the 1920s. This railroad is **5BL445**, traversing Eldorado Mountain to the south.

At this time, none of these sites can be linked with known owners of the land. It is unlikely that the structures were constructed by the partners from the Marshall Coal Mining Company.

5BL3898 - The Schoolmarm's Cabin

Site **5BL3898**, was occupied by Miss Florence Lane, a Denver schoolteacher. The property was owned at this time by Don Lord. It is not known whether the buildings were constructed by Lord, Lane or by one or more previous owners. The main building at the site shows signs of having been constructed in two episodes. Miss Lane used the cabin as a summer residence during the 1920s and 1930s. After leaving Boulder, she moved to Red Sign Mine and Eagle Rock, and around 1947 or 1948 moved to Texas.

5BL3899 - The Brammeier Home Site

A tax assessors book from 1879 showed the parcel containing site **5BL3899** to be owned or occupied by Jesse B. Smith and Temperance Walsh (Laws 1879). Jesse B. Smith appears in the Boulder County Census from 1870 onwards. Smith was a farmer, originally from Minnesota, residing first in Burlington (in 1870) and then from 1880 onwards, in Pello, a town later absorbed by Hygiene. Jesse B. Smith died in Hygiene in 1926. A second Jesse Smith occurs only once in census records, in 1885 (middle initial is unknown). This man was a clergyman from Illinois residing with his wife and daughter, Jessie, in Valmont. Several miners are listed as J. Smith, in different years and locations. Information regarding Temperance Walsh is presented in the discussion of archival research for site **5BL3885**.

Although Smith and Walsh owned, occupied, or controlled the parcel in 1878, John Brammeier apparently patented the land in 1902.

The following was reported to D. M. Teegarden by Inez Twa, told to her by Julian Brammeier. The Brammeier family came to the area from Iowa, first to Burlington, to Ward and finally to Boulder during the mid-1890s. The family included seven children, three girls and four boys. The family also brought two horses and a cow. John W. and Maud Brammeier settled in the area and built the cabin recorded at site 5BL3899 during the winter. John's brother helped with the construction. The homestead included 160 acres in one section, and 23 acres were added in an adjacent section. The land was patented in three years. The one room cabin was divided by hanging blankets and the animals were housed in a shed attached to the cabin. The first winter at this location was hard. All of the children were sick and both horses starved to death, but the cow survived. The family lived at the cabin for about six years. Part of the

parcel, the small acreage in the adjacent section, was deeded to Julian Brammeier, the youngest child. Julian owned the land until the early 1980s.

On June 9, 1902, the oldest son, John Fred Brammeier, aged 19, was shot and killed by John Dunn. This tragic event generated considerable local attention, with extensive newspaper coverage. According to the Denver Post the shooting was the result of a dispute occurring when the Brammeier cattle broke into Dunn's alfalfa field. The Post titled its story "Cattle Herder Killed By An Irate Farmer", in itself a comment about social interaction in the rural west (10 June 1902:6). The title was inaccurate, however, as Dunn ran cattle as well. The Boulder Daily Camera cites the cause as a dispute lasting several years over a division fence and right of way, or access (16 Oct. 1902:1). Dunn and Bill Blake had been out searching for lost cattle, and Fred Brammeier was encountered. An altercation ensued in which Dunn shot Brammeier. Dunn then turned himself into the sherriff and claimed the shooting was accidental and in self defense. Brammeier proved to be unarmed. Dunn stood trial for murder, and the jury reached a verdict of involuntary manslaughter (Daily Camera 17 & 18 Oct 1902).

Although the family had been on the land for some time, the land was not filed for until October 6, 1902, the month of Dunn's trial. After Fred Brammeier was killed, the family moved into town. The family ran into financial difficulties. Maud's father, in Iowa, agreed to help the family, on condition that the properties be deeded to his daughter.

In 1948, Ewald and Elmer Anderson acquired the area around the Brammeier homestead, and ran cattle through the property. According to Gertrude DeBacker Anderson, interviewed by D. M. Teegarden, by the mid-1940s the house and stable had collapsed. Ms. Anderson remembers a dugout structure which was used for winter storage, specifically of fruit. Ms. Anderson does not recall any roads in the area. This might mean that the now heavily overgrown quarry road near the Brammeier homestead had not yet been built, or that by the mid 1940s, the road was already overgrown.

Julian Brammeier also told Ms. Twa of a landmark known as the "Devil's Thumb Postoffice". This was a large overhanging rock, with a flat floor. The rock was used as a message exchange in the late 19th or early 20th century. The Brammeier children were aware of this message exchange, and had seen letters left under a rock on the floor. Their father instructed them to leave the messages alone. Two large boulders with substantial overhangs were noted west of the Brammeier homestead along the old quarry road extending west from the site. The first boulder, closest to the homestead has had a considerable amount of rockfall, therefore it is not known if there is a flat floor beneath the rubble. Further up the road is **5BL3903**, a substantial rockshelter with a flat floor and dry laid rock walls. If this rockshelter is actually the same rock overhang as the "Devil's Thumb Postoffice" the walls of the rockshelter would likely have been built at least since 1902, when the family moved down to Boulder. Brammeier apparently did not describe any walls around the rock overhang. The talus slope above the rockshelter is said to have been quarried, and a well constructed road leads up to it. The rock overhang may have been enclosed by quarry workers, or by campers. Records tell of early settlers in Colorado spending winters in caves (Smith 1989), this site, as with site **5BL3902**, could also have been used for that purpose.

5BL3900

The site consists of rock alignments outlining foundations of several structures. The land surrounding the site has passed through many changes of hands. The earliest owner on record is the Union Pacific Railway which purchased the land in 1897. At some point the land was acquired by G. Arthur Chase.

Jesse B. Smith, at times partnered with Temperance and Mary Walsh, owned a great deal of land in this area, at various times. Smith has been discussed above in the archival research discussion of site **5BL3899**. It is unlikely that Smith would have built structures on every parcel of land he owned. Charles M. Pruden purchased the property from Smith. A Charles A. Pruden was noted in the Boulder County Census Records in 1885, residing in Eldorado Springs. No Charles M. Pruden was found in a census search. Charles Pruden was likely related to Marie Pruden, who obtained a patent on a homestead to the southwest of 5BL3900 in 1902. In 1906 Marie Pruden sold the homestead to Hugh McGilvery, and it is widely known as the McGilvery cabin, site **5BL3459**.

No Mariettie Adams was found in the Boulder County census search. It is not known which of the several owners constructed the original structures. The condition of the site tends to indicate that it has been abandoned for some time: rocks are lichen covered, and vegetation covers fallen debris.

5BL3901

5BL3901 is a small site which includes two stone structures built up against a large boulder, and a rectangular rock enclosure. Only three transactions were found concerning this land, prior to purchase by City of Boulder. Again, it is unknown which owner built the structures. The site is located near an old quarry road, and the original buildings may have been related to quarries or people engaged in quarrying.

5BL3902

Site **5BL3902** is a rockshelter, located above the previously recorded McGilvery Cabin (**5BL3459**). This land passed through many hands. The site may have been constructed by McGilvery children, by the Boy Scouts staying at the Stockton place, or by some unknown person or persons.

5BL3904, 5BL3905

Sites, **5BL3904**, **5BL3905**, are associated with sandstone "quarrying" or procurement. No information is available concerning either the age of the sites or the operators. Isolated Find **5BL3918**, located below **5BL3904**, may be associated with quarrying activities at these sites.

Trails Sites - 5BL3924, 5BL3925, 5BL3926, and 5BL3927

Ernest Greenman (personal communication 1992) recalled building the Mesa Trail (**5BL3924**), connecting Chautauqua Park to Eldorado Springs in 1923 or 1924. The trail incorporated a number of older roads and trails, and about 200 cairns were built to mark the trail (Ament and McCarty 1985). A number of cairns, both standing and toppled, were noted along the trail during this survey. Many of these had sufficient lichen growth to suggest that they may have been built at this time.

A Boulder Mountain Park Trail Map (n.d.) may show the original route of the Mesa Trail. The trail is shown proceeding directly south from Shadow Canyon down into Eldorado Springs, rather that around "First Mesa" as it does today. Other than this, the route as originally constructed seems to have been much as it is today. Though there is no date on this map, a mention is made of the Interurban Railway, suggesting that it was published prior to 1926.

Some trails in Chautauqua Park, located to the north of Boulder Open Space, were constructed and improved by the Civilian Conservation Corps in the 1930s, it is not known if the work of the C.C.C. extended onto what is now Boulder Open Space.

A toll (**5BL3925**) road was built in Bear Canyon in 1861 (Friedman 1989) or 1862 (Schoolland 1980). The route of this road is shown on an 1873 map of Boulder and the surrounding areas (Schoolland 1980, p. 174). The Bear Canyon Road was intended to connect Boulder with Central City and other mining areas (Friedman 1989). The building of this road was spurred by the desire of Boulder and Marshall residents to transport ore down the mountain to smelters in and around Boulder, intercepting ore that was being taken to Denver smelters. In addition, equipment, produce, and other goods could be shipped up the mountain to be sold at profit to the miners. The road washed out, was rebuilt, and washed out again in 1864 (Schoolland 1980). Bear Canyon road was rebuilt in 1907 by the Colorado Power Company. Between 1907 and 1910 construction supplies were hauled over the Bear Canyon Road. After being washed out in 1919, the road was again rebuilt in 1935 by the Civilian Conservation Corps (Ament and McCarty 1985).

The Fern Canyon Trail (**5BL3926**) and Shadow Canyon Trail (**5BL3927**) are of unknown age, but the Fern Canyon Trail is mentioned in a Chautauqua publication dating from 1926. The Shadow Canyon Trail is mentioned in a March 1928 Colorado Chautauqua Bulletin. These two trails are also depicted on the Boulder Mountain Park Trail Map (n.d.) discussed above. When Open Space acquired the land in the 1970s a number of old trails, roads and fencelines were present. Many of the trails were closed off and fences removed. The locations of these trails, roads and fences were not recorded.

The Homestead, Towhee and Big Bluestem Trails are all relatively new (Dick Lyman, Chautauqua Ranger, personal communication 1992). Any of these may have incorporated earlier, unofficial trails, or portions of roads.

TABLE 5

Results of title search for historic habitation sites and possible habitation sites in the Phase II portion of the survey. Compiled from the Public Records of Boulder County. A question mark (?) represents incomplete information.

Date	Grantor	Grantee
5BL3895		
?	?	Frank L. Sweeny
22 Dec 1865	Frank L. Sweeny	Augustin G. Langford
(From 18 Oct 1866 to at least 30 Oct 1885, various transactions within the Marshall Coal Mining Co. See D/517, O/230, 26/460, 51/428, 60/241, 61/491, and 77/174.)		
30 Oct 1885	Marshall Coal Mg. Co.	David H. Moffat
?	?	City of Boulder
5BL3897		
?	?	Frank L. Sweeny
22 Dec 1865	Frank L. Sweeny	Augustin G. Langford
(From 18 Oct 1866 to at least 30 Oct 1885, various transactions within the Marshall Coal Mining Co. See D/517, O/230, 26/460, 51/428, 60/241, 61/491, and 77/174.)		
30 Oct 1885	Marshall Coal Mg. Co.	David H. Moffat
?	?	City of Boulder
5BL3898		
29 Dec 1890	-	Geo. W. Williams (patent)
02 Mar 1891	Geo. W. Williams	Temperance A. Walsh and Jesse B. Smith
01 Aug 1892	Temperance A. Walsh	Mary E. Walsh
?	?	D.W. Croft
01 Aug 1898	D.W. Croft	Public Trustee
24 Apr 1905	Public Trustee	Don A. Lord
?	?	City of Boulder
5BL3899		
06 Oct 1902	?	John W. Brammeier
14 Apr 1905	John W. Brammeier	John Harding
16 Apr 1908	John Harding	Maud Brammeier
08 Mar 1909	Maud Brammeier	Eastern Power Company
01 Apr 1931	Maud Brammeier	Ewald & Elmer Anderson
?	?	City of Boulder
5BL3900		
12 Oct 1897	-	Union Pacific Railway
?	?	G. Arthur Chase
03 Aug 1898	G. Arthur Chase	Jesse B. Smith
03 Aug 1898	Jesse B. Smith	Charles M. Pruden
27 Sep 1901	Charles M. Pruden	Mariettie Adams
11 Jun 1969	?	Thomas Dunn
?	?	City of Boulder

TABLE 5 (Continued)

5BL3901		
16 Jul 1896	-	James Honahan
27 Feb 1935	James Honohan et al.	Stella Honohan
11 Mar 1942	Stella Honohan	Sam and Henry Eberharter
?	?	City of Boulder
5BL3902		
08 May 1902	-	Marie Pruden (patent)
12 Aug 1906	Marie Pruden	Hugh S. McGilvery
18 Mar 1914	Hugh S. McGilvery	Nellie McGilvery
10 Nov 1937	Nellie McGilvery	G. Anderson et al.
24 Nov 1937	Gwendolyn Davis and Ruth H. Randleman	G. Anderson et al.
10 Jun 1959	G. Anderson et al.	Stuart Anderson
18 Aug 1967	G. Anderson et al.	Doris H. DeBacker
18 Nov 1969	?	Gertrude DeB. Anderson
29 Jul 1971	?	Harold DeBacker Estate
?	?	City of Boulder
5BL3903		
08 May 1902	-	Marie Pruden (patent)
12 Aug 1906	Marie Pruden	Hugh S. McGilvery
18 Mar 1914	Hugh S. McGilvery	Nellie McGilvery
10 Nov 1937	Nellie McGilvery	G. Anderson et al.
24 Nov 1937	Gwendolyn Davis and Ruth H. Randleman	G. Anderson et al.
10 Jun 1959	G. Anderson et al.	Stuart Anderson
18 Aug 1967	G. Anderson et al.	Doris H. DeBacker
18 Nov 1969	?	Gertrude DeB. Anderson
29 Jul 1971	?	Harold DeBacker Estate
?	?	City of Boulder

DISCUSSION

A total of 33 sites and 28 isolated finds have been documented on City of Boulder Open Space between Bear Creek/Shanahan Hill and South Boulder Creek. While prehistoric (aboriginal) material is present, the cultural manifestations in this area are predominantly from the historic era, reflective of Euro-American settlement and occupation beginning about 1859.

The entire project area of this cultural resource inventory falls within the area defined for the Boulder Historic Context Project (Friedman 1989). The goal of the Boulder Historic Context Project was to aid the City of Boulder in preservation planning by establishing an historic context which can then be used to assist in directing the identification, evaluation, registration, and treatment of historic properties. An historic context is a body of information about historic properties organized by theme, place, and time. Historic contexts organize information about our prehistory and history according to the stages of development occurring at various times and places. The Boulder Historic Context defined the place and time as the entire history of human occupation in the Boulder Valley, and defined a number of themes and sub-themes based on general socioeconomic/political trends.

Historic Themes, Boulder Historic Context

The cultural manifestations documented in the project area relate to some of the historic themes developed for the Boulder Historic Context. In some cases, these cultural resources can help to further define those themes. The culture history of the area relates primarily to two major themes - agriculture and mining. Other themes represented by cultural resources in the area are aboriginal prehistory, transportation, water resources, and recreation. Obviously any given historic property can crosscut themes, relating or applying to several themes. Roads relate to the theme of transportation, but may have been integral to sandstone quarrying or important to agricultural pursuits. Habitation sites may have been occupied by persons engaged full or part-time in mining who also ran cattle and grew crops. The information presented in this report is intended to serve as a baseline or foundation for future research. There are many gaps in our current knowledge of who occupied the sites and what took place at the sites and in the survey area.

Aboriginal Prehistory, ca. 12,000 B.C. to A.D. 1880

One site, **5BL3882**, and three isolated finds, **5BL599**, **5BL836**, and **5BL3888**, in the project area pertain to this theme. A lack of diagnostic artifacts at **5BL3882** and **5BL3888** prevents their assignment to specific temporal periods. Isolated find **5BL599**, a small corner-notched point, is likely from the Ceramic Period, ca. A.D. 1 to 1540, or the Protohistoric/Historic Period, ca. A.D. 1600 to 1880. The Eden point, **5BL836**, dates to the Cody Complex of the Paleo-Indian Period, ca. 6000 - 7000 B.C., and is particularly interesting in view of its antiquity.

There is the distinct possibility that any of the isolated finds tentatively identified as hunting blinds (**5BL3889**, **5BL3911**, **5BL3920**) may be aboriginal in origin. However, this assignment cannot be substantiated without further research, including test excavations.

As expected, the evidence for prehistoric activity in the project area is very sparse, but the finds confirm that the area was utilized prehistorically. In low lying, flatter areas, such as the open valley where **5BL3888** was found, alluvial, colluvial, and eolian depositional activity is ongoing. Prehistoric sites, particularly from older periods, are buried and not visible on the surface unless revealed by erosion or surface disturbance, as were **5BL836** and **5BL3882**. The chances are good that buried prehistoric material is present, and may be encountered during any future projects that include surface disturbance.

Agriculture, ca. 1859 to present.

The theme of Agriculture covers a broad expanse of time, essentially encompassing the entire history of the Boulder Valley. Agricultural property types include farms, flour/grist mills, gardens, orchards, livestock ranches, dairy industries, and fisheries (Friedman 1989:29). Most of the sites and isolated features recorded by this project are directly associated with this theme, and agriculture is clearly the most important theme in the historical development of the South Boulder Foothills area.

The predominant historic property type is the home site. The sites that we are considering home sites all have the common aspect of having one or more structures that served as some sort of habitation. These sites are discussed under the theme of agriculture, as opposed to the sub-theme of Rural Residential Neighborhoods within the theme of Community Development and Social History, because that sub-theme is specifically intended to include only those sites not directly related to farming or ranching (Friedman 1989:35). The home sites in the project area are all associated with, or appear to be associated with, agricultural activities or features.

These home sites, along with other nearby home sites, may be loosely placed into the following time periods: Pioneer Homesteaders - 1860s and 1870s, Later Settlers - 1890s, and Diversified Use - 1900s to 1930s. During the first decades of the 20th century, the nature of the occupation of the area changed. The number of habitation sites in the area declined and recreational and seasonal use of the area increased. Much of the area was and is used primarily as grazing land.

Pioneer Homesteaders Period

During the 1860s and 1870s the South Boulder Foothills area saw substantial homesteading activity. Settlement focused primarily along the South Boulder Creek drainage, and early inhabitants included the families of Andrew Doudy (beginning ca. 1859), John DeBacker (1860), and Jonas Barber (1860). These homesteads were concentrated near the mouth of Eldorado Canyon. A few years after they were established, others began to spring up a little further downstream; including one, possibly two, in the eastern extreme of the present project area. William and Elizabeth Jones appear to have homesteaded the land at **5BL3886** from 1864 to 1867. The land where sites **5BL3895** and **5BL3897** are located was originally owned by Frank L. Sweeny from an unknown date up until 1865, during which time he may have been homesteading the area. Carl and Clemency Blake arrived from Belgium around 1870, and took over **5BL3864**. These sites are located in the floodplain of South Boulder Creek, to the east of Eldorado Canyon.

During the 1870s flatlands within the project area away from the creek began to be inhabited. Carl and Mary Dehn are listed as homesteaders from 1875 to 1881 on the land where **5BL3883**

is located. Unfortunately, no cultural manifestations can presently be securely attributed to the homestead that must have been established by the Dehns in the area. The parcel of land containing site **5BL3887** may have been the homestead of Fred Raw and his family. This homestead would have been adjacent to the Dehn Homestead, and occupied at approximately the same time period.

Records indicate that Jesse B. Smith and Temperance A. Walsh made improvements on a quarter section of land on the highland mesa above the Dehn homestead (Laws 1879). This is the same land that would later contain the Brammeier Homestead (**5BL3899**). There are no cultural manifestations that can be attributed to Smith and Walsh from this time, but they may have made an attempt to homestead in this area.

Land use during the Pioneer Homesteaders Period appears to have been devoted to farming, ranching, and other ancillary activities, such as lumber and grist milling. Both Doudy and DeBacker were known to keep herds of cattle. Under the homestead laws of 1915, at least 1/16th of homesteaded land had to be under cultivation (Clason 1915:34, United States Department of the Interior 1917:11-13). Assuming similar provisions in the early laws, the early homesteaders in the South Boulder Foothills area probably were cultivating at least an equivalent area.

It is interesting to note the order in which land was inhabited in the area. The pattern seems to indicate primary, secondary and tertiary levels of land preference, probably based on quality of land and access to water. Primary occupation took place in the South Boulder Creek valley, nearest to the mouth of the canyon. This occupation began in the late 1850s. Secondary occupation began about five years later, located just downstream, but more in the flatlands. Cultivation in this wider, more arid floodplain of South Boulder Creek must have been aided by the construction of the Bear Creek Irrigation Ditch (**5BL3870**) in 1862. Tertiary occupation in the area is characterized by short-term attempts in the 1870s to homestead in the flatlands and upland mesas, away from the main drainages. Here, dryland farming had to have been practiced, since the South Boulder and Foothills Irrigation Ditch wasn't built until 1883. Although seep springs in the area were undoubtedly utilized, they would be a limited resource (see discussion of water resources below). Only in the primary occupation areas did the homesteads continue to be occupied through multiple generations. The secondary and tertiary areas were abandoned at the end of the Pioneer Homesteaders Period though other attempts at habitation would occur in later times.

After this first flush of homesteading activity there seems to have been a short lull in new arrivals to the area. Land in the southeastern portion of the survey area was owned by various benefactors of the Marshall Coal Mining Company and the Rocky Mountain Fuel Company from 1865 to 1913. This includes the areas of sites **5BL3886**, **5BL3895**, **5BL3896**, and **5BL3897**. No evidence of mining activity was found, so it seems likely that the real estate was only an investment made by those companies.

Later Settlers Period

A second major period in the settlement of the South Boulder Foothills region appears to usher in a period of upland ranching and farming, starting in the 1890s. Homesteaders include the Brammeiers, who began occupying the land at **5BL3899** around 1895. They ran cattle and probably also grew crops or gardened. Following the killing of Fred Brammeier in 1902, the Brammeiers moved into Boulder. The Brammeier family continued to own the land containing their homesite until 1948, and some adjacent acreage until the early 1980s.

George W. Williams patented 160 acres containing site **5BL3898** in 1890. This is the "Schoolmarm's Cabin", known to be used by Miss Florence Lane during the summers of the 1920s and 1930s. It is possible that George Williams built the cabin. The cabin was apparently occupied by D.W. Croft in 1902, as the newspaper accounts of the Dunn/Brammeier case mention "Croffs place" (Daily Camera, 17 October 1902).

Marie Pruden patented a homestead on the land containing site **5BL3459** (the McGilvary Cabin) in 1902, and owned the property until 1906. According to the site form, records from the DeBacker family reunion in 1989 reveal that Marie Pruden was the widow of a homesteader in the area. These records also mention a Seth Prudens (sic), who died in 1882 and is buried on the Barker Ranch at Eldorado Springs. (The ranch referred to is probably the Barber Ranch). A Seth Pruden, however, was alive and was a witness at the murder trial of John Dunn in 1902 (Daily Camera, 17 October 1902). A Charles M. Pruden owned the land of the nearby site **5BL3900** from 1898 to 1901. He apparently lived there, and was also a witness at John Dunn's murder trial (Daily Camera, 16 October 1902). The relationship between Marie and Charles Pruden is presently unclear.

Ranching activities also took place on unoccupied land in the survey area. The Shanahan and Honahan family came into the Boulder area in the 1890s. The Shanahans and Honohans owned much of the land in the northern portion of the survey area, where they were known to run cattle. The Shanahans may have been responsible for the animal enclosure and structure at site **5BL3884**, though when this site was first built is unclear.

Other individuals owned tracts of land within the project area around the turn of the century. These include John Hutchinson and Andrew Clarkson from 1897 to 1912, and George F. Chase from the late 1890s to 1910. The parcel owned by Hutchinson and Clarkson contains **5BL3885**, and according to the Daily Camera (17 October 1902) Bill Blake and John Dunn were looking for cattle owned by "Tom Hutchinson" on the day Fred Brammeier was killed . Whether Hutchinson lived at **5BL3885** is unknown. Chase may have used the land for grazing or farming purposes, but it is also unknown whether he occupied the land. Chase, or hired hands, or other owners may have used **5BL3887**.

Diversified Use

Use and occupation of the project area after the turn of the century appears to have been more diversified, though farming and ranching activities continued to be prevalent. The Dunns, Blakes, and Shanahans continued to run dairy stock. Some sites were inhabited only seasonally, the inhabitants perhaps attracted to the area because of the proximity to the mountains or to the growing health spa community at Eldorado Springs. Other occupants were full year and engaged in several pursuits, with employment opportunities in Eldorado Springs and the Marshall mines being available. The quarrying of sandstone for building material took place and is discussed in the Mining theme, below.

The first dozen years of the 20th century saw several parcels containing homesites change ownership and several families leave the area. The causes of this shift in settlement and ownership, be they economic, social, or both, need further study. George Chase sold the parcels containing **5BL3883** and **5BL3887** to the Manchesters. Hutchinson and Clarkson sold the parcel containing **5BL3885** to Louis Stengel. D.W. Croft sold **5BL3898** to Don Lord. The Brammeier family moved to Boulder. Charles Pruden sold **5BL3900** to Mariette Adams. Marie Pruden sold **5BL3459** to Hugh and Nellie McGilvery, related to the DeBackers.

The McGilverys ran some cattle, and the family used the cabin in later years as a summer retreat. The Manchester family occupied **5BL3883** from 1906 to 1912, and someone, possibly by the name of Reames, may have occupied **5BL3885** at approximately the same time. John Manchester came to Colorado to help his asthma. In addition to farming, he worked in Eldorado Springs and for the Coal Creek Ditch Company. The Manchester land was eventually acquired by the Stengels.

It appears that sometime prior to 1910, possibly as early as the 1890s, Jessie and Lincoln Stockton built and occupied the cabin at **5BL3812**, which appears to have been intended only for summertime use. They may have spent their time doing some exploratory mining excavations, though apparently nothing came of these attempts. By 1920, their son, Roscoe Stockton patented the land where the cabin is located, and continued to use the cabin as a summer retreat.

During the 1920s, two other people were known to take up summer residence in the area. A Rodeo Rider lived and raised livestock at **5BL3880** and probably at **5BL3881**. Miss Lane, a Denver school teacher, spent her summers at **5BL3898** where she apparently gardened, though the land had been owned by Don A. Lord since 1905.

Use of the project area as pasture by the Dunn, Anderson, Blake, Shanahan, and Stengle families continued into recent times. It was for the purpose of controlling grazing livestock that many of the barbed wire fences were constructed. As already discussed, many of these fences may have utilized materials scavenged from the abandoned home sites in the area. The stone wall or fence lines recorded in the project area (**5BL3890**, **5BL3891**, **5BL3892**, **5BL3908**, **5BL3913**, **5BL3914**, **5BL3917** and **5BL3922**) were certainly used to fence in livestock and to mark property boundaries, although in some cases the boundary being marked is unclear. The sites that are associated with water resources are also associated with agriculture in the area, and will be discussed below.

Mining, Minerals, and Extractive Industries, ca. 1858 to present.

Much of the early history of European settlement in Colorado is connected with mineral extraction. The original settlement of the Boulder Valley in 1858 was by gold seekers. The Boulder Mining District was formed in 1859 (Friedman 1989). A series of precious metal mining boom and bust cycles occurred over the next 40 years in western Boulder County; involving gold, silver, and telluride. Southern Boulder County also supported a major coal mining industry into the 1930s.

Prospectors and miners, many of them immigrants, were attracted to the Boulder area by guidebooks and flyers distributed throughout the eastern United States and Europe by railroading interests. The County Census records for the Nebraska Territories and later Boulder County, between the mid and late 19th century, show a large percentage of Boulder residents listed their occupation as "miner".

The early population of Boulder and other mining towns consisted not only of prospectors and company owners, but also laborers to work larger mines, and merchants who supplied goods and services to miners and laborers. Agricultural products were in high demand to supply miners. Building supplies were needed for housing and other mining-related construction. Mining thus had both direct and indirect effects on the project area. Mining took place in the project area, to a limited extent, and people who worked as miners elsewhere settled in the

area. Parcels of land in the project area are associated with mining through ownership by persons important in Colorado's mining history. Agriculture was stimulated by the demand for produce in the mining regions to the west.

Building Stone: Sandstone, Limestone, Decorative Rock

The most important extractive industry which took place within the project area was sandstone procurement, or quarrying. Little documentary information is available concerning historic sandstone quarrying in the area of the foothills of southern Boulder County. This is likely related to the importance of the Lyons and Nolan quarries, which were far more substantial and overshadowed the small quarries in southern Boulder County.

The demand for building stone increased as populations rose and urban areas expanded. The growing cities used sandstone in constructing both public and private buildings. Sandstone became a popular building material due to its durability and availability, and was widely used for sidewalks, foundations, and exterior walls. A Boulder City Ordinance of 1892 required wooden sidewalks to be replaced by stone on Pearl Street between Ninth and Nineteenth Streets (McNellan 1990). Large quantities of building stone were extracted from sources in Northeastern Colorado between 1870 and 1895 (Mehls 1984). The stone from quarries in Lyons, Nolan, and Mt. Sanitas was considered superior to stone from south of the city of Boulder. One of the few southern quarries for which documentay evidence exists is the Woods-Bergheim Quarry, located just to the north of the survey area. This quarry was probably in use before 1900 and operated until around 1920 when the property was deeded to the City of Boulder (McNellan 1990). Portland cement began to replace sandstone in sidewalks, foundations, and other constructions in the early 20th century.

Sites and isolated features from this project related to sandstone quarrying include **5BL3901**, **5BL3903**, **5BL3904**, **5BL3905**, and **5BL3918**. The period of operation for quarries in this area is unknown, but probably dates to around the turn of the century. Site **5BL3904** is a well-built quarry road winding along a steep talus slope, with a flattened area down slope from the road. Waste rock surfacing the road exhibits noticeable chisel marks on one or more faces. Apparently loose sandstone from the talus was procured. Site **5BL3905** is a quarry, consisting of two platforms, a talus slope, and a slightly excavated area. The talus again seems to have been quarried. Site **5BL3904** and **5BL3905** are connected by a two track road.

Because the dates of construction and details of ownership of sites **5BL3901**, **5BL3903**, and **5BL3918** are unknown, the absolute function of these sites remains unclear. Their locations suggest that they could be related to quarrying, but they could be associated with one or more other historic themes.

Site **5BL3901** is a sandstone structure, built abutted against a boulder. This site is located along a trail/access road which is rumored to have been a quarry road at one time. It may have been a temporary habitation or work camp. The rockshelter at **5BL3903** is located along a quarry road, below a talus slope that was apparently quarried. The high-roofed rock overhang could have provided either a simple shelter from the elements or temporary habitation to persons engaged in quarrying.

The excavated area with retaining wall at **5BL3918** may be a feature related to **5BL3904**, the quarry road located immediately above this Isolated Find. If the feature is related to the quarry above, it may have served as a shelter for humans, mining equipment, or supplies.

Limestone quarrying began in Boulder County as early as 1860, when the first lime kiln was built by William Pell who supplied lime to Denver and mining communities (Friedman 1989). Although limestone continued to be quarried in the area, and cement plants were built near Fort Collins and Lyons in the 1890s, limestone quarrying and concrete production did not become an important local industry until the early twentieth century (Mehls 1984).

Isolated Find **5BL3912** consists of two shallow pits dug into outcropping limestone. The dates of quarrying are unknown. No artifacts were found near these pits and no record concerning their date of use or ownership was located.

"Moss rock" is lichen covered rock, or rock covered with a combination of moss and lichen. It is used as a decorative construction material. Most, although not all, moss rock excavation in the survey area occurred during the last three decades (Wallace Griffitts personal communication 1992; Jack Kissel personal communication 1992).

A number of pits left by moss rock quarrying were noted during the survey, all appearing to be relatively recent. Traces of recent two track roads were also noted during the survey. These roads may be related to transporting moss rock, or to possible agricultural pursuits.

Metals

Although gold mining was important in Boulder's beginnings, ore extraction in Boulder County soon expanded to other minerals. Hematite ore was found near South Boulder Creek, and Joseph Marshall constructed a cold blast furnace to produce iron. The furnace was called the Belle Monte, and Belmont became the first name for the town now called Marshall (Smith 1989:13). Other minerals extracted in Boulder County include silver, tellurium found near Gold Hill and Ward, fluorspar around Jamestown, and tungsten in the Ward District (Schooland 1980). Little direct evidence of precious metal mining was found in the project area.

Isolated features **5BL3906**, **5BL3907** are a mine adit and mine shaft, and both are probably prospecting excavations. These excavations are located in an area that has been subject to heavy geological faulting, and any area that looked a little different was likely to be tested by prospectors. The mine adit, **5BL3906**, was obviously unproductive, as it is very small and shallow. Whether or not the shaft, **5BL3907**, was productive is unknown but unlikely. The shaft is backfilled.

Both mine features are near the Stockton Cabin, **5BL3812**. The cabin was built by Jesse and Lincoln Stockton in the 1890s or early 1900s. Lincoln, and his brother Washington Stockton, were involved with mining in the Eldorado Springs area. The prospects were probably excavated by the Stocktons.

Coal

By 1859 claims were being staked on coal seams in southern Boulder County (Smith 1989). With wood essentially non-existent on the plains, coal became an important alternative fuel source. The town of Marshall, located immediately to the east of the survey area, was named after Joseph Marshall. Marshall was renamed as Langford in 1882 when Augustin Langford, Marshall's partner in the Marshall Coal Mining Company assumed management of the mines, but the older name is still in common use. Marshall had several major coal mines and undoubtedly produced an economic effect on development of the project area.

No obvious signs of coal mining were found in the survey area, but parcels of land in the eastern portion of the area were owned by a group of people who were important in the history of local coal mining.

A 160 acre parcel was sold by Frank Sweeny to Augustin Langford in 1865. Marshall, Langford, and William and Mylo Lee, each acquired one quarter interest in the land. These quarter interests were passed back and forth among the partners, and occasionally outside of the company, for a period of years.

Nathanial Hill, a professor of chemistry from Brown University, at one time owned a quarter interest in this property with the Marshall Coal partners. Hill is an important figure in the history of mining in the region and in the history of gold mining in the western United States, because he perfected the method of separating the elements in concentrated ore. After amassing a personal fortune from his work in gold as well as silver mining, Hill became a Colorado State Senator (Republican) (Ubbelohde et al. 1976).

This land was purchased from the Marshall Coal Mining Company by David Moffat in 1885, who acquired a sizable parcel. Moffat was not only prominent in early gold mining, but also planned and financed attempts to build a railway through the mountains using southern Boulder County as access to the Rockies. The successful railway was later named the Denver and Salt Lake Railroad and includes what is now the Moffat Tunnel (Ubbelohde et al. 1976). It is discussed in the Transportation theme, below.

The possibility of underground coal deposits was important enough that in 1901, when Mariettie Adams bought a parcel of land from Charles Pruden, the deed specified that she acquired the land, and the water rights, but not the coal rights.

Transportation, ca. 1540 to present.

According to information gathered from Colorado Mountain Club members by D. M. Teegarden, some of the current hiking trails and access roads in and near the project area incorporated existing trails and roads. Some of the transportation routes originated with pioneer use, but other existing trails were attributed to the Ute or the Arapahoe. While this ethnic distinction can't be related to specific trails and is unsupported by documentary evidence, it seems likely that the Bear Canyon and Shadow Canyon trails were originally aboriginal. Indigenous travel through the mountains certainly took place, and these seem likely locations.

In 1861 an attempt was made to establish a wagon road up Bear Canyon to reach the mining towns of Central City and Black Hawk (Friedman 1989). According to Smith (1989), roads were repeatedly constructed up Bear Canyon, and repeatedly washed out. John DeBacker was known to take produce to mountain markets during the mid to late 1860s, perhaps via the Bear Canyon Road. A segment of the Mesa Trail incorporates an old road, probably used to travel from South Boulder Creek to the Bear Canyon Road or points north. The road segment extends up past the Schoolmarm's cabin (**5BL3898**), then up the valley between the Hogback and the Flatirons. The road segment at **5BL3850** may have been part of a system, with what is now the Mesa Trail, connecting Eldorado Springs to Boulder or Chautauqua. The Big Bluestem and Shanahan Trails follow roads which existed prior to recreational use.

Other roads used in conjunction with sandstone quarrying are present and discussed with the Mining theme.

The South Boulder Creek corridor was undoubtedly used for east-west transportation. The route of the Eldorado Springs Road (State Highway 170) probably follows a wagon road. Segments of wagon roads were recorded as features of **5BL3863** (the Doudy/DeBacker/Dunn homestead), with one segment extending from the floodplain of South Boulder Creek up to the terrace where Highway 170 runs. Attempts were made to use South Boulder Creek and its canyon for a railroad route through the mountains. The Denver, Utah, and Pacific grade (**5BL344**) was a failed attempt by David Moffat and others, and is near but outside the current project area. The Moffat Road, traversing Eldorado Mountain, was a successful route which served the Denver, Northwestern and Pacific Railway, later named the Denver and Salt Lake, absorbed by the Denver and Rio Grande Western RR (**5BL445**). It is still in use, and is also near but outside the project area.

The Colorado and Southern Railway, Denver and Interurban "kite route" had a spur from Marshall to Eldorado Springs (**5BL400**) which paralleled South Boulder Creek. The trolly was used by patrons of the Eldorado Springs resorts from 1909 to 1926, and was important in the development of recreational use of Eldorado Springs and South Boulder Canyon.

Water Resources, ca. 1859 to present.

The relative aridity of the plains was an obvious constraint to agricultural development, and permanent watercourses like South Boulder Creek played an important role in early efforts to control and manipulate water resources.

Irrigation ditches have been an integral part of the history of Boulder since October 1, 1859 (Schoolland 1980:158). Ditches were built across the Boulder Valley in rapid succession. The construction of several early ditches tapping South Boulder Creek was critical to the development of the cultural landscape in southern Boulder County over the next century. In the project area, the first ditch to be dug was the South Boulder and Bear Creek Ditch (**5BL3870**) in 1862. The Goodhue ditch (**5BL2719**) was dug in the late 1860s, though it was not registered until 1873, and other ditches gained higher priority, such as the Davidson Ditch (**5BL453**) built in 1872 (Dyni 1989:86). The South Boulder and Foothills Ditch (**5BL3865**) was constructed in 1883.

These ditches helped to bring irrigation water to lands that otherwise would have been dependent on fickle rainfall and seep springs. However, these springs were not neglected as a source for water. This survey recorded two improved springs, **5BL3867** and **5BL3909**. An improved spring was also recorded with the Stockton Cabin (**5BL3812**). Additionally, **5BL3921**, an iron pipe in the side of a hill, may have served to direct spring water. Seep springs at the Manchester home site (**5BL3883**) appear to have been modified with stone alignments.

Several stock ponds have been noted throughout the project area, including a pond that has impacted the structures at **5BL3884**. Most of these stock ponds are simply bulldozed dams in small drainages. Some artificial stock ponds are modern wells and tanks that are maintained by Open Space.

The Lafayette Water Pipeline (**5BL3866**), which traverses the project area, has been important to the development of the community of Lafayette. The pipeline was constructed in 1928, diverting water from South Boulder Creek near Eldorado Springs for domestic use in Lafayette.

Recreation and Sports, ca. 1859 to present.

Many of the trails along the foothills have seen considerable recreational use by the people of Boulder, at least since the 1920s. Boulder is the home to a number of hiking clubs, including the Colorado Mountain Club. Four of these trails have been recorded by this project - **5BL3924** (Mesa Trail), **5BL3925** (Bear Canyon Trail), **5BL3926** (Fern Canyon Trail), and **5BL3927** (Shadow Canyon Trail). These trails are discussed in detail elsewhere in this report. Other trails in the area are more recent. Many trails enter the nearby Boulder Mountain park, which has been in existence since 1913. Eldorado Springs has also attracted many visitors to the area since 1903 in order to hike in the mountains and relax at the resort. Recreational use of the project area has increased over the course of the 20th century, particularly since the City of Boulder Open Space Department acquired the land. Recreation is now the dominant use of the area.

The four alignments that are postulated to be historic hunting blinds (**5BL3889**, **5BL3911**, and **5BL3920**) may be related to recreation. The locations of all of these alignments afford excellent views of valley and foothill areas. Their configuration and location suggest that they may have been used as hunting blinds. The dates when they were built remains unknown, though the lichen predominantly on the upper sides of the rocks suggests that these probably were built at least fifty years ago or more. Use of the blinds, however, may have been a subsistence pursuit and not recreational.

RECOMMENDATIONS

The 33 sites and 28 isolated finds documented within the project area were evaluated for their significance and eligibility to the National Register of Historic Places (NRHP), the State Register of Historic Properties (SRHP), and the newly formed Boulder County Register of Historic Places. Specific management recommendations regarding treatment of the cultural resources follow the eligibility assessments.

Significance and Eligibility Assessments

NRHP eligibility is judged according to the criteria set forth in 36CFR 60.4 below:

"National Register Criteria" means the following criteria established by the Secretary of the Interior for the use in evaluating and determining the eligibility of properties for listing in the National Register: The quality of significance in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

(A) That are associated with events that have made a significant contribution to the broad patterns of out history; or

(B) That are associated with the lives of persons significant in our past; or

(C) That embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(D) That have yielded, or may be likely to yield, information important in prehistory or history.

The State Register of Historic Properties uses essentially the same criteria as above, with the addition of a fifth criterion, that being "geographical importance". The Boulder County Register is designed to recognize cultural properties of local significance.

The project area contains a high density of cultural resources, principally sites and isolated features from the historic period. The cultural properties in the project area are essentially archaeological - the ruins and remains of buildings, features, and associated material culture. A few standing buildings are present, including the Dunn House at **5BL3863**, several buildings at the DeBacker/Blake/Hedgecock Homestead (**5BL3864**), and a building at **5BL3897**. The majority of cultural resources are the result of an agricultural adaptation to the area, and are representative of the history of agricultural use of the foothills area of southern Boulder County. Agricultural use of the vicinity began about 1859 and is ongoing. However, the cultural resources are indicative of a fairly dramatic shift in the land use of the south Boulder foothills area. The area had numerous habitations (home sites) during the period 1859 through about the 1920s. Following that, the number of individual home sites in the area declined and property was consolidated under the ownership of a few families living on the margins of the area. The interior continued to be used for grazing. In addition to representing the agricultural history of the area, the cultural properties are a scientific resource which has the potential for explaining the historic developments in the area such as the shifts in land use. The sites contain the remains of buildings and features which can be investigated archaeologically to provide data about habitation form and configuration, site layout, building construction, and agricultural features. Based on test excavations at 5BL3144 (east of the project area), and trenching near the Dunn House for trail construction, the sites appear to contain subsurface deposits of artifacts which can provide important information regarding historic lifestyles and use of material culture.

For management and research purposes, these cultural properties may be designated as a district. A district is defined as a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. Deeming the area a district serves to acknowledge the interrelationship of the resources as a unified entity. Features and properties that lack individual distinction can be contributing elements to the district, thus the grouping of properties achieves significance as a whole within its historic context. This district is archaeological, from the historic period, with the unifying theme of Agriculture within the Boulder Historic Context.

We propose that the area be termed **The South Boulder Foothills Historic Archaeological District**. Geographical boundaries of a district are generally based on the distribution of properties with a shared relationship constituting the district. For present purposes the boundaries of the district are the limits of Open Space property within the project area on the north, east, and west. Bear Creek/Shanahan Hill forms a well defined northern boundary, as the area to the north has recent urban development and does not retain historic archaeological features. Highway 93 forms the eastern boundary. While there are probably sites east of Highway 93 which relate to historic agriculture, the area is yet unsurveyed, and most of the cultural properties east of Highway 93 will relate to coal mining in the Marshall area. This

area will likely be eventually deemed another historic district, The Marshall Coal Mining District. The western boundary is the boundary with the Boulder Mountain Park Historic District. Steepness of terrain to the west of this precludes much agricultural use.

The southern boundary of the district remains undefined. The Eldorado Springs Historic District, relating to a theme of recreation, forms the southwest boundary. It is known that agricultural activities extended south of Highway 170, into the Doudy Draw area. The Dunns, for example, owned land in the Doudy Draw area, and ran dairy cattle. A cultural resource investigation is currently being completed for the Doudy Draw area, and the results of that inventory will help define the southern boundary of the South Boulder Foothills Historic Archaeological District.

While some of the individual properties within the district are significant and eligible or potentially eligible to the NRHP in and of themselves, the entire district appears significant and potentially eligible to the NRHP under criteria A and D, for its association with significant historical events (agriculture), and for the information content of the archaeological material. Specific research questions for the district can be formulated after a testing program defines the type and quantity of archaeological data present at the sites.

Contributing Elements to the South Boulder Foothills Historic Archaeological District

Sites that are known or assumed to be directly associated with agriculture:

5BL3459	McGilvery Cabin
5BL3863	Doudy-DeBacker-Dunn Homestead
5BL3864	DeBacker-Blake-Hedgecock Homestead
5BL3880	Rodeo Riders Camp
5BL3881	Small Stone Enclosure
5BL3883	Manchester Home site
5BL3884	Stone Enclosure
5BL3885	Home site and Livestock Pen
5BL3886	Jones Homestead
5BL3887	Home site
5BL3897	Home site
5BL3898	Schoolmarm's Cabin
5BL3899	Brammeier Homestead
5BL3900	Home site

Sites and Isolated Finds that are associated with water resources and thus related to agriculture:

5BL453	Davidson Ditch
5BL2719	Goodhue Ditch
5BL3865	South Boulder and Foothills Ditch
5BL3867	Developed Spring
5BL3870	South Boulder Bear Creek Ditch
5BL3909	Developed Spring and pond
5BL3921	Iron pipe (Spring pipe)

Sites associated with transportation, i.e., movement of agricultural produce or access to sites:

5BL3924 Mesa Trail
5BL3925 Bear Canyon Trail
5BL3927 Shadow Canyon Trail

Stone fence lines, recorded as Isolated Finds:

5BL3849
5BL3850
5BL3890
5BL3891
5BL3892
5BL3908
5BL3913
5BL3914
5BL3917
5BL3922

Sites and Isolated Finds that are possibly contributing. Additional research may ascertain the function and affiliation of these manifestations:

5BL3895 Structure Foundation, Rock Pile
5BL3896 Historic Dump
5BL3901 Three Stone Walled Structures
5BL3902 Rockshelter with Enclosure
5BL3903 Rockshelter with Rock Walls
5BL3910 Survey Monument
5BL3918 Excavated Area with Stone Retaining Wall

Significance of Noncontributing Properties

Some of the cultural resources in the area don't relate to agriculture, and thus are noncontributing properties to the South Boulder Foothills Historic Archaeological District. These resources may be significant in and of themselves.

Site **5BL3812** is the Stockton Cabin, used by miners and as a summer retreat. The cabin is eligible to the NRHP under criterion C, as an example of the type of architecture of the period. It is eligible to the Boulder County Register.

Site **5BL3866** is the Lafayette Water Pipeline, which is potentially eligible to the NRHP under criterion A. The pipeline may have been important to the development of Lafayette. It is eligible to the Boulder County Register.

Site **5BL3882** is a prehistoric lithic scatter. Little is known about the site, due to the discovery of artifacts only along the eroded foot path. Much of the site may exist below the surface in the area. Limited testing would help to answer this question. However, based on the current artifact inventory, this site is considered only potentially eligible for inclusion on the NRHP

under criterion D. If additional buried cultural material is present at the site, it may contain data important to our understanding of the prehistory of the area.

Sites **5BL3904,** and **5BL3905**, a quarry road and quarry do not appear to be eligible to the NRHP or SRHP. They may be eligible to the Boulder County Register as elements of a non-contiguous district relating to sandstone quarrying. Research on other quarries in Boulder County would have to be conducted before such a district is defined.

Sites **5BL3901**, **5BL3902**, **5BL3903** have been listed above as elements of the South Boulder Foothills Historic Archaeological District. Sites **5BL3901** and **5BL3903** were also discussed as possibly relating to sandstone quarrying. If future research on the historic structures and rockshelters indicate they are not related to agriculture, then they may still be potentially eligible to the NRHP under criterion D. All may contain buried artifacts which may yield information important to our understanding of the history of Boulder County. If they do not contain subsurface deposits, then they are not eligible.

Site **5BL3926**, the Fern Canyon Trail, is potentially eligible to the SRHP under criterion A, for its association with recreational use of the Front Range. It is eligible to the Boulder County Register.

Isolated finds **5BL3889**, **5BL3911**, and **5BL3920** are postulated to be hunting blinds. If they contain subsurface cultural material, they may be eligible to the NRHP or SRHP under criterion D, for their information content.

Isolated finds **5BL3888**, **5BL3915**, **5BL3916**, **5BL3919**, and **5BL3923** consist of artifacts, and are not significant or eligible to any register. The artifacts may be related to agriculture but that is indeterminable. Isolated features **5BL3906** (mine adit), **5BL3907** (mine shaft), and **5BL3912** (limestone quarry pits) are also ineligible to any register. The information content of these properties has been thoroughly documented.

Management Recommendations

Additional, yet undetected prehistoric sites may be contained within the project area. As such, it is important that if any prehistoric artifacts or features are uncovered during any development of the project area, all work be temporarily stopped until an archaeologist is consulted.

The prehistoric lithic scatter, **5BL3882**, should be tested in order to determine if the trail is impacting a site with significant buried cultural material.

Many of the sites are potentially very informative for the archaeological information they may contain. Only testing can determine the information potential of the sites. The sites should be preserved for future research by protecting them from disturbance. Currently, the protected and patrolled status of the project area constrains the opportunity for detrimental impacts to the cultural resources. Only sites **5BL3882**, **5BL3889**, and **5BL3899** are directly impacted by recreational use, with recreational trails bisecting the sites. Otherwise, the principal concern for site preservation should be to minimize the effects of livestock trampling, vandalism, and collecting. Some sites in the area show signs of modern disturbance from unauthorized camping, such as **5BL3902**, **5BL3903**, and **5BL3906**.

Any development in the area which would impact the integrity of feeling and association of the district should be prohibited, including any major construction in nearby areas which would impact the viewshed of the area. Agricultural improvements such as stock ponds or tanks should be constructed and placed in a manner that does not create adverse impacts to the historical integrity of the area.

If trails are to be modified or changed, sites in the affected areas should be avoided. It is advised that in any future trail-head modification plans, public access roads should not be placed in the interior of the Open Space property. Such modification, allowing vehicular access, would increase the threat of damage, looting, and vandalism of the cultural properties.

Site **5BL3864**, the DeBacker/Blake/Hedgecock Homestead is an active ranch with several standing historic buildings. When this ranch reverts to Open Space control, it will be suitable for a living history program. The historic buildings should be maintained without impacting their integrity. The preservation of the buildings should include the wooden buildings, and not be limited to the stone buildings.

An understanding of the cultural landscape in the area may be effectively presented to the public through the use of signs placed on the elevated area of Shanahan Hill, providing a panoramic view, or at trailheads or along trails.

Interpretive signs posted at the sites on trails may help to inform the public of the value of historic archaeological sites and reduce further vandalism.

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APPENDIX A: CULTURAL RESOURCE LOCATION MAPS

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Note: All maps are derived from the Eldorado Springs (1965, PR 1971) and the Louisville (1965, PR 1979) USGS quadrangles, 7½' series.

Paleontological Assessment: City of Boulder West Trail Study Area, Boulder, Colorado

Prepared for

City of Boulder Department of Open Space and Mountain Parks

Prepared by

SWCA Environmental Consultants

September 14, 2009

SWCA Project #15280

Paleontological Assessment: City of Boulder West Trail Study Area, Boulder, Colorado

Prepared for

Julie Johnson
City of Boulder Department of Open Space and Mountain Parks
P.O. Box 791
Boulder, CO 80306
720.564.2012

Prepared by

Paul C. Murphey, Ph.D., and Lori S. Browne, M.S.

SWCA Environmental Consultants
295 Interlocken Boulevard, Suite300
Broomfield, CO 80021
303.487.1183

SWCA Paleontological Report #CO09-15280-04

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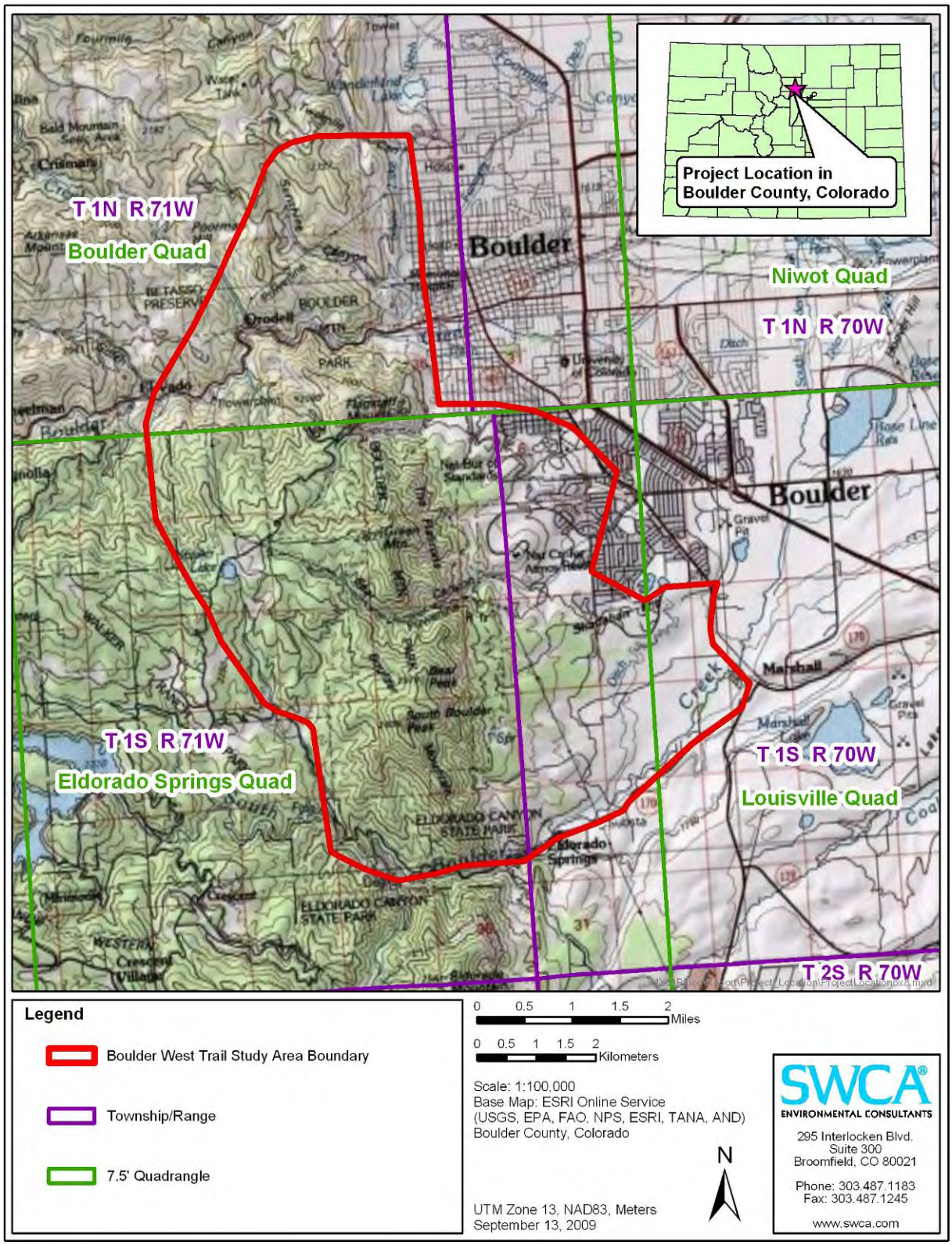
1.0 SUMMARY

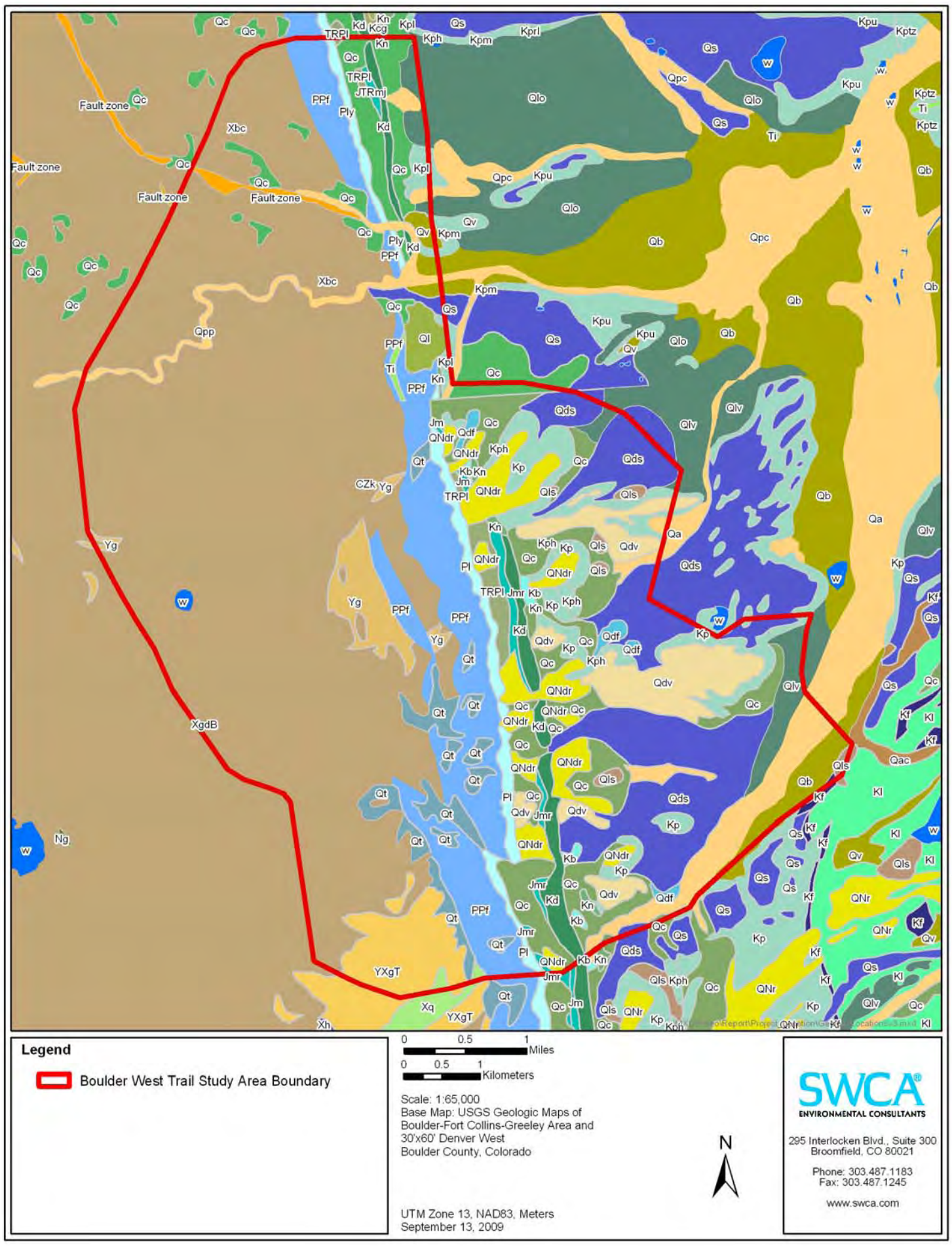
This report presents the results of a paleontological resources assessment that was conducted within the Boulder West Trail Study Area (Boulder West TSA), an approximately 17,215-acre area managed by the City of Boulder Department of Open Space and Mountain Parks located in Boulder County, Colorado (Map 1). The Boulder West TSA is located in portions of Sections 22–27 and 33–36, Township 1 North, Range 71 West; Section 31, Township 1 North, Range 70 West; Sections 1–4, 9–15, and 22–27, Township 1 South, Range 71 West; and Sections 5–9, 16–21, and 29–30, Township 1 South, Range 70 West (Sixth Principal Meridian).

The objective of the paleontological study was to identify both previously recorded and previously undocumented (new) fossil localities within the study area and evaluate the paleontological sensitivity of the rock formations and fossil localities within the context of trail development. The scope of work included background research focused on geologic mapping, museum and agency fossil locality records, published scientific literature, unpublished technical reports, and consultation with geologists and paleontologists with knowledge of the study area. The background research was followed by a field survey that focused on fossiliferous geologic units. The field survey did not encompass areas within the Boulder West TSA that are underlain by exposures of unfossiliferous Precambrian basement rock. Basement rock is located to the west of the Fountain Formation, the rock unit that forms the Flatirons. Furthermore, due to difficulty of access and related safety concerns, the project schedule, and budgetary constraints, the field survey included only a small portion of the area underlain by the Fountain Formation (Map 2). Although this formation occupies a significant part of the central portion of the Boulder West TSA, it is considered to have low paleontological sensitivity because it has produced few fossils.

The Boulder West TSA contains 12 mapped bedrock geologic units that are overlain by a variety of younger surficial sedimentary deposits. The bedrock units are, from oldest to youngest and in approximate ascending stratigraphic order, early Proterozoic Boulder Creek Granidiorite, middle(?) and early Proterozoic Twin Spruce Monzogranite, middle Proterozoic Peraluminous Monzogranite, middle Pennsylvanian to lower Permian Fountain Formation, middle and upper Permian Lyons Sandstone, upper Permian and lower Triassic Lykins Formation, upper Jurassic Morrison Formation, lower Cretaceous Dakota Group, upper and lower Cretaceous Benton Group, upper Cretaceous Niobrara Formation, Upper Cretaceous Pierre Shale, and upper Cretaceous Fox Hills Sandstone (Colton 1978; Kellogg et al. 2008). Surficial units include a variety of mapped and unmapped deposits of Holocene and Pleistocene age such as alluvium, colluvium, debris flows, and landslides. All of the bedrock geologic units of sedimentary origin have produced fossils of varying abundance, taxonomic affinity, quality of preservation, and scientific significance. The paleontological sensitivity of the sedimentary bedrock units range from low (Potential Fossil Yield Classification [PFYC] Class 2) to very high (PFYC Class 5). Surficial sedimentary deposits within the study area are either Pleistocene or Holocene in age. Pleistocene-age surficial deposits contain fossils, but because fossils are uncommon in these sediments in Colorado, they are generally considered to have low to moderate paleontological sensitivity (PFYC Class 3a). Holocene-age surficial deposits are too young to contain in-situ fossils and have low paleontological sensitivity (PFYC Class 2) (Table 1).



Map 1. Location and boundaries of the Boulder West TSA, Boulder County, Colorado.



Map 2. Geologic map of the Boulder West TSA, Boulder, Colorado (geology from Colton [1978] and Kellogg et al. [2008]; see Table 1 for geologic unit abbreviations).

- Qb, Broadway Alluvium (late Pleistocene)
- Qc, Colluvium (Holocene to middle? Pleistocene)
- Qc, Colluvium (upper Holocene to Pleistocene)
- Qdf, Debris-flow deposits (Holocene to middle? Pleistocene)
- Qds, Debris-flow deposits and Slocum Alluvium, undivided (middle Pleistocene)
- Qdv, Debris-flow deposits and Verdos Alluvium, undivided (middle Pleistocene)
- Qe, Eolian sand (Holocene and late Pleistocene)
- Ql, Landslide deposits (Holocene to Pleistocene)
- Qlo, Loess (late and middle? Pleistocene)
- Qlo, Louviers Alluvium (Bull Lake Glaciation, Pleistocene)
- Qls, Landslide deposits (Holocene to middle? Pleistocene)
- Qlv, Louviers Alluvium (late and middle Pleistocene)
- Qpc, Piney Creek Alluvium (upper Holocene)
- Qpp, Post-Piney Creek Alluvium (upper Holocene)
- Qs, Slocum Alluvium (Sangamon Interglaciation or Illinoian Glaciation, Pleistocene)
- Qs, Slocum Alluvium (middle Pleistocene)
- Qt, Talus deposits (Holocene to middle? Pleistocene)
- Qv, Verdos Alluvium (Yarmouth Interglaciation or Kansan Glaciation, Pleistocene)
- Qv, Verdos Alluvium (middle Pleistocene)
- TRPl, Lykins Formation (Triassic and Permian)
- TRPl, Lykins Formation (Triassic? and Permian)
- Ti, Rhyodacite and basalt (Paleocene)
- Xbc, Boulder Creek Granodiorite (Precambrian X)
- XgdB, Boulder Creek Granodiorite (Early Proterozoic)
- Xh, Hornblende-plagioclase gneiss and amphibolite (Early Proterozoic)
- Xq, Quartzite (Early Proterozoic?)
- YXgT, Twin Spruce Monzogranite (Middle? and Early Proterozoic)
- Yg, Peraluminous monzogranite (Middle Proterozoic)
- af, Artificial fill
- af, Artificial fill deposits (latest Holocene)
- w, Open water
- w, water body

Map 2 (continued). Legend for geologic map.

- , Breccia zone
- CZk, Kimberlite (Cambrian or Late Proterozoic)
- Fault zone, Brecciated rock
- JTRmj, Morrison Formation (Upper Jurassic), Canyon Springs Member of Sundance Formation (Upper Jurassic), and Jelm Formation (Upper Triassic)
- Jm, Morrison Formation (Upper Jurassic)
- Jmr, Morrison Formation (Upper Jurassic) and Ralston Creek Formation (Upper and Middle Jurassic), undivided
- Kb, Benton Group (Upper and Lower Cretaceous)
- Kcg, Carlile Shale (Upper Cretaceous), Greenhorn Limestone (Upper Cretaceous), and Graneros Shale (Upper and Lower Cretaceous)
- Kd, Dakota Group (Lower Cretaceous)
- Kf, Fox Hills Sandstone (Upper Cretaceous)
- Kfh, Fox Hills Sandstone (Upper Cretaceous)
- Kl, Laramie Formation (Upper Cretaceous)
- Kn, Niobrara Formation (Upper Cretaceous)
- Kp, Pierre Shale (Upper Cretaceous)
- Kph, Hygiene Sandstone Member of Pierre Shale (Upper Cretaceous)
- Kph, Hygiene Sandstone Member of the Pierre Shale (Upper Cretaceous)
- Kpl, Lower shale member of Pierre Shale (Upper Cretaceous)
- Kpm, Middle shale member of Pierre Shale (Upper Cretaceous)
- Kprl, Richard Sandstone Member, unnamed shale member, Larimer Sandstone Member, unnamed shale member, and Rocky Ridge Sandstone Member of Pierre Shale (Upper Cretaceous)
- Kptz, Upper transition member of Pierre Shale (Upper Cretaceous)
- Kpu, Upper shale member of Pierre Shale (Upper Cretaceous)
- Ng, High-level gravel deposits (Miocene?)
- PPf, Fountain Formation (Lower Permian and Pennsylvanian)
- PPf, Fountain Formation (Permian and Pennsylvanian)
- Pl, Lyons Sandstone (Lower Permian)
- Ply, Lyons Sandstone (Permian)
- QNdr, Debris-flow deposits and Rocky Flats Alluvium, undivided (early Pleistocene and late Pliocene?)
- QNr, Rocky Flats Alluvium (early Pleistocene and late Pliocene?)
- Qa, Post-Piney Creek Alluvium and Piney Creek Alluvium, undivided (Holocene)
- Qac, Alluvium and colluvium, undivided (Holocene to middle? Pleistocene)
- Qb, Broadway Alluvium (Pinedale Glaciation, Pleistocene)

Map 2 (continued). Legend for geologic map.

Table 1. Summarized Paleontological Sensitivities of Geologic Units within the Study Area for the Boulder West TSA Using the PFYC

Geologic Unit	Map Abbreviation	Age	Typical Fossils	PFYC
Alluvium, colluvium, landslides	Qa, Qc, Qls, Qac	Holocene	No in-situ fossils in Holocene deposits	*Class* 2
Alluvium, colluvium, debris flow deposits, landslides,	Qds, Qc, Qls, Qdv, Qlv, Qndr, Qs, Qv, Qpy, Qpp	Pleistocene	Uncommon and typically poorly preserved but scientifically important occurrences of vertebrates (mainly mammals), invertebrates, and plants	*Class* 3a
Fox Hills Sandstone	Kfh, Kf	Upper Cretaceous	Locally common invertebrates, plants, ichnofossils, uncommon vertebrates	*Class* 2
Pierre Shale	Kp, Kph, Kpu, Kpm, Kpl	Upper Cretaceous	Locally abundant marine invertebrates (mostly mollusks) and trace fossils, less common vertebrates and plants	*Class* 3
Niobrara Formation	Kn	Upper Cretaceous	Locally abundant marine invertebrates (mostly mollusks), less common vertebrates	*Class* 3
Benton Group	Kb	Lower and Upper Cretaceous	Locally common marine invertebrates (mostly mollusks), foraminifera, palynomorphs, less common vertebrates (fishes, reptiles)	*Class* 3
Dakota Group	Kd	Lower Cretaceous	Locally common marine invertebrates, terrestrial plants, and trace fossils, scarce vertebrates	*Class* 3
Morrison Formation	Jm, Jmr, Jtrmj	Upper Jurassic	Locally common terrestrial vertebrates (especially dinosaurs), invertebrates, plants, and trace fossils	*Class* 5
Lykins Formation	TRPl	Upper Permian and Lower Triassic?	Stromatolites	*Class* 2
Lyons Sandstone	Pl, Ply	Middle? And Upper Permian	Trace fossils (trackways)	*Class* 2

Geologic Unit	Map Abbreviation	Age	Typical Fossils	PFYC
Fountain Formation	PPf	Middle Pennsylvania n to Lower Permian	Localized occurrences of marine invertebrates, uncommon vertebrates (fish bones) and trace fossils (including rare fossil vertebrate trackways)	*Class* 2
Boulder Creek Granidiorite, Twin Spruce Monzogranite, Peraluminous Monzogranite	XgdB, Yg, YXgT	Early and middle Proterozoic	No fossils	*Class* 1

Note: Map abbreviations and ages of units are from Colton (1978) and Kellogg et al. (2008).

As summarized in this report, approximately 119 previously recorded fossil localities have been documented within the study area based on records maintained by the University of Colorado Museum of Natural History (UCM), the Denver Museum of Nature and Science (DMNS), and the U.S. Geological Survey (USGS). Not all of the localities have specific geographic coordinates associated with them; therefore, their locations have been generalized from Public Land Survey System (PLSS) data and all may not necessarily occur within the project area. An additional 17 fossil localities or points of geological interest have been identified and documented during the field survey that was completed for this study. In combination, these fossil localities provide an indication of the overall paleontological sensitivity of the geologic formations within the boundaries of the study area.

For the purpose of this study, no scientifically significant fossil localities were identified during the field survey of the Boulder West TSA. Scientifically significant fossil localities are defined as locations with occurrences of identifiable vertebrate fossils and noteworthy occurrences of invertebrate and plant fossils that would be recommended for 1) in-situ preservation and protection, including avoidance by trail development, or 2) collection (removal from their current in-situ locations) for the purpose of curation and preservation in a public museum. While not scientifically significant, the fossils documented during the field survey include those that should be considered for avoidance by future trail and other surface-disturbing development and that may also be incorporated in public outreach programs and interpretive displays. Additionally, the fact that scientifically significant fossils have been previously documented within the West Boulder TSA and vicinity indicates the potential for additional fossils that were either not discovered during the field survey or may erode onto the surface in the future.

2.0 INTRODUCTION

This report presents the results of a paleontological resources assessment that was conducted within the Boulder West TSA, an approximately 17,215-acre area managed by the City of Boulder Department of Open Space and Mountain Parks located in Boulder County, Colorado (see Map 1). The objective of the paleontological study was to identify both previously

recorded and previously undocumented (new) fossil localities within the study area and evaluate the paleontological sensitivity of the rock formations and fossil localities within the context of trail development. The scope of work included background research focused on geologic mapping, museum and agency fossil locality records, published scientific literature, unpublished technical reports, and consultation with geologists and paleontologists with knowledge of the study area. The background research was followed by a field survey that focused on fossiliferous geologic units. Geologically, the Boulder West TSA is underlain by Proterozoic intrusive igneous rocks, the Fountain Formation, Lyons Sandstone, Lykins Formation, Dakota Group, Benton Group, Niobrara Formation, Pierre Shale, and Fox Hills Sandstone. These bedrock geologic units are locally mantled by surficial deposits of alluvium, colluvium, debris flows, and landslides.

2.1 DEFINITION AND SIGNIFICANCE OF PALEONTOLOGICAL RESOURCES

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains.

The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered nonrenewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced (Murphey and Daitch 2007). Fossils are important scientific and educational resources because they are used to:

- Study the phylogenetic relationships among extinct organisms, as well as their relationships to modern groups.
- Elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record.
- Reconstruct ancient environments, climate change, and paleoecological relationships.
- Provide a measure of relative geologic dating that forms the basis for biochronology and biostratigraphy and that is an independent and corroborating line of evidence for isotopic dating.
- Study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time.
- Study patterns and processes of evolution, extinction, and speciation.
- Identify past and potential future human-caused effects to global environments and climates (Murphey and Daitch 2007).

3.0 METHODS

The paleontological inventory for the Boulder West TSA was conducted using professional paleontological standards (Society of Vertebrate Paleontology 1995, 1996) under State of Colorado Paleontological Permit 2009-58. This study was completed under contract with the City of Boulder Department of Open Space and Mountain Parks.

3.1 PERSONNEL

The background research was completed by Paul C. Murphey, Ph.D., Lori S. Browne, M.S., and David J. Daitch, Ph.D. The field survey was completed by Paul C. Murphey, Ph.D., Lori S. Browne, M.S., and Wendi L. Shaver, B.S. Data compilation and report preparation were completed by Paul C. Murphey, Ph.D., and Lori S. Browne, M.S. The maps were produced by Paige Baker.

3.2 TECHNICAL RESEARCH AND ANALYSIS

The technical research completed prior to the field survey included geologic map reviews, museum and agency fossil locality record searches, reviews of published scientific literature and unpublished technical reports, and consultation with geologists and paleontologists with knowledge of the study area. Institutions from which fossil locality data were obtained included the UCM, DMNS, and USGS. Geographic information system (GIS) data were obtained from the City of Boulder and the USGS and were generated during the field survey. Note that geographic coordinates for previously recorded museum localities are not included in this report because these data are considered confidential and are exempt from the Freedom of Information Act. The vast majority of fossils documented at these localities were collected at the time of initial discovery.

In conjunction with the pre-survey research, the paleontological sensitivity of each geologic unit within the survey area was evaluated using the PFYC system. The PFYC was recently approved as policy by the BLM (IM 2008-009).

3.3 FIELD SURVEY

The Boulder West TSA includes approximately 17,215 acres managed by the City of Boulder Department of Open Space and Mountain Parks in Boulder County, Colorado (see Map 1). The study area is located on the USGS Eldorado Springs, Boulder and Louisville 7.5-minute topographic quadrangles and occurs in portions of Sections 22–27 and 33–36, Township 1 North, Range 71 West; Section 31, Township 1 North, Range 70 West; Sections 1–4, 9–15, and 22–27, Township 1 South, Range 71 West; and Sections 5–9, 16–21, and 29–30, Township 1 South, Range 70 West (Sixth Principal Meridian). The field survey took place on the following dates: June 16 to 18, July 24, July 29, and August 6, 2009.

The field survey was designed to 1) determine the surface presence of previously unknown significant vertebrate fossils and/or noteworthy occurrences of invertebrate, plant, or trace fossils; 2) evaluate the condition of previously recorded paleontological localities and the potential for disturbance of these localities; and 3) evaluate potential adverse impacts to

subsurface paleontological resources. All fossil discoveries and points of geological interest were documented. No fossils were collected during the field survey; however, data for all documented fossil localities are included in this report.

The study area was inspected for both surface fossils and exposures of potentially fossiliferous rock. The field survey focused on outcrops of the following geologic units because of their accessibility and/or paleontological sensitivity: Lykins Formation, Lyons Sandstone, Morrison Formation, Dakota Group, Benton Group, and Pierre Shale. The field survey did not encompass areas within the Boulder West TSA that are underlain by exposures of unfossiliferous Precambrian basement rock. Basement rock is located to the west of the Fountain Formation, the rock unit that forms the Flatirons. Furthermore, due to difficulty of access and related safety concerns, the project schedule, and budgetary constraints, the field survey included only a small portion of the Fountain Formation outcrops. Although this formation occupies a significant part of the central portion of the Boulder West TSA, it is generally considered to have low paleontological sensitivity because it has produced few fossils. The field survey did not include an examination of the study area for unmapped potentially fossiliferous remnants of Pleistocene surficial sediments that could be present within the Boulder West TSA because these deposits generally have low sensitivity in Colorado and would have been difficult to identify based on the survey schedule and available budget.

4.0 RESOURCE ASSESSMENT

The paleontological sensitivity of each geologic unit within the study area for the Boulder West TSA was evaluated using the now widely used PFYC system (see Table 1). The PFYC system was originally developed by the U.S. Forest Service's Paleontology Center of Excellence and the Region 2 Paleontology Initiative in 1996. Modifications have been made by the BLM's Paleontological Resources staff in subsequent years. The PFYC version used for this analysis was recently approved as policy by the BLM (IM 2008-009). This classification system is summarized in Appendix A and was used to classify the geologic units within the Boulder West TSA as presented in Section 5.0.

4.1 PALEONTOLOGICAL RESOURCE IMPACTS

The loss of any fossil that could yield information important to prehistory or that embodies the distinctive characteristics of a type of organism, environment, period of time, or geographic region represents a significant adverse environmental impact. Adverse impacts on paleontological resources primarily concern the potential destruction of nonrenewable paleontological resources and the loss of information associated with these resources. This includes destruction as the result of surface disturbance as well as the unlawful or unauthorized collection of fossil remains. Because paleontological resources are nonrenewable, impacts on these resources are considered to be long term.

Scientifically significant fossils are defined herein as all vertebrate fossils that are identifiable to the level of taxon and/or element (with the exception of scattered turtle carapace fragments)

and particularly noteworthy (well preserved, uncommon taxa, unusual depositional setting or paleoenvironment, etc.) fossil invertebrates and plants.

Paleontological resources within the study area consist of two types: 1) those that have already eroded onto the ground surface and are thus visible (surface fossils); and 2) those that are buried within rock strata and are thus not visible on the surface and whose locations are unknown (subsurface fossils). It is important to point out that subsequent to the location and removal of significant surface fossils during any paleontological field survey and issuance of a surface clearance recommendation, additional subsurface fossils will continue to erode onto the ground surface over time.

Because they are buried and thus are not visible and their precise locations are unknown, subsurface fossils typically cannot be located and evaluated prior to ground disturbance unless portions of them are exposed at the surface. The likelihood of adverse effects to subsurface fossils generally can only be estimated by evaluating the study area with regard to scientifically significant fossil occurrences that are known to occur elsewhere within the same geologic formations or strata therein. Importantly, the presence of completely buried subsurface fossils can only be determined by monitoring excavations during construction, which also provides the only opportunity to document and salvage these resources.

The potential for adverse impacts on both surface and subsurface paleontological resources is directly proportional to the amount of ground disturbance associated with a proposed action. Thus, the higher amount of disturbance associated with construction of roads, bridges, culverts, pipelines, and other facilities, the greater the potential for adverse impacts on paleontological resources. The following are general types of impacts on paleontological resources.

4.1.1 Direct Impacts

Direct impacts on surface or subsurface paleontological resources are the result of destruction via breakage and crushing in construction-related excavations. Ground disturbance has the potential to adversely impact an unknown quantity of fossils that may occur on or underneath the surface in areas containing paleontologically sensitive geologic units. Without mitigation, these fossils, as well as the paleontological data they could provide if properly salvaged and documented, could be adversely impacted (destroyed), rendering them permanently unavailable. Direct impacts can typically be mitigated to below a level of significance through implementation of paleontological mitigation. Mitigation also creates a beneficial impact because it results in the salvage of fossils that may never have been unearthed via natural processes. With mitigation, these newly exposed fossils become available for scientific research, education, display, and preservation into perpetuity at a public museum.

4.1.2 Indirect Impacts

Indirect impacts typically result from the continuing implementation of management decisions and resulting activities, including normal ongoing operations of facilities or infrastructure constructed within a given project area. They also occur as the result of the construction of new roads and trails in areas that were previously less accessible. This increases public access and therefore increases the likelihood of the loss of paleontological

resources through vandalism and unlawful collecting. Human activities that increase erosion as the result of stormwater runoff also cause indirect impacts to surface and subsurface fossils via damage or destruction during hydrologic transport, weathering, and reburial. Indirect impacts are difficult to mitigate to below the level of significance, but they can be greatly reduced by educating the general public and informing construction personnel about penalties for unlawful destruction or illegal collection of these resources.

4.1.3 Cumulative Impacts

Cumulative impacts can result from incrementally minor but collectively significant actions occurring over a period of time. The incremental loss of paleontological resources over time as a result of construction-related surface disturbance or vandalism and unlawful collection would represent a significant cumulative adverse impact because it would result in the destruction of nonrenewable paleontological resources and the associated irretrievable loss of scientific information. The size of any study area correlates directly with cumulative impacts on paleontological resources. The greater the area of fossiliferous geologic formations and higher the number of known fossil localities within an area, the greater the likelihood of cumulative impacts in terms of the loss to science and society of fossils and associated information. Should significant fossils be unearthed and salvaged during the construction of trails or other infrastructure within the Boulder West TSA, the recovery of these fossils through mitigation would effectively recover the value to science and society of the significant fossils that would otherwise have been damaged or destroyed by ground-disturbing actions.

4.2 RESOURCE ASSESSMENT SUMMARY

According to the geologic mapping of Colton (1978) and Kellogg et al. (2008), the Boulder West TSA contains 12 mapped bedrock geologic units that are overlain by a variety of younger surficial sedimentary deposits. The bedrock units are, from oldest to youngest and in approximate ascending stratigraphic order, early Proterozoic Boulder Creek Granidiorite, middle(?) and early Proterozoic Twin Spruce Monzogranite, middle Proterozoic Peraluminous Monzogranite, middle Pennsylvanian to lower Permian Fountain Formation, middle and upper Permian Lyons Sandstone, upper Permian and lower Triassic Lykins Formation, upper Jurassic Morrison Formation, lower Cretaceous Dakota Group, upper and lower Cretaceous Benton Group, upper Cretaceous Niobrara Formation, upper Cretaceous Pierre Shale and upper Cretaceous Fox Hills Sandstone. Surficial units include a variety of mapped and unmapped deposits of Holocene and Pleistocene age, such as alluvium, colluvium, debris flows, and landslides. The geology and paleontology of all geologic units is summarized in Section 5.0.

5.0 RESULTS

This section includes a narrative on the paleontological significance of eastern Colorado and the history of paleontological research in the area. The following also presents the results of the research and field survey completed for the Boulder West TSA divided into sections by geologic unit (formation) or grouped units, as appropriate.

5.1 PALEONTOLOGICAL SIGNIFICANCE OF EASTERN COLORADO

The Front Range foothills and adjacent eastern plains region of Colorado is well known for its geologic history and paleontological importance. Scientists working in the area have conducted numerous studies in geology and paleontology, some of which are now considered classic works and others that are on the cutting edge of modern paleontological and paleoenvironmental research. Many important fossil specimens, including numerous holotypes, have been collected in the region. These include the type specimens of the dinosaurs *Stegosaurus armatus, Diplodocus, Allosaurus,* and *Apatosaurus ajax*, which were collected during the late nineteenth century from historic quarries near the town of Morrison. These and many other fossils from the Front Range and eastern plains region of Colorado are now housed in museums in Colorado and across the United States.

The geology and paleontology of Colorado is scientifically important because it records some of the earliest known vertebrate fossils: small armored fish from the Harding Formation of middle Ordovician age; the uplift and erosion of the ancestral Rocky Mountains, early tetrapod trackways, and the marine fauna of adjacent shallow seas during the late Paleozoic Era; the development of a shallow epeiric seaway, which covered much of central North America during the late Cretaceous Period; the uplift of the Rocky Mountains and extinction of the dinosaurs at the end of the Cretaceous Period; the development of tropical rainforest ecosystems and rapid evolutionary radiation of mammals during the Paleocene Epoch; and the glacial and interglacial climates, environments, and mammalian faunas of Colorado during the Pleistocene "ice ages."

Today, these and many other events in the history of ancient Colorado, which are recorded by both the diversity of fossils and associated well-exposed sedimentary rocks in this area, can be studied at many locations. In central and eastern Colorado, a few representative examples are the Kremmling Giant Ammonite Site in Middle Park; the Picketwire Dinosaur Tracksite in Comanche National Grassland; the Garden Park Dinosaur Area north of Cañon City; Florissant Fossil Beds National Monument; Red Rocks Park, the Dakota Hogback, and Dinosaur Ridge just to the west of Denver; and museums including the Dinosaur Depot Museum in Cañon City, DMNS in Denver, UCM in Boulder, and the Morrison Natural History Museum.

5.2 HISTORY OF PALEONTOLOGICAL WORK IN EASTERN COLORADO

In 1870, during his first dedicated fossil collecting expedition to the West, paleontologist O.C. Marsh and a group of students from Yale University prospected outcrops of Tertiary rocks in northeastern Colorado for a week. While most of the 1870 expedition was spent visiting various locations in Wyoming and Utah, the Marsh party did collect a variety of mammal fossils from western Weld County about 5 miles south of the Wyoming state line on Little Crow Creek and "along the hills known as Chalk Bluffs." Marsh noted the presence of "Titanotherium beds and above these…similar clay deposits…marked by abundant remains of *Oreodon culbertsoni*." His report stated that there were about 150 feet of White River beds and 200 feet of post-Oligocene beds. Most of Chalk Bluffs now lie within Pawnee National Grasslands. E. Berthoud noted the presence of fossils in the Crow Creek area during a search for Paleoindian sites in 1871.

Other early paleontological work in northeastern Colorado was undertaken by paleontologist E.D. Cope of the Academy of Natural Sciences of Philadelphia, who visited the area during the summer and fall of 1873 and then again in the fall of 1879, collecting fossils and studying the geology. Cope recognized the general similarity of the Tertiary deposits to those of Nebraska and South Dakota, and he published on the geology and fossils of the area. In 1882, a Princeton University expedition collected data in the vicinity of Chalk Bluffs. In 1898, 1901, and 1902, field parties from the American Museum led by W.D. Matthew worked in northeast Colorado in the Chalk Bluffs region.

The first dinosaur fossils reported from the Denver Basin were described in a letter from E. Berthoud to O.C. Marsh as having been discovered in an excavation for a well in Golden in 1867. Berthoud also reported other fossil remains from the Golden area. One specimen, sketched in an 1874 letter to Marsh, is now known to be the first known specimen (a tooth) of *Tyrannosaurus rex*. The fossil was collected from the Denver Formation by Golden resident Arthur Lakes at South Table Mountain. G.L. Cannon, W. Cross, and G. Eldridge initiated the first study of the geology of the Denver Basin in 1896 and reported additional fossil localities, the richest being on Green Mountain and along the South Platte River.

In March 1877, A. Lakes discovered fossil bones near the town of Morrison. After corresponding with Marsh, Lakes sent him 1,500 pounds of dinosaur bone for study, and the specimens were described in the *American Journal of Science*. The town of Morrison later became the stratotype for the late Jurassic Morrison Formation, a rock unit that is today world renowned for its dinosaur fossils, including the holotypes of many currently recognized taxa.

In 1876, H. Felch, the brother of local rancher M.P. Felch, discovered some dinosaur bones in the area now known as Garden Park to the north of Cañon City (also in the Morrison Formation) that were the subject of an article in the Cañon City Times in 1877. In 1877, O.W. Lucas discovered more large bones north of Cañon City, which he sent to Marsh's bitter rival, paleontologist E.D. Cope, for study. Between 1887 and 1883, Lucas and his brother excavated many bones for study and scientific description. Among these was the sauropod *Camarasaurus supremas* that Cope described. Cope visited the two quarry sites from which the bones were collected in 1879. In 1877, and between 1882 and 1888, B. Mudge, S. Williston, and M.P. Felch worked what became known as the Marsh/Felch Quarries #1 and #2, sending the excavated bones to Marsh for study. Type specimens described by Marsh from these quarries include *Diplodocus longus*, *Allosaurus fragilis*, *Stegosaurus stenops*, and *Ceratosaurus nasicornis*. Well-known fossil collector J.B. Hatcher and his associate W. Utterback from the Carnegie Museum of Natural History worked in the Garden Park area in 1900 and 1901, expanding the Marsh/Felch Quarry #1 to twice the original size and collecting and describing the type specimens of *Haplocanthosaurus priscus* and *H. utterbacki*.

Cannon (1906) made reference to dinosaur fossils that he collected in 1887 from what is now known as the Denver Formation. These include the famous type specimen of *Bison alticornis* originally described by Marsh (1887), which consists of a pair of supraorbital horn cores (National Museum of Natural History [USNM] specimen # 4739) that Marsh originally misidentified as belonging to an extinct species of Pliocene bison; he later correctly re-identified the specimen as a Cretaceous-age ceratopsian dinosaur (*Triceratops alticornis*). Cannon (1906) questioned the accuracy of locality information printed on labels of specimens

he had collected from near Denver, which were then housed at the USNM, that he had sent to Marsh for study, including the data for the horn cores. The USNM database does presently list the specimen as being collected from the Denver Formation "near Denver," Colorado. The Colorado Department of Transportation (CDOT) Staff Paleontologist has researched the provenance of the famous *Bison alticornis* discovery. According to Cannon (1906:194), the fossils were originally discovered by George Coon while "excavating for brick clay on the north bank of Green Mountain Creek (Dry Creek) near the intersection of Boulevard F and the Denver and Intermountain railway in North Denver, among which were a femur which had diameters of ten inches at both distal and proximal ends, a nasal horncore and a fine tooth of some theropodous dinosaur. With the exception of the tooth these bones were portions of one of the species of huge horned dinosaurs for which this neighborhood is noted." The CDOT Staff Paleontologist believes that this site is located along Lakewood Gulch, about halfway between Federal and Sheridan boulevards on land that now belongs to Denver Parks and Recreation (Steve Wallace, CDOT, written communication, 2008).

In 1912, Professor J. Henderson, an invertebrate paleontologist and founder of the UCM initiated field studies of the Cretaceous-age formations of northeastern Colorado that were collectively published in 1920. This was a pioneering study that, although undertaken primarily for the purpose of determining the stratigraphic position of coal beds, led to a large collection of Cretaceous marine invertebrates and helped establish the stratigraphic framework for the Front Range and eastern plains of Colorado.

Arguably the most noteworthy fossil locality in northeastern Colorado was discovered in the White River Formation in the early 1920s. The Trigonias Quarry locality yielded a large collection of thousands of specimens, including well-preserved skeletons of the small rhinoceros *Trigonias osborni*, entelodonts such as *Archaeotherium*, as well as other large and small mammals and birds. The excavations were initiated by the Colorado Museum (now the DMNS), and the first scientific studies of fossils from the quarry were published by Colorado Museum Curator H.J. Cook, Professor W.K. Gregory, and H.E. Wood. The Trigonias Quarry was later re-excavated by amateur paleontologist J. Mellinger in the 1930s and 1950s, resulting in many more fossils that are now housed at the UCM. In the late 1990s, the quarry was rediscovered and further excavated by crews from the DMNS.

In 1940, G.E. Lewis and R.W. Wilson began an intensive investigation of the Tertiary stratigraphy and mammalian paleontology of northeastern Colorado. This project was interrupted by the World War II, but was then continued by students. E. Galbreath published his doctoral dissertation (University of Kansas) on the Tertiary geology and paleontology of northeastern Colorado in 1953. Galbreath's work greatly refined the stratigraphy with a series of stratigraphic sections and geologic maps, and he described in detail the highly diverse vertebrate fossil fauna of the area and its biostratigraphic significance. Much of the geographic area that contains Tertiary strata in northeastern Colorado has been unavailable for study since the 1950s, primarily due to lack of access to private property.

USGS paleobotanist F.H. Knowlton (1930) made an important contribution to paleontological work in eastern Colorado with his publication on the flora of the Denver Formation and associated formations in Colorado. Another USGS paleontologist, R.W. Brown, was an important contributor to the stratigraphy and paleontology of the Denver Basin from the late

1930s to the 1960s. His work led to the recognition of the Cretaceous-Tertiary boundary in the Denver Formation, discoveries of new earliest Paleocene (Puercan) mammal taxa such as *Baioconodon denverensis* (Gazin 1941), the discovery of various dinosaur fossils, and important contributions to paleobotany with his descriptions of the Paleocene-age flora of the Rocky Mountains and Great Plains. Many other USGS geologists and paleontologists have made important contributions to paleontological and geological work in eastern Colorado. Two particularly noteworthy examples include W.A. Cobban for his work on Cretaceous molluscan biostratigraphy and G.R. Scott for his geologic mapping and documentation of Quaternary vertebrates and their biostratigraphic significance, as well as the superpositional relationships and nomenclature of Quaternary deposits.

Since the 1960s, a large number of paleontological studies in Colorado have been completed by scientists, students, and avocational paleontologists affiliated with a variety of universities and museums. These include many more contributions than can be discussed here. However, beginning in the 1990s, the Denver Basin Project, spearheaded by paleobotanist and Chief Curator at the DMNS Dr. Kirk Johnson, has brought together a large number of scientists and students with an interdisciplinary research approach. Since the 1970s, Dr. Kenneth Carpenter of the DMNS has been the primary researcher on Cretaceous vertebrates in eastern Colorado inclusive of the Denver Basin. The UCM and DMNS maintain the largest paleontological collections from eastern Colorado.

5.3 PALEONTOLOGY AND GEOLOGY OF THE BOULDER WEST TSA

According to the geologic mapping of Colton (1978) and Kellogg et al. (2008) and as corroborated by the field survey, the Boulder West TSA contains 12 mapped bedrock geologic units that are overlain by a variety of younger surficial sedimentary deposits. See Section 4.2 for the complete list of units contained within the Boulder West TSA. The distribution of geologic units within the Boulder West TSA is shown in Map 2 above.

In summary, the Boulder West TSA contains a stratigraphic sequence of rocks extending from early Proterozoic to late Mesozoic (late Cretaceous) in age, and these rocks are mantled by a variety of much younger Pleistocene and Holocene surficial sediments. The Fountain Formation documents the uplift and erosion of the ancestral Rocky Mountains (an event called the Colorado orogeny) in proximity to a shallow sea. As these coarse sediments subsided, the Lyons Sandstone was deposited as coastal sand dunes. As the coast migrated to the east, the area was dominated by coastal floodplains with occasional marine and brackish water transgressions, resulting in the deposition of the Lykins Formation. For the ensuing approximately 40 million years, no sediments were deposited, indicating a period of local uplift that lasted throughout most of the Jurassic. By this time, the ancestral Rocky Mountains had been completely leveled, and a vast plain extended in all directions for hundreds of miles. As uplift occurred far to the west, deposition of floodplain, lake, and meandering stream deposits resulted the highly fossiliferous Morrison Formation. During the early Cretaceous, an epicontinental sea transgressed from the north and south, resulting initially in the marginal marine, beach, and estuarine deposits of the Dakota Group, which was followed by deposition in deeper waters on the Benton Shale and Niobrara Formation and the thickest unit, the Pierre Shale. After millions of years of transgressing and regressing marine waters, the western interior continental sea began its ultimate retreat to the east, north,

and south. This retreat is documented by the deposition of estuarine, beach, and marginal marine sediments of the youngest bedrock formation within the Boulder West TSA, the Fox Hills Sandstone, and the slightly younger Laramie Formation that was deposited on coastal marshy floodplains. At this time, the uplift or the modern Rocky Mountains was initiated (an event called the Laramide orogeny). Erosion and sporadic uplifts during most of the last 70 million years until modern times formed the modern topography and the youngest pre-Holocene sediments, and contained fossils record the Pleistocene ice age Colorado prior to the current Holocene interglacial period.

5.3.1 Proterozoic Intrusive Igneous Rock Units

Igneous rock units within the Boulder West TSA include early Proterozoic Boulder Creek Granidiorite, middle(?) and early Proterozoic Twin Spruce Monzogranite, and middle Proterozoic Peraluminous Monzogranite (Colton 1978; Kellogg et al. 2008).

Intrusive igneous rock units form deep under the earth's surface under extreme pressure and high temperature and contain no fossils. Therefore, igneous rocks have no paleontological sensitivity (PFYC Class 1) and were not included in the paleontological survey for the Boulder West TSA. The distribution of these units is shown in Map 2 (XgdB, Yg, YXgT). Although locally mantled with younger surficial deposits of alluvium, colluvium, landslides and debris flows, these rocks occupy much of the area to the west of the Fountain Formation on Bear Peak, Green Mountain, Flagstaff Mountain, and Mount Sanitas. Because they have no paleontological potential, these igneous rocks are not discussed further in this report.

5.3.2 Fountain Formation

The Middle Pennsylvanian to Lower Permian Fountain Formation consists of arkosic thick-bedded, coarse-grained sandstone and conglomerate containing thin layers of dark maroon, micaceous, silty, fine-grained sandstone that is more abundant in the lower part of the unit. The coarse clastic facies are characterized by well-developed cross-bedding and poor sorting (Scott 1972; Trimble and Machette 1979; Van Horn 1972). Interbeds of locally fossiliferous limestone also occur. Color is generally reddish with local variations of white, green, and gray. The Fountain Formation is 4,050 feet thick at its type locality along Fountain Creek in the Manitou Springs quadrangle (Keller et al. 2005) and 1,000 feet thick in the Eldorado Springs quadrangle (Kellogg et al. 2008). The formation was deposited mostly in alluvial fans and braided streams during the uplift of the ancestral Rocky Mountains.

Fine-grained facies (limestone and siltstone) of the Fountain Formation locally contain diverse invertebrate fauna, including gastropods, crinoids, echinoderms, brachiopods, and echinoids. Fossil amphibian footprints and rare fish bone fragments also occur along the Front Range (UCM n.d.). One noteworthy fossil specimen is the ichnotype of the fossil amphibian track *Brachydactylopus fontis*, which is housed at the UCM (UCM 18633, Loc. 69039). This specimen was collected from a quarry west of Boulder on Flagstaff Mountain. Fountain Formation fossil localities from within the study area are listed in Table 2.

Table 2. Previously Recorded Fountain Formation Fossil Localities within the Boulder West TSA

Fossil (F) or Sedimentary Structure (S)	Institution	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	UCM	18633	1934	Tracks, ichnotype of fossil amphibian *Brachydactylopus fontis*

The Fountain Formation is extremely well exposed within the Boulder West TSA, forming the Flatirons (Figure 1), Devils Thumb, and other notable landmarks along the Front Range, including Red Rocks near the town of Morrison. Only a small portion of Fountain Formation outcrops within the Boulder West TSA was surveyed due to the large amount of exposures, low potential for scientifically significant fossils, accessibility (safety concerns in steep terrain), project schedule, and budgetary constraints. No fossil localities were identified within the Fountain Formation during the field survey for the Boulder West TSA.

The distribution of the Fountain Formation within the Boulder West TSA is shown in Map 2 (PPf). The Fountain Formation is sparsely fossiliferous and has produced few fossils in the Boulder area, primarily because of the rarity of fine-grained marine limestone lithologies in the area. Therefore, the Fountain Formation is considered to have low paleontological sensitivity (PFYC Class 2). However, any additional fossils discovered within it, especially vertebrates and vertebrate trace fossils, would be very important scientifically.

Management Recommendations for the Fountain Formation

Disturbance to the Fountain Formation associated with trail construction or other development is highly unlikely to adversely impact scientifically significant fossils. If any potential fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

Figure 1. Prominent outcrops of the Fountain Formation within the Boulder West TSA to the northwest of the National Center for Atmospheric Research.

5.3.3 Lyons Sandstone

The Middle(?) and Upper Permian Lyons Sandstone consists of pink, pinkish gray, cross laminated, silica-cemented, fine- to coarse-grained eolian sandstone, with a thickness of 250 feet in the Eldorado Springs 7.5-minute quadrangle (Kellogg et al. 2008). This sandstone contains conglomerate near its base.

The Lyons Sandstone is best known for its fossil insect and amphibian footprints and other ichnofossils (Figure 2). Well-preserved fossil sand dune ripple marks and mud cracks are also commonly preserved in this unit. Its laminated rock slabs have been widely used as flagstone in urban construction in Colorado and was used widely for the construction of buildings on the University of Colorado Boulder campus. Particularly well-preserved amphibian tracks include the ichnotype of *Laoporus coloradoensis* that was collected from a Lyons Sandstone quarry near the town of Lyons (Loc. 71175, UCM, 14190, 14191, 14192). Another important fossil specimen, the trackway of the arthropod *Palaeohelcura lyonensis* (Loc. 69038, UCM 18632), was collected from the Lyons Sandstone south of Boulder in 1935, possibly within the Boulder West TSA, although the specimen is lacking more precise locality coordinates. Another locality in the Lyons Sandstone is within the Boulder West TSA, UCM Loc. 96365 (Sanitarium Quarry), although it is not known what was collected there based on the information obtained for this report. Other fossil trackways are known to occur in the Lyons Sandstone along Lee Hill Road.

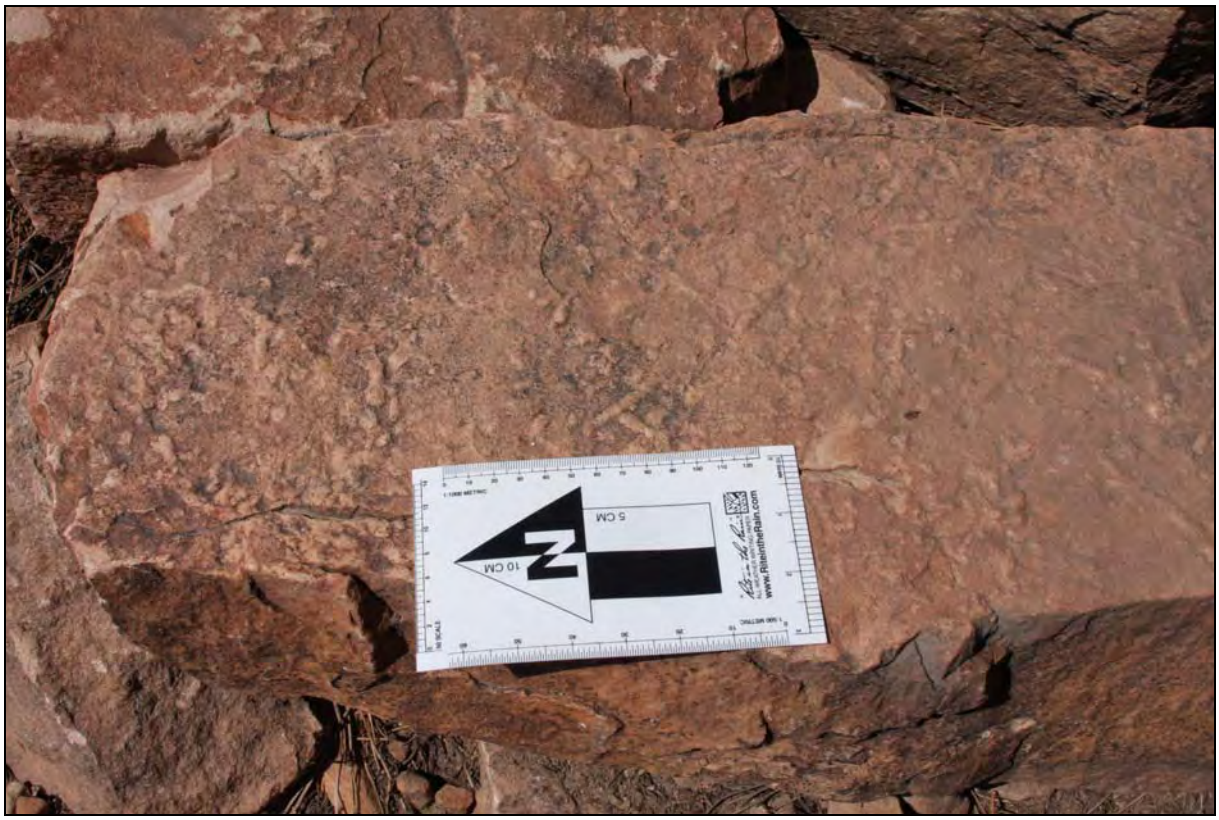


Figure 2. Unidentified ichnofossils in Lyons Sandstone along the Bluebell-Baird Trail.

The Lyons Sandstone is well exposed with the assistance of many historic quarries within the Boulder West TSA (Figure 3). The sandstone is commonly situated just east of the Fountain Formation along the east-facing first large set of Front Range foothills west of the Dakota hogback. Despite the excellent exposures in the many old Lyons Sandstone quarries within the Boulder West TSA, no definitive fossil localities were identified during the field survey, although possible poorly preserved trackways were documented at one locality and ripple marks were observed at several locations. It is possible that the numerous scratches left by rock climbing activity that masks the details of the exposed bedding planes in some quarries has also obscured some trackways. Lyons Sandstone fossil localities from within the study area are listed in Table 3.

The distribution of the Lyons Sandstone within the study area is shown in Map 2 (Pl, Ply). The Lyons Formation is sparsely fossiliferous and has produced few fossils, although those that have been discovered are highly significant scientifically. Within the Boulder West TSA, the Lyons Sandstone has low paleontological sensitivity (PFYC Class 2).

Figure 3. Well-exposed Lyons Sandstone in the historic wood quarry.

Table 3. Previously and Newly Recorded Lyons Sandstone Fossil Localities within the Boulder West TSA

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	Survey	090617-PCM-04	2009	Burrows and small scale ripple marks
F?	Survey	090617-PCM-06	2009	Possible trackway, but too poorly preserved to permit a definitive identification
F	Survey	090618-PCM-01	2009	Burrows
F	UCM	*96365	?	Data not available (Sanitarium Quarry)
F	UCM	*69038	1935	Tracks, fossil arthropods *Palaeohelcura lyonensis* from quarry "south of Boulder"
S	Survey	F2-090618-01	2009	Ripple marks

*Precise locality coordinates are not available and may or may not be within the boundaries of the Boulder West TSA.
Note: Fossil locality data sheets are provided in Appendix D.

Management Recommendations for the Lyons Sandstone

Disturbance to the Lyons Sandstone associated with trail construction or other development is highly unlikely to adversely impact scientifically significant fossils. If any potential fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

5.3.4 Lykins Formation

The Upper Permian and Lower Triassic? Lykins Formation includes four members. The upper part of the formation is composed of the Strain Shale Member, which consists of about 295 feet of maroon, stratified, micaceous, fine-grained, silty sandstone and siltstone with some green siltstone beds. The middle portion of the formation is composed of the Forelle Limestone Member, which consists of about 16 feet of pink, wavy-laminated, marine algal limestone. The lower part of the formation comprises the Bergen Shale Member and underlying Harriman Shale Member, which have a combined thickness of about 131 feet and consist of maroon and green siltstone separated by a 3-foot-thick, thin-laminated, red-weathering limestone bed (Kellogg et al. 2008). The Lykins Formation is at least partially equivalent with the Chugwater, Dinwoody, Thanes, Spearfish, Jelm, Ankareh, Woodside, Chinle, and Dolores formations and the Glen Canyon and Dockum groups.

The Lykins Formation contains few identifiable fossils and is best known for its algal stromatolites within the Forelle Limestone Member. The carbonate beds within this member exhibit a laminated texture indicative of algal mats in a shallow marine environment (Keller et al. 2005). Stromatolitic structures are visible in the Lykins Formation to the west of the National Center for Atmospheric Research (NCAR) within the Boulder West TSA (Figure 4). Rare fossil bones have also been discovered in the Lykins Formation, as have mollusks (bivalves, gastropods) and brachiopods (unpublished UCM paleontological data). Unfortunately, these museum locality records lack precise geographic coordinates, so it is uncertain as to whether the fossils were collected from within the Boulder West TSA.

The Lykins Formation is poorly exposed within the Boulder West TSA (Figure 5), being largely covered with colluvium derived from the mostly topographically higher Fountain Formation and Lyons Sandstone, as well as vegetated soil. One fossil locality, consisting of stromatolitic limestone, was documented within the Lykins Formation during the field survey. Lykins Formation fossil localities from within the study area are listed in Table 4.

The distribution of the Lykins Formation within the study area is shown in Map 2 (TRPl). Because of its scarce fossils, the Lykins Formation is considered to have low paleontological sensitivity (PFYC Class 2).

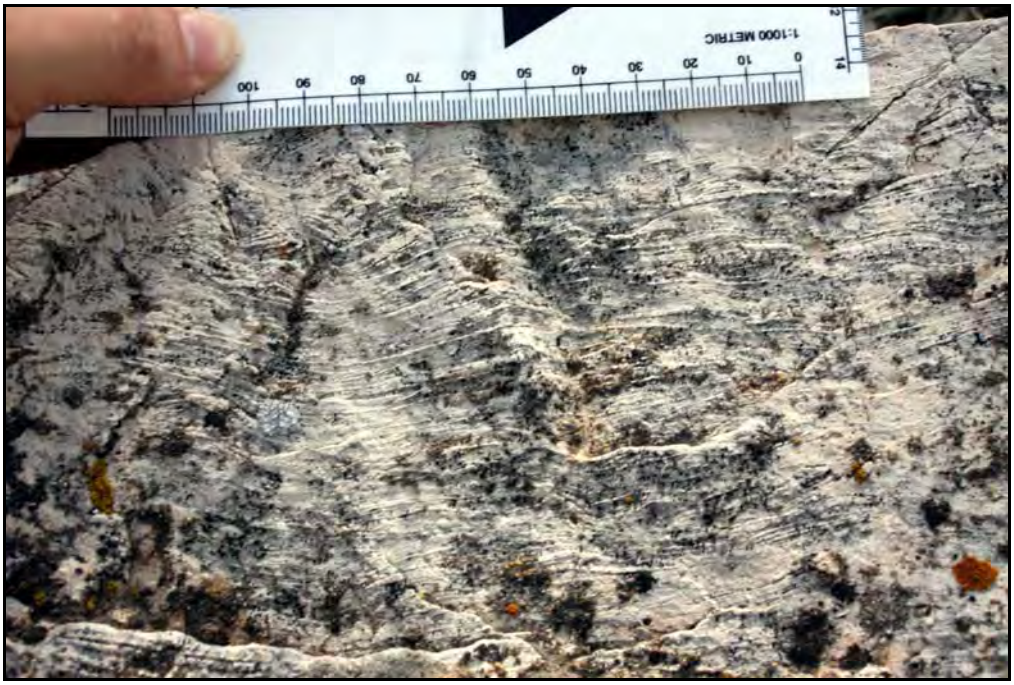


Figure 4. Laminated "stromatolitic" carbonate bed within the Forelle Limestone Member of the Lykins Formation to the west of NCAR.

Figure 5. View looking west towards NCAR at the Lykins Formation (red) overlain by the Morrison Formation (white) and the Dakota Group (in trees along ridge at top of photo).

Table 4. Newly Recorded Lykins Formation Fossil Localities within the Boulder West TSA.

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F and S	Survey	090617-PCM-05	2009	Stromatolitic limestone

Note: Fossil locality data sheets are provided in Appendix D.

Management Recommendations for the Lykins Formation

Disturbance to the Lykins Formation associated with trail construction or other development is highly unlikely to adversely impact scientifically significant fossils. If any potential fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

5.3.5 Morrison Formation

The Upper Jurassic Morrison Formation (and Ralston Creek Formation undivided) in the vicinity of the study area is composed of red siltstone and thin brown sandstone beds in the upper part, green siltstone and claystone with some interbedded sandstone and limestone beds in the middle part, and brown lenticular sandstone beds and red jasper in the lower part. The formation is about 344 feet thick in the Eldorado Springs 7.5-minute quadrangle (Kellogg et al. 2008) and is interpreted to contain numerous unconformities. In much of its distribution in Colorado, the Morrison Formation has been locally subdivided into members including the Brushy Basin, Westwater Canyon, Recapture Creek, Salt Wash, and Bluff Sandstone. The underlying Ralston Creek Formation is composed of light reddish brown to tan, interbedded sandstone, shale, limestone, and gypsum (Keller et al. 2005). The widely distributed and highly fossiliferous Morrison Formation was deposited in a combination of fluvial and lacustrine environments in warm, humid climatic conditions after the regression of an inland sea (Peterson 1988), while the Ralston Creek Formation was deposited in more near shore shallow marine environments (Berman et al. 1980).

The Morrison Formation is well known for the large number of dinosaur remains that are preserved within it, including many historically important specimens on display in museums around the world. Historically important fossil localities within the Morrison Formation are numerous and include Como Bluff in Wyoming, Dinosaur National Monument in Utah, and localities near Morrison (the type locality of the Morrison Formation) and Cañon City, Colorado, among others. Although dinosaur bones, teeth, and fragments of fossilized wood are perhaps the most common Morrison Formation fossils, an extremely diverse fish, non-dinosaur reptilian, mammalian, plant, and trace fossil assemblage has also been documented. In addition to its rich dinosaur bone beds with articulated and disarticulated remains that are often very well preserved, the Morrison Formation has produced a diverse assemblage of small mammals and non-dinosaurian reptiles, dinosaur eggs, trackways, and plants. The

geology and paleontology of the Morrison Formation has been studied extensively (e.g., Armstrong and Kihm 1980; Armstrong et al. 1987; Bilbey 1992; Carpenter 1979; Dodson et al. 1980, Peterson 1988; Tidwell 1990), and it has produced the greatest diversity of Jurassic-age fossils of any rock unit in the world (Breithaupt 1994).

The Morrison Formation is very poorly exposed within the Boulder West TSA, being largely covered with vegetated soil, alluvium, and colluvium (Figure 6). One fossil locality, consisting of a poorly preserved and unidentifiable fragment of probable dinosaur bone, was documented within the Morrison Formation during the field survey (Figure 7). This locality was discovered in a channel sandstone to the west of NCAR. The UCM has two recorded fossil localities in the Morrison Formation of Boulder County, one of which was likely documented within the Boulder West TSA. UCM Loc. 72132 is described as being north of Bear Canyon, and it is possible that this locality is at the same Morrison Formation outcrop in which a fossil bone was documented during the field survey for this study. Fossils recorded at UCM Loc. 72132 include three specimens of planorbid snail and one specimen of horsetail (the plant *Equisetum*). Morrison Formation fossil localities from within the study area are listed in Table 5.

The distribution of the Morrison Formation within the study area is shown in Map 2 (Jm, Jmr, Jtrmj). Because of its locally abundant, taxonomically diverse and well-preserved fossils, the Morrison Formation is considered to have very high paleontological sensitivity (PYFC Class 5).

Figure 6. Cross-bedding in an isolated sandstone outcrop of the Morrison Formation west of NCAR.

Figure 7. Fragment of unidentifiable bone in a Morrison Formation sandstone outcrop west of NCAR.

Table 5. Previously and Newly Recorded Morrison Formation Fossil Localities within the Boulder West TSA

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	UCM	72132	No data	*Planorbis* sp., *Equisetum* sp.
F	Survey	090617-PCM-03	2009	Unidentifiable bone fragment

Note: Fossil locality data sheets are provided in Appendix D.

Management Recommendations for the Morrison Formation

Despite its very high paleontological sensitivity, disturbance to the Morrison Formation associated with trail construction or other development is unlikely to adversely impact scientifically significant fossils because this unit is covered within most of the Boulder West TSA, and large excavations would be required in order to expose it at most locations. The exposed sandstone channel to the west of NCAR could be used for educational and interpretive purposes and may be the only well-exposed Morrison outcrop within the study area. If any potential fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

5.3.6 Dakota Group

The Lower Cretaceous Dakota Group, also known as the Dakota Sandstone, consists of the South Platte Formation and underlying Lytle Formation. In the vicinity of the study area, the South Platte Formation consists of two or three yellowish gray, well-sorted, cross-stratified, porous, fine- to medium-grained quartz sandstone sequences separated by dark gray, silty, hard, locally carbonaceous shale interbedded with thin quartz sandstone beds and clay beds. The South Platte Formation is approximately 220 feet thick. The Lytle Formation consists of yellowish gray, medium- to fine-grained sandstone and conglomerate that is locally iron-stained and is about 79 feet thick. The conglomerate is generally near the base of the unit (Kellogg et al. 2008).

Deposited during the first major transgression of the Cretaceous Interior Seaway in beach, estuarine, and other proximal shoreline depositional environments, rocks of the Dakota Group contain a moderately diverse fossil fauna and flora. The unit is well known for its fossil footprints and other trace fossils and also contains scattered bones and locally well-preserved plant remains. Dinosaur track sites from near the top of the Dakota Group have been reported from numerous localities in Colorado. Lockley et al. (1992) describe several dozen dinosaur track sites along the Front Range of Colorado and the southern high plains of Colorado, Oklahoma, and New Mexico. According to these authors, all of these track sites occur in a stratigraphic interval that is less than 30 feet thick. This interval is referred to as a "megatracksite," and it is estimated that this track-bearing complex, which includes dinosaur, crocodile, and bird tracks, covers an area of 80,000 square kilometers. Waage (1955) cites plesiosaur vertebrae in the Dakota Group in northern Colorado, and Dakota Sandstone fossils have been the subject of numerous paleontological studies (Chamberlain 1976; Elliot and Nations 1998; Lockley 1987, 1990, 1992; Mehl 1931; Snow 1887; Rushforth 1971; Waage and Eicher 1960; Young 1960). In 1878, a partial dinosaur skull was discovered in the Lytle Formation in the Garden of the Gods area near Colorado Springs. This specimen was later identified as a new genus and species of iguanodont dinosaur, *Theiophytalia kerri*, and was formally described by Brill and Carpenter (2006).

The Dakota Group is generally well exposed within the Boulder West TSA. The group forms prominent ridges all along the Front Range foothills and is the namesake for Dakota Ridge in the northern part of the Boulder West TSA. Three fossil localities, consisting of mostly poorly preserved plant impressions on sandstone (Figure 8), were documented during the field survey, as were four locations with relatively well-preserved ripple marks (Figure 9). An additional fossil locality consisting of one possible fossil underprint (underside of footprint) of a tridactyl dinosaur was also documented (Figure 10). The DMNS has one fossil plant locality (Loc. 1562) within the Boulder West TSA, and the UCM has 13 fossil localities in the Dakota Group in Boulder County (UCM Loc. 75947, Dakota Sandstone, Boulder County, no data), but because these are old records, all lack precise geographic coordinates, and several probably occur within the Boulder West TSA based on the locality descriptions. Fossils documented at these localities include invertebrate burrows, sharks teeth, oysters, and leaves and wood (UCM n.d.). UCM Loc. 85223 consists of one specimen of the gymnosperm *Araucaria* (plant) that was collected from the Dakota Group from the "hogback back of Sanitarium, Boulder," (UCM n.d.) presumably within the Boulder West TSA. Dakota Group fossil localities from within the study area are listed in Table 6.

Figure 8. Fossil plant impressions in Dakota Sandstone west of NCAR.

Figure 9. Well-preserved ripple marks in Dakota Sandstone on Dakota Ridge.

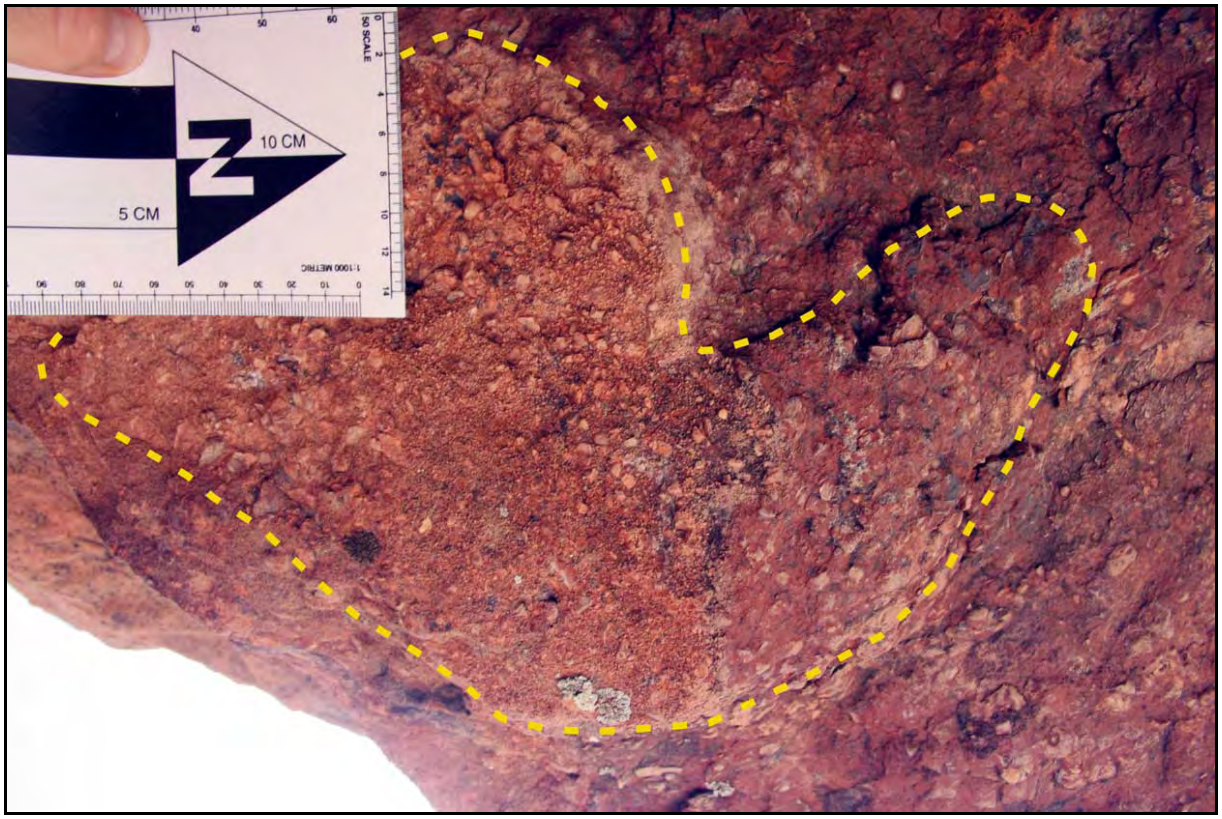


Figure 10. Possible underprint (track) of a tridactyl dinosaur on Dakota Ridge.

Table 6. Previously and Newly Recorded Dakota Group Fossil Localities within the Boulder West TSA

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	DMNS	1562	No data	Plants
F	UCM	75947	Various	Invertebrate burrows, sharks teeth, leaves, wood: 13 “no data” localities, 6 of which may occur within Boulder West TSA based on locality descriptions
F	UCM	85223	1985	*Araucaria* sp., 1 specimen
F	Survey	090616-PCM-01	2009	Poorly preserved tridactyl track on sandstone overhang
F	Survey	090617-PCM-02	2009	Invertebrate burrows
F	Survey	090617-PCM-07	2009	Plants

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	Survey	090617-PCM-08	2009	Plants
S	Survey	F2-090616-02	2009	Ripple marks
S	Survey	F2-090616-03	2009	Ripple marks
S	Survey	F2-090729-01	2009	Ripple marks
S	Survey	F2-090729-02	2009	Ripple marks

Note: Fossil locality data sheets are provided in Appendix D.

The distribution of the Dakota Group within the study area is shown in Map 2 (Kd). Because fossils are somewhat sparse and mostly poorly preserved in the Dakota Group in the Boulder area, this unit is considered to have moderate paleontological sensitivity (PYFC Class 3) within the Boulder West TSA.

Management Recommendations for the Dakota Group

Disturbance to the Dakota Group associated with trail construction or other development may impact fossils, whether or not they are of scientifically importance. It is recommended that the localities documented during this survey be avoided. Although none of the fossils or sedimentary structures documented are considered scientifically significant, they would be well suited for use in educational programs or interpretive displays. If any potential fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

5.3.7 Benton Group

The stratigraphic nomenclature associated with the Benton Group, constituent formations, and correlative units is complex. The Benton Group includes three formations. The Carlile Shale is composed of dark gray shale interbedded with thin beds of dark brown sandstone, yellowish brown siltstone, and gray limestone. The Greenhorn Limestone consists of dark to light gray limestone with a lesser amount of shale and siltstone. The Graneros Shale consists of black marine shale with thin interbedded bentonite beds. The combined thickness of these three units is approximately 446 feet in the Eldorado Springs 7.5-minute quadrangle (Kellogg et al. 2008).

Fossils are locally common and diverse in these units, including trace fossils, fossil wood and plant debris, foraminifera, barnacles, brachiopods, bivalves, gastropods, ammonites, radiolarians, fish scales and other fish remains such as sharks, and marine reptiles including plesiosaurs and ichthyosaurs (Cobban and Kennedy 1989; Cicimurri 2001; Hanson and Connely 2006; Knechtel and Patterson 1962; Massare and Dain 1989; Merewether 1996; Romer 1968; Stewart et al. 1994; Stewart and Hakel 2006; Yacobucci 2004). Foraminifera and palynomorphs are also abundant and varied in this formation (Fox 1954; Merewether 1996; Okumura 1994). Specifically, fossil vertebrates are generally sparse in the Greenhorn Limestone in Colorado and for the most part are based on isolated, poorly described fossil

fish. Recently, Parkin et al. (2002) and Shimada et al. (2003) have reported on a diverse marine vertebrate fauna from the Lincoln Limestone Member of the Greenhorn Limestone in Comanche National Grassland in southeastern Colorado. This faunal assemblage includes bony and cartilaginous fishes, two kinds of plesiosaur (large marine reptile), and a dolichosaurid lizard.

The Benton Group is poorly exposed within the Boulder West TSA due to soil and vegetative cover. The group's soft lithologies are easily eroded and weathered. No fossil localities within the Benton Group were documented during the field surveys, and no UCM or DMNS fossil localities in the Benton Group occur within the Boulder West TSA.

The distribution of the Benton Group within the study area is shown in Map 2 (Kb). Although fossil invertebrates are locally abundant in the Carlile Shale, Greenhorn Limestone, and Graneros Shale, fossil vertebrates are uncommon. Therefore, the Benton Group is considered to have moderate paleontological sensitivity (PFYC Class 3).

Management Recommendations for the Benton Group

Disturbance to the Benton Group associated with trail construction or other development is highly unlikely to adversely impact scientifically significant fossils because this unit is very poorly exposed, being almost entirely covered with soil and vegetation. If any potential fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

5.3.8 Niobrara Formation

Like the Dakota and Benton groups, the Upper Cretaceous Niobrara Formation is a stratigraphically complex geologic unit. The formation has been subdivided into the Fort Hays Limestone Member and the conformably overlying Smoky Hill Shale Member, and is partially stratigraphically equivalent with the Mancos Shale, which occurs further to the northwest. The Smoky Hill Shale Member consists of yellowish orange to brown shale interbedded with thin gray and white chalk beds and thin rare limestone beds. The Fort Hays Limestone Member is composed primarily of gray limestone with a lesser amount of chalky limestone and shale. The combined thickness of both members is approximately 410 feet (Kellogg et al. 2008). The Niobrara Formation is widely distributed and was deposited mostly in nearshore marine settings during the second late Cretaceous transgressive-regressive cycle.

Most fossil vertebrates known from the Niobrara Formation have been discovered in the Smoky Hill Shale Member in Kansas, although other geographic areas have produced less abundant and less well-preserved vertebrate remains. Among the most well known Niobrara Formation fossils from Kansas are articulated skeletons of pterosaurs, fishes (including rare sharks), birds, and numerous plesiosaurs, mosasaurs, and turtles. Free swimming crinoids (sea lilies) have also been reported (Cobban 1995). Mosasaurs, plesiosaurs, and fishes have also been discovered within the Smoky Hill Shale Member in Larimer County, Colorado (Anthony and Smith 1992; Martz 1996). Fossil marine mollusks, cephalopods, and

foraminifers are also locally abundant within the Niobrara Formation throughout its distribution. Niobrara Formation fossils have been the subject of numerous paleontological studies (e.g., Anthony and Smith 1992; Cobban 1995; Feager and Smidt 1992; Martz 1996; Russell 1993).

The Niobrara Formation is locally exposed within the Boulder West TSA. Small outcrops occur in the NCAR vicinity, where fossil localities have been previously documented (see Evanoff and Hirschfeld 2006) and where fossil oysters were observed during the field survey for this study (Figure 11). Additionally, the UCM has one previously recorded localities within the Boulder West TSA; a single specimen of the inoceramid bivalve *Cremnoceramus erectus* was collected from Shadow Canyon (Loc. 92214). Niobrara Formation fossil localities from within the study area are listed in Table 7.

The distribution of the Niobrara Formation within the study area is shown in Map 2 (Kn). Although fossil invertebrates are locally common, the Niobrara Formation contains less abundant fossil vertebrates throughout most of its distribution. Therefore, the Niobrara Formation is considered to have moderate paleontological sensitivity (PFYC Class 3) within the Boulder West TSA.

Figure 11. View facing east of fossil-bearing strata of the Niobrara Formation west of NCAR.

Table 7. Previously and Newly Recorded Niobrara Formation Fossil Localities within the Boulder West TSA

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	UCM	92214	1992	One specimen of the inoceramid bivalve *Cremnoceramus erectus*
F	Survey	090617-PCM-01	2009	Bivalves
F	Survey	090618-PCM-02	2009	Bivalves
F	Survey	090724-LSB-01	2009	Bivalves

Note: Fossil locality data sheets are provided in Appendix E.

Management Recommendations for the Niobrara Formation

Disturbance to the Niobrara Formation associated with trail construction or other development is highly unlikely to adversely impact scientifically significant fossils, although bivalve shells and other common marine mollusk fossils may be damaged by surface-disturbing activities. Several Niobrara Formation localities documented during the field survey are readily accessible from existing trails, and these areas could be used for educational programs or interpretive displays. If any potential fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

5.3.9 Pierre Shale

The Upper Cretaceous (Campanian-Maastrichtian) Pierre Shale occurs in Montana, North Dakota, South Dakota, Wyoming, and Colorado. Until recently the Pierre Shale was always given a formation-level designation; however, recent stratigraphic research has prompted some workers to elevate the Pierre Shale to group status in Nebraska, North Dakota, South Dakota, and eastern Wyoming, thereby elevating the subdivisions of the Pierre Shale in western Kansas, North Dakota, central and western South Dakota, and southeastern Wyoming to the formation level (Martin et al. 2004). Generally, lithologies of the Pierre Shale include hard, platy to flaky gray, dark gray, brownish gray, grayish black, tan shale and silty shale; light olive gray silty bentonitic shale; limestone; and ironstone concretions (Haymes 1989; Gill and Cobban 1966; Scott and Wobus 1973). The Pierre Shale underlies and is gradational with the Fox Hills Formation and conformably and unconformably lies on the Niobrara Formation. Contact with the underlying Niobrara Formation is gradational and conformable, and the unit has a thickness of about 6,182 feet in the Louisville area (Kellogg et al. 2008).

The invertebrate and vertebrate fossil faunas of the Pierre Shale in Colorado, Wyoming, South Dakota, North Dakota, Montana, Kansas, and New Mexico have been the subject of far more studies than can be cited here (e.g., Bergstresser 1981; Bishop 1985; Carpenter 1996; Cobban et al. 1993; Gill and Cobban 1966; Kauffman and Kesling 1960; Lammons 1969; Martz et al. 1999; Scott and Cobban 1986). The invertebrate fauna includes a diverse assemblage of

mollusks (primarily ammonites and inoceramids), as well as other bivalves, bryozoans, and gastropods. The ichnofauna consists primarily of trails, burrows, tubes, fecal pellets, raspings on shells (Gill and Cobban 1966), and gastroliths. Plant fossils are rarer, consisting of logs and wood fragments. The vertebrate fauna is diverse but geographically constrained, containing a variety of fish, turtles, mosasaurs, plesiosaurs, and more rare dinosaurs, pterosaurs, and birds (Carpenter 1996, 2006). Most vertebrate fossils have been discovered in the Sharon Springs Member of the Pierre Shale in Wyoming, South Dakota, and Kansas. However, additional vertebrate fossils including mosasaurs have been discovered in the Pierre Shale in the Walsenburg area of southern Colorado.

The Pierre Shale is not well exposed within the Boulder West TSA despite the fact that it underlies much of the eastern portion of the area. Here the study area consists of vegetated low hills, mesas, and flat lands at the base of the foothills, and the soft lithologies of the Pierre Shale are easily eroded and weathered. No Pierre Shale fossil localities were recorded during the field survey, presumably because of the unusually dense vegetative cover resulting from abnormally high precipitation this spring and summer. Nevertheless, numerous fossil localities have been documented in the Pierre Shale in the Boulder area, and some of these were recorded within the Boulder West TSA. Workers from the USGS from the 1950s to 1970s researched the Pierre Shale along the Front Range intensively in an effort to document the biostratigraphy and evolutionary history of some key marine index fossils (Scott and Cobban 1965). The USGS recorded 107 fossil localities that may be within the boundaries of the Boulder West TSA based on the locality descriptions. However, these records are old and lack precise geographic coordinates. These localities produced a variety of ammonites (mostly baculites) and inoceramid bivalves. The DMNS has one recorded locality (Loc. 1406) within the study area that produced fossil invertebrates, and the UCM has two recorded fossil localities within the study area (Loc. 76124, 76125), both of which yielded fossil invertebrates. Although the specifics of the data pertaining to these UCM and DMNS Pierre Shale fossil localities were not available at the time this report was prepared, it is assumed that these localities produced marine mollusks. Pierre Shale fossil localities from within the study area are listed in Table 8.

Table 8. Previously Recorded Pierre Shale Fossil Localities within the Boulder West TSA

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	DMNS	1406	No data	Invertebrates
F	UCM	?76124	1976	Invertebrates
F	UCM	?76125	1976	Invertebrates
F	USGS	47	No data	*Inoceramus, Baculites*
F	USGS	48	No data	*Inoceramus, Baculites, Emperoceras, Solenoceras*
F	USGS	49	No data	–
F	USGS	50	No data	*Baculites*

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	USGS	51	No data	*Baculites*
F	USGS	52	No data	*Baculites*
F	USGS	244	No data	*Baculites asperiformis*
F	USGS	290	No data	*Baculites gilberri*, n. sp
F	USGS	292	No data	*Baculites compressus*
F	USGS	293	No data	*Baculites compressus*
F	USGS	294	No data	*Eutrephoceras, Acanthoscaphites, Inoceramus*
F	USGS	307	No data	*Inoceramus, Didymoceras*
F	USGS	308	No data	*Emperoceras*
F	USGS	309	No data	–
F	USGS	589	No data	*Baculites*
F	USGS	607	No data	*Baculites corrugatuis* fauna
F	USGS	608	No data	*Acanthoscaphites, Inoceramus*
F	USGS	611	No data	*Inoceramus*
F	USGS	896	No data	*Baculites obtusus*
F	USGS	1050	No data	*Inoceramus, Solenoceras*
F	USGS	1051	No data	*Inoceramus*
F	USGS	1219	No data	*Baculites, Didymoceras*
F	USGS	1300	No data	*Inoceramus*
F	USGS	1573	No data	*Eutrephoceras*
F	USGS	1574	No data	*Baculites, Inoceramus, Nucula obsoletistriata,*
F	USGS	1646	No data	*Baculites obtusus*
F	USGS	1716	No data	*Barroisiceras* fauna
F	USGS	1733	No data	*Baculites* cf. *obtusus*
F	USGS	1807	No data	*Borissjakoceras*
F	USGS	1808	No data	*Collignoniceras?, Inoceramus*
F	USGS	1809	No data	*Baculites gilberti*
F	USGS	1810	No data	*Inoceramus*
F	USGS	1816	No data	*Calycoceras*
F	USGS	2317	No data	*Baculites* sp.
F	USGS	2320	No data	*Inoceramus labiatus*
F	USGS	2706	No data	–
F	USGS	2707	No data	*B. cuneatus*
F	USGS	2708	No data	–
F	USGS	2709	No data	*B. corrugatus?*
F	USGS	2710	No data	–

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	USGS	2712	No data	*B. cuneatus*
F	USGS	2713	No data	–
F	USGS	2714	No data	*D. stevensoni*
F	USGS	2743	No data	*B. clinolobatus*
F	USGS	2761	No data	*Baculites eliasi*
F	USGS	2764	No data	*Inoceramus typicus?*
F	USGS	2765	No data	*B. scotti*
F	USGS	2767	No data	*Scaphites* sp.
F	USGS	2768	No data	*Perissonota* sp., *Inoceramus* aff. *I. Typicus (Whitfield), Anomia raetiformis, Baculites* sp., *Acanthoscaphites* sp.
F	USGS	2769	No data	*B. grandis?*
F	USGS	2770	No data	*Inoceramus? Fibrosus*
F	USGS	2771	No data	*Inoceramus* cf. *I. Vanuxem, Inoceramus* cf. *I. Maclearni Douglas, Lucina* sp., *Polinices?* sp., *Baculites* n. sp.
F	USGS	2772	No data	*Inoceramus sagensis, Anomia raetiformis, Crenella* cf. *C. elegantula, Thetis? circularis, Acanthoscaphites nodosus, Homolopsis punctata Rathbun*
F	USGS	2773	No data	*Baculites*
F	USGS	2774	No data	*B. grandis?*
F	USGS	2775	No data	*B. clinolobatus?*
F	USGS	2776	No data	*B. grandis?*
F	USGS	2777	No data	*Baculites scotti?*
F	USGS	2778	No data	*B. pseudovatus?, Didymoceras* sp.
F	USGS	2779	No data	*Inoceramus* aff. *I. Convexus, Baculites scotti*
F	USGS	2780	No data	–
F	USGS	2781	No data	*Inoceramus sp., Acanthoscaphites* n. sp., *Didymoceras* cf. *D. nebrascense*
F	USGS	2782	No data	–
F	USGS	2783	No data	–
F	USGS	2784	No data	*D. nebra?*

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	USGS	2790	No data	–
F	USGS	2791	No data	*B. reduncus*
F	USGS	2792	No data	*B. scotti*
F	USGS	2813	No data	*B. perplexus?* zone
F	USGS	2814	No data	*B. perplexus.*
F	USGS	2815	No data	*Baculites gilberti*
F	USGS	2816	No data	*B. gilberti* zone
F	USGS	2817	No data	*B. gilberti*
F	USGS	2827	No data	*Haresiceras, Baculites.*
F	USGS	2863	No data	*Inoceramus* sp., *Pteria* n. sp., *Baculites* aff. *B. gregoryensis Cobban, Didymoceras* sp.
F	USGS	2864	No data	*Breviarca* sp., *Inoceramus* cf. *I. pertenuis, Pteria* cf. *P. linguaeformis, Didymoceras* n. sp.
F	USGS	2955	No data	*Baculites gilberti*
F	USGS	2956	No data	*Baculites gilberti*
F	USGS	2957	No data	*Baculites perplexus*
F	USGS	2958	No data	*Baculites perplexus*
F	USGS	2959	No data	*Baculites perplexus*
F	USGS	2985	No data	*Baculites clinolobatus*
F	USGS	3641	No data	*Exiteloceras jenneyi*
F	USGS	3642	No data	*Baculites corrugatus*
F	USGS	3714	No data	*Baculites grandis*
F	USGS	3721	No data	*Baculites grandis*
F	USGS	3722	No data	*Baculites grandis?*
F	USGS	3769	No data	*Discoscaphites*
F	USGS	3770	No data	*Baculites grandis*
F	USGS	3794	No data	*Inoceramus*
F	USGS	3795	No data	*Didymoceras stevensoni, Solenoceras* n. sp.
F	USGS	4068	No data	*Baculites grandis*
F	USGS	7410	No data	*Tarrantoceras* n. sp
F	USGS	7411	No data	*Inoceramus pictus*
F	USGS	7412	No data	*Inoceramus labiatus (Schlotheim)*
F	USGS	7413	No data	*Inoceramus labiatus (Schlotheim)*
F	USGS	7414	No data	*Inoceramus labiatus (Schlotheim)*

Fossil (F) or Sedimentary Structure (S)	Institution (museum acronym or this survey)	Museum Loc. No. or Field Loc. No.	Year of Collection or Documentation	Fossil(s) or Sedimentary Structure Type
F	USGS	7415	No data	*Inoceramus labiatus (Schlotheim), Ostrea* sp.
F	USGS	7416	No data	*Inoceramus labiatus (Schlotheim), Vascoceras (Greenhornoceras) birchbyi*
F	USGS	7417	No data	*Inoceramus labiatus (Schlotheim)*
F	USGS	7418	No data	*Inoceramus labiatus (Schlotheim)*
F	USGS	7888	No data	*Baculites eliasi*
F	USGS	8833	No data	*Baculites gilberti*
F	USGS	9571	No data	*Oxybeloceras plumosa*
F	USGS	9572	No data	*Inoceramus* sp., *Didymoceras nebrascense*
F	USGS	9573	No data	*Exiteloceras jeneyi (Whitfield)*
F	USGS	12720	No data	*Ostrea beloiti*

The distribution of the Pierre Shale within the study area is shown in Map 2 (Kp, Kph, Kpu, Kpm, Kpl). Because it contains a diverse invertebrate fauna and locally produces well-preserved vertebrate fossils, the Pierre Shale is considered to have high paleontological sensitivity (PFYC Class 4) within the Boulder West TSA.

Management Recommendations for the Pierre Shale

Disturbance to the Pierre Shale associated with trail construction or other development is highly unlikely to adversely impact scientifically significant fossils, although baculites and inoceramid bivalves, as well as other common marine mollusk fossils, could be damaged by surface-disturbing activities. These fossils are numerous enough that the effects of trail construction are considered to be negligible. If any potential fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

5.3.10 Fox Hills Sandstone

Along the Front Range, the Upper Cretaceous Fox Hills Sandstone is approximately 300 feet thick, consisting of an upper part composed of cross-bedded tan sandstone, which grades downward into brown, fine-grained silty sandstone interbedded with gray fissile shale. Locally, the Fox Hills Sandstone contains thin coal beds (Colton 1978; Gill et al. 1970; Scott 1972) and has a maximum thickness of approximately 213 feet in the Louisville area (Kellogg et al. 2008). The sandstone is commonly exposed as sandstone ridges in areas of steeply

dipping beds along the mountain front that are raised above topographically lower areas of Pierre Shale and Laramie Formation (Trimble and Machette 1979). The Fox Hills Sandstone conformably overlies the Pierre Shale and conformably underlies the Laramie Formation. This unit is widely distributed in Colorado, Wyoming, Montana, North Dakota, South Dakota, and Nebraska. In the Green River Basin in Wyoming, the Fox Hills Sandstone consists mostly of quartz sandstone that coarsens upward and contains oyster shells and trace fossils, indicating the eroded remnants of a barrier island depositional environment (Roehler 1993). In McCone County, Montana, the Fox Hills Sandstone consists mostly of uniform, consistently cross-bedded, well-sorted, very fine-grained, gray to yellow, ledge-forming sandstone that shows little variation. The unit was deposited in regressive marine and paralic environments.

Fossils known from the Fox Hills Sandstone include invertebrates such as bivalves, gastropods, and ammonites (Erickson 1974, 1978); bryozoans (Cobban and Kennedy 1992; Cuffey et al. 1981), echinoids (Holland and Feldmann 1967); crabs (Feldmann et al. 1976); beetles (Northrop 1928), and several species of foraminifera. Plant fossils have also been described (Dorf 1942). Vertebrate fossils include mostly sharks teeth and bony fish scales, although mammalian (multituberculate) reptilian (mosasaur and dinosaur) and amphibian remains have also been reported (Hoganson, Erickson, et al. 1997; Hoganson, Erickson, and Anonymous 2004; Nelson et al. 2003; Wilson 1987). The Fox Hills Sandstone also contains the important trace fossil *Ophiomorpha*, which consists of 0.5- to 1-inch-diameter burrows formed by the tunneling activities of callanassid shrimp. These fossils indicate marginal marine to littoral conditions deposited in tidal environments (Rigby and Rigby 1990). Other reported trace fossils include structures interpreted as sea turtle nests (Bishop and Anonymous 2002).

The Fox Hills Sandstone is limited to the extreme southeast corner of the Boulder West TSA where it outcrops as prominent sandstone ledges adjacent to State Highway 93 and State Highway 119. No fossil localities were documented in this unit during the field survey, and neither the DMNS nor the UCM have any previously recorded fossil localities within the Boulder West TSA.

The distribution of the Fox Hills Sandstone within the study area is shown in Map 2 (Kfh). In Colorado, the Fox Hills Sandstone is less fossiliferous than elsewhere in its distribution, and it is considered to have low paleontological sensitivity (PFYC Class 2).

Management Recommendations for the Fox Hills Sandstone

Disturbance to the Fox Hills Sandstone associated with trail construction or other development is highly unlikely to adversely impact scientifically significant fossils. If any fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

5.3.11 Quaternary Surficial Deposits

Surficial sedimentary deposits of Quaternary (Pleistocene and Holocene) age within the Boulder West TSA include a variety of mapped and unmapped units consisting of alluvium, colluvium, debris flows, and landslides (Colton 1978; Kellogg et al. 2008).

Holocene-age alluvium is composed primarily of poorly consolidated silt, sand, and cobbles derived from eroded bedrock and older alluvial and colluvial deposits. These sediments are deposited by rivers and streams in stream channels and on active alluvial floodplains. Pleistocene-age alluvium consists of gravel, sand, silt, mud, and clay that forms alluvial terraces and isolated remnants on dissected benches along stream drainages. Colluvium includes sediments that are transported by gravity and sheet flow and deposited on the sides of valleys and below landslides, debris flows, and alluvial fans. Landslide and debris flow deposits consist of rock material that has moved under the influence of gravity. Lithologies of landslide and colluvium vary and are dependent on the type of source rock. These deposits form on unstable slopes and on older landslides and colluvial deposits. In general, colluvium and landslide deposits are much less likely to contain well-preserved animal and plant remains than intact native sediments. Landslide material is often subjected to increased groundwater percolation, which tends to have a negative effect on the preservation of organic material. Gravitationally induced movement of sediment can also destroy animal and plant remains through abrasion and breakage. Additionally, when the original stratigraphic position of the sediments is disturbed, there are varying degrees of information loss with the severity of changes to the slide mass.

Pleistocene surficial deposits, particularly alluvium, may contain mineralized or partially mineralized animal bones, invertebrates, and plant remains of paleontological significance. With the exception of some caves, hot springs, and tar deposits, these fossils typically occur in low density and usually consist of scattered and poorly preserved remains. Nevertheless, many Pleistocene fossils provide important paleobiologic, paleobiogeographic, and paleoenvironmental information and are therefore scientifically important. The most common Pleistocene vertebrate fossils include the bones of mammoth, bison, deer, and small mammals, but other taxa including horse, lion, cheetah, wolf, camel, antelope, peccary, mastodon, and giant ground sloth have been reported from the Rocky Mountain region (Cook 1930, 1931; Emslie 1986; Graham and Lundelius 1994; Gillette and Miller 1999; Gillette, Bell, and Hayden 1999; Gillette, McDonald, and Hayden 1999; Heaton 1999; Hunt 1954; Lewis 1970; Scott 1963; Smith et al. 1999; unpublished DMNS paleontological data).

Within the Boulder West TSA, Quaternary surficial deposits mantle much of the bedrock geology. Although unmapped, remnants of unidentified Pleistocene sediments likely occur in the western portion of the Boulder West TSA and, if present, would be the only sediments in that part of the study area underlain by igneous rocks with the potential to contain fossils. No fossil localities were documented in this unit during the field survey, and neither the DMNS nor the UCM have any previously recorded fossil localities within the study area. In May 2008, a cache of Clovis tools was discovered adjacent to the Boulder West TSA on Flagstaff Mountain and may represent evidence of human habitation in the Boulder area during the latest Pleistocene (http://www.sciencedaily.com/releases/2009/02/090225132355.htm), contemporaneous with the terminal Pleistocene mammalian megafauna.

The distribution of Quaternary surficial deposits within the Boulder West TSA is shown in Map 2 (Qa, Qc, Qls, Qds, Qc, Qac, Qdv, Qlv, Qndr, Qs, Qv, Qpy, Qpp). Pleistocene-age surficial deposits have low to moderate or unknown paleontological sensitivity (PFYC Class 2, 3a, or 3b). Holocene surficial deposits contain animal and plant remains (e.g. Hunt 1954), but these are the unfossilized remains of modern species. Deposits of Holocene age are generally considered too young to contain in-situ fossils and have low paleontological sensitivity (PFYC Class 2).

Management Recommendations for Quaternary Surficial Deposits

Disturbance to the Quaternary surficial deposits associated with trail construction or other development is highly unlikely to adversely impact scientifically significant fossils. If any potential fossils are discovered within the footprint of a future project anywhere within the Boulder West TSA, a qualified and Colorado State permitted paleontologist should be consulted to inspect the discovery and make further recommendations.

6.0 RECOMMENDATIONS

- Direct, indirect, and cumulative impacts on paleontological resources resulting from trail construction and other related development are anticipated to be insignificant, because 1) no scientifically significant fossils (as defined herein) were identified during the field survey, 2) the fossils from previously recorded fossil localities have been collected and are preserved in museums, and 3) the level of anticipated surface disturbance is anticipated to be minimal. Nevertheless, because the locations of subsurface fossils are unknown and fossils weather out of rock matrix onto the ground surface over time, it is possible that scientifically important fossils do occur within the Boulder West TSA and could even be unearthed during minor surface-disturbing activities. If any subsurface bones or other potential fossils are discovered anywhere within the study area, a qualified and Colorado State permitted paleontologist should be consulted to assess the discovery and make further recommendations.

- As a result of the beautifully exposed, upturned stratigraphic sequence representing a vast amount of geologic time and biologic history that occurs within the Boulder West TSA, opportunities for in-situ interpretative displays and educational programs focused on the geology and paleontology of the Boulder area are numerous. It is recommended that future planning efforts explore these opportunities and take advantage of the educational benefits that they could provide for the community.

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APPENDIX A

Potential Fossil Yield Classification System

Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them. The probability for finding paleontological resources can be broadly predicted from the geologic units present at or near the surface. Therefore, geologic mapping can be used for assessing the potential for the occurrence of paleontological resources.

Using the Potential Fossil Yield Classification (PFYC) system, geologic units are classified based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. This classification is applied to the geologic formation, member, or other distinguishable unit, preferably at the most detailed mappable level. It is not intended to be applied to specific paleontological localities or small areas within units. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher class; instead, the relative abundance of significant localities is intended to be the major determinant for the class assignment.

The PFYC system is meant to provide baseline guidance for predicting, assessing, and mitigating paleontological resources. The classification should be considered at an intermediate point in the analysis, and should be used to assist in determining the need for further mitigation assessment or actions.

The descriptions for the classes below are written to serve as guidelines rather than as strict definitions. Knowledge of the geology and the paleontological potential for individual units or preservational conditions should be considered when determining the appropriate class assignment. Assignments are best made by collaboration between land managers and knowledgeable researchers.

Class 1 **– Very Low**. Geologic units that are not likely to contain recognizable fossil remains.

- Units that are igneous or metamorphic, excluding reworked volcanic ash units.
- Units that are Precambrian in age or older.

(1) Management concern for paleontological resources in Class 1 units is usually negligible or not applicable.

(2) Assessment or mitigation is usually unnecessary except in very rare or isolated circumstances.

The probability for impacting any fossils is negligible. Assessment or mitigation of paleontological resources is usually unnecessary. The occurrence of significant fossils is non-existent or extremely rare.

Class 2 **– Low**. Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils.

- Vertebrate or significant invertebrate or plant fossils not present or very rare.
- Units that are generally younger than 10,000 years before present.
- Recent aeolian deposits.
- Sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration).

(1) Management concern for paleontological resources is generally low.

(2) Assessment or mitigation is usually unnecessary except in rare or isolated circumstances.

The probability for impacting vertebrate fossils or scientifically significant invertebrate or plant fossils is low. Assessment or mitigation of paleontological resources is not likely to be necessary. Localities containing important resources may exist, but would be rare and would not influence the classification. These important localities would be managed on a case-by-case basis.

Class 3 – **Moderate** or **Unknown**. Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential.

- Often marine in origin with sporadic known occurrences of vertebrate fossils.
- Vertebrate fossils and scientifically significant invertebrate or plant fossils known to occur intermittently; predictability known to be low.

(or)

- Poorly studied and/or poorly documented. Potential yield cannot be assigned without ground reconnaissance.

Class 3a – **Moderate Potential.** Units are known to contain vertebrate fossils or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered. Common invertebrate or plant fossils may be found in the area, and opportunities may exist for hobby collecting. The potential for a project to be sited on or impact a significant fossil locality is low, but is somewhat higher for common fossils.

Class 3b – **Unknown Potential.** Units exhibit geologic features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and field surveys may uncover significant finds. The units in this Class may eventually be placed in another Class when sufficient survey and research is performed. The unknown potential of the units in this Class should be carefully considered when developing any mitigation or management actions.

(1) Management concern for paleontological resources is moderate; or cannot be determined from existing data.

(2) Surface-disturbing activities may require field assessment to determine appropriate course of action.

This classification includes a broad range of paleontological potential. It includes geologic units of unknown potential, as well as units of moderate or infrequent occurrence of significant fossils. Management considerations cover a broad range of options as well, and could include pre-disturbance surveys, monitoring, or avoidance. Surface-disturbing activities will require sufficient assessment to determine whether significant paleontological resources occur in the area of a proposed action, and whether the action could affect the paleontological resources. These units may contain areas that would be appropriate to designate as hobby collection areas due to the higher occurrence of common fossils and a lower concern about affecting significant paleontological resources.

Class 4 **– High**. Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Surface disturbing activities may adversely affect paleontological resources in many cases.

Class 4a – Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two acres. Paleontological resources may be susceptible to adverse impacts from surface disturbing actions. Illegal collecting activities may impact some areas.

Class 4b – These are areas underlain by geologic units with high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
- Areas of exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic conditions.
- Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources.

(1) Management concern for paleontological resources in Class 4 is moderate to high, depending on the proposed action.

(2) A field survey by a qualified paleontologist is often needed to assess local conditions.

(3) Management prescriptions for resource preservation and conservation through controlled access or special management designation should be considered.

(4) Class 4 and Class 5 units may be combined as Class 5 for broad applications, such as planning efforts or preliminary assessments, when geologic mapping at an appropriate scale is not available. Resource assessment, mitigation, and other management considerations are similar at this level of analysis, and impacts and alternatives can be addressed at a level appropriate to the application.

The probability for impacting significant paleontological resources is moderate to high, and is dependent on the proposed action. Mitigation considerations must include assessment of the disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access resulting in greater looting potential. If impacts to significant fossils can be anticipated, on-the-ground surveys prior to authorizing the surface disturbing action will usually be necessary. On-site monitoring or spot-checking may be necessary during construction activities.

Class 5 – **Very High**. Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation.

Class 5a – Unit is exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two contiguous acres. Paleontological resources are highly susceptible to adverse impacts from surface disturbing actions. Unit is frequently the focus of illegal collecting activities.

Class 5b – These are areas underlain by geologic units with very high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has very high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

- Extensive soil or vegetative cover; bedrock exposures are limited or not expected to be impacted.
- Areas of exposed outcrop are smaller than two contiguous acres.
- Outcrops form cliffs of sufficient height and slope so that impacts are minimized by topographic conditions.
- Other characteristics are present that lower the vulnerability of both known and unidentified paleontological resources.

(1) Management concern for paleontological resources in Class 5 areas is high to very high.

(2) A field survey by a qualified paleontologist is usually necessary prior to surface disturbing activities or land tenure adjustments. Mitigation will often be necessary before and/or during these actions.

(3) Official designation of areas of avoidance, special interest, and concern may be appropriate.

The probability for impacting significant fossils is high. Vertebrate fossils or scientifically significant invertebrate fossils are known or can reasonably be expected to occur in the impacted area. On-the-ground surveys prior to authorizing any surface disturbing activities will usually be necessary. On-site monitoring may be necessary during construction activities.

APPENDIX B

State of Colorado Paleontological Permit

OFFICE *of* ARCHAEOLOGY *and* HISTORIC PRESERVATION

No. 2009–58

STATE OF COLORADO PALEONTOLOGICAL PERMIT

Issued under the authority of the Colorado Historical, Prehistorical, and Archaeological Resources Act, CRS 1973 24–80–401 *et seq.*, and under the procedures of the State Administrative Procedures Act, CRS 1973 24–4–101 *et seq.*

THIS IS TO CERTIFY that: Paul C. Murphey and
(Principal Investigator[s])

same plus Lori Browne and David Daitch,
(Project Paleontologists)

of: 295 Interlocken Blvd., Suite 300, Broomfield, CO 80021

representing: SWCA Environmental Consultants

has/have been found to be qualified for the conduct of Paleontological studies and is/are hereby authorized to conduct paleontological investigations as described below, subject to: (a) the terms and conditions listed below, and (b) the Rules and Procedures published by the Colorado State Archaeologist.

Nature of investigation and location: Paleontological Survey and Testing, statewide

Disposition of materials collected (subject, however, to such reservation as the State Archaeologist may impose under CRS 1973 24–80–406d):

Denver Museum of Nature & Science–Denver, CO

Other condition(s):

Issued this 9th day of March, 2009.

The Permit is valid through February 28, 2010.

NOTE: Keep a copy of this Permit in your field possession.

Kevin D. Black
Asst. State Archaeologist of Colorado
for SMC

Rev. 1/09

C.R.S. 24-80-406. Permits. (2) Stipulations:

(a) The investigations, excavations, gatherings, and removals shall be undertaken only for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such resources; and such activities shall be conducted for permanent preservation, either on the site or in museums, open to the public and available to qualified students.

(b) All permit holders shall provide the state archaeologist, within one year after the start of the investigation, excavation, gathering, or removal, with a preliminary report of progress. If such activity continues for more than one year, an annual progress report shall be made. The permit holder shall furnish a final report of the activity undertaken within three years after termination of the field work.

(c) An inventory of all materials recovered during the course of the investigation, excavation, gathering, or removal shall be supplied to the state archaeologist.

(d) Upon receipt of the final report of the activity undertaken by a permit holder, the state archaeologist may require that a representative collection of the materials recovered be delivered to the state of Colorado and shall determine a repository for the same.

(e) Any permit issued by the society may be revoked by the society, pursuant to article 4 of this title, at any time if there is evidence that the activity authorized by the permit is being unlawfully or improperly conducted or if the permit holder does not honor the conditions of the permit. When a permit is revoked, all recovered materials, catalogues, maps, field notes, and other records necessary to identify the same shall be surrendered immediately to the society.

APPENDIX C

Summary of New Fossil Localities Documented during the Field Survey

Summary of New Localities Recorded During the Field Survey

Field Locality Number	UTMs		Geologic Unit	Fossil Description
	Easting	Northing		
090616-PCM-01	474700	4431774	Dakota Group	Poorly preserved tridactyl track on sandstone overhang
090617-PCM-01	476182	4425257	Niobrara Formation	Bivalves
090617-PCM-02	475971	4425302	Dakota Group	Invertebrate burrows
090617-PCM-03	475871	4425263	Morrison Formation	Unidentifiable bone fragment
090617-PCM-04	475577	4425007	Lyons Sandstone	Burrows and small scale ripple marks
090617-PCM-05	475629	4425337	Forelle Limestone Member of the Lykins Formation	Stromatolitic limestone
090617-PCM-06	475562	4425451	Lyons Sandstone	Possible trackway, but too poorly preserved to permit a definitive identification
090617-PCM-07	475920	4425444	Dakota Group	Plant hash
090617-PCM-08	475962	4425283	Dakota Group	Plant hash
090618-PCM-01	475243	4426777	Lyons Sandstone	Burrows
090618-PCM-02	475833	4426161	Niobrara Formation	Bivalves
090724-LSB-01	476282	4425047	Niobrara Formation	Shell layer; bed extends laterally

APPENDIX D
Fossil Locality Data Sheets

Paleontological Locality Form

Locality #:			
Field Number:	090616-PCM-01	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Boulder Quadrangle, 7.5 minute (1:24,000)		
PLSS Location:	Section 24, Township 1N., Range 71W.		
UTM :	Zone 13N, 474700.087019 mE, 4431774.46735mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:	Bottom of sandstone overhang at the edge of a ridge		
Formation:	Dakota Group	**Member:**	
Era:	Mesozoic	**Period:**	Cretaceous
Series-Epoch:		**Stage/NALMA**	Albian
Lithologies:	Orange/gray/off-white medium- to coarse-grained well-indurated sandstone.		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☐	Invertebrate ☐ Trace ☒
Taxa:	dinosaur		
Fossil Description:	Possible tridactyl underprint		
Significance:	Not significant	**Preservation:**	Poor
In Situ or Float:	In-Situ ☒ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3588, 3589		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/16/09	**By:**	Paul C. Murphey
Date Recorded:	6/16/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form

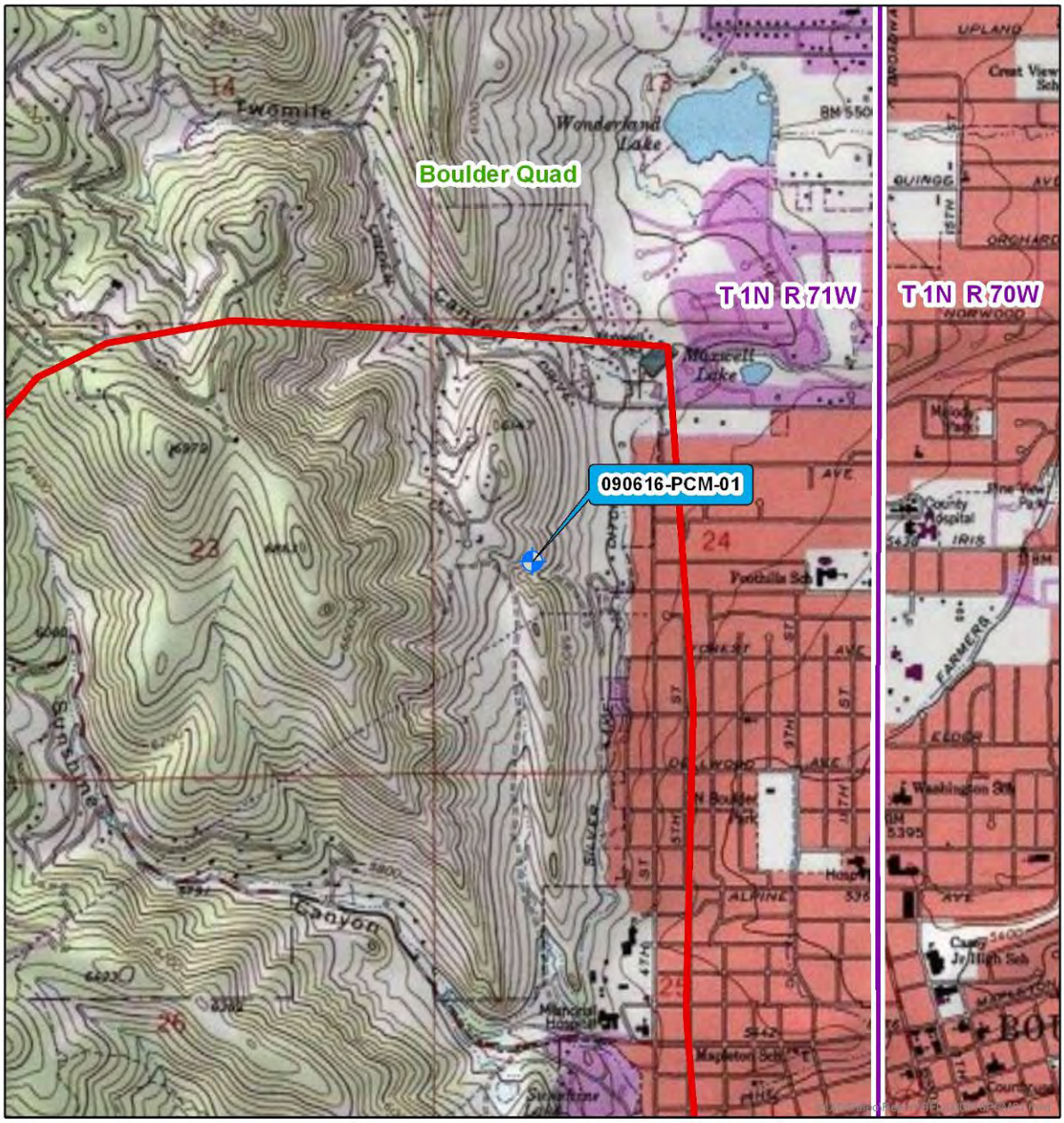


Figure 1. View east at locality 090616-PCM-01. Person is marking location of underprint on the bottom of sandstone overhang.

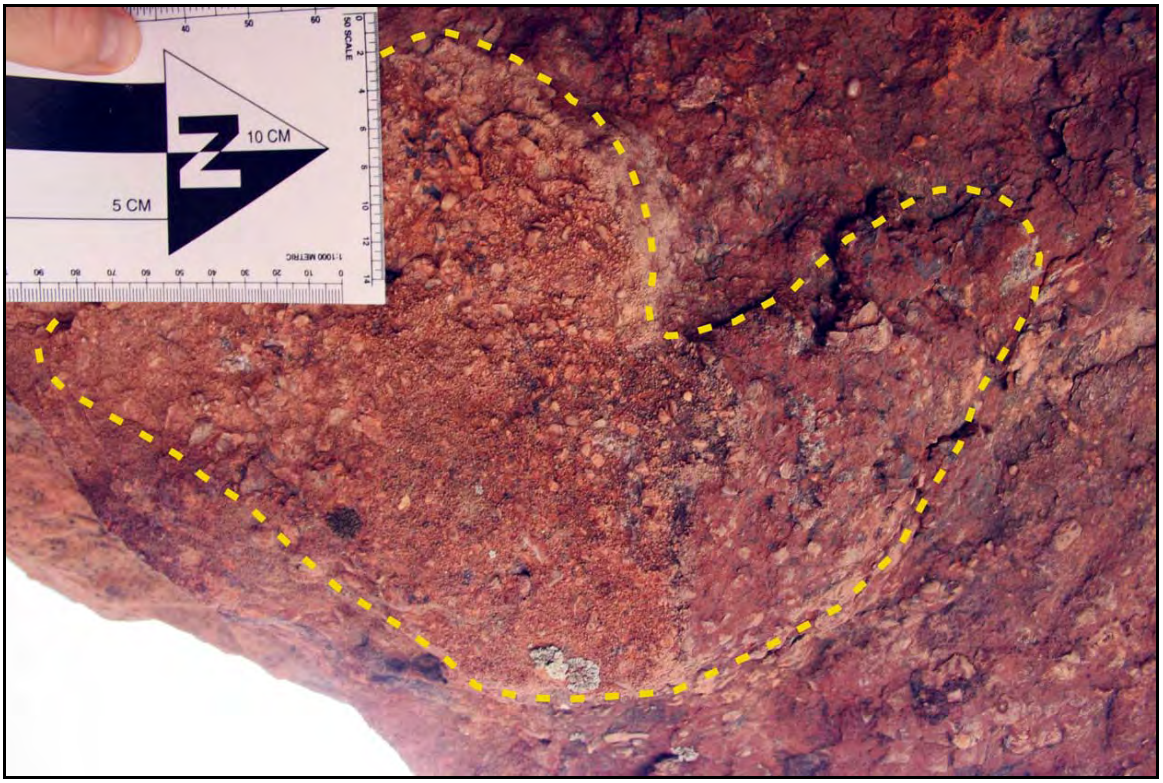


Figure 2. Possible underprint (track) of tridactyl dinosaur on Dakota Ridge.

Paleontological Locality Form

Locality #:			
Field Number:	090617-PCM-01	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 476181.881361mE, 4425257.17262mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:	Rock exposed on south-facing slope cut by trail just west of NCAR.		
Formation:	Niobrara Formation	**Member:**	
Era:	Mesozoic	**Period:**	Cretaceous
Series-Epoch:		**Stage/NALMA**	
Lithologies:	Gray limestone		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☐	Invertebrate ☒ Trace ☐
Taxa:	*Inoceramus* sp.		
Fossil Description:	Fragmentary bivalves		
Significance:	Not significant	**Preservation:**	Poor
In Situ or Float:	In-Situ ☒ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3597		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/17/09	**By:**	Paul C. Murphey
Date Recorded:	6/17/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form

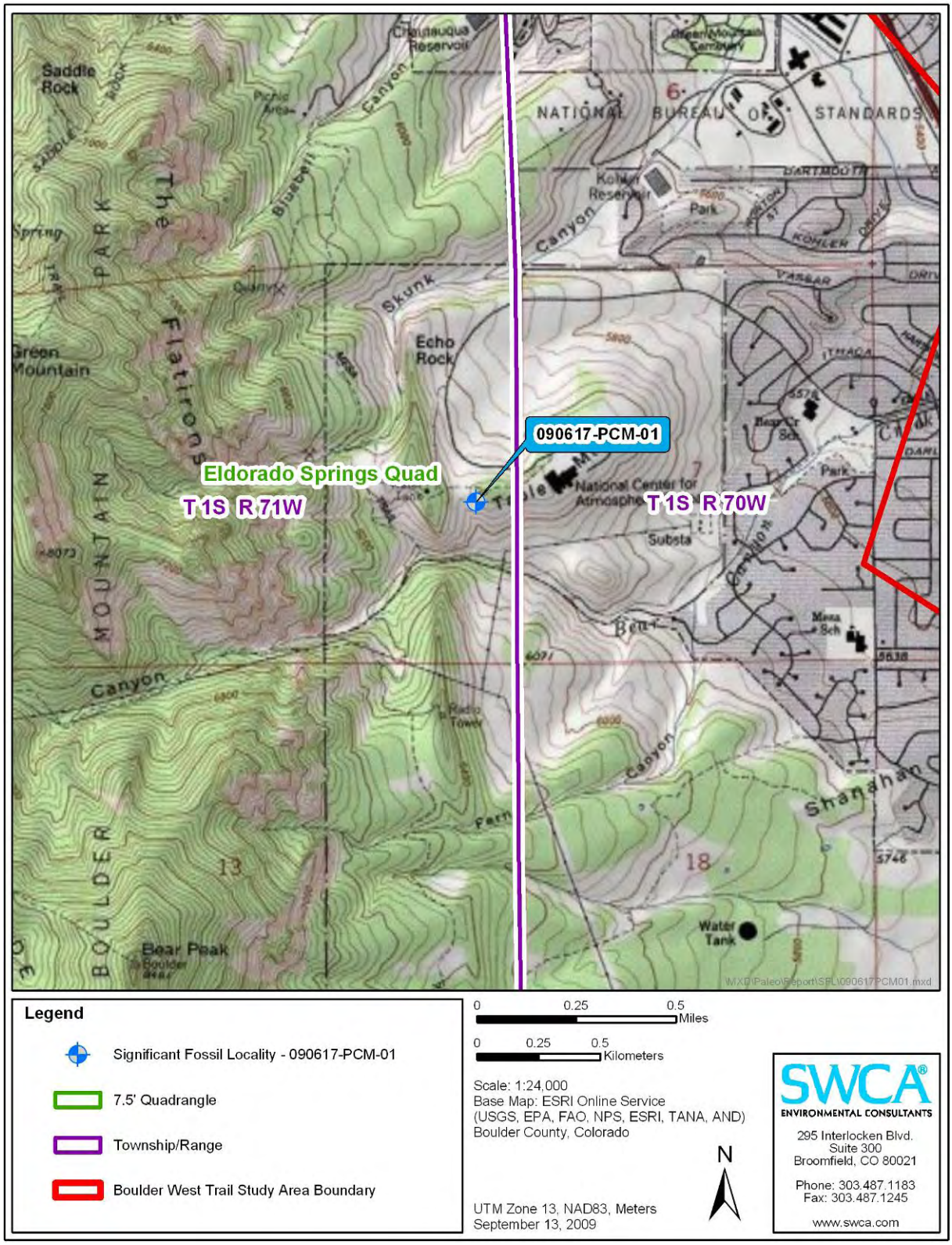
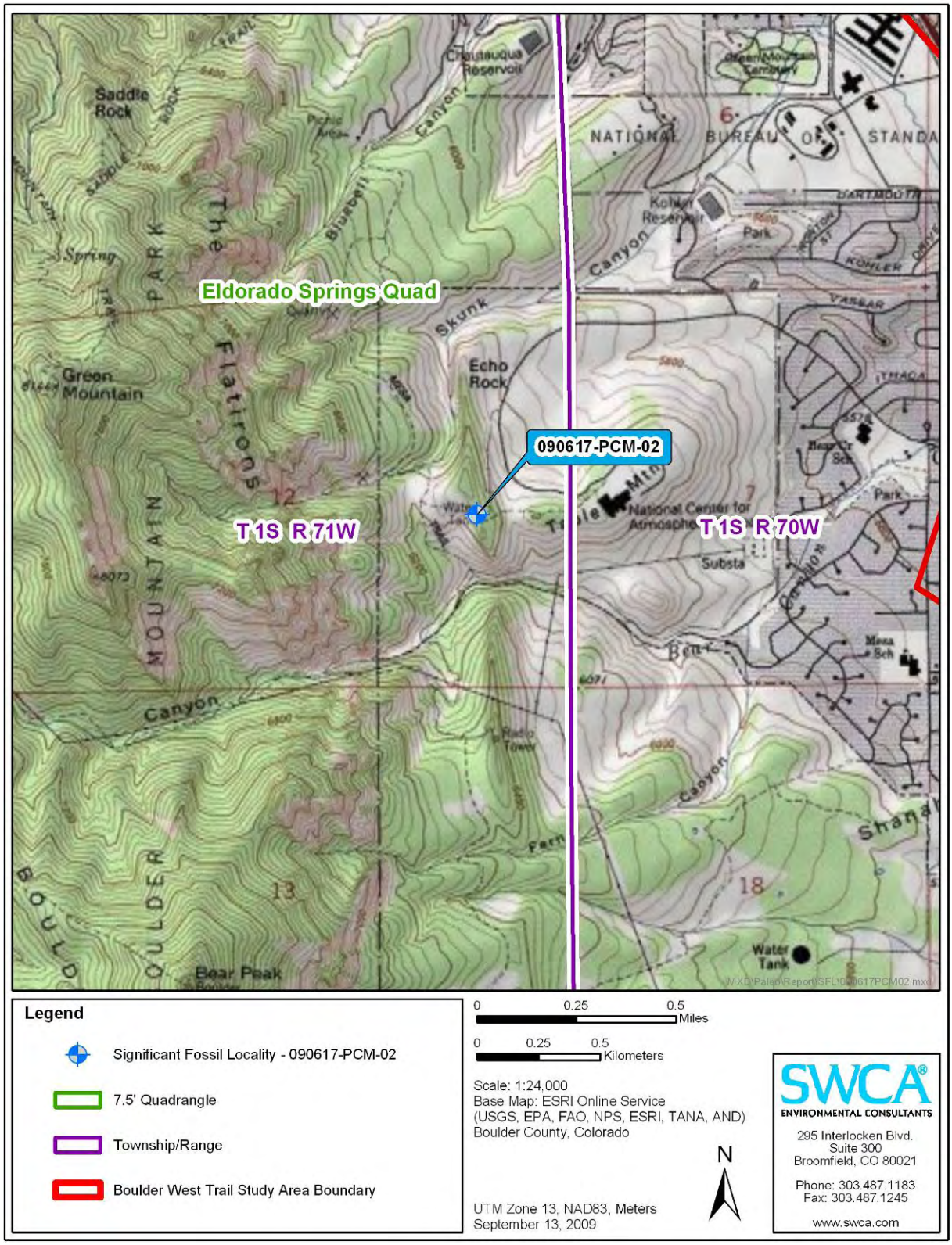


Figure 1. View east at locality preserving abundant shell fragments of inoceramid clams just to the west of NCAR in Niobrara Formation.

Paleontological Locality Form

Locality #:			
Field Number:	090617-PCM-02	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 475971.013899 mE, 4425301.89447 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:	Numerous bedding planes exposed on east-facing slope on ridgetop.		
Formation:	Dakota Group	**Member:**	
Era:	Mesozoic	**Period:**	Cretaceous
Series-Epoch:		**Stage/NALMA**	Albian
Lithologies:	Orange/gray/off-white medium- to coarse-grained well-indurated sandstone		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☐	Invertebrate ☐ Trace ☒
Taxa:			
Fossil Description:	Invertebrate burrows		
Significance:	Not significant	**Preservation:**	Fair
In Situ or Float:	In-Situ ☒ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3599, 3600		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/17/09	**By:**	Paul C. Murphey
Date Recorded:	6/17/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form



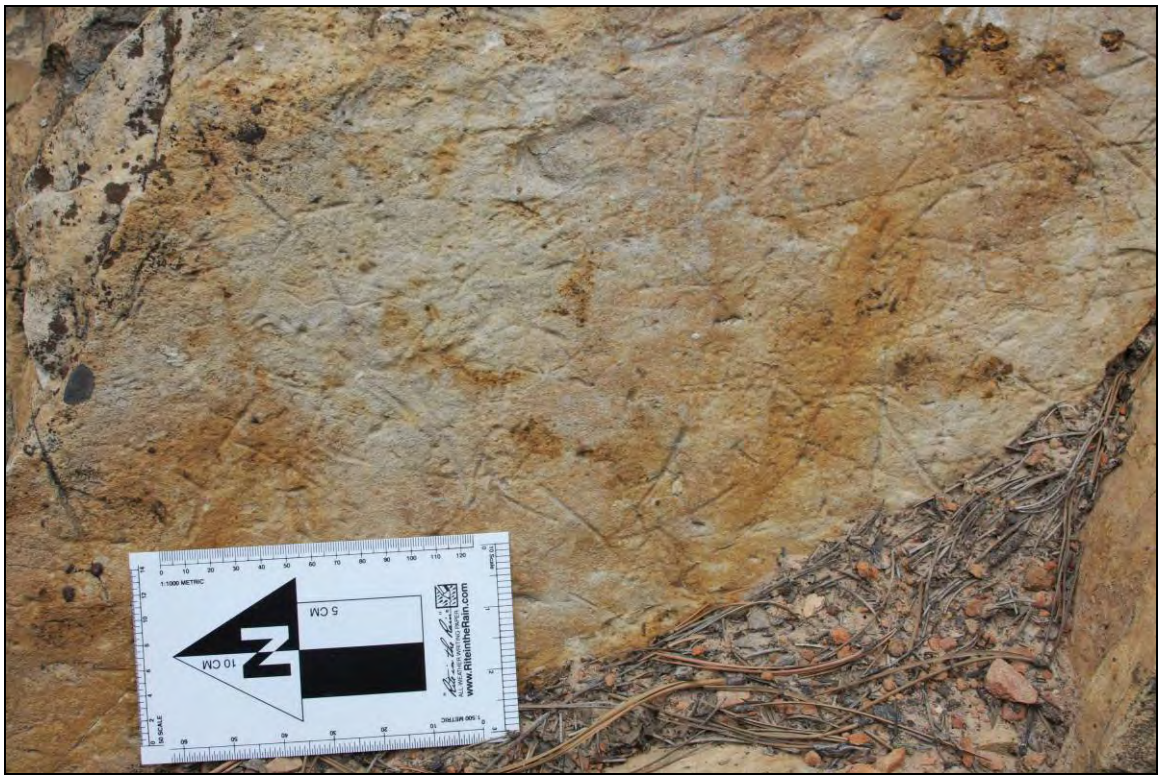


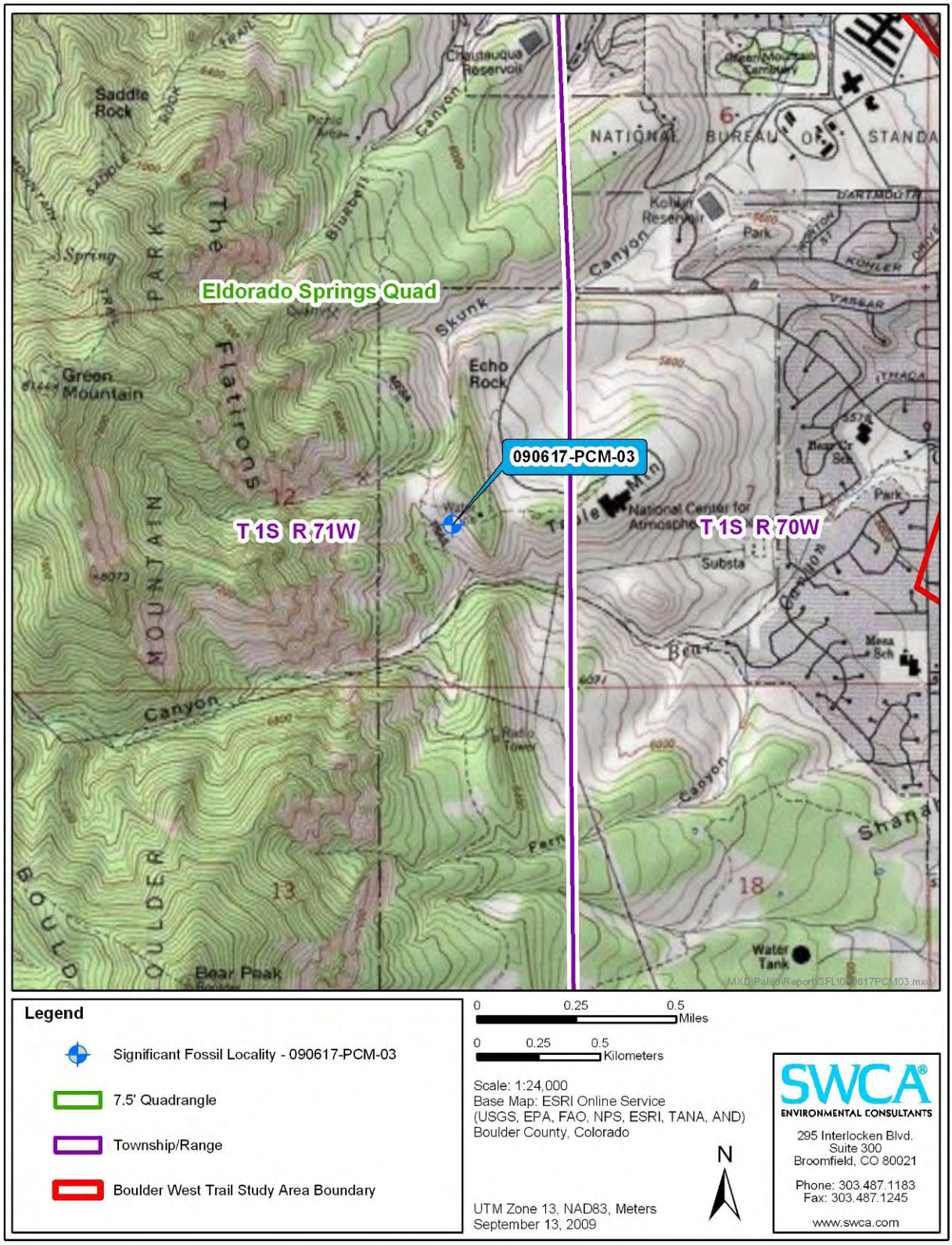
Figure 1. Trace fossils (invertebrate burrows) in Dakota Group by green water tank west of NCAR.

Figure 2. View northwest at locality 090617-PCM-02 in the Dakota Group.

Paleontological Locality Form

Locality #:			
Field Number:	090617-PCM-03	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 475871.425254 mE, 4425262.59199 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:	On the west-facing slope of a low north-south trending ridge.		
Formation:	Morrison Formation	**Member:**	
Era:	Mesozoic	**Period:**	Jurassic
Series-Epoch:		**Stage/NALMA**	
Lithologies:	Gray coarse-grained sandstone with purple, green and off-white mudstone/siltstone interbeds.		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☒	Plant ☐	Invertebrate ☐ Trace ☐
Taxa:	Possible dinosaur		
Fossil Description:	Unidentifiable vertebrate bone fragment		
Significance:	Not significant	**Preservation:**	Poor
In Situ or Float:	In-Situ ☒ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3601, 3602, 3603		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/17/09	**By:**	Paul C. Murphey
Date Recorded:	6/17/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form



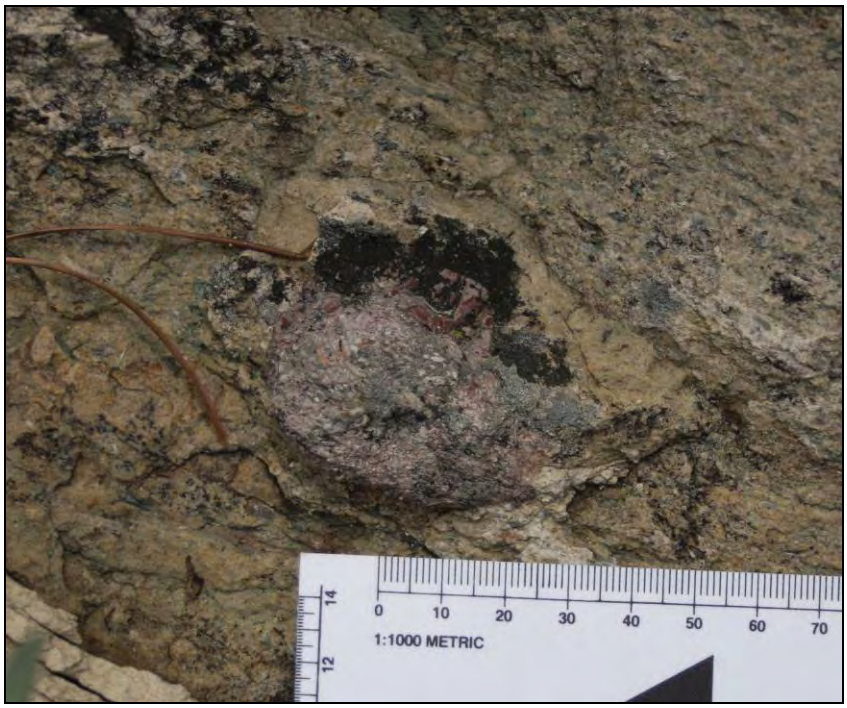


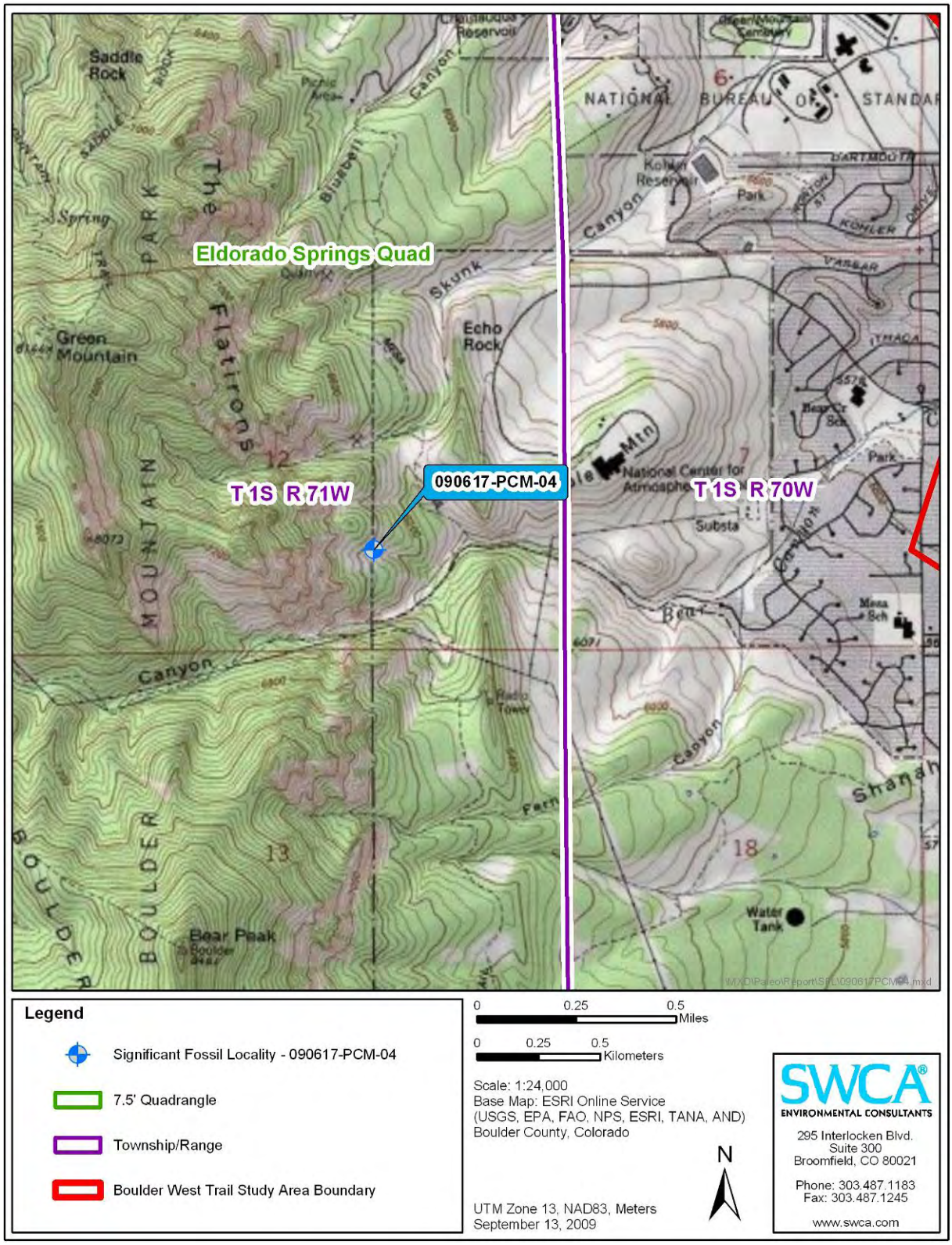
Figure 1. Fragment of poorly preserved vertebrate (possible dinosaur) bone in Morrison Formation west of NCAR.

Figure 2. View southeast at 090617-PCM-03 bone locality in Morrison Formation west of NCAR.

Paleontological Locality Form

Locality #:			
Field Number:	090617-PCM-04	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 475576.770681 mE, 4425007.02587 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:	Sandstone slab exposed on south-facing slope in old rock quarry.		
Formation:	Lyons Sandstone	**Member:**	
Era:	Paleozoic	**Period:**	Permian
Series-Epoch:		**Stage/NALMA**	
Lithologies:	Reddish-yellow coarse-grained quartz-cemented sandstone.		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☐	Invertebrate ☐ Trace ☒
Taxa:			
Fossil Description:	Invertebrate burrows		
Significance:	Not significant	**Preservation:**	Fair
In Situ or Float:	In-Situ ☒ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3606, 3607		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/17/09	**By:**	Paul C. Murphey
Date Recorded:	6/17/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form



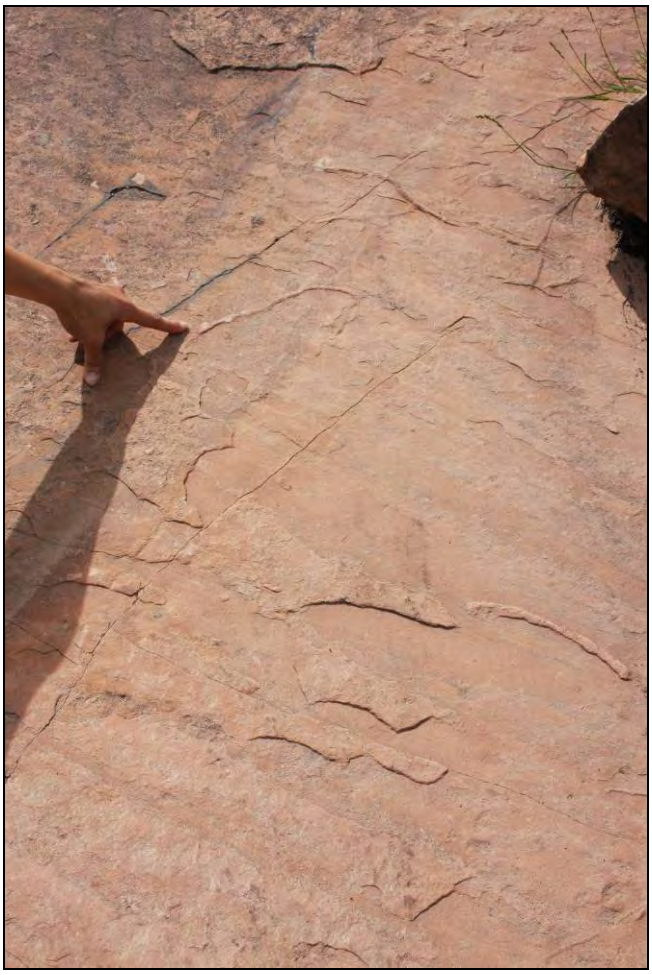


Figure 1. Trace fossils (invertebrate burrows) in Lyons Formation

Figure 2. View of Lyons Formation sandstone slab preserving trace fossils.

Paleontological Locality Form

Locality #:			
Field Number:	090617-PCM-05	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 475628.988 mE, 4425337.23537 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	Point, but bed extends north and south
Location Description:	Some isolated blocks on east-facing slope of ridge and some in situ rock exposed within vegetation.		
Formation:	Lykins Formation	**Member:**	Forelle Member
Era:	Paleozoic/Mesozoic	**Period:**	Permian/Triassic
Series-Epoch:		**Stage/NALMA**	
Lithologies:	Stromatolitic limestone		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☐	Invertebrate ☒ Trace ☐
Taxa:			
Fossil Description:	Stromatolites		
Significance:	Not signifciant	**Preservation:**	Good
In Situ or Float:	In-Situ ☒ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3609, 3610		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/17/09	**By:**	Paul C. Murphey
Date Recorded:	6/17/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form

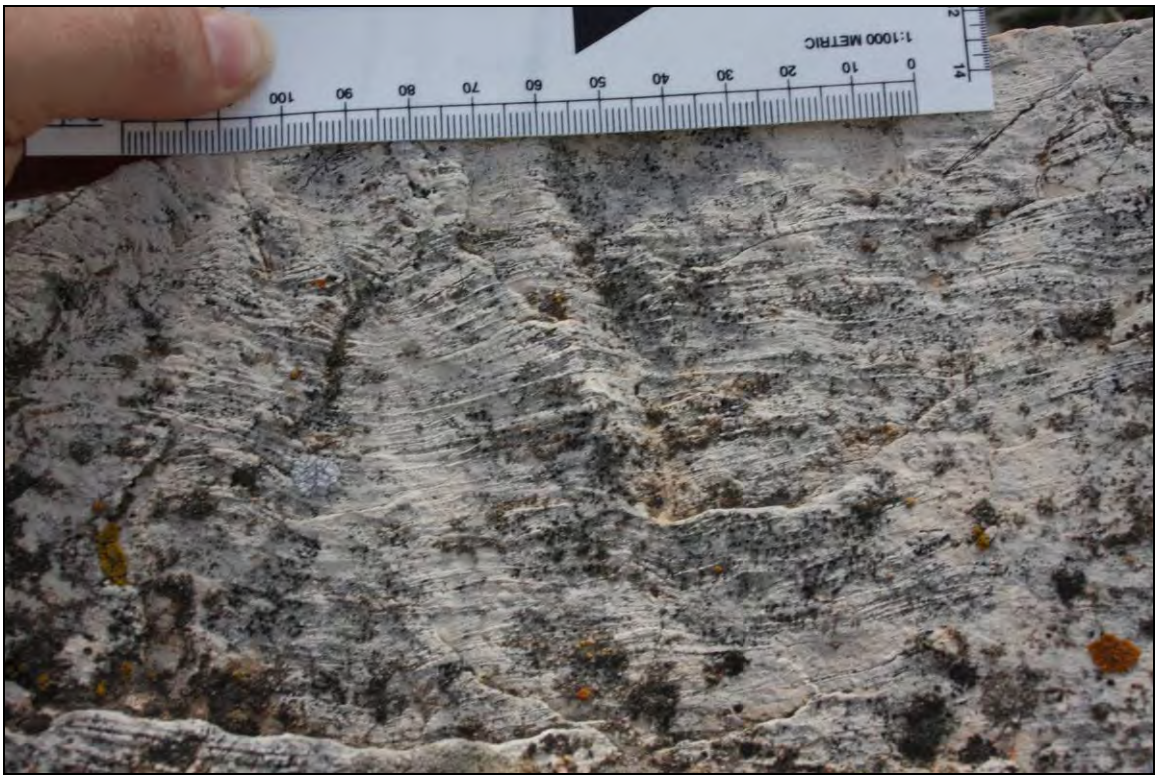


Figure 1. Close up of stromatolitic limestone in the Forelle Member of the Lykins Formation.

Paleontological Locality Form

Locality #:			
Field Number:	090617-PCM-06	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 475561.902088 mE, 4425450.52708 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:	Sandstone slab exposed on south-facing slope in old rock quarry.		
Formation:	Lyons Sandstone	**Member:**	
Era:	Paleozoic	**Period:**	Permian
Series-Epoch:		**Stage/NALMA**	
Lithologies:	Reddish-yellow coarse-grained quartz-cemented sandstone.		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☐	Invertebrate ☐ Trace ☒
Taxa:			
Fossil Description:	Possible parallel trackways.		
Significance:	Not significant	**Preservation:**	Very poor
In Situ or Float:	In-Situ ☒ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3611, 3612, 3613, 3614, 3615		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/17/09	**By:**	Paul C. Murphey
Date Recorded:	6/17/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form

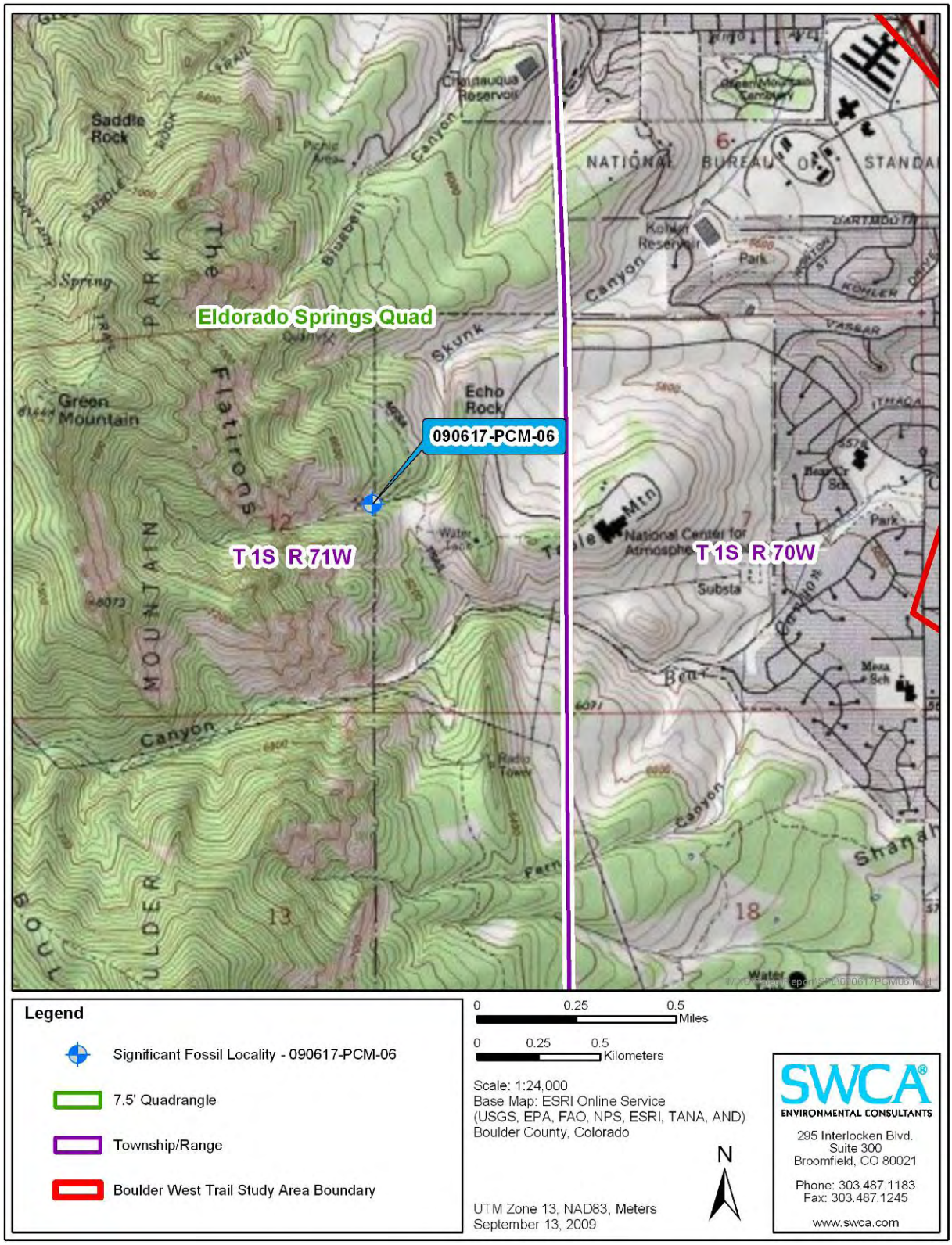


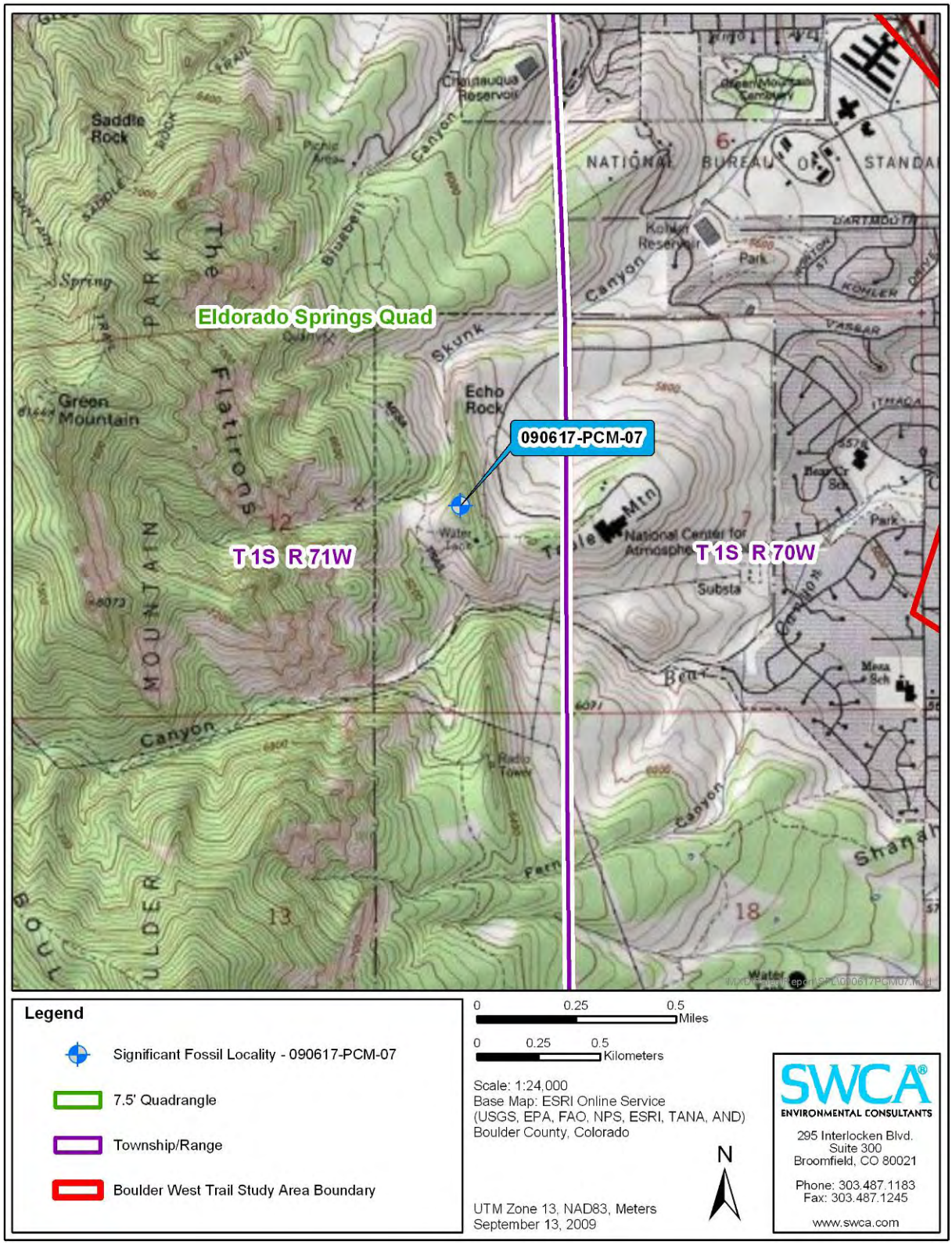
Figure 1. View of possible parallel trackways on sandstone slab near base of Lyons Formation quarry in Skunk Canyon.

Figure 2. View northwest at trackway locality. Person is pointing to location of trackways on sandstone slab.

Paleontological Locality Form

Locality #:			
Field Number:	090617-PCM-07	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 475919.62361 mE, 4425443.50583 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:	On top of narrow ridge formed by Dakota sandstone.		
Formation:	Dakota Group	**Member:**	
Era:	Mesozoic	**Period:**	Cretaceous
Series-Epoch:		**Stage/NALMA**	Albian
Lithologies:	Orange/gray/off-white medium- to coarse-grained well-indurated sandstone		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☒	Invertebrate ☐ Trace ☐
Taxa:			
Fossil Description:	External bivalve molds and plant impressions.		
Significance:	Not significant	**Preservation:**	Very poor
In Situ or Float:	In-Situ ☐ Ex-Situ ☒	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3618, 3619		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/17/09	**By:**	Paul C. Murphey
Date Recorded:	6/17/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form



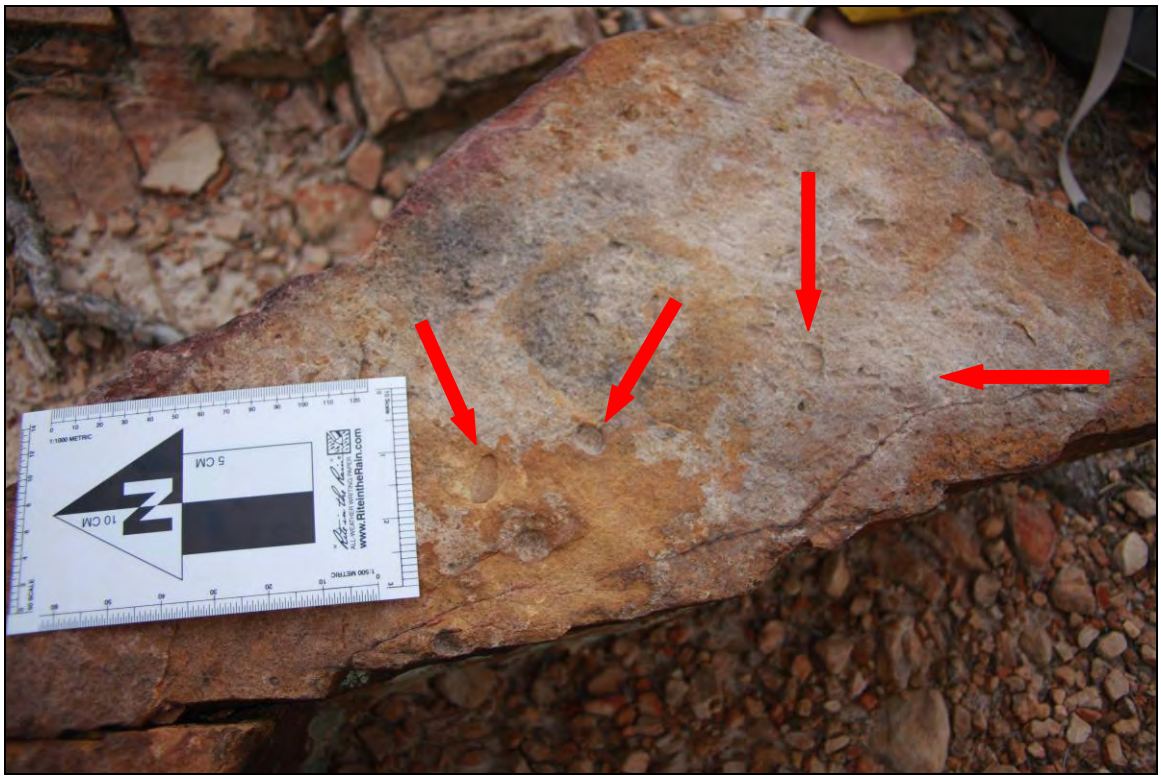


Figure 1. External bivalve molds and fossil plant impressions on sandstone fragment in Dakota Group.

Figure 2. View south southwest at Dakota Group plant locality.

Paleontological Locality Form

Locality #:			
Field Number:	090617-PCM-08	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 475961.934505 mE, 4425283.47501 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:			
Formation:	Dakota Group	**Member:**	
Era:	Mesozoic	**Period:**	Cretaceous
Series-Epoch:		**Stage/NALMA**	Albian
Lithologies:	Orange/gray/off-white medium- to coarse-grained well-indurated sandstone		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☒	Invertebrate ☐ Trace ☐
Taxa:			
Fossil Description:			
Significance:	Not significant	**Preservation:**	Poor
In Situ or Float:	In-Situ ☐ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3620, 3621, 3622		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/17/09	**By:**	Paul C. Murphey
Date Recorded:	6/17/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form

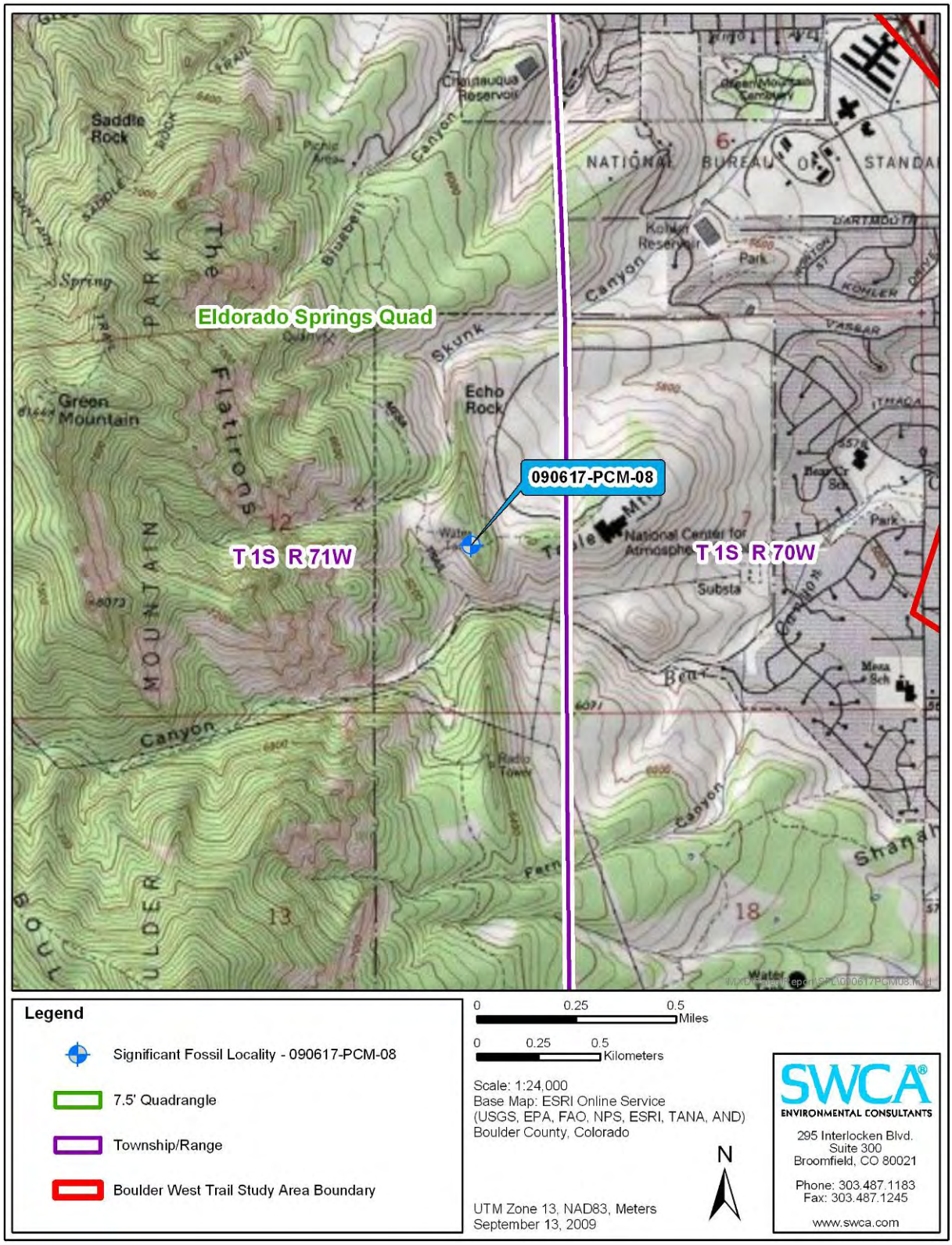


Figure 1. Plant fragments (impressions and external molds) preserved on Dakota Group sandstone blocks.

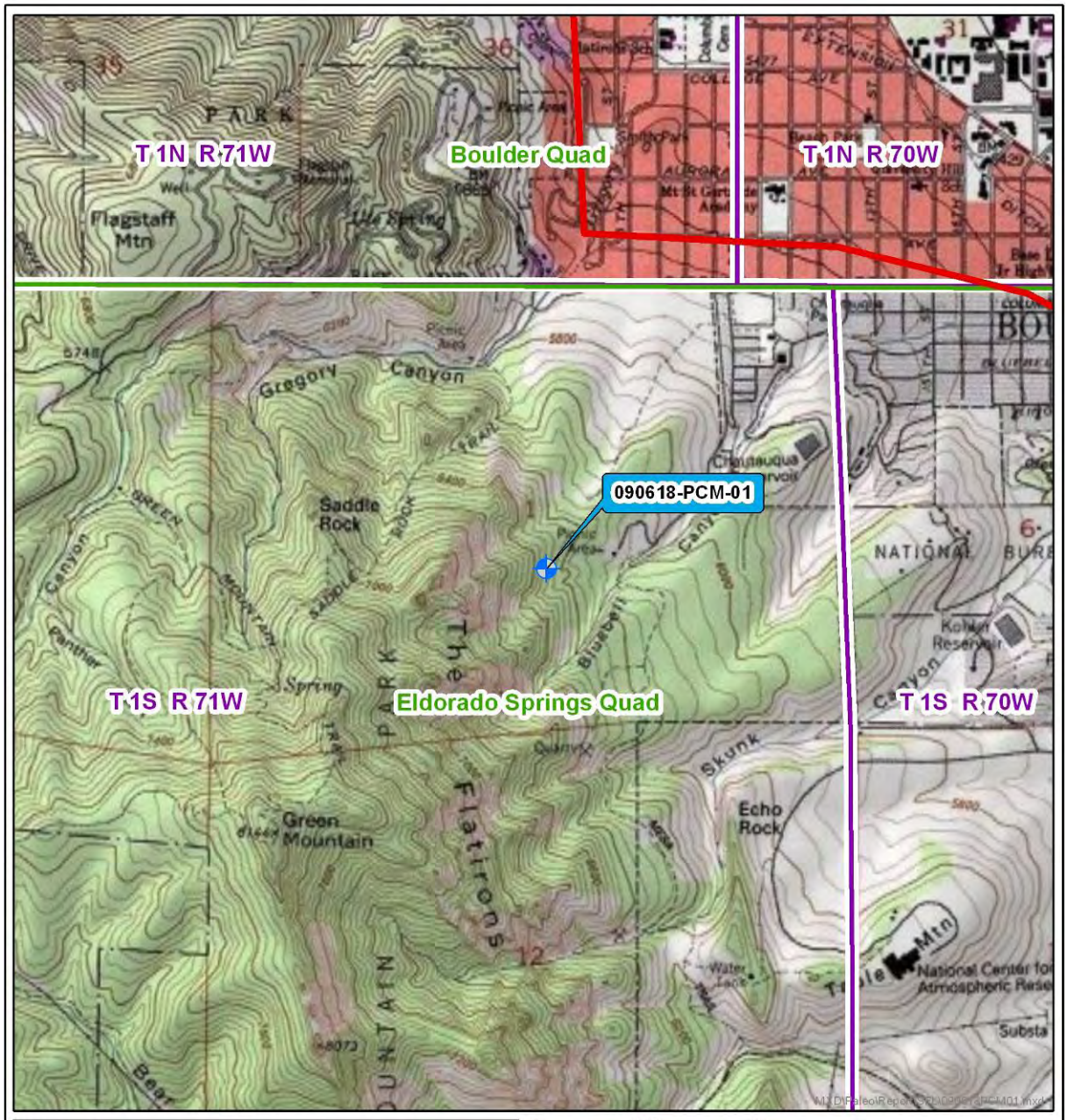
Figure 2. Plant fragments (impressions and external molds) preserved on Dakota Group sandstone blocks.

Figure 3. View south at Dakota Group plant locality.

Paleontological Locality Form

Locality #:			
Field Number:	090618-PCM-01	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 1, Township 1S, Range 71W.		
UTM :	Zone 13N, 475242.92655 mE, 4426776.5203 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:	Blocks on large talus pile on east-facing slope. Burrows observed in numerous blocks.		
Formation:	Lyons Sandstone	**Member:**	
Era:	Paleozoic	**Period:**	Permian
Series-Epoch:		**Stage/NALMA**	
Lithologies:	Reddish-yellow coarse-grained quartz-cemented sandstone.		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☐	Invertebrate ☐ Trace ☒
Taxa:			
Fossil Description:	Invertebrate burrows		
Significance:	Not significant	**Preservation:**	Fair
In Situ or Float:	In-Situ ☐ Ex-Situ ☒	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3627, 3628		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/18/09	**By:**	Paul C. Murphey
Date Recorded:	6/18/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form



Legend

- Significant Fossil Locality - 090618-PCM-01
- 7.5' Quadrangle
- Township/Range
- Boulder West Trail Study Area Boundary

0 0.25 0.5 Miles

0 0.25 0.5 Kilometers

Scale: 1:24,000
Base Map: ESRI Online Service
(USGS, EPA, FAO, NPS, ESRI, TANA, AND)
Boulder County, Colorado

UTM Zone 13, NAD83, Meters
September 13, 2009

N

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Figure 1. Trace fossils (invertebrate burrows) in Lyons Formation, with other slabs with fossils in talus across the same slope.

Figure 2. View southwest at Lyons Formation locality.

Paleontological Locality Form

Locality #:			
Field Number:	090618-PCM-02	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 475833 mE, 4426161 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	point
Location Description:	Small exposure within grassy vegetation on southeast-facing slope leading down into Skunk Canyon.		
Formation:	Niobrara Formation	**Member:**	
Era:	Mesozoic	**Period:**	Cretaceous
Series-Epoch:		**Stage/NALMA**	
Lithologies:	Gray limestone		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☐	Invertebrate ☒ Trace ☐
Taxa:	*Inoceramus* sp.		
Fossil Description:	Abundant fragmentary bivalves		
Significance:	Not significant	**Preservation:**	Fair
In Situ or Float:	In-Situ ☒ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	PCM3645		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:	6/18/09	**By:**	Paul C. Murphey
Date Recorded:	6/18/09	**By:**	Lori S. Browne
Remarks:			

Paleontological Locality Form

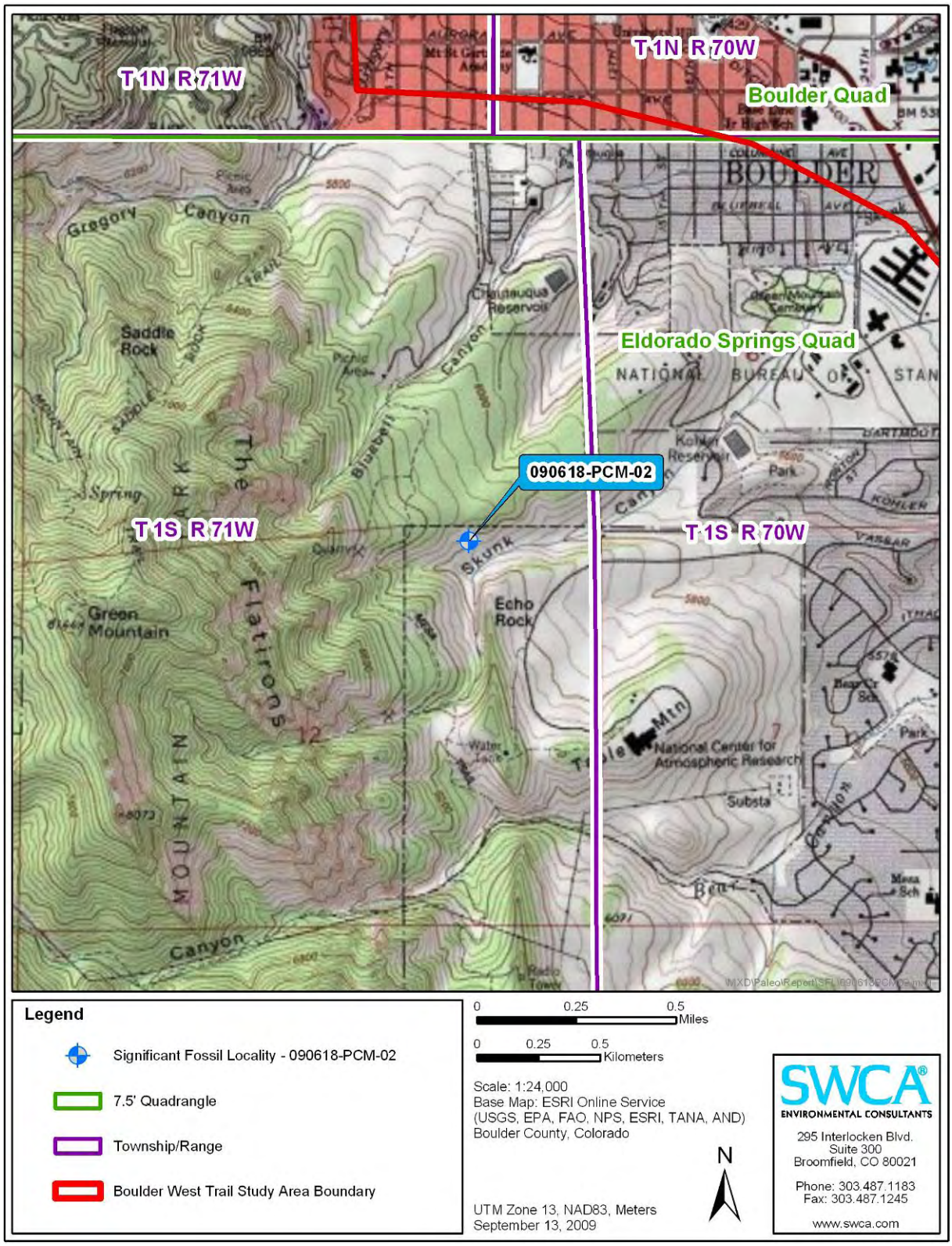
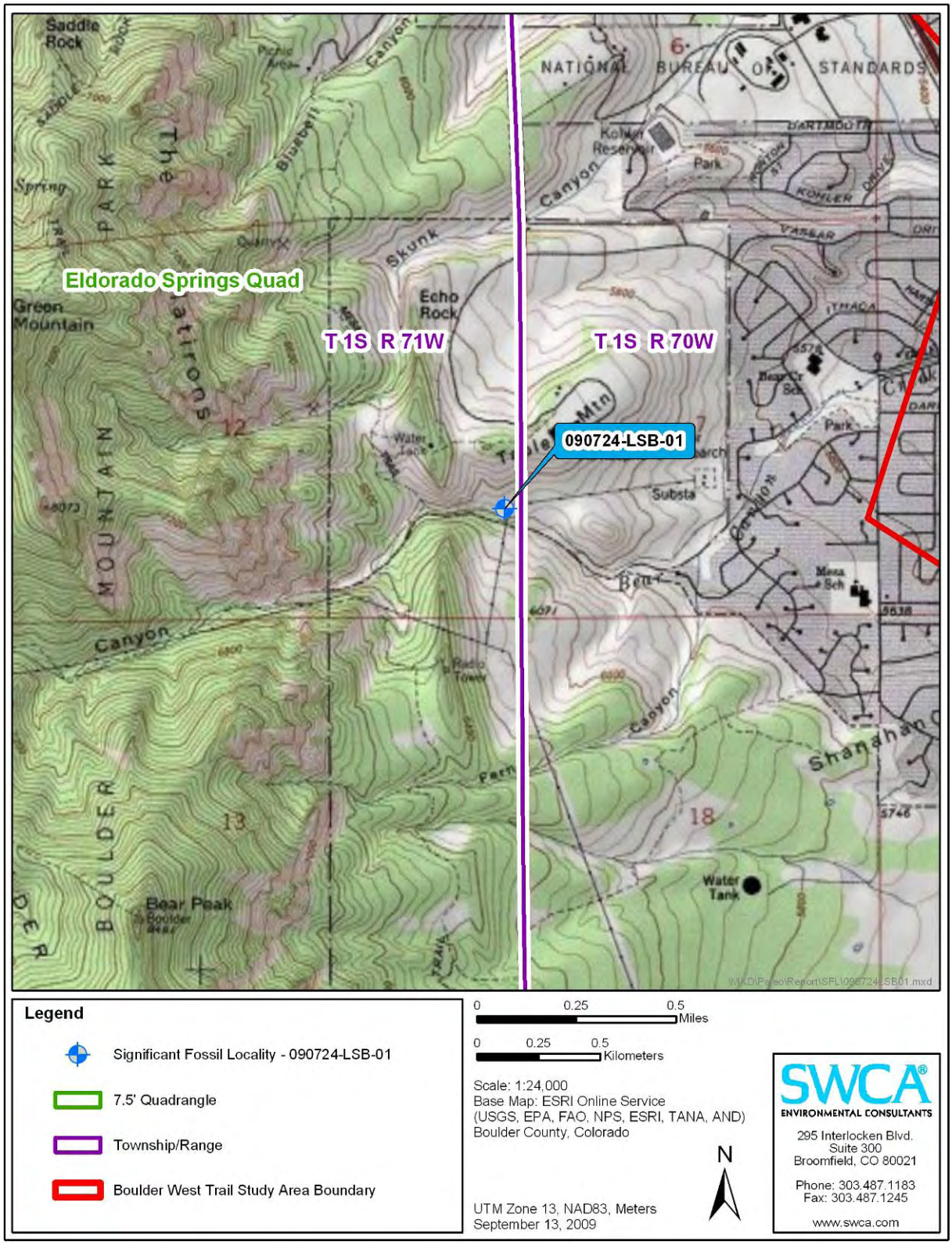


Figure 1. Patchy exposure of Niobrara Formation on north side of Skunk Creek northwest of NCAR. Abundant fragments of inoceramid shell present.

Paleontological Locality Form

Locality #:			
Field Number:	090724-LSB-01	**Other Locality #s:**	
Locality Name:		**Project Name/Number:**	Boulder West Trail Study Area / #15280
County:	Boulder	**State:**	CO
Land Ownership:	Boulder County Open Space and Mountain Parks		
Map Names(s):	Eldorado Springs Quadrangle 7.5 minute (1:24,000)		
PLSS Location:	Section 12, Township 1S., Range 71W.		
UTM :	Zone 13N, 476282.138306 mE, 4425047.20714 mN	**Datum:**	NAD 83
Source:	GPS	**Site Confidence:**	
Elevation:		**Geometry:**	fossil bed extends both north and south from UTM point
Location Description:	Bed trends north-south along a west-facing slope partially covered with low grass.		
Formation:	Niobrara Formation	**Member:**	
Era:	Mesozoic	**Period:**	Cretaceous
Series-Epoch:		**Stage/NALMA**	
Lithologies:	Pale yellowish brown (10YR 6/2), yellowish-gray (5Y 7/2)-weathering, fine carbonate with off-white to gray siltstone interbeds.		
Stratigraphic Position:			
Fossil Types (s):	Vertebrate ☐	Plant ☒	Invertebrate ☒ Trace ☐
Taxa:			
Fossil Description:	Plant hash and abundant bivalves		
Significance:	Important	**Preservation:**	Good
In Situ or Float:	In-Situ ☒ Ex-Situ ☐	**Fossils Collected:**	Yes ☐ No ☒
Repository:		**Accn #:**	
Photos:	LSB		
Permit #:	State of CO #2009-58	**Permittee:**	Paul C. Murphey Lori S. Browne
Date Found:		**By:**	
Date Recorded:		**By:**	Lori S. Browne

Paleontological Locality Form



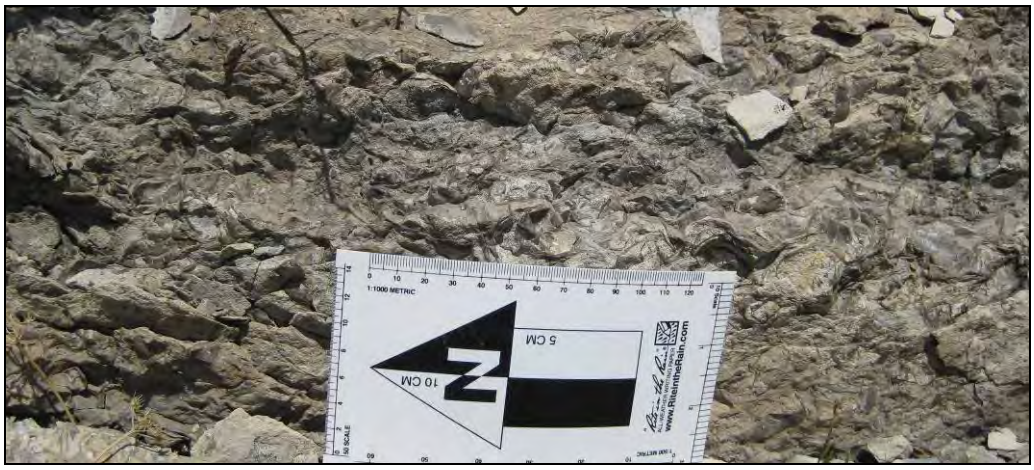


Figure 1. Close up of shell layer in Niobrara Formation in valley southwest of NCAR.

Figure 2. Isolated block containing abundant shell fragments.

Figure 3. View to the south of fossiliferous bed, delineated by red lines.

APPENDIX E

Points of Geologic Interest Documented during the Field Survey

Points of Geologic Interest Documented During the Field Survey

Field Locality Number	UTMs		Geologic Unit	Description
	Easting	Northing		
F2-090616-02	474752	4430908	Dakota Group	Ripple marks
F2-090616-03	474754	4430837	Dakota Group	Ripple marks
F2-090618-01	475367	4426143	Lyons Sandstone	Ripple marks
F2-090729-01	476207	4422653	Dakota Group	Ripple marks
F2-090729-02	476222	4422623	Dakota Group	Ripple marks