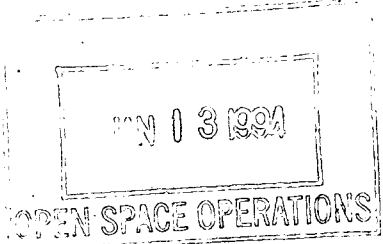


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**NATURAL HERITAGE INVENTORY
OF THE RARE PLANTS AND SIGNIFICANT NATURAL COMMUNITIES
OF THE DOUDY DRAW AND ELDORADO MOUNTAIN AREA, COLORADO**

NATURAL HERITAGE INVENTORY O
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FINAL REPORT

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EXECUTIVE SUMMARY

In 1993, the Colorado Natural Heritage Program (CNHP) was contracted by the City of Boulder Open Space Department to conduct an inventory of Open Space property in the Doudy Draw/Eldorado Mountain area. The objective of the study was to conduct a systematic botanical inventory of the area, concentrating on rare, threatened, endangered, or sensitive species and significant natural communities/plant associations monitored by CNHP for their biodiversity significance. In short, we were to identify those sites supporting unique or exemplary natural communities, rare plants, and other significant natural features. The inventory was conducted in five steps.

1. Review topographic maps and available aerial photographs.
2. Gather existing information.
3. Perform initial ground surveys.
4. Inventory the entire study area.
5. Compile results and prepare the final report.

Several rare plant populations were located within the study area including: *Spiranthes diluvialis* (1 population), *Viola pedatifida* (2 populations), *Amorpha nana* (2 populations), *Asplenium septentrionale* (2 populations), and *Smilax lasioneuron* (1 population).

RECOMMENDATIONS

1. Continue inventory for rare species and establish monitoring programs on those rare plant populations identified in this study.
2. Investigate the possibility of restoration of natural communities.
3. Expand public awareness of the need for protecting areas determined to be significant to natural diversity.
4. Proactively plan future development to minimize impacts to natural heritage resources.

INTRODUCTION

In 1993, the Colorado Natural Heritage Program (CNHP) was contracted by the City of Boulder Open Space Department to conduct an inventory of Open Space property in the Doudy Draw/Eldorado Mountain area. The objective of the study was to conduct a systematic botanical inventory of the area, concentrating on rare, threatened, endangered, or sensitive species and significant natural communities/plant associations monitored by CNHP for their biodiversity significance. In short, we were to identify those sites supporting unique or exemplary natural communities, rare plants, and other significant natural features.

This inventory has been completed, and the results of it are presented herein. A brief overview of the natural condition of the study area is presented first. The results of the inventory are discussed with emphasis on the areas of biodiversity significance identified during this study.

Overview of the Study Area

The study area is a part of the City of Boulder Open Space properties containing Doudy Draw and extending west to Eldorado Mountain (Figure 1). The site is mapped on the Eldorado Springs U.S.G.S. Quadrangle, and includes the following: T2S, R70W, section 6; T1S, R70W, all of section 31, most of the west half of sections 29 and 32, and parts of section 30 south of Highway 170; T1S, R71W, most of section 36 (unsurveyed). The study area is approximately 2,000 acres in size and is located along the foothills of the Southern Rocky Mountains physiographic region. Elevations range from ca. 5,640' to 8,335', which includes the Piedmont and Montane life zones (U.S.D.A. 1975). Boulder County, and especially the foothills/prairie ecotone that characterizes the Doudy Draw area, are physiographically and biologically diverse.

Climate. The climate of the area is varied, being exposed to typical high plains weather, but significantly modified by the nearby mountains. In general, precipitation here is greater than to the east but less than in the mountains to the west, and year round temperatures are higher than those either east or west of the study area. Precipitation in nearby Boulder averages 18.52 inches per year with frequent periods of drought in the fall and winter. Average temperatures range from 32.7 degrees Fahrenheit in January to 73.6 degrees in July. Winds at the mouths of the larger canyons can be locally intense (U.S.D.A. 1975).

Soils. The soils of the area are of two associations. The mountainous portions to the west are composed of a rock outcrop-Juget-Baller association described as rock outcrop and shallow, very gravelly and stony soils formed in residuum from granite and sandstone. The rest of the area is dominated by the Nederland-Valmont association, typified by nearly level to moderately steep, deep, and cobbly soils on old high terraces, alluvial fans, and benches formed in gravelly and cobbly alluvium (U.S.D.A. 1975).

Geology. The geology of the area is typical of the boundary between the Front Range and the Piedmont area. The foothills along the western edge of the Piedmont are characterized by a series of folded and faulted sedimentary strata, the more resistant beds of which form the striking hogback ridges. East of this margin the area consists of broad, gently sloping surfaces that form steplike levels above modern stream valleys. The high level surfaces of the study area usually occur as fan-shaped pediments mantled by coarse alluvial deposits (U.S.D.A. 1975).

Current Vegetation. The vegetation of the study area is typical of the foothills/prairie ecotone in Boulder County. Coniferous forests and woodlands of *Pinus ponderosa* (ponderosa pine) dominate the mountainous western portion and extend eastward on the higher mesas. Cooler (generally north facing) slopes and microhabitats support mostly *Pseudotsuga menziesii* (Douglas-fir) forests (Marr 1961). Most of the remaining area is covered by a grassland whose pre-settlement composition is unclear but is currently dominated by a wide range of native grasses in some areas, grading into various proportions of introduced grasses and forbs. Riparian areas are dominated by dense shrubs, especially *Crataegus macracantha* (hawthorn) and various *Salix* species (willows), with some stands of small *Populus* species (cottonwoods). Wetlands comprise a small but important portion of the study area and are dominated by a grass/sedge mixtures.

Faunal Composition. The fauna of the Doudy Draw area is a mixture typical of both the foothills of the Southern Rocky Mountains and the western edge of the high plains. Typically, no vertebrates and few invertebrates at the species level are known to be endemic to the area (Andrews and Righter 1992, Ferris and Brown 1981, Woodling 1985, Armstrong 1972, Hammerson 1982, McCafferty et al., 1993, Evans 1988, Kippenhan 1990). Mule deer, coyotes, and black bear are all well known in the area, as are a large number of breeding passerines and several species of raptors.

METHODS

Natural Heritage staff initiated prioritized inventories in order to gather information on Colorado's rare species and natural communities in a more thorough and systematic manner. Given that some regions of the state face greater development pressures than others, Natural Heritage staff and network scientists are attempting to inventory the most highly threatened areas first. The Doudy Draw/Eldorado Mountain property is potentially one of these areas. The inventory was conducted in five stages:

1. Review topographic maps and available aerial photographs.

2. Gather existing information.

No known occurrences of rare plants or significant natural communities were found in the CNHP Biological and Conservation Databases (BCD) from within the study area, but there were several known occurrences from nearby areas and

these species (listed below) were searched for in appropriate habitats on the Open Space property.

Asplenium septentrionale
Botrypus virginiana
Carex torreyi
Carex saximontana
Lilium philadelphicum
Listera convallarioides
Malaxis brachypoda
Pyrola picta
Selaginella weatherbiana
Smilax lasioneuron
Spiranthes diluvialis
Viola pedatifida
Woodsia mexicana

3. Perform initial ground surveys.

One day was spent with Open Space staff to become more familiar with access points and the landscape. Familiarity with the area allowed the field scientists to plan efficient field visits.

4. Inventory the entire study area.

Tim Hogan and Nan Lederer visited the site 20 times throughout the summer to locate species with different phenologies. Areas with potential habitat for rare species were surveyed at the times when the specific plant would be most conspicuous (usually flowering). At this time detailed information was collected on the presence and status (population size, habitat information, landform, associated species, etc.) of rare species. Threats and past or present disturbances were also noted.

5. Compile results and prepare the final report.

As fieldwork was completed, Natural Heritage staff scientists reviewed the information gathered. For locations of rare plant populations or significant communities (element occurrences) found to be of statewide significance, these data are transcribed onto Natural Heritage Program maps and entered into the BCD.

RESULTS

Flora:

Four hundred and twenty eight species of vascular plants were identified by Tim Hogan and Nan Lederer. Four of these species are monitored by CNHP. Included were

302 genera in 92 families. Families represented most commonly were Asteraceae (70 species), Poaceae (52 species), Fabaceae (26 species), Rosaceae (19 species), and Brassicaceae (18 species). Approximately 19% of the species were adventives (83 species). A full species list is included in the appendices. Approximately 50 voucher specimens were collected and placed in the University of Colorado Herbarium (COLO). Voucher specimens were collected only for those species not well documented from the general area or where needed to confirm identification.

In the nearby Boulder Mountain Park 639 species were documented in three years of field work by Hogan (1993). The Doudy Draw/Eldorado Mountain area is only about 1/3 the size of the Boulder Mountain Park, yet 428 species were found in one field season of work. This high diversity is in part because of the location of the study site on the foothills/prairie ecotone.

Rare Plants

Tim Hogan relocated a small population of *Spiranthes diluvialis* (Ute ladies'-tresses, G2/S1/LT) within the study area. This plant is listed as threatened by the U.S. Fish and Wildlife Service (USF&WS) under the Endangered Species Act. This population was located at 5760' elevation (T1S, R70W, the center of section 29), along the drier margins of a swale which is kept moist by seepage from a nearby irrigation ditch. On August 8, 1993, when the population was located, there were 4 individuals (1 in bud, 1 in fruit, and 2 in flower). Associated species were *Agrostis gigantea* (redtop), *Juncus arcticus* (rush), *J. saximontana* (rush), *Carex nebrascensis* (Nebraska sedge), *Schoenoplectus pungens* (bulrush), *Lycopus americanus* (water horehound), *Cichorium intybus* (chicory), and *Cirsium arvense* (Canada thistle). Total graminoid cover was 80%, and total forb cover was 20%. Potential threats that need to be investigated are grazing effects, changes in the groundwater hydrology, and invasion of Canadian thistle. Documentation to meet the *S. diluvialis* survey requirements has been forwarded to the Grand Junction office of the USF&WS. Areas surveyed for the species are marked on the occurrence map included in the appendices (Tim Hogan and Nan Lederer are certified *S. diluvialis* surveyors). It is recommended that a management plan be developed specifically for the population. Also, a monitoring program for this population would be recommended to determine the long term viability of the population.

Viola pedatifida (birdfoot violet, G5/S2) was also found on the study area. Two sub-populations were found within about 1/2 mile of each other with a total of about 120 individuals. More detailed information is included on the completed survey forms included in the appendices. It is recommended that a management plan be developed specifically for these populations.

Two sub-populations of *Amorpha nana* (dwarf wild indigo, G5/S?) were found within the study area. A total of six individuals were seen in the two sub-populations. Grazing impacts on this species are unknown. More detailed information is included on

the survey forms included in the appendices. This information will help to determine the rarity of this species, which seems to be more common than previously thought.

Several populations of *Asplenium septentrionale* (grass fern, G3/S2) were found within the study area. Individuals were not specifically counted, but it was noted that there were several individuals in each population. No threats were perceived for these populations. This species appears to be more common than previously known and doesn't appear to be threatened in Colorado. The species' rarity rank may be down graded in the future.

One population of *Smilax lasioneuron* (carrion flower) was located within the study area. It was estimated that there were 5 individuals in this population. This species is no longer actively monitored by CNHP.

Natural Communities:

No rare or exemplary natural communities monitored by CNHP or listed in the Boulder County Comprehensive Plan were located within the study area. Although *Pinus ponderosa* and *Leucopoa kingii* (spike fescue) were found together in the study area, the species were not present on the Open Space property in the quantities or population sizes that typically express a viable *Pinus ponderosa/Leucopoa kingii* community. The same is true of *Andropogon gerardii* (big bluestem), *Bouteloua curtipendula* (sideoats grama), *Bouteloua gracilis* (blue grama), and *Schizachyrium scoparium* (little bluestem), which although present in the study area, did not form the xeric tallgrass prairie community which consists of these species.

Some communities in Doudy Draw may be unusual and appear to be limited to the foothills of the Front Range. The dominant species is *Crataegus macracantha*, with *Padus virginiana* (chokecherry), *Rhus aromatica* ssp. *trilobata* (skunkbrush) and *Salix irrorata* (bluestem willow) as common associates. This community (located in T2S, R70W, section 6, the NW4) has not been documented in published literature and should be investigated. The upper Doudy Draw riparian area contains an interesting and unusual mixture of species that are eastern woodland relicts [*Agrimonia striata* (agrimony), *Aralia nudicaulis* (wild sarsaparilla), *Corylus cornuta* (hazelnut), *Sanicula marilandica* (black snakeroot)] and are only found in the cool moist foothill ravines. This area (located in T2S, R70W, section 6, SW4 of the NW4) also merits further investigation to determine the status of the plant communities.

Historical and present land use at Doudy Draw has significantly altered the landscape. Visible impacts include the diversion and impoundment of water sources for both urban and livestock uses, mining activity at several sites, fragmentation of continuous habitat by roads, construction of a power line and the associated reseeding, and livestock grazing, all of which contribute, to some degree, to the alteration of native plant communities.

Natural areas within the Front Range of Colorado are highly threatened by human activity (development, agricultural conversion, etc.) and will be more threatened in the future. Areas that are in a natural or restorable condition are valuable because they represent the natural heritage and biodiversity of the area, much of which has been lost or degraded since European settlement. The proximity of the Doudy Draw/Eldorado Mountain property to other open space properties (in both Boulder and Jefferson counties), and Golden Gate Canyon State Park provides a connection of natural systems that is also rare on the Colorado Front Range and may have value as a corridor for species migration.

RECOMMENDATIONS

1. **Continue inventory for rare species and establish monitoring programs on those rare plant populations identified in this study.**

Due to year to year population fluctuations (well known for *Spiranthes diluvialis*), differences in phenology, or chance, some plants (especially rare plants) can be potentially overlooked in a one year study. Any absence of data does not necessarily mean that other rare plant populations do not occur on the site. In addition, because of limited field time, the higher elevation areas on the western side of the property were not surveyed as thoroughly as others. An additional 10-15 days of field work next season would insure that the species list and rare plant inventory are as thorough as possible and would could be used to for additional searching for those species listed under Methods step 2 on page 2.

2. **Investigate the possibility of restoration of natural communities.**

The effects of fire on the ecosystems (mainly the ponderosa pine forests and woodlands, and the grasslands) should be investigated, especially the historical role and frequency along the Front Range. Implementation of fire management should await more detailed invertebrate information, especially insect data. High frequency prescribed fires on a tallgrass prairie in Oklahoma are believed to have reduced insect species richness in that system (Paul Opler, personal communication).

/ Fire or grazing regimes that tend to favor native species over adventives may help restore some of the plant communities to a more natural species composition. Open Space range management personnel are best qualified to identify specific fire or grazing practices which are most effective in controlling adventive species. Adventives were most common along the gravel roads in the study area and along the access trail near lower Doudy Draw in T1S, R70W, section 29 (Nan Lederer, personal communication). Areas with high concentrations of adventive species were not specifically mapped or documented, as this was beyond the scope of the study.

3. **Expand public awareness of the need for protecting areas determined to be significant to natural diversity.**

Natural lands are becoming more scarce, especially near densely populated metropolitan areas. Rare species may continue to decline if not given appropriate protective measures on these natural areas. Increasing the public's knowledge of the remaining significant areas will build support for the programmatic initiatives necessary to protect them. Such activities could be done through interpretive facilities, conferences or meetings to stimulate public involvement, information pamphlets, and others.

4. **Proactively plan future development to minimize impacts to natural heritage resources.**

Locations of any future development should be designed to minimize impacts to natural heritage resources. Further fragmentation of the landscape should be avoided if possible.

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Appendix A

Colorado's Natural Heritage Program

The Colorado Natural Heritage Program (CNHP) is the latest stage of a fourteen year development. Building on a solid base of biodiversity information, CNHP was relocated from the Division of Parks and Outdoor Recreation into the University of Colorado Museum in the spring of 1992. With an increased staff, the Program is revitalized and updating comprehensive information on the rare, threatened, and endangered species and significant ecosystems in Colorado. The multi-disciplinary team of scientists and information managers gather information and incorporate it into the continually updated databases. CNHP is part of an international network of conservation data centers that use the Biological and Conservation Databases (BCD) (developed by The Nature Conservancy). Concentrating on site-specific data for each element of natural diversity, the accurate status of each element is known. The mapped data illustrate sites that are important to the conservation of Colorado's natural biological diversity. By using the element ranks and the quality of each occurrence, priorities can be established for the protection of the most sensitive sites. It is by having an updated locational database and priority-setting system that CNHP can provide its most effective, proactive land-planning tools.

The information gathered by CNHP is on species, natural communities, and ecosystems. Each of these significant natural features (species and natural communities) is an **element of natural diversity**, or simply an **element**. Each element is assigned a rank that indicates its relative rarity on a five-point scale (1 = extremely rare; 5 = abundant).

Table 1. Definition of Natural Heritage state rarity ranks. Global rarity ranks are similar, but refer to a species' rarity throughout its range. State and Global ranks are denoted, respectively, with an "S" or a "G" followed by a character. Note that GA and GN are not used and GX means extinct. These ranks should not be interpreted as legal designations.

S1	Extremely rare; usually 5 or fewer occurrences in the state; or may be a few remaining individuals; often especially vulnerable to extirpation.
S2	Very rare; usually between 5 and 20 occurrences; or with many individuals in fewer occurrences; often susceptible to becoming endangered.
S3	Rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
S4	Common; usually > 100 occurrences, but may be fewer with many large populations; may be restricted to only a portion of the state; usually not susceptible to immediate threats.
S5	Very common; demonstrably secure under present conditions.
SA	Accidental in the state.
SH	Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when inventory has been attempted recently.
S#B	Same rank as the numbered S-series, but refers to the breeding season rarity of migrants.
S#N	Same rank as the numbered S-series, but refers to the non-breeding season rarity of migrants; where no consistent location can be discerned for migrants or non-breeding populations, a rank of S2N is used.
SU	Status uncertain, often because of low search effort or cryptic nature of the element.
SX	Apparently extirpated from the state.

The primary criterion for ranking elements is the number of occurrences, i.e. the number of known distinct localities or populations. Also of great importance is the number of individuals at each locality or, for highly mobile organisms, the total number of individuals. Other considerations include the condition of the occurrences, the number of protected occurrences, and threats. However, the emphasis remains on the number of occurrences such that ranks are an index of known biological rarity. These ranks are assigned both in terms of the element's rarity within Colorado (its State or S-rank) and the element's rarity over its entire range (its Global or G-rank). Taken together, these two ranks give an instant picture of the rarity of the element. Although most species protected under state or federal endangered species laws are extremely rare, not all rare species are listed as endangered or threatened, and Natural Heritage rarity ranks should not be interpreted as legal designations.

The spot on the landscape that supports a particular population of a specific species or a specific stand of a given community type is an **element occurrence**. The CNHP has mapped over 3,500 element occurrences in Colorado. Information on the location and quality of these element occurrences is also entered into the computerized Biological and Conservation Databases (BCD). This computer system, developed by The

Nature Conservancy, is utilized by the international network of heritage programs and conservation data centers. All centers utilize the same methodology, allowing a unique, direct comparison of information throughout the area covered.

In addition to ranking each element in terms of rarity, Natural Heritage staff scientists rank each element occurrence so that protection efforts can be aimed not only at the rarest elements, but at the best examples of each. Element occurrences are ranked in terms of the **quality** (size, vigor, etc.) of the population or community, the **condition** or naturalness of the habitat, the long-term **viability** of the population or community, and the **defensibility** (ease or difficulty of protecting) the occurrence. Given the relationship between a natural community and its environment, community occurrences are largely ranked in terms of their quality and size.

One of the ways that the Colorado Natural Heritage Program uses these element and element occurrence ranks is to assess the overall significance of a site, which may include one or many element occurrences. Based on these ranks, each site is assigned a **biodiversity** (or B-) **rank**:

- B1 Outstanding Significance: only site known for an element or an excellent occurrence of a G1 species.
- B2 Very High Significance: one of the best examples of a community type, good occurrence of a G1 species, or excellent occurrence of a G2 or G3 species.
- B3 High Significance: excellent example of any community type, good occurrence of a G3 species, or a large concentration of good occurrences of state rare species.
- B4 Moderate Significance: good example of a community type, excellent or good occurrence of state-rare species.
- B5 General Biodiversity Significance: good or marginal occurrence of a community type, S1, or S2 species.

What is Biological Diversity?

Biological diversity has recently become an important management issue for many natural resource professionals and forms the basis for the "New Perspectives" and the "Ecosystem Management" initiatives of the U. S. Forest Service. In the most simple terms, biological diversity, or simply biodiversity, is the full variety of plant and animal life in an area **AND** the ecological processes of which they are a part. This concept includes all living organisms from bacteria and fungi, invertebrate animals, mosses and lichens, and the "higher life forms" of plants and animals.

The biological diversity of an area can be described at four levels:

1. Genetic Diversity -- the genetic variation within a population and among

populations of a plant or animal species. The genetic makeup of a species is variable between populations of a species within its geographic range. Loss of a species' population results in a loss of genetic diversity for that species and a reduction of total biological diversity for the region.

2. Species Diversity -- the total number and abundance of plant and animal species in an area.

3. Community Diversity -- the variety of natural communities or ecosystems within that area. These communities may be diagnostic or even endemic to an area.

4. Landscape Diversity -- the type, condition, pattern, and connectedness of natural communities or ecosystems within a landscape. Fragmentation of forested landscapes, loss of connections and migratory corridors, and loss of natural communities all result in a loss of biological diversity for a region.

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Katherine Pague - Information Manager

Diane Bacher - Administrative Assistant

Catherine Porter - Data Handler

FIGURE 1

Spiranthes diluvialis



area searched for
Spiranthes diluvialis



study area boundaries

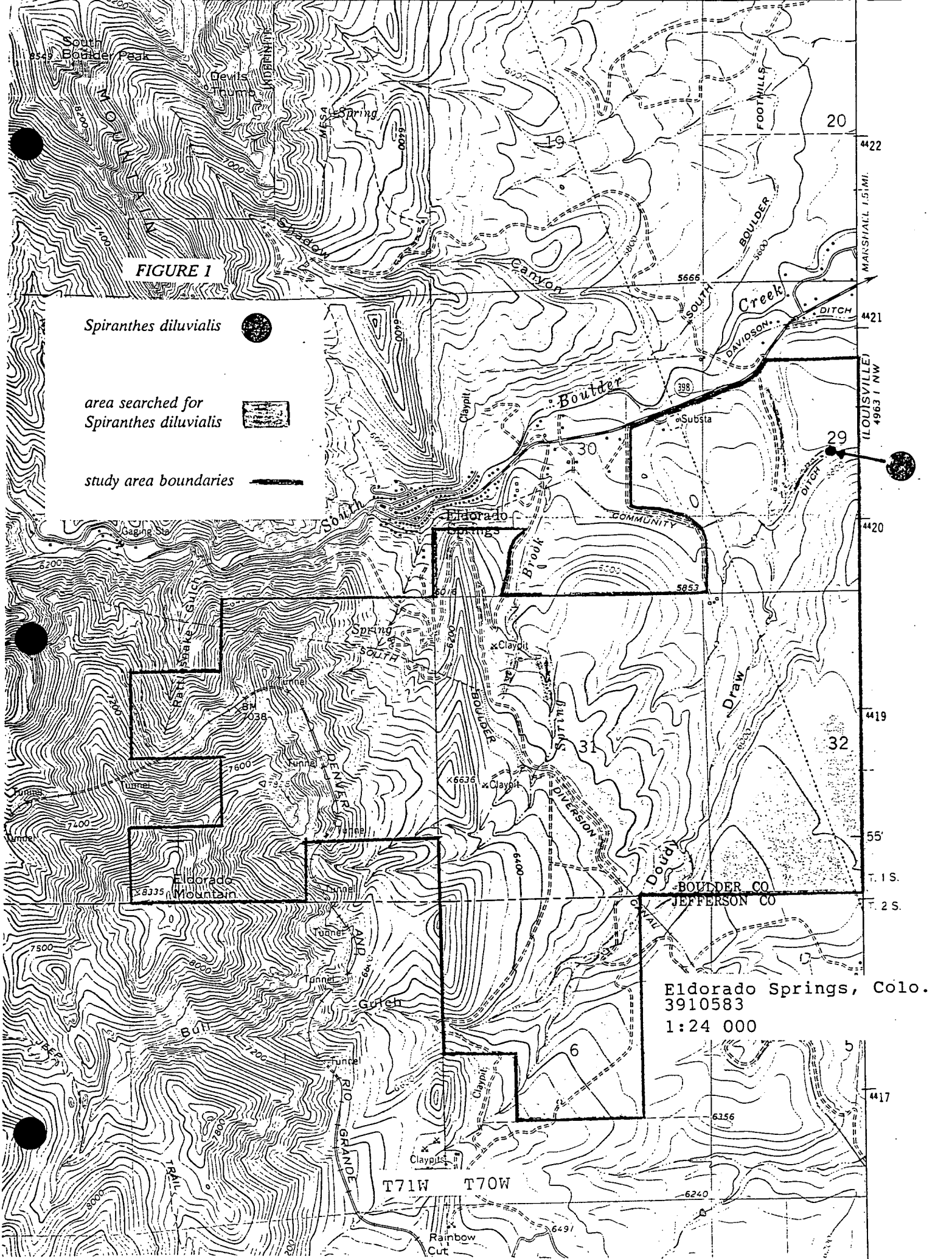
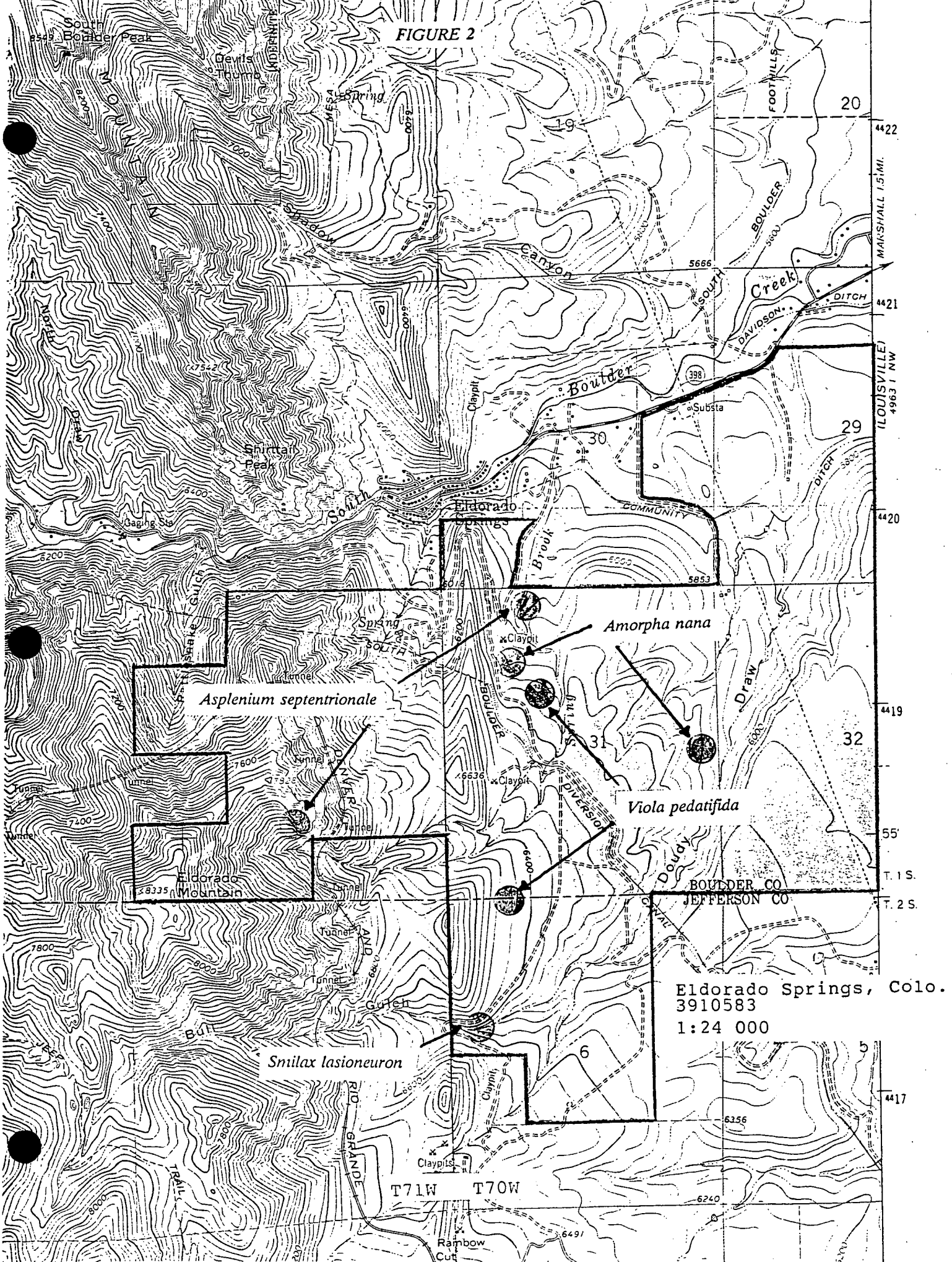


FIGURE 2



Asplenium septentrionale

Amorpha nana

Viola pedatifida

Smilax lasioneuron

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T71W T70W

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T. 1 S.

T. 2 S.

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JEFFERSON CO

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5666

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Appendix B

COMPLETED NATURAL HERITAGE FORMS

PLANT SPECIES OF SPECIAL CONCERN SURVEY FORM
COLORADO NATURAL HERITAGE PROGRAM

C/O UNIVERSITY OF COLORADO MUSEUM*HUNTER 115 CB 315*BOULDER, CO 80309-0315*(303)492-4719

DATE OF SURVEY: 8/9/93

OBSERVER(S) Tim Hogan (CU Herbarium) & Curry Tallman (City of Bldg. Open Space 'weed crew')

TAXONOMY:

SCIENTIFIC NAME: *Spiranthes diluvialis* Shrevink COMMON NAME Ute Lady's Tresses

LOCATION: (Attach a copy of pertinent 7.5' or 15' topographic map section with locations of populations/subpopulations outlined, one map for each sensitive species described)

COUNTY: Boulder USGS QUADRANGLE: Eldorado Springs

TOWNSHIP: 1S RANGE: 70W SECTION: 29 1/4 SEC.: _____

ADDITIONAL T/R/S, SECTIONS OR 1/4 SECS.: center of SEC 29

ELEVATION (at population center (and range of population if known)): 5760

NATIONAL FOREST/BLM DISTRICT: _____ F.S. DISTRICT/BLM RESOURCE AREA _____

LAND OWNERSHIP/MANAGEMENT (if not USFS/BLM): City of Boulder Open Space

DIRECTIONS TO SITE (refer to roads, trails, geographic features, etc.): From Doudy Draw trailhead on State Hwy

Highway 70 on newer maps
(ca. one mile east of Eldorado Springs), go south on paved trail; ca. 400 yards from picnic area, a
moist swale is visible to the east that is fed by the irrigation ditch above it. (See other side).

HABITAT:

VEGETATION STRUCTURE WITHIN POPULATION AREA:

TOTAL TREE COVER (%) 0 TOTAL SHRUB COVER (%) < 5%

TOTAL FORB COVER (%) 20(?) TOTAL GRAMINOID COVER (%) 80

TOTAL MOSS/LICHEN COVER (%) _____ TOTAL BARE GROUND COVER _____

ASSOCIATED PLANT COMMUNITY: (list dominant species currently present, include age structure if known):

Agrostis gigantea, Juncus arcticus, J. saximontanus, Carex nebrascensis,
Schoenoplectus pungens, Lycopodium americanus, Cichorium intybus, Cirsium arvense

HABITAT TYPE: "wetland"

ADDITIONAL ASSOCIATED PLANT SPECIES: _____

ASPECT (S, SE, MNW, etc.): _____ % SLOPE _____ SLOPE SHAPE (concave, convex, straight, etc.) _____

LIGHT EXPOSURE (open, shaded, partial shade, etc.): open

TOPOGRAPHIC POSITION (crest, upslope, midslope, lower slope, bottom, etc.): lower slope

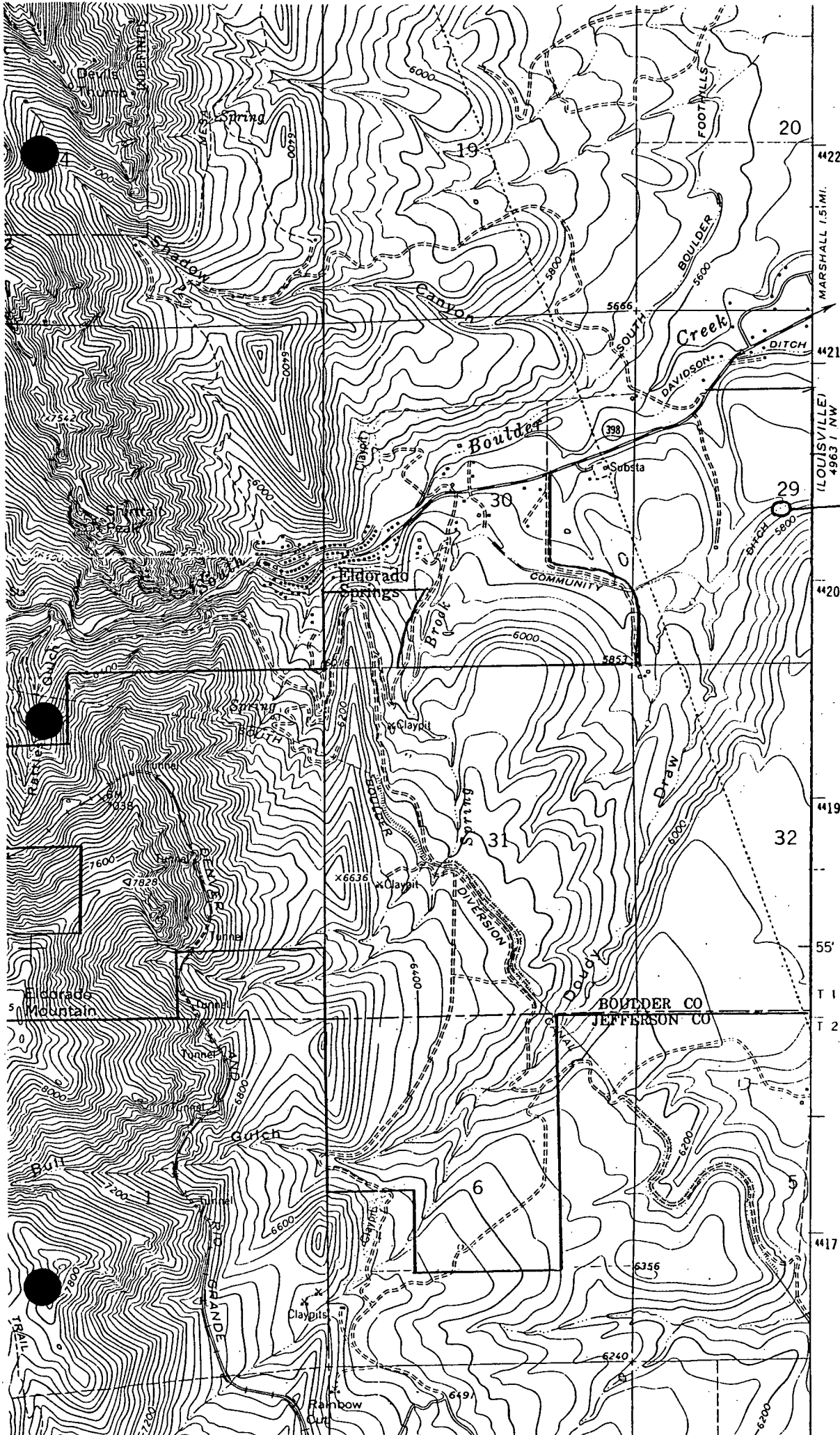
MOISTURE: (dry, moist, saturated, inundated, seasonal seepage, etc.) moist, seasonally inundated (?)

PARENT MATERIAL: colluvium (?)

GEOGRAPHIC LAND FORM (e.g. glaciated mountain slopes and ridges, alpine glacial valley, rolling uplands, breaklands, alluvial-colluvial-lacustrine (floodplains, terraces, etc.), rockslides):

River terrace mesa (S. Boulder Creek drainage) in piedmont of Boulder Valley

Eldorado Springs
Quadrangle



422
MARSHALL 1/4 MI.
421
(LOUISVILLE)
4963 1 NW
420
419
55'
T 1 S
T 2 S
417

Spiranthes diluvialis

PLANT SPECIES OF SPECIAL CONCERN SURVEY FORM
COLORADO NATURAL HERITAGE PROGRAM

C/O UNIVERSITY OF COLORADO MUSEUM*HUNTER 115 CB 315*BOULDER, CO 80309-0315*(303)492-4719

DATE OF SURVEY: 5/27/93

OBSERVER(S) Tim Hogan, Nan Lederer

TAXONOMY:

SCIENTIFIC NAME: Viola pedatifida COMMON NAME Birdfoot violet

LOCATION: (Attach a copy of pertinent 7.5' or 15' topographic map section with locations of populations/subpopulations outlined, one map for each sensitive species described)

SITE NAME: Dowdy Draw City Open Space

COUNTY: Boulder/Jefferson USGS QUADRANGLE: Eldorado Springs

TOWNSHIP: 1S RANGE: 70W SECTION: 31 1/4 SEC.: NW

ADDITIONAL T/R/S, SECTIONS OR 1/4 SECS.: Also T 2S, R 70W, S 6, NW 1/4

ELEVATION (at population center (and range of population if known)): 6200' - 6450'

NATIONAL FOREST/BLM DISTRICT: _____ F.S. DISTRICT/BLM RESOURCE AREA _____

LAND OWNERSHIP/MANAGEMENT (if not USFS/BLM): City of Boulder

DIRECTIONS TO SITE (refer to roads, trails, geographic features, etc.): 1/4 mile east of Eldorado Springs,

the County Rd. 67 south to gate. Walk up Boulder Diversion Canal service road. One sub-population is just east of dogleg where road curves east then south; other is 1/2 mi. south in meadow on Boulder/Jefferson County line.

HABITAT:

VEGETATION STRUCTURE WITHIN POPULATION AREA: (2 sub-populations separated by 1)

TOTAL TREE COVER (%) 30% / 1% TOTAL SHRUB COVER (%) 5% / 5%

TOTAL FORB COVER (%) 10% / 20% TOTAL GRAMINOID COVER (%) 20% / 40%

TOTAL MOSS/LICHEN COVER (%) _____ TOTAL BARE GROUND COVER _____

ASSOCIATED PLANT COMMUNITY: (list dominant species currently present, include age structure if known):

Ponderosa pine (young), Poa compressa, Poa agassizensis, Phleum pratense, Pneumonanthe affinis, Muhlenbergia montana, Stipa comata

HABITAT TYPE: Woodland / Meadow; rocky sites

ADDITIONAL ASSOCIATED PLANT SPECIES: Schizachyrium scoparium, Koeleria macrantha, Bouteloua curtipendula

ASPECT (S, SE, NNW, etc.): E % SLOPE 0-5% SLOPE SHAPE (concave, convex, straight, etc.) _____

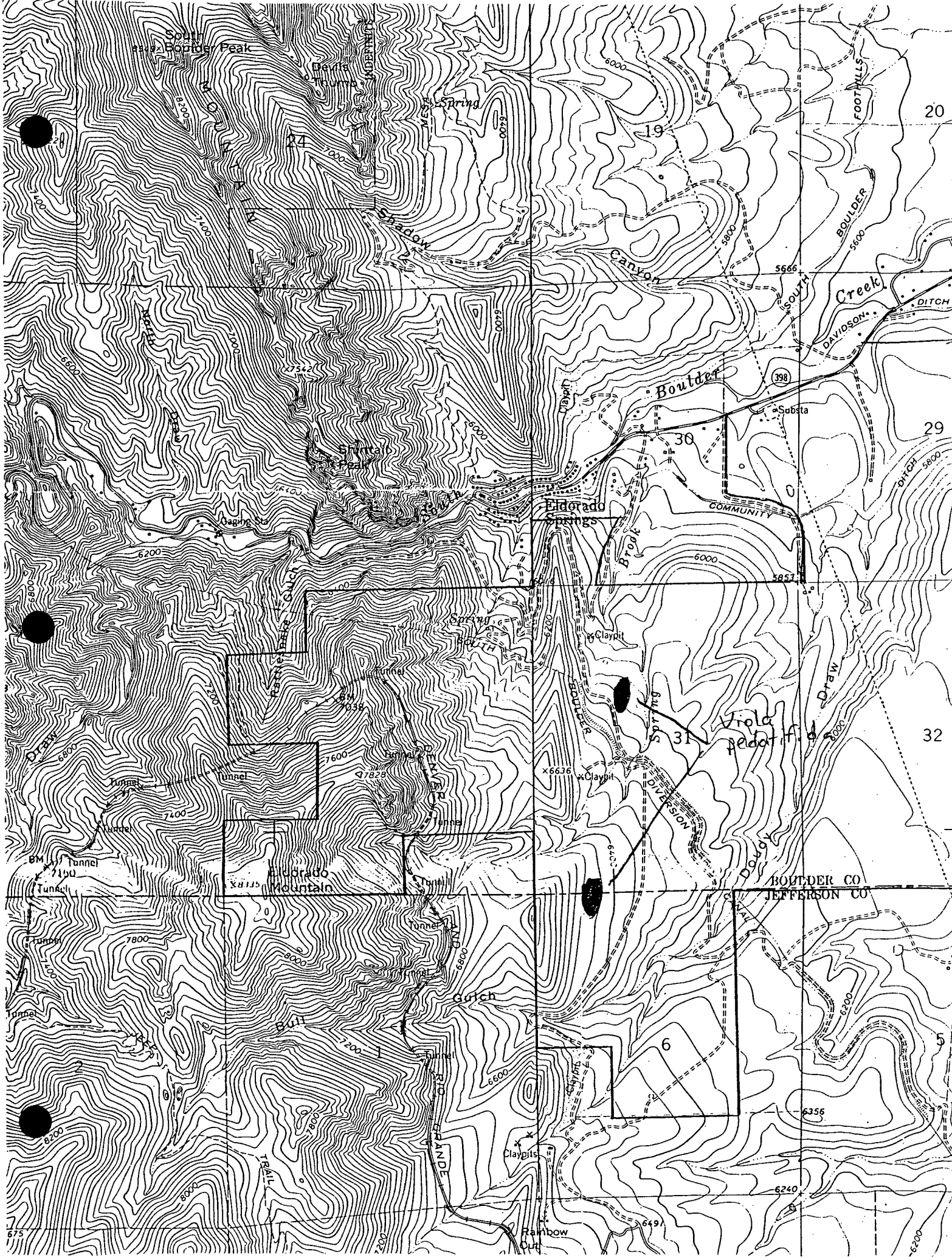
LIGHT EXPOSURE (open, shaded, partial shade, etc.): open to partial shade

TOPOGRAPHIC POSITION (crest, upslope, midslope, lowerslope, bottom, etc.): midslope

MOISTURE: (dry, moist, saturated, inundated, seasonal seepage, etc.) Dry

PARENT MATERIAL: _____

GEOMORPHIC LAND FORM (e.g. glaciated mountain slopes and ridges, alpine glacial valley, rolling uplands, breaklands, alluvial-colluvial-lacustrine (floodplains, terraces, etc.), rockslides): piedmont mesas



PLANT SPECIES OF SPECIAL CONCERN SURVEY FORM
COLORADO NATURAL HERITAGE PROGRAM

C/O UNIVERSITY OF COLORADO MUSEUM*HUNTER 115 CB 315*BOULDER, CO 80309-0315*(303)492-4719

DATE OF SURVEY: 6/25/93

OBSERVER(S) Nan Lederer, Tim Hogan

TAXONOMY:

SCIENTIFIC NAME: Asplenium septentrionale COMMON NAME Grass fern

LOCATION: (Attach a copy of pertinent 7.5' or 15' topographic map section with locations of populations/subpopulations outlined, one map for each sensitive species described)

SITE NAME: Eldorado Mountain

COUNTY: Boulder USGS QUADRANGLE: Eldorado Springs

TOWNSHIP: 1S RANGE: 71W SECTION: 36 1/4 SEC.: _____

ADDITIONAL T/R/S, SECTIONS OR 1/4 SECS.: T1S, R70W, S31

ELEVATION (at population center (and range of population if known)): 7000 ft. & 6000 ft.

NATIONAL FOREST/BLM DISTRICT: _____ F.S. DISTRICT/BLM RESOURCE AREA _____

LAND OWNERSHIP/MANAGEMENT (if not USFS/BLM): City of Boulder Open Space

DIRECTIONS TO SITE (refer to roads, trails, geographic features, etc.):

Sub-pop. a: On talus slope, lower slope Eldorado Mtn. at base of Micky Mouse Wall, just west of RR tracks. Sub-pop. b: On large boulder along Sing Brook just south of Open Space property boundary fence

HABITAT:

VEGETATION STRUCTURE WITHIN POPULATION AREA:

TOTAL TREE COVER (%) _____ TOTAL SHRUB COVER (%) _____

TOTAL FORB COVER (%) _____ TOTAL GRAMINOID COVER (%) _____

TOTAL MOSS/LICHEN COVER (%) _____ TOTAL BARE GROUND COVER _____

ASSOCIATED PLANT COMMUNITY: (list dominant species currently present, include age structure if known):

HABITAT TYPE: Boulders, in crevices

ADDITIONAL ASSOCIATED PLANT SPECIES: _____

ASPECT (S, SE, NNW, etc.): _____ % SLOPE _____ SLOPE SHAPE (concave, convex, straight, etc.) _____

LIGHT EXPOSURE (open, shaded, partial shade, etc.): _____

TOPOGRAPHIC POSITION (crest, upslope, midslope, lower slope, bottom, etc.): _____

MOISTURE: (dry, moist, saturated, inundated, seasonal seepage, etc.) _____

P _____ MATERIAL: _____



up from stream
 Aggl. Some lga P.
 d vir

Pipos/Pavi - Archal - Pavi
 Mumo, Sporet Bay

Pipos/Pavi - Archal - Pavi
 (Pavi) / Pavi - Archal - Pavi

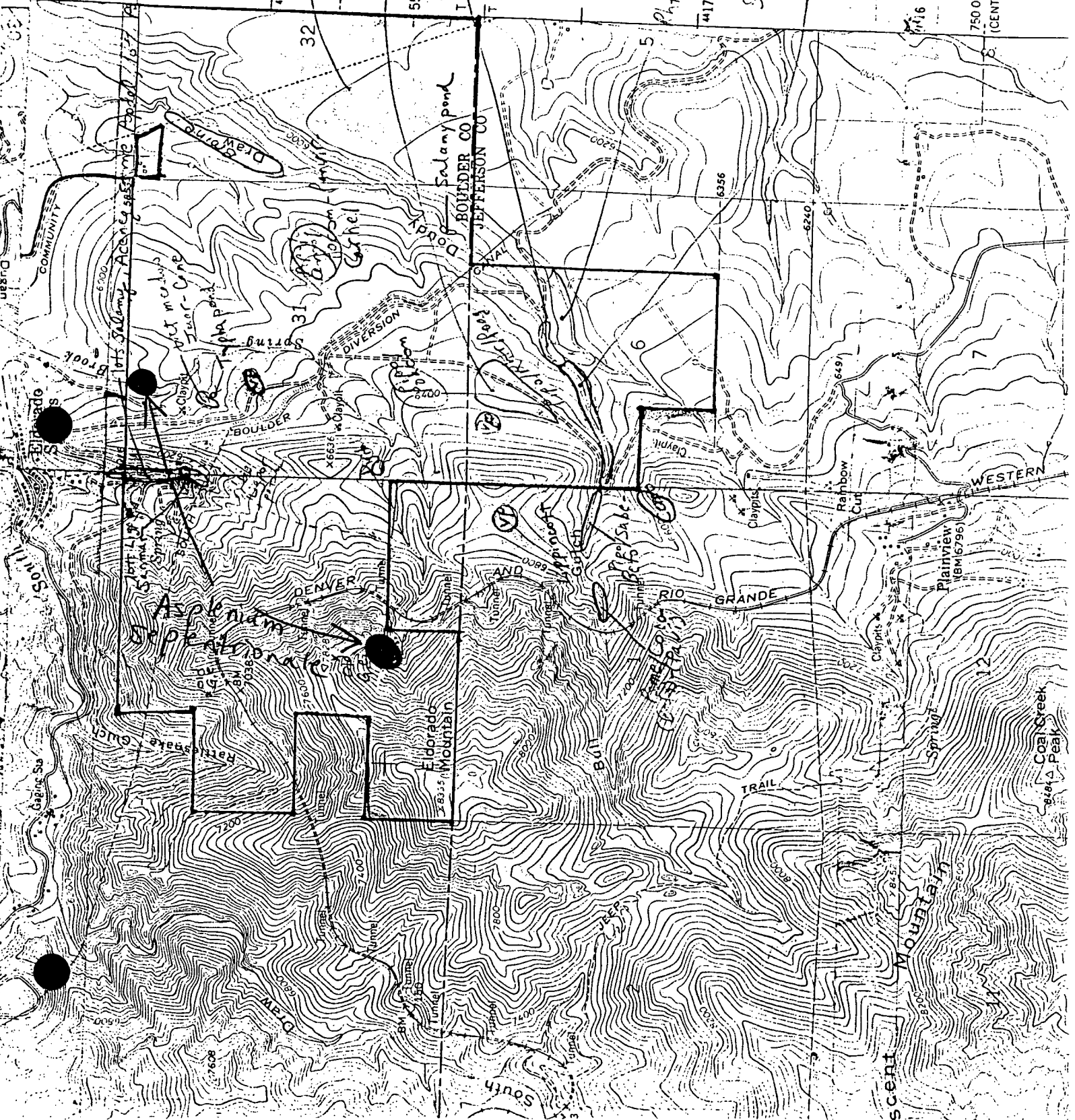
Pavi - Rht - Aggl -
 Salirr

up to RR
 Lippincott, Chunder
 776-0661

Pht/Poag - Archal
 (Lupang, Fenvir, Eri-
 Symoc, Drifts)

Pipos/Pavi - Archal - Pavi
 Pimo - Salt
 Section 16

750 000 FEET
 (CENTRAL)



up from stream
 Aggl. Some lga P.
 d vir

Pipos/Pavi - Archal - Pavi
 Mumo, Sporet Bay

Pipos/Pavi - Archal - Pavi
 (Pavi) / Pavi - Archal - Pavi

Pavi - Rht - Aggl -
 Salirr

up to RR
 Lippincott, Chunder
 776-0661

Pht/Poag - Archal
 (Lupang, Fenvir, Eri-
 Symoc, Drifts)

Pipos/Pavi - Archal - Pavi
 Pimo - Salt
 Section 16

750 000 FEET
 (CENTRAL)

PLANT SPECIES OF SPECIAL CONCERN SURVEY FORM
COLORADO NATURAL HERITAGE PROGRAM

C/O UNIVERSITY OF COLORADO MUSEUM*HUNTER 115 CB 315*BOULDER, CO 80309-0315*(303)492-4719

DATE OF SURVEY: 6/9/93

OBSERVER(S) Tim Hogan, Nan Lederer

TAXONOMY:

SCIENTIFIC NAME: *Smilax lasioneuron* COMMON NAME _____

LOCATION: (Attach a copy of pertinent 7.5' or 15' topographic map section with locations of populations/subpopulations outlined, one map for each sensitive species described)

SITE NAME: Doudy Draw

COUNTY: Boulder USGS QUADRANGLE: Eldorado Springs

TOWNSHIP: 2S RANGE: 70W SECTION: 6 1/4 SEC.: NW

ADDITIONAL T/R/S, SECTIONS OR 1/4 SECS.: _____

ELEVATION (at population center (and range of population if known)): 6400 ft.

NATIONAL FOREST/BLM DISTRICT: _____ F.S. DISTRICT/BLM RESOURCE AREA _____

LAND OWNERSHIP/MANAGEMENT (if not USFS/BLM): City of Boulder Open Space

DIRECTIONS TO SITE (refer to roads, trails, geographic features, etc.):
From either the Doudy Draw trailhead or County Rd. 67, hike up to upper Doudy Draw approx. 1/2 mile above Boulder diversion Canal

HABITAT:

VEGETATION STRUCTURE WITHIN POPULATION AREA:

TOTAL TREE COVER (%)	30	TOTAL SHRUB COVER (%)	50
TOTAL FORB COVER (%)	20	TOTAL GRAMINOID COVER (%)	5
TOTAL MOSS/LICHEN COVER (%)		TOTAL BARE GROUND COVER	

ASSOCIATED PLANT COMMUNITY: (list dominant species currently present, include age structure if known):

Pinus ponderosa - narrow leaf cottonwood / Padus virginianus -
Acer glabrum - Crataegus macantha

HABITAT TYPE: Riparian

ADDITIONAL ASSOCIATED PLANT SPECIES: _____

ASPECT (S, SE, NNW, etc.): E % SLOPE 5 SLOPE SHAPE (concave, convex, straight, etc.) _____

LIGHT EXPOSURE (open, shaded, partial shade, etc.): Shaded

TOPOGRAPHIC POSITION (crest, upslope, midslope, lowerslope, bottom, etc.): bottom

MOISTURE: (dry, moist, saturated, inundated, seasonal seepage, etc.) Moist

PA MATERIAL: _____

4120
4119
32
55
I1S
T2S
4117
416
750,000 FEET
(CENTRAL)

driv - Aggl. - Some life P.
up from stream

Pipe road - 1/2 mile
Muno, Picket Bog

Pipe/Poag - Archd. - 1/2 mile
wood road

(Pom) / P. ...

Pavi - Rhr - Aggl -
Salirr

up to RR

Hippincott, Chucker
Shirley

776-0661

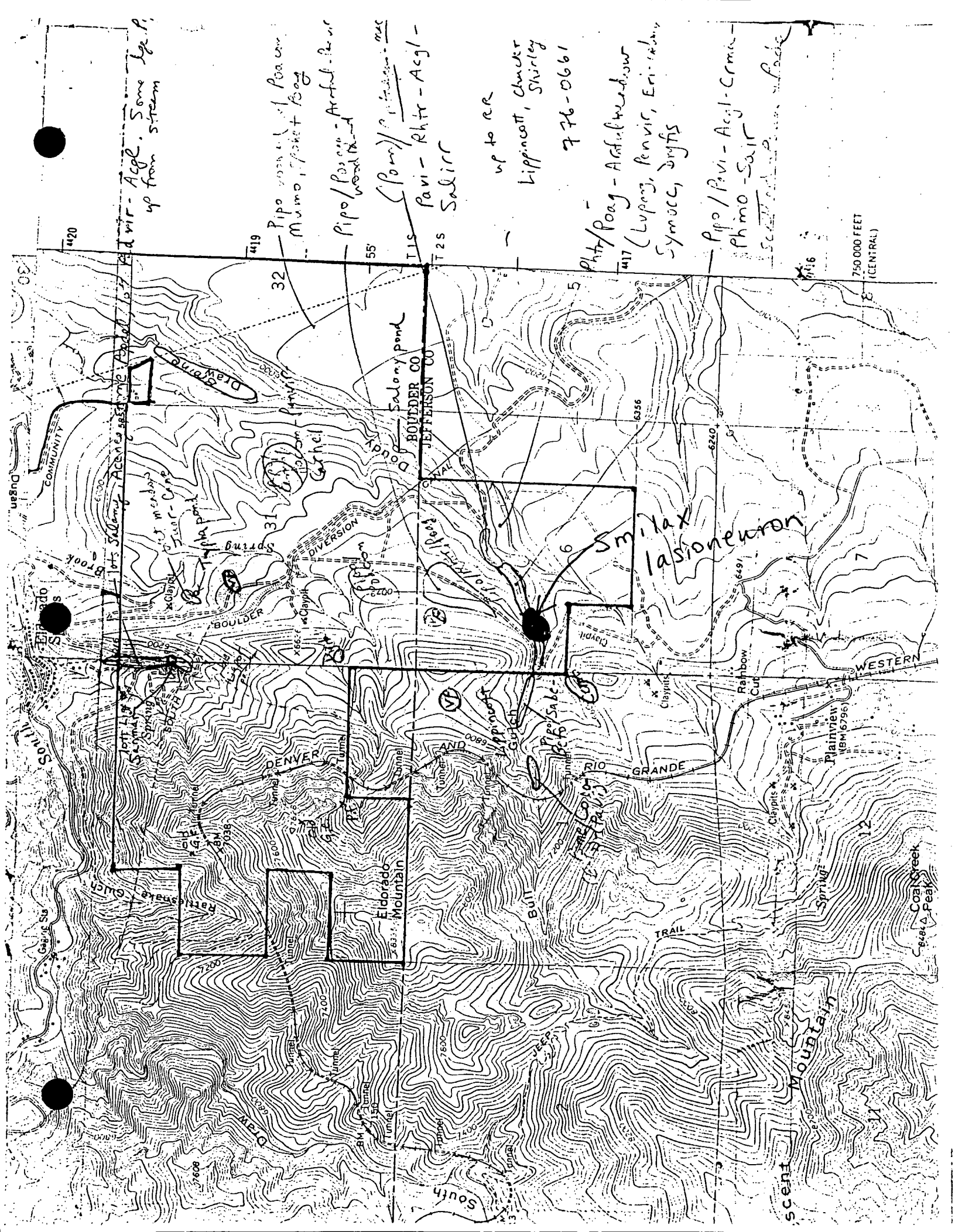
Phy/Poag - Archd. - 1/2 mile

(Lupin, Penvir, Ericid, ...
Synoc, Dryfs

Pipe/Pavi - Aggl - Crm -

Phmo - Salt

Section ...



PLANT SPECIES OF SPECIAL CONCERN SURVEY FORM
COLORADO NATURAL HERITAGE PROGRAM

C/O UNIVERSITY OF COLORADO MUSEUM*HUNTER 115 CB 315*BOULDER, CO 80309-0315*(303)492-4719

DATE OF SURVEY: 9/14/93

OBSERVER(S) Nan Lederer, Tim Hogan, Steve Kettler

TAXONOMY:

SCIENTIFIC NAME: *Amorpha nana* COMMON NAME Dwarf wild indigo

LOCATION: (Attach a copy of pertinent 7.5' or 15' topographic map section with locations of populations/subpopulations outlined, one map for each sensitive species described)

SITE NAME: Doudy Draw area

COUNTY: Boulder USGS QUADRANGLE: Eldorado Springs

TOWNSHIP: 1S RANGE: 70W SECTION: 31 1/4 SEC.: NW and SE

ADDITIONAL T/R/S, SECTIONS OR 1/4 SECS.:

ELEVATION (at population center (and range of population if known)): 6000 ft.

NATIONAL FOREST/BLM DISTRICT: F.S. DISTRICT/BLM RESOURCE AREA

LAND OWNERSHIP/MANAGEMENT (if not USFS/BLM): City of Boulder Open Space

DIRECTIONS TO SITE (refer to roads, trails, geographic features, etc.):

Sub-population a: From Doudy Draw trailhead east of Eldorado Springs, walk up trail along Doudy Draw ca. 1.5 mi, walk west up sideslope. Sub-population b: Drive up County Rd. 67 to go walk up Spring Brook; plants are on slope west of small cattail pond.

HABITAT:

VEGETATION STRUCTURE WITHIN POPULATION AREA:

TOTAL TREE COVER (%) 0 TOTAL SHRUB COVER (%) 2

TOTAL FORB COVER (%) 10 TOTAL GRAMINOID COVER (%) 80

TOTAL MOSS/LICHEN COVER (%) TOTAL BARE GROUND COVER

ASSOCIATED PLANT COMMUNITY: (list dominant species currently present, include age structure if known):

Poa compressa, *Bromopsis inermis*, *Poa sagassizensis*, *Stipa viridula*, *Gutierrezia sarothrae*, *Liatris punctata*

HABITAT TYPE: Grassland

ADDITIONAL ASSOCIATED PLANT SPECIES:

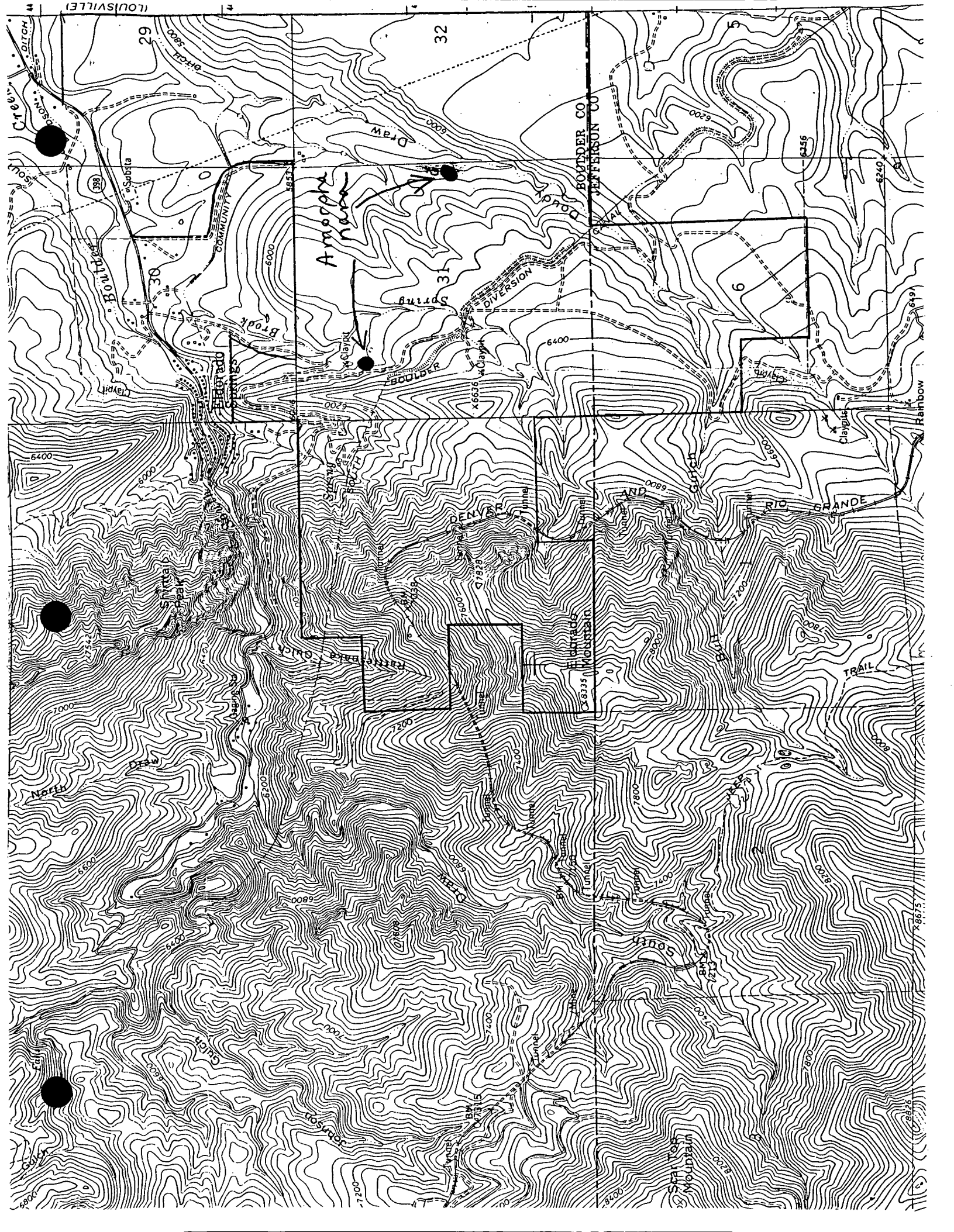
ASPECT (S, SE, NNW, etc.): E % SLOPE 20 SLOPE SHAPE (concave, convex, straight, etc.)

LIGHT EXPOSURE (open, shaded, partial shade, etc.): Open

TOPOGRAPHIC POSITION (crest, upperslope, midslope, lowerslope, bottom, etc.): lowerslope

MOISTURE: (dry, moist, saturated, inundated, seasonal seepage, etc.) Dry

PLANT MATERIAL:



Appendix C

DOUDY DRAW SPECIES LIST

Doudy Draw Species List

Nomenclature follows Weber (Weber and Wittmann, 1992). If other names are considered to be more familiar, these are provided. Those species marked with an asterisk (*) were not observed by Hogan or Lederer, but are reported to be in the Herbarium of City Open Space. In addition to the local manuals (Weber, 1976, 1990), other works used in compiling this list include the *Flora of the Great Plains* (Great Plains Flora Association, 1986), *Intermountain Flora* (Cronquist et al., 1977), *Manual of the Plants of Colorado* (Harrington, 1954), and *Vascular Plants of Wyoming* (Dorn, 1988).

FERNS and FERN ALLIES

ASPIDIACEAE SHIELD FERN FAMILY

Dryopteris filix-mas (L.) Schott MALE FERN.

ASPLENIACEAE SPLEENWORT FAMILY

Asplenium septentrionale (L.) Hoffman GRASS FERN.

ATHYRIACEAE LADY FERN FAMILY

Cystopteris fragilis (L.) Bernhardt BRITTLE FERN.

CRYPTOGRAMMACEAE ROCK BRAKE FAMILY

Cryptogramma acrostichoides R. Brown AMERICAN ROCK BRAKE. [*C. crispa* (L.) R.Br. ssp. *acrostichoides* (R.Br.) Hultén]

EQUISETACEAE HORSETAIL FAMILY

Equisetum arvense L. FIELD HORSETAIL.
Hippochaete laevigata (A. Braun) Farwell SMOOTH SCOURING-RUSH. [*Equisetum laevigatum* A. Braun]

HYPOLEPIDACEAE BRACKEN FAMILY

Pteridium aquilinum (L.) Kuhn ssp. *lanuginosum* (Bongard) Hultén BRACKEN FERN.

SELAGINELLACEAE LITTLE CLUB-MOSS FAMILY

Selaginella densa Rydberg

SINOPTERIDACEAE LIPFERN FAMILY

Cheilanthes fendleri Hooker FENDLER'S LIP FERN.

WOODSIACEAE WOODSIA FAMILY

Woodsia scopulina Eaton ROCKY MOUNTAIN WOODSIA.

GYMNOSPERMS

CUPRESSACEAE CYPRESS FAMILY

Juniperus communis L. ssp. *alpina* (Smith) Celakowski COMMON JUNIPER.

Sabina scopulorum (Sargent) Rydberg ROCKY MOUNTAIN JUNIPER. [*Juniperus scopulorum* Sarg.]

PINACEAE PINE FAMILY

Pinus flexilis James LIMBER PINE.

Pinus ponderosa Douglas ssp. *scopulorum* (Watson) Weber PONDEROSA PINE.

Pseudotsuga menziesii (Mirbel) Franco DOUGLAS FIR.

ANGIOSPERMS

ACERACEAE MAPLE FAMILY

Acer glabrum Torrey MOUNTAIN MAPLE.

Negundo aceroides (L.) Moench BOX ELDER. [*Acer negundo* L.]

AGAVACEAE AGAVE FAMILY

Yucca glauca Nuttall SPANISH BAYONET.

ALISMATACEAE WATER-PLANTAIN FAMILY

Alisma triviale Pursh WATER PLANTAIN. [*A. plantago-aquatica* L. ssp. *brevipes* (Greene) Samuelsson]

ALLIACEAE ONION FAMILY (LILIACEAE)

Allium cernuum Roth NODDING ONION.

Allium geyeri Watson WILD ONION.

Allium textile Nelson & Macbride WILD ONION.

ALSINACEAE CHICKWEED FAMILY (CARYOPHYLLACEAE)

Cerastium fontanum Baumgartner [*C. vulgatum* L.] Adventive.

Cerastium strictum L. emend Haenke MOUSE-EARS. [*C. arvense* of Colorado literature]

Eremogone fendleri (Gray) Ikonnikov SANDWORT. [*Arenaria fendleri* Gray]

Paronychia jamesii Torrey & Gray JAMES' NAILWORT.

Pseudostellaria jamesiana (Torrey) Weber & Hartman TUBER STARWORT. [*Stellaria jamesiana* Torrey]

ANACARDIACEAE SUMAC FAMILY

Rhus aromatica Aiton ssp. *trilobata* (Nuttall ex Torrey & Gray) Weber SKUNKBRUSH. [*R. trilobata* Nutt.]

Rhus glabra L. SMOOTH SUMAC.

Toxicodendron rydbergii (Small ex Rydberg) Greene POISON IVY.

APIACEAE/UMBELLIFERAE PARSLEY FAMILY

- Aletes acaulis* (Torrey) Coulter & Rose MOUNTAIN CARAWAY.
Berula erecta (Hudson) Coville WATER PARSNIP. Adventive.
Carum carvi L. CARAWAY. Adventive. *
Conium maculatum L. POISON HEMLOCK.
Harbouria trachypleura (Gray) Coulter & Rose WHISKBROOM PARSLEY.
Heracleum sphondylium L. ssp. *montanum* (Schleicher ex Gaudin) Briquet in Schinz & Thellung COW PARSNIP.
Ligusticum porteri Coulter & Rose PORTER'S LOVAGE, OSHA.
Lomatium orientale Coulter & Rose SALT & PEPPER.
Musineon divaricatum (Pursh) Nuttall ex Torrey & Gray
Osmorhiza depauperata Philippi SWEET CICELY. [*O. obtusa* (Coulter & Rose) Fernald]
Osmorhiza longistylis (Torrey) de Candolle
Sanicula marilandica L. BLACK SNAKEROOT.

APOCYNACEAE DOGBANE FAMILY

- Apocynum androsaemifolium* L. SPREADING DOGBANE.

ARALIACEAE GINSENG FAMILY

- Aralia nudicaulis* L. WILD SARSAPARILLA.

ASCLEPIADACEAE MILKWEED FAMILY

- Asclepias pumila* (Gray) Vail DWARF MILKWEED.
Asclepias speciosa Torrey SHOWY MILKWEED.
Asclepias stenophylla Gray NARROW LEAVED MILKWEED.
Asclepias viridiflora Rafinesque GREEN MILKWEED.

ASPARAGACEAE ASPARAGUS FAMILY

- Asparagus officinale* L. ASPARAGUS. Adventive. *

ASTERACEAE/COMPOSITEAE SUNFLOWER FAMILY

- Achillea lanulosa* Nuttall YARROW.
Acosta diffusa (Lamarck) Sojak KNAPWEED, CORNFLOWER. [*Centaurea diffusa* Lam.] Adventive.
Agoseris aurantiaca (Hooker) Greene ORANGE FALSE DANDELION.
Agoseris glauca (Pursh) Rafinesque PALE FALSE DANDELION.
Ambrosia psilostachya De Candolle var. *coronopifolia* (Torrey & Gray) Farwell WESTERN RAGWEED. [*A. coronopifolia* T. & G.]
Ambrosia trifida L. GIANT RAGWEED. Adventive.
Antennaria howellii Greene ssp. *neodioica* (Greene) Bayer NORTHERN PUSSYTOES. [*A. neglecta* of Colorado literature; *A. obovata* Nelson] *
Antennaria parvifolia Nuttall MOUNTAIN PUSSYTOES.
Antennaria pulcherrima (Hooker) Greene ssp. *anaphaloides* (Rydberg) Weber PUSSYTOES. [*A. anaphaloides* Rydb.]
Antennaria rosea Greene PINK PUSSYTOES.
Arctium minus (Hill) Bernhardt BURDOCK. Adventive.
Arnica cordifolia Hooker HEARTLEAF ARNICA.
Arnica fulgens Pursh ORANGE ARNICA.

Artemisia frigida Willdenow SILVER SAGE.
Artemisia ludoviciana Nuttall PRAIRIE SAGE.
Aster laevis L. var. *geyeri* Gray SMOOTH ASTER.
Aster lanceolatus Willdenow ssp. *hesperius* (Gray) Semple & Chmielewski [*A. hesperius* Gray]
Aster porteri Gray PORTER'S ASTER.
Bidens frondosa L. BEGGARS TICK.
Brickellia eupatoroides (L.) Shinnery BRICKELLIA. [*Kuhnia eupatoroides* L.]
Carduus nutans L. ssp. *macrolepis* (Peterman) Kazmi MUSK THISTLE. Adventive.
Chlorocephalus albiflora (Hooker) Weber WHITE HAWKWEED. [*Hieracium albiflora* Hook.]
Chrysothamnus nauseosus (Pallas ex Pursh) Britton ssp. *nauseosus* RABBITBRUSH.
Cichorium intybus L. CHICORY. Adventive.
Cirsium arvense (L.) Scopoli CANADA THISTLE. Adventive.
Cirsium ochrocentrum Gray
Cirsium vulgare (Savi) Tenore BULL THISTLE. [*C. lanceolatum* (L.) Scopoli] Adventive.
Dyssodia papposa (Ventenat) Hitchcock FETID MARIGOLD.
Erigeron colo-mexicanus Nelson FLEABANE.
Erigeron divergens Torrey & Gray SPREADING FLEABANE.
Erigeron flagellaris Gray WHIPLASH FLEABANE.
Erigeron speciosus (Lindley) De Candolle SHOWY FLEABANE.
Erigeron vetensis Rydberg LA VETA DAISY.
Gaillardia aristata Pursh BLANKET FLOWER.
Grindelia squarrosa (Pursh) Dunal GUMWEED.
Grindelia subalpina Greene MOUNTAIN GUMWEED.
Gutierrezia sarothrae (Pursh) Britton & Rusby SNAKEWEED.
Helianthus annuus L. COMMON SUNFLOWER.
Helianthus pumilus Nuttall SUNFLOWER.
Helianthus rigidus (Cassini) Desfontaines ssp. *subrhomboides* (Rydberg) Heiser
Heliomeris multiflora Nuttall [*Gymnolomia multiflora* (Nutt.) Bentham & Hooker; *Viguiera multiflora*
(Nutt.) Blake]
Heterotheca fulcrata (Greene) Shinnery GOLDEN ASTER. [*Chrysopsis fulcrata* Greene]
Heterotheca villosa (Pursh) Shinnery var. *villosa* GOLDEN ASTER. [*Chrysopsis villosa* (Pursh) Nuttall ex De
Candolle]
Lactuca canadensis L. CANADIAN WILD LETTUCE.
Lactuca serriola L. PRICKLY LETTUCE. Adventive.
Liatris punctata Hooker BLAZING STAR.
Nothocalais cuspidata (Pursh) Greene FALSE DANDELION. [*Microseris cuspidata* (Pursh) Schultz-
Bipontinus]
Oligoneuron rigidum (L.) Small STIFF GOLDENROD. [*Solidago rigida* L.]
Oligosporus dracunculus (L.) Poljakov WILD TARRAGON. [*Artemisia dracunculoides* Pursh]
Oligosporus pacificus (Nuttall) Poljakov WESTERN SAGEWORT. [*O. campestris* (L.) ssp. *pacificus* (Nutt.)
Weber; *Artemisia campestris* L.; *A. pacifica* Nutt.]
Oreochrysum parryi (Gray) Rydberg PARRY GOLDENROD. [*Haplopappus parryi* Gray]
Packera fendleri (Gray) Weber & Löve FENDLER'S SENECIO. [*Senecio fendleri* Gray]
Packera plattensis (Nuttall) Weber & Löve [*Senecio plattensis* Nutt.]
Pericome caudata Gray var. *caudata*
Podospermum laciniatum (L.) De Candolle FALSE SALSIFY. [*Scorzonera laciniata* L.]
Psilochenia occidentalis (Nuttall) Nuttall WESTERN HAWKSBEARD. [*Crepis occidentalis* Nutt.]*
Ratibida columnifera (Nuttall) Wootton & Standley PRAIRIE CONEFLOWER.
Rudbeckia ampla Nelson TALL CONEFLOWER. [*R. laciniata* L. var. *ampla* (Nelson) Cronquist]
Senecio integerrimus Nuttall SPRING SENECIO.
Senecio spartioides Torrey & Gray BROOM SENECIO.
Solidago missouriensis Nuttall SMOOTH GOLDENROD.
Solidago nana Nuttall LOW GOLDENROD.

Solidago nemoralis Aiton WOODLAND GOLDENROD.
Taraxacum officinale G.H. Weber COMMON DANDELION. Adventive.
Townsendia grandiflora Nuttall SHOWY EASTER DAISY.
Townsendia hookeri Beaman
Tragopogon dubius Scopoli ssp. *major* (Jacquin) Vollmann SALSIFY. Adventive.
Tragopogon porrifolius L. Adventive.
Virgulus falcatus (Lindley) Reveal & Keener [*Aster falcatus* Lindley]
Xanthium strumarium L. COCKLEBUR. Adventive.

BERBERIDACEAE BARBERRY FAMILY

Mahonia repens (Lindley) Don OREGON GRAPE.

BETULACEAE BIRCH FAMILY

Alnus incana (L.) Moench ssp. *tenuifolia* (Nuttall) Breitung ALDER. [*A. tenuifolia* Nutt.]
Betula fontinalis Sargent RIVER BIRCH. [*B. occidentalis* Hooker]
Corylus cornuta Marshall HAZLENUIT.

BORAGINACEAE BORAGE FAMILY

Asperugo procumbens L. MADWORT. Adventive.
Cynoglossum officinale L. HOUND'S TONGUE. Adventive.
Hackelia floribunda (Lehmann) Johnston STICKSEED.
Lappula redowskii (Hornemann) Greene BEGGARS TICK.
Lithospermum incisum Lehmann NARROW-LEAVED PUCCOON.
Lithospermum multiflorum Torrey ex Gray MANY-FLOWERED PUCCOON.
Mertensia ciliata (James ex Torrey) Don BLUEBELLS.
Mertensia lanceolata (Pursh) De Candolle var. *lanceolata* BLUEBELLS.
Myosotis scorpioides L. FORGET-ME-NOT. Adventive.
Onosmodium molle Michaux ssp. *occidentale* (Mackenzie) Cochrane FALSE GROMWELL.
Oreocarya virgata (Porter) Greene MINER'S CANDLE. [*Cryptantha virgata* (Porter) Payson]

BRASSICACEAE/CRUCIFERAE MUSTARD FAMILY

Alyssum alyssoides L. ALYSSUM. Adventive.
Alyssum parviflorum Bieberstein ALYSSUM. [*A. minus* (L.) Rothmaler] Adventive.
Arabis hirsuta (L.) Scopoli HAIRY ROCK CRESS.
Barbarea orthoceras Ledebour WINTERCRESS. Adventive.
Boechera fendleri (Watson) Weber FENDLER'S ROCK CRESS. [*Arabis fendleri* Watson]
Camelina microcarpa Andrzejowski FALSE FLAX. Adventive.
Capsella bursa-pastoris (L.) Medicus SHEPHERDS PURSE. Adventive.
Cardaria cf. draba (L.) Desvaux WHITETOP. Adventive.
Chorispora tenella (Pallas) DeCandolle PURPLE MUSTARD. Adventive.
Descurainia incana (Bernardhi ex Fischer & Meyer) Don WESTERN TANSY MUSTARD. [*D. richardsonii* (Sweet) Schultz]
Erysimum capitatum (Douglas) Greene WESTERN WALLFLOWER.
Lepidium virginicum L. PEPPERGRASS. Adventive.
Lesquerella montana (Gray) Watson MOUNTAIN BLADDER-POD.
Neolepia campestre (L.) Weber FIELD CRESS. [*Lepidium campestre* (L.) R. Brown] Adventive.
Noccaea montana (L.) Meyer WILD CANDYTUFT. [*Thlaspi montanum* L.]
Sisymbrium altissimum L. JIM HILL MUSTARD. Adventive.
Thlaspi arvense L. PENNY CRESS. Adventive.

Turritis glabra L. TOWER MUSTARD. [*Arabis glabra* (L.) Bernhardi] Adventive.

CACTACEAE CACTUS FAMILY

Coryphantha missouriensis (Sweet) Britton & Rose NIPPLE CACTUS. [*Mammillaria missouriensis* Sweet]

Echinocereus viridiflorus Engelm. GREEN FLOWERED HEDGEHOG CACTUS.

Opuntia fragilis (Nuttall) Haworth BRITTLE CACTUS.

Opuntia macrorhiza Engelm. PRICKLY PEAR CACTUS. [*O. compressa* (Salisbury) Macbride]

Pediocactus simpsonii (Engelm.) Britton & Rose MOUNTAIN BALL CACTUS.

CALOCHORTACEAE MARIPOSA FAMILY (LILIACEAE)

Calochortus gunnisonii Watson MARIPOSA LILY.

CAMPANULACEAE BELL FLOWER FAMILY

Campanula rotundifolia L. HAREBELL.

CANNABACEAE HOPS FAMILY

Humulus lupulus L. ssp. *americanus* (Nuttall) Löve & Löve WILD HOPS. [*H. americanus* Nutt.]

CAPRIFOLIACEAE HONEYSUCKLE FAMILY

Symphoricarpos albus (L.) Blake WHITE SNOWBERRY.

Symphoricarpos occidentalis Hooker WESTERN SNOWBERRY.

Viburnum lentago L. NANNYBERRY. Adventive.

CARYOPHYLLACEAE PINK FAMILY (see also ALSINACEAE)

Gastrolychnis drummondii (Hooker) Löve & Löve CHAMPION. [*Lychnis drummondii* (Hook.) Watson]

CHENOPODIACEAE GOOSEFOOT FAMILY

Bassia sieversiana (Pallas) Weber BURNING BUSH. [*Kochia iranica* of the Colorado literature] Adventive.

Chenopodium fremontii Watson

Chenopodium leptophyllum (Nuttall ex Moquin) Watson

COMMELINACEAE SPIDERWORT FAMILY

Tradescantia occidentalis (Britton) Smyth var. *scopulorum* (Rose) Anderson & Woodson SPIDERWORT.

CONVALLARIACEAE MAYFLOWER FAMILY (LILIACEAE)

Maianthemum amplexicaule (Nuttall) Weber FALSE SOLOMON'S SEAL. [*Smilacina racemosa* of the Colorado literature]

Maianthemum stellatum (L.) Link FALSE SOLOMON'S SEAL. [*Smilacina stellata* (L.) Desfontaines]

CONVOLVULACEAE MORNINGGLORY FAMILY

Convolvulus arvensis L. BINDWEED. Adventive.

COPTACEAE MEADOW RUE FAMILY
(RANUNCULACEAE)

Thalictrum fendleri Engelman ex Gray MEADOW RUE.

CORNACEAE DOGWOOD FAMILY

Swida sericea (L.) Holub RED OSIER DOGWOOD. [*Cornus stolonifera* Michaux]

CRASSULACEAE STONECROP FAMILY

Amerosedum lanceolatum (Torrey) Löve & Löve STONECROP. [*Sedum lanceolatum* Torrey]

CYPERACEAE SEDGE FAMILY

Carex brevior (Dewey) Mackenzie

Carex lanuginosa Michaux

Carex microptera Mackenzie [*C. festiva* Dewey]

Carex nebrascensis Dewey

Carex occidentalis Bailey

Carex pennsylvanica Lamarck ssp. *heliophila* (Mackenzie) Weber [*C. heliophila* Mackenzie]

Carex praegracilis Boott

Carex scoparia Schkuhr ex Willdenow

Carex stenophylla Wahlenberg ssp. *eleocharis* (Bailey) Hultén [*C. eleocharis* Bailey]

Carex stipata Mühlenberg ex Willdenow

Carex vulpinoidea Michaux

Eleocharis palustris (L.) Roemer & Schultes SPIKE RUSH. [*E. macrostachya* Britton]

Scirpus microcarpus Presl BULRUSH. [*S. rubrotinctus* Fernald]

Scirpus pallidus (Britton) Fernald BULRUSH.

ELAEAGNACEAE OLEASTER FAMILY

Elaeagnus angustifolia L. RUSSIAN OLIVE. Adventive.

ERICACEAE HEATH FAMILY
(see also MONOTROPACEAE, PYROLACEAE)

Arctostaphylos uva-ursi (L.) Sprengel ssp. *adenotricha* (Fernald & Macbride) Calder & Taylor KINNIKINNIK,
BEARBERRY.

EUPHORBIACEAE SPURGE FAMILY

Agaloma marginata (Pursh) Löve & Löve SNOW-ON-THE-MOUNTAIN. [*Euphorbia marginata* Pursh]

Chamaesyce serpyllifolia (Persoon) Small [*Euphorbia serpyllifolia* Pers.] Adventive. *

Poinsettia dentata (Michaux) Klotsch & Garcke [*Euphorbia dentata* Michx.] *

Tithymalus brachyceras (Engelmann) Small ROCKY MT. SPURGE. [*T. montanus* (Engelm.) Sm.; *Euphorbia robusta* of Colorado literature]

Tragia ramosa (Müller-Argoviensis) Torrey STINGING SPURGE.

FABACEAE/LEGUMINOSAE PEA FAMILY

- Amorpha fruticosa* L. LEAD PLANT.
Amorpha nana Nuttall DWARF AMORPHA.
Astragalus adsurgens Pallas var. *robustior* Hooker [*A. striatus* Nuttall ex Torrey & Gray]
Astragalus agrestis Douglas ex Don [*A. dasyglottis* of Colorado literature]
Astragalus crassicarpus Nuttall GROUND PLUM.
Astragalus drummondii Douglas ex Hooker DRUMMOND'S MILK VETCH.
Astragalus flexuosus (Hooker) Don WIRY MILK VETCH.
Astragalus shortianus Nuttall in Torrey & Gray
Astragalus tenellus Pursh LOOSE FLOWERED MILK VETCH.
Dalea candida Willdenow var. *oligophylla* (Torrey) Shinnery WHITE PRAIRIE CLOVER.
Dalea purpurea Ventenat PURPLE PRAIRIE CLOVER.
Glycyrrhiza lepidota Pursh WILD LICORICE.
Lathyrus leucanthus Rydberg WHITE FLOWERED PEAVINE.
Lotus tenuis Waldstein & Kitaibel BIRDSFOOT TREFOIL. Adventive.
Lupinus argenteus Pursh COMMON LUPINE.
Medicago lupulina L. BLACK MEDIC. Adventive.
Medicago sativa L. ALFALFA. Adventive.
Melilotus albus Medicus WHITE SWEET CLOVER. Adventive.
Melilotus officinalis (L.) Pallas YELLOW SWEET CLOVER. Adventive.
Oxytropis lamberti Pursh COLORADO LOCO.
Psoralidium tenuiflora (Pursh) Rydberg [*Psoralea tenuiflora* Pursh]
Thermopsis divaricarpa Nelson GOLDEN BANNER.
Trifolium fragiferum L. STRAWBERRY CLOVER. Adventive.
Trifolium pratense L. RED CLOVER. Adventive.
Trifolium repens L. WHITE DUTCH CLOVER. Adventive.
Vicia americana Mühlenberg AMERICAN VETCH.

FUMARIACEAE FUMITORY FAMILY

- Corydalis aurea* Willdenow ssp. *aurea* GOLDEN SMOKE.

GENTIANACEAE GENTIAN FAMILY

- Frasera speciosa* Douglas ex Grisebach MONUMENT PLANT, GREEN GENTIAN.
Pneumonanthe affinis (Grisebach) Greene BOTTLE GENTIAN. [*Gentiana affinis* Gris. in Hooker]

GERANIACEAE GERANIUM FAMILY

- Erodium cicutarium* (L.) L'Heritier STORKSBILL. Adventive.
Geranium caespitosum James COMMON GERANIUM.

GROSSULARIACEAE CURRANT or GOOSEBERRY FAMILY

- Ribes aureum* Pursh GOLDEN CURRANT.
Ribes cereum Douglas WAX CURRANT.
Ribes inerme Rydberg COMMON GOOSEBERRY.

HELLEBORACEAE HELLEBORE FAMILY
(**RANUNCULACEAE**)

Delphinium carolinianum Walter ssp. *virescens* (Nuttall) Johnston PLAINS LARKSPUR. [*D. virescens* Nutt.]

Delphinium nuttallianum Pritzl BLUE LARKSPUR. [*D. nelsonii* Greene]

HYDRANGEACEAE HYDRANGEA FAMILY

Jamesia americana Torrey & Gray WAXFLOWER.

HYDROPHYLLACEAE WATERLEAF FAMILY

Hydrophyllum fendleri (Gray) Heller WATERLEAF.

Phacelia heterophylla Pursh SCORPION WEED.

HYPERICACEAE ST. JOHNSWORT FAMILY

Hypericum perforatum L. KLAMATH WEED. Adventive.

IRIDACEAE IRIS FAMILY

Iris missouriensis Nuttall WILD IRIS.

Sisyrinchium montanum Greene BLUE-EYED-GRASS.

JUNACEAE RUSH FAMILY

Juncus arcticus Willdenow ssp. *ater* (Rydb.) Hultén

Juncus articulatus L. Adventive.

Juncus bufonius L. TOAD RUSH.

Juncus compressus Jacquin Adventive.

Juncus confusus Coville

Juncus dudleyi Wiegand [*J. tenuis* Willdenow] *

Juncus longistylis Torrey

Juncus saximontanus Nelson

Luzula parviflora (Ehrhart) Desvaux WOOD RUSH.

LAMIACEAE/LABIATAE MINT FAMILY

Lycopus americanus Mühlenberg ex Barton WATER HOREHOUND.

Mentha arvensis L. FIELD MINT.

Monarda fistulosa L. var. *menthifolia* (Graham) Fernald PINK BERGAMOT.

Nepeta cataria L. CATNIP. Adventive.

Prunella vulgaris L. HEAL-ALL.

Salvia reflexa Hornemann LANCE LEAVED SAGE. Adventive.

Scutellaria brittonii Porter BRITTON SKULLCAP.

Teucrium canadense L. var. *occidentalis* GERMANDER.

LEMNACEAE DUCKWEED FAMILY

Lemna minor L. DUCKWEED.

LILIACEAE LILY FAMILY

(see also ALLIACEAE, CONVALLARIACEAE, CALOCHORTACEAE,
MELIANTHIACEAE, and UVULARIACEAE)

Leucocrinum montanum Nuttall ex Torrey & Gray SAND LILY.

LINACEAE FLAX FAMILY

Adenolinum lewisii (Pursh) Löve & Löve WILD FLAX. [*Linum lewisii* Pursh]

MALVACEAE MALLOW FAMILY

Malva neglecta Wallroth MALLOW. Adventive.

Sphaeralcea coccinea (Pursh) Rydberg COPPER MALLOW.

**MELANTHIACEAE FALSE HELLEBORE FAMILY
(LILIACEAE)**

Toxicoscordion venenosum (Watson) Rydberg DEATH CAMAS. [*Zigadenus gramineus* Rydb.; *Z. venenosus* Watson]

NYCTAGINACEAE FOUR O'CLOCK FAMILY

Oxybaphus hirsutus (Pursh) Sweet in De Candolle HAIRY UMBRELLAWORT. [*Mirabilis hirsuta* (Pursh)
MacMillan]

Oxybaphus linearis (Pursh) Robinson NARROW LEAVED UMBRELLAWORT. [*Mirabilis linearis* (Pursh)
Heimerl]

ONAGRACEAE EVENING-PRIMROSE FAMILY

Calylophus serrulatus (Nuttall) Raven [*Oenothera serrulata* Nutt.]

Chamerion danielsii Löve FIREWEED. [*C. angustifolium* and/or *Epilobium angustifolium* of Colorado literature]

Circaea alpina L. ssp. *pacifica* (Ascherson & Magnus) Raven ENCHANTERS NIGHTSHADE.

Epilobium brachycarpum Presl ANNUAL WILLOW HERB. [*E. paniculatum* Nuttall]

Epilobium ciliatum Rafinesque ssp. *glandulosum* (Lehmann) Hoch & Raven NORTHERN WILLOW HERB. [*E.
adenocaulon* Haussknecht]

Gaura coccinea Nuttall ex Pursh SCARLET GAURA.

Gaura parviflora Douglas ex Lehmann

Oenothera villosa Thunberg ssp. *strigosa* (Rydberg) Dietrich & Raven COMMON EVENING PRIMROSE. [*O. strigosa*
(Rydberg) Mackenzie & Bush]

ORCHIDACEAE ORCHID FAMILY

Corallorhiza maculata Rafinesque SPOTTED CORAL ROOT.

Corallorhiza striata Lindley STRIPED CORAL ROOT.

Corallorhiza wisteriana Conrad SPRING CORAL ROOT.

OROBANCHACEAE BROOMRAPE FAMILY

Aphyllon fasciculatum (Nuttall) Torrey & Gray BROOMRAPE. [*Orobanche fasciculata* Nutt.]

Aphyllon uniflorum (L.) Torrey & Gray BROOMRAPE. [*Orobanche uniflora* L.]

Oryzopsis micrantha (Trinius & Ruprecht) Thurber LITTLESEED RICEGRASS.
Panicum virgatum L. SWITCHGRASS.
Pascopyrum smithii (Rydberg) Löve WESTERN WHEATGRASS. [*Agropyron smithii* Rydberg]
Phalaroides arundinacea (L.) Rauschert REED CANARY GRASS. [*Phalaris arundinacea* L.] Adventive.
Phleum pratense L. TIMOTHY. Adventive.
Poa agassizensis Boivin & D. Löve BLUEGRASS.
Poa bulbosa L. BULBOUS BLUEGRASS.
Poa compressa L. CANADA BLUEGRASS. Adventive(?).
Poa nemoralis L. ssp. *interior* (Rydberg) Butters & Abbe [*P. interior* Rydb.]
Poa pratensis L. KENTUCKY BLUEGRASS. Adventive.
Puccinellia airoides Watson & Coulter ALKALI GRASS. [*P. nuttalliana* of literature]
Schizachyrium scoparium (Michaux) Nash LITTLE BLUESTEM. [*Andropogon scoparius* Michaux]
Sorghastrum avenaceum (Michaux) Nash INDIAN GRASS. [*S. nutans* (L.) Nash]
Sporobolus heterolepis (Gray) Gray PRAIRIE DROPSEED.
Stipa comata Trinius & Ruprecht NEEDLE-AND-THREAD.
Stipa nelsonii Scribner NEEDLEGRASS. [*S. columbiana* Macoun]
Stipa viridula Trinius GREEN NEEDLEGRASS.
Thinopyrum intermedium (Host) Barkworth & Dewey WHEAT GRASS. [*Agropyron intermedium* (Host) Beauvois; *Elytrigia intermedia* (Host) Nevski] Adventive.
Vulpia octoflora (Walter) Rydberg SIX WEEKS FESCUE. [*Festuca octoflora* Walt.]

POLEMONIACEAE PHLOX FAMILY

Collomia linearis Nuttall NARROWLEAVED COLLOMIA.
Ipomopsis aggregata (Pursh) Grant ssp. *candida* (Rydberg) Grant & Grant GILIA. [*Gilia candida* Rydb.; *I. candida* (Rydb.) Wherry]
Ipomopsis spicata (Nuttall) Grant SPIKE GILIA. [*Gilia spicata* Nutt.]
Microsteris gracilis (Douglas ex Hooker) Greene ssp. *humilis* (Greene) Grant [*M. humilis* (Doug. ex Hook.) Greene]
Phlox multiflora Nelson MANY-FLOWERED PHLOX.

POLYGONACEAE BUCKWHEAT FAMILY

Acetosella vulgaris (Koch) Fourreau SHEEP SORREL. [*Rumex acetosella* L.] Adventive.
Eriogonum effusum Nuttall
Eriogonum jamesii Bentham var. *flavescens* Watson *
Eriogonum umbellatum Torrey SULPHUR FLOWER.
Polygonum arenastrum Boreau DEVIL'S SHOESTRING. [*P. aviculare*, *P. rurivagum* of many authors] Adventive.
Polygonum douglasii Greene DOUGLAS KNOTWEED. [*P. montanum* (Small) Greene, *P. sawatchense* Small]
Pterogonum alatum (Torrey) Gross WINGED BUCKWHEAT. [*Eriogonum alatum* Torrey]
Rumex crispus L. CURLY DOCK. Adventive.

PORTULACACEAE PURSLANE FAMILY

Claytonia rosea Rydberg SPRING BEAUTY. [*C. lanceolata* Pursh]

PRIMULACEAE PRIMROSE FAMILY

Androsace septentrionalis L. ROCK PRIMROSE.
Dodecatheon pulchellum (Rafinesque) Merrill SHOOTING STAR.
Lysimachia ciliata L. FRINGED LOOSESTRIFE. [*Steironema ciliatum* (L.) Rafinesque] *

