



**THREATENED AND ENDANGERED  
SPECIES EVALUATION  
Rocky Flats Plant Site**

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**THREATENED AND ENDANGERED  
SPECIES EVALUATION  
Rocky Flats Plant Site**

**EXECUTIVE SUMMARY**

Studies were conducted to identify potential habitat for threatened or endangered species and other species of special concern on the Rocky Flats Plant site. Appropriate agencies were contacted, relevant literature was reviewed and experts on the flora and fauna of the area were consulted. Limited reconnaissance level field studies were conducted to verify information obtained from other sources.

**Sensitive Plant Species**

Habitat potentially suitable for two plant species, the Federal Category 2 Colorado butterfly plant (Gaura neomexicana var coloradensis) and the proposed Federal threatened diluvium lady's-tresses orchid (Spiranthes diluvialis), is present on the site. In addition, habitat potentially suitable for two species of special concern to the State of Colorado, the forktip threeawn (Aristida basiramea) and toothcup (Rotala ramosior), is also present on the site.

No individuals of the Colorado butterfly plant, diluvium lady's tresses, forktip threeawn or the toothcup were observed during the reconnaissance surveys. Intensive field studies designed to survey potential habitat for the Federal Category-2 plant species and the plant species of special concern to the State of Colorado will be required to assess if they occur on the Rocky Flats Plant site.

## Sensitive Wildlife Species

The results of the studies indicate that habitat potentially suitable for the endangered black-footed ferret (Mustela nigripes) and peregrine falcon (Falco peregrinus) is present on the Rocky Flats Plant site. The bald eagle (Haliaeetus leucocephalus) was identified as occasionally using habitat between 0.3 and 1.1 miles (mi) from the Rocky Flats Plant site during the winter months. Habitat use by bald eagles on the site is expected to be casual if it occurs at all. Potentially suitable habitat also is present for six Federal Category 2 wildlife species, including the white-faced ibis (Plegadis chichl), ferruginous hawk (Buteo regalis), mountain plover (Charadrius montanus), long-billed curlew (Numenius americanus), Preble's meadow jumping mouse (Zapus hudsonius preblei) and the swift fox (Vulpes velox). Insufficient information is available to determine if habitat for the Federal Category 2 Texas horned lizard (Phrynosoma cornutum) is present on the site. Habitat potentially suitable for the western snowy plover (Charadrius alexandrinus nivosus) is not present on the Rocky Flats Plant site. Prior to undertaking actions that may affect potentially suitable habitat, focused surveys should be conducted to determine if sensitive wildlife species are present.

Black-footed ferrets require prairie-dog colonies or complexes of smaller prairie-dog colonies as habitat. Approximately 15 acres located in the northeast area of the plant site were identified as a location of a prairie-dog colony. These 15 acres are part of a larger colony (comprised of an estimated 47 acres) that is dissected by Highway 128. This acreage is part of a 753-acre complex acreage that occurs primarily east of Indiana Avenue. Although the 47-acre colony by itself is insufficient to support a black-footed ferret, the larger complex is potentially suitable habitat for ferrets. This 753-acre complex is fragmented by several major roads and highways. No confirmed sightings have been reported for this area, but several unconfirmed sightings have been reported for the Denver area. Surveys of the 753-acre complex may be required to determine if the 15 acres present on the Rocky Flats Plant site is habitat for the black-footed ferret. Surveys will be required only if potential development directly impacts this colony. Based upon the

information gathered for this survey, the USFWS is not considering the area of the Rocky Flats Plant site as a re-introduction site for black-footed ferrets

Although the peregrine falcon was not observed during the reconnaissance level surveys, two historic nest sites are present within 10 miles of the Rocky Flats Plant site. The Peregrine Falcon Recovery Plan (USFWS, 1984) discourages land-use practices that would adversely alter the character of the hunting habitat or prey base within a 10-mile radius of a nesting cliff (including historical sites)

**THREATENED AND ENDANGERED  
SPECIES EVALUATION  
Rocky Flats Plant Site**

**1 0    INTRODUCTION**

A survey for potential habitat that may support sensitive plant and animal species was conducted on Federal property encompassing the U S Department of Energy's (DOE) Rocky Flats Plant facility near Golden, Colorado. Subjects of the survey included prairie dog habitat, as well as several species of concern at the state and federal levels.

The Rocky Flats Plant site is located in Jefferson and Boulder Counties in the State of Colorado. This location is at the western edge of the Great Plains and about 3 miles (mi) east of the Front Range of the Rocky Mountains. The site slopes gently to the east from an elevation of about 6250 feet above mean sea level (ft MSL) to about 5650 ft MSL (Clark et al , 1980).

The geological formations which immediately underlay the site include the Rocky Flats Alluvium, the Arapahoe Formation, the Laramie Formation, Fox Hills Sandstone, and the Pierre Shale (Van Horn, 1972). The soils on the site include members of the Larimer, Fort Collins, Cass and Terry Series (Moreland and Moreland, 1975). These soils vary in texture from clay loams to sandy loams and some include cobble material.

The land-use patterns in the study and adjacent areas include industrial, mineral extraction, and agricultural uses. Historically, cattle grazing has been a significant use and has probably affected the distribution and composition of the existing vegetation within the study area (Clark et al , 1980). However, cattle grazing was discontinued about 35 years ago, and the habitats on the site are probably in a successional process.

The majority of the site is dominated by prairie habitats similar to those present on the Great Plains. Clark et al (1980) suggests that historically the Rocky Flats Plant site was probably dominated by forested habitat prior to settlement in the area by people of European origin.

## 2.0 METHODS

### 2.1 Literature Survey and Agency Contacts

A literature survey was conducted to obtain information and data on habitats present on the site and background information on sensitive species which may be present. Information from the U.S. Fish and Wildlife Service (USFWS) was obtained to develop the compliance list and to update information on endangered species (Carlson, pers commun, 1989, Chu, pers commun, 1990, Leachman, pers commun, 1990a and 1990b, USFWS, 1989) [Note: All cited personal communications involving this study are listed in Appendix C]. The U.S. Army Corp of Engineers (COE) was contacted for information on a wetland plant species. The Colorado Natural Areas Program and Colorado Division of Wildlife were contacted for information on state plant and animal species of concern (Coles, pers commun, 1990, Weber, pers commun, 1990a and 1990b). In addition, a local expert on sensitive plant species was contacted for supplementary information on the Colorado butterfly plant (Von Loh, pers commun, 1990).

### 2.2 Field Methods - Endangered Plant Species and Their Habitats

During the helicopter survey conducted principally for the endangered wildlife species (see Section 2.3), general endangered-plant species habitat types were noted. A follow-up reconnaissance level-ground survey for sensitive plant species and their potential habitat was conducted during July 10 through 12, 1990. Information on potential habitat for sensitive species was mapped in the field on 1:24,000 scale USGS topographical maps. Recent aerial photographs were used to augment the data obtained from field observations.

The primary focus of the plant habitat survey was information received from the U S Fish and Wildlife Service (Chu, pers commun , 1990) which suggested the possible occurrence of the Category 2 candidate species the Colorado Butterfly Weed (Gaura neomexicana var coloradensis) and the Diluvium Lady's Tresses (Spiranthes diluvialis) Additional habitat information for these and other plant species of special concern was obtained by searching the database maintained by the Colorado Natural Areas Program (Colorado Department of Natural Resources, 1990) and from sources obtained during the literature review phase of the project The Colorado Natural Areas Program identified the forktip threeawn (Aristida basiramea) and tooth cup (Rotala ramosior) as species which could occur on the Rocky Flats Plant site Phone conversations with local experts (Von Loh, pers commun , 1990, and Cole, pers commun , 1990) provided unpublished background information

The focus of the effort was the identification of potential habitat on the site, and this effort did not constitute a definitive survey for the presence of sensitive species Limited walking and driving surveys of upland habitats were conducted These surveys were conducted during August 10 through 12, 1990 In addition, a reconnaissance-level ground survey was conducted by walking through approximately 23 acres (ac) of the wetland and wetland margin habitat on the site Plants belonging to the genus Gaura were carefully inspected to evaluate if they were Colorado butterfly plants No orchid species or orchid-like plants were observed during the August surveys

### 2 3 Field Methods - Endangered Wildlife Species and Their Habitats

#### Prairie-Dog Colony

The primary focus of the prairie-dog colony surveys was to assess whether habitat capable of supporting black-footed ferrets is present on the Rocky Flat Plant site The prairie-dog colony surveys at the Rocky Flats Plant site were conducted during July 10 through 12, 1990 The habitat survey was designed to accurately map all the prairie-dog colonies within the delineated

boundary of the Rocky Flats Plant site and an additional mile-wide extended study zone around the boundary. In order to locate prairie-dog colonies within the study area, a helicopter was used to facilitate mapping. North/south transects were flown at approximately 400 ft above the ground surface and were spaced about 1/4-mi apart. Due to flight restrictions over the Rocky Flats Plant site area, the overflight was limited to this altitude above ground level. Where required, and where safe to do so, the helicopter was flown at lower elevations to inspect certain areas in more detail. Transects, spaced at 1/4-mi intervals were flown along the north/south axis. This allowed strips 1/2 mi in width to be surveyed for the presence of prairie-dog colonies and other potentially significant habitats. No overflights of the plant site itself are allowed, and the flight pattern was modified slightly to avoid violating this restriction. All prairie-dog colonies located were plotted on 7.5-minute (1:24,000 scale) USGS topographical maps. Additional walking and driving surveys were conducted to verify the location of the prairie-dog colonies.

Colonies which were atypical in appearance were surveyed at ground level to assess what factors may be responsible for observed variations from the norm. In addition, several typical colonies were observed at ground level to confirm species identification. Ground-level surveys were conducted from the nearest roadside location using 10 x 50 power binoculars.

The plotted locations were subsequently checked against recent, high-resolution aerial photographs for accuracy. The prairie-dog colonies were clearly visible on these photos. The areal extent of all the mapped colonies was determined with a compensating polar planimeter.

#### Peregrine Falcon

During walking and driving surveys conducted to assess potential habitat, observations were made of raptor species present in the study area. In addition, observations were made of habitat components which might constitute foraging areas for the peregrine.

## 2.4 Map Preparation

A base map for the study area (1:24,000) was developed by combining portions of the Golden, Colorado and Louisville, Colorado USGS 7.5-minute quadrangles. Three maps were prepared to delineate important habitats on the site.

A map (1:24,000) of upland habitats that may be potential habitats for sensitive species was prepared (Figure 1). Habitat descriptions by Clark et al. (1980) were used as a basis for habitat analysis for non-wetland habitats. Data from the aerial photographs was used to adjust the distribution of some habitat mapping units delineated by Clark et al. (1980). The dry upland vegetation and habitat type consists of those areas which are comparable with the more xeric vegetation types delineated by Clark et al. (1980). These include habitats where low growing herbaceous species, including short grasses, dominate the vegetation and where mid-grasses are dominant but cover is relatively low. Variations from mapping efforts by Clark et al. (1980) are based on infrared signatures of the existing habitat on recent aerial images of the study area. The relatively mesic type is delineated from areas where infrared signatures indicate that cover and moisture content in the vegetation is higher than that which would be attributed to the xeric type. Wetlands are present within areas delineated as relatively mesic but only major open water areas are distinguished in the upland habitat map. Cultivated fields are present in the southeast corner of the study area and are delineated as they appear in the aerial photographs.

A map (1:24,000 scale) of very mesic habitats that includes wetlands and areas of transition to upland habitats was prepared (Figure 2). Wetland studies (EG&G Rocky Flats, Inc., 1990) provided recent information on the distribution and classification of wetland habitats. Habitats considered transitional from wetland to upland were derived from the aerial photos and were mapped on the 1:24,000-scale base map. These wet-to-moist areas provide potential habitat for several sensitive plant species and a sensitive mammal. In addition, these habitat areas may represent a source of water and food and temporary habitat for other sensitive species during migration. Results of the mapping effort were not ground verified.

Prairie-dog colonies on the site and within the 1-mile-wide extended study zone were mapped on the 1:24,000 scale base map (Figure 3). Locations observed during the field studies were confirmed on the aerial photographs and transcribed to the base map. All prairie-dog colony locations were ground verified during the field studies.

### 3.0 RESULTS AND DISCUSSION

#### 3.1 The Compliance List

The USFWS provided a list of endangered and candidate wildlife species to be addressed in this report (Carlson, pers. commun., 1989). Subsequently, the USFWS added two plant species to their compliance list (Chu, pers. commun., 1990). The Colorado Division of Wildlife (Weber, pers. commun., 1990a and 1990b) indicated the presence of historic nesting sites for the peregrine falcon near the study area. Because the provisions of the Peregrine Falcon Recovery Plan (USFWS, 1984) would require that the study area be included in the foraging area associated with these sites, the Peregrine falcon was added to the list. The U.S. Army Corps of Engineers (COE) (Strine, pers. commun., 1990) was contacted to obtain information regarding the diluvium lady's tresses orchid (Spiranthes diluvialis). The USFWS was contacted at Golden, Colorado (Weimer, pers. commun., 1991), regarding the status of this orchid species.

Data from the Colorado Natural Areas Program (Colorado Natural Areas Program, 1990) indicated that the Rocky Flats Plant site could provide habitat suitable for the forktip threeawn (Aristida basiramea) and the toothcup (Rotala ramosior). These species are of special concern to the state of Colorado. The results of the database search are included as Appendix B. All potential species of concern are listed in Table 1.

Table 1. Compliance List

SPECIES	STATUS
Plant Species	
Forktip Threeawn ( <u><i>Aristida basiramea</i></u> )	Co
Colorado Butterfly Plant ( <u><i>Gaura neomexicana</i></u> var <u><i>coloradensis</i></u> )	C2
Toothcup ( <u><i>Rotala ramosior</i></u> )	Co
Diluvium Lady's Tresses ( <u><i>Spiranthes diluvialis</i></u> )	P
Wildlife Species	
Black-Footed Ferret ( <u><i>Mustela nigripes</i></u> )	E
Peregrine Falcon ( <u><i>Falco peregrinus</i></u> )	E
Bald Eagle ( <u><i>Haliaeetus leucocephalus</i></u> )	E
Texas Horned Lizard ( <u><i>Phrynosoma cornutum</i></u> )	C2
White-Faced Ibis ( <u><i>Plegadis chichi</i></u> )	C2
Ferruginous Hawk ( <u><i>Buteo regalis</i></u> )	C2
Western Snowy Plover ( <u><i>Charadrius alexandrinus nivosus</i></u> )	C2
Mountain Plover ( <u><i>Charadrius montanus</i></u> )	C2
Long-Billed Curlew ( <u><i>Numenius americanus</i></u> )	C2
Preble's Meadow Jumping Mouse ( <u><i>Zapus hudsonius preblei</i></u> )	C2
Swift Fox ( <u><i>Vulpes velox</i></u> )	C2
<p>E = Endangered Species            Co = Plant Species of Concern to the State of Colorado            C2 = Category 2 (Federal)            P = Proposed for Listing as a Federal Threatened Species</p>	

## 3 2 Results and Discussion

### 3 2 1 Sensitive Plant Species

No currently listed rare or endangered plant species are expected to occur on the Rocky Flats Plant site (Chu, pers commun , 1990) Two Federal Category 2 candidate species, the Colorado butterfly plant (Gaura neomexicana var coloradensis) and the diluvium lady's tresses orchid, could occur in or near wetlands on the site (Chu, pers commun , 1990) As federal candidate species, the Colorado butterfly plant and the diluvium lady's-tresses could be listed at any time The Omaha District of the COE issued a special public notice regarding the status of diluvium lady's tresses on February 16, 1990 (COE, 1990) In this notice, the COE states that this species would be proposed for listing in Fiscal Year (FY) 1990 and listed in FY 1991 The diluvium lady's tresses was proposed for listing as threatened on November 13, 1990 (Weimer, pers commun , 1991)

In addition to federal agency concern for these species, the Colorado Natural Areas Program considers these species to be sensitive and lists known occurrences in the state data base Other species of concern to Colorado (Coles, pers commun , 1990) which may occur at the Rocky Flats Plant site are the forktip threeawn (Aristida basiramea) and the toothcup (Rotala ramosior)

#### 3 2 1 1 Colorado Butterfly Plant (Gaura neomexicana var coloradensis)

The Colorado butterfly plant is a short-lived perennial or biennial plant which generally blooms in the first or second year It may grow from between 15 and 30 inches (in) high when in bloom Its known flowering period is between July and September

The species is generally found in the transition zone between wetland bottoms and the drier uplands associated with wet meadow habitat Both EG&G Rocky Flats, Inc (1990) and Clark et al (1980) identified wetland habitat on the Rocky Flats Plant site Clark et al (1980)

recognized two wetland habitat types, Salix exigua-Barbarea orthoceras wetland scrub and Carex nebrascensis-Juncus articus marsh. Habitat that may be suitable for the Colorado butterfly plant is present near the upland margins of these vegetation types (Figure 2)

No individuals of the Colorado butterfly plant were found on the portions of the site surveyed. Although approximately 23 ac of wetland habitat on the site was surveyed, no conclusion regarding the presence or absence of the species on unsurveyed lands is made.

### 3.2.1.2 Diluvium Lady's Tresses (Spiranthes diluvialis)

The diluvium lady's tresses is a terrestrial orchid that grows in and near wetlands in the states of Utah, Nevada, and Colorado. It is considered extremely rare in Colorado, being known from only three populations along the Front Range (Jennings, pers. commun., 1986a and 1986b). The plant is relatively low growing and is known to bloom from late July to early October.

Jennings (pers. commun., 1986a and 1986b) reported that appropriate habitat for the diluvium lady's tresses includes moist swales dominated by grasses and near the edge of wetlands dominated by sedges, rushes and cattails. He further stated that the orchid cannot compete in the marsh habitat. The habitat (Figure 2) described as potentially suitable for the Colorado butterfly plant on the Rocky Flats Plant site also might be suitable for S. diluvialis.

Populations of the orchid are known from parts of the Clear Creek drainage in Prospect Park and near the west edge of Golden in Jefferson County. Another population is known on South Boulder Creek near U.S. Highway 36 in Boulder County. The Rocky Flats Plant site is located between the known Jefferson County and Boulder County populations (Colorado Natural Areas Program, 1990).

No individuals of the diluvium lady's tresses were found on the parts of the Rocky Flats Plant site surveyed. Because only 23 ac of the total wetland habitat on the site were surveyed, no conclusions as to the presence or absence of the species on unsurveyed lands is made.

3 2 1 3 Forktip Threawn (Aristida basiramea)

The forktip threawn is a species of special concern to the State of Colorado. It ranges from Maine to North Dakota and south to Kentucky, Oklahoma, and Colorado. It was observed in 1973 growing on the Rocky Flats Plant site where Woman Creek enters the site near the western boundary (Colorado Natural Areas Program, 1990). No recent observations were listed in the Colorado Natural Areas Program (1990) database.

The forktip threawn grows on uplands where sandy soils and open barrens form the substrate (Hitchcock, 1950). This species may occur at other xeric upland locations (Figure 1) on the site where the necessary soil conditions are present.

3 2 1 4 Toothcup (Rotala ramosior)

The toothcup is most common along the eastern seaboard and the eastern part of the great plains. A disjunct distribution occurs in Washington and Oregon (Steyermark, 1977). Few occurrences have been reported from Colorado.

The toothcup is a small herb which blooms from June to October. Steyermark (1977) described the habitat of the toothcup as including a wide range of wetlands, including the margins of streams, ponds, ditches, open swales and depressions in prairies.

The toothcup has been observed growing in a temporary pool approximately four miles east of Boulder (Colorado Natural Areas Program, 1990). This pool was filled with water in early summer by overflow from Baseline Lake. At the time of the siting in August 1979, muddy soils

were present in low areas, but standing water was no longer present. The recent wetland delineation (EG&G Rocky Flats, Inc., 1990) of Rocky Flats Plant site indicates that intermittently filled lacustrine habitat with open water is present on the site. The toothcup's status as an obligate wetland species (Reed, 1988) and its known habitat as described by Steyermark (1977) indicates that all wetland areas, except permanent open water, present on the Rocky Flats Plant site represent potential habitat (Figure 2). Focused surveys would be required to determine its presence or absence on the site.

### 3.2.2 Sensitive Wildlife Species

The Rocky Flats Plant site has habitat that may be suitable for eleven wildlife species (Table 1) which are endangered or candidates for Federal listing (Carlson, pers. commun., 1989). Three of the wildlife species are listed as endangered by the USFWS: the black-footed ferret, the peregrine falcon, and the bald eagle.

The remaining eight wildlife (Table 1) species are Federal Category 2 candidate species for listing as threatened or endangered. Category 2 species are under consideration for listing, but insufficient data currently are available to support threatened or endangered status. Although Category 2 species do not receive the legal protection afforded to threatened or endangered species, they are addressed because they may be listed at any time.

#### 3.2.2.1 Black-Footed Ferret (Mustela nigripes)

The black-footed ferret (BFF) is considered to be one of the rarest and most endangered mammals in North America (Hillman and Clark, 1980). It is listed as endangered and receives full protection under the 1973 Endangered Species Act, as amended (P.L. 93-205). The USFWS has indicated that potential habitat for the black-footed ferret may be present on or near the Rocky Flats Plant study area (Carlson, pers. commun., 1989). BFF prey primarily upon prairie dogs (both black- and white-tailed) and potential habitat would be strongly associated with

prairie-dog colonies An investigation was conducted to determine if potential habitat (i.e., prairie-dog colonies) is present on the Rocky Flats Plant site The habitat survey was conducted using the methods outlined in Clark et al (1984)

The long, thin body of the black-footed ferret is weasel-like in appearance Its fur is buff or buckskin-colored with the exception of black markings about the eyes, feet, legs and on the tip of the tail The males are about one-and-one-half ft in length and the females average a bit shorter (Hillman and Clark, 1980) The adults weigh between approximately 23 oz and 49 oz (Hillman and Clark, 1980)

The historic range of the black-footed ferret included the great plains, semi-arid grasslands and mountain basins of North America wherever prairie dogs were present Black-footed ferrets are closely associated with the colonies of both the black and white-tailed prairie dogs The known distribution of the black-footed ferret is extremely limited An extensive program to reintroduce them to appropriate habitats within their historic range is being undertaken

The black-footed ferret historically occurred in the Denver metropolitan area (Leachman, pers commun, 1990) Black-footed ferret sightings in the Denver area have been reported within the past five years but these reports have not been confirmed (Leachman, pers commun, 1990)

Black-tailed prairie-dog colonies are present on the Rocky Flats Plant study area and have been mapped on Figure 3 The acreage of the colonies detected within the study area range from 2 to 242 ac (Table 2) The areal extent of those colonies, or parts of colonies, within the Rocky Flats Plant site boundary total approximately 15 ac This 15 ac is part of a 47-ac colony which straddles the northern Rocky Flats Plant site boundary (Figure 3) Colonies present in the extended study zone cover approximately 753 ac The distribution of the colonies in the extended study zone along the eastern boundary of the site is discontinuous, and the largest is approximately 242 ac in extent Application of USFWS (1989) survey guidelines indicate that the discontinuous colonies are part of a larger complex with a total of at least 753 ac (Table 2)

Other prairie-dog colonies are present outside the extended study zone and are presumed to be part of a regional colony complex

**Table 2. Prairie-Dog Colonies within the Rocky Flats Extended Study Zone**

---

<u>Colony Designation</u>	<u>acres (ac)</u>
1	210
2	150
3	242
4	32
5	15
6	4
7	48
8	2
9	28
10	<u>22</u>
Total	753

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Potential habitat for the black-footed ferret within the Rocky Flats Plant study area is limited to approximately the 15 ac that are part of the contiguous colony and complex mentioned above. Because approximately 80 ac of prairie-dog colony is required to support a black-footed ferret, the available habitat within the Rocky Flats Plant site would be insufficient to support a BFF by itself. However, the colony within the site is considered suitable habitat for ferrets, because it is part of the larger 753-ac prairie-dog complex. This suggests that sufficient potential habitat is present in the extended study zone to support black-footed ferrets. The distance between each separate colony is less than 4 mi, therefore, black-footed ferrets, if present, may be able to travel between them (Leachman, pers commun, 1990)

The 753-ac complex of prairie-dog colonies is fragmented by major roads and other disturbance factors resulting from local land use practices. The roads represent a potential hazard to wildlife species which use the complex as habitat. If black-footed ferrets are present in the prairie-dog

complex, they would be exposed to traffic hazards when crossing roads to hunt or disperse to other parts of the complex. The nocturnal habits of the black-footed ferret make the potential hazard greatest on roads with heavy traffic during the night hours (i.e. dusk to dawn) (Leachman, pers. commun., 1990). In summary, the overall value of the 753-ac complex as black-footed ferret habitat is reduced, due to the habitat-fragmentation and human-disturbance factors noted in the area.

The black-tailed prairie-dog complex within the extended study zone of the Rocky Flats Plant site is greater than 80 ac and less than 1,000 ac. Consequently, the USFWS requires a black-footed ferret survey before allowing any prairie dog-colony to be affected by a proposed project (USFWS, 1989). The area surveyed should include all black-tailed prairie-dog colonies or complexes within 0.5 mi of any proposed construction site. Methods for the survey should follow the Black-Footed Ferret Survey Guidelines for Compliance with the Endangered Species Act (USFWS, 1989).

The USFWS has plans to reintroduce the black-footed ferret in parts of its historic range. Prairie-dog colonies and colony complexes larger than 1000 ac may be considered as potential re-introduction sites. At this time, however, the USFWS is not considering potential habitat associated with the Rocky Flats Plant site as suitable for the reintroduction of black-footed ferrets (Leachman, pers. commun., 1990).

### 3.2.2.2 Peregrine Falcon (Falco peregrinus)

The peregrine falcon, a Federally-listed endangered species, formerly nested on cliffs throughout the region from Mexico to Alberta and British Columbia. Peregrines in the Rocky Mountains and southwest now persist mainly where suitable nesting habitat is present on mountain cliffs and river gorges. Under normal conditions, a clutch of three or four eggs is laid in early-to-late April (USFWS, 1984). Both sexes incubate, and the male provides most of the prey. Incubation lasts 33 days. Peregrines may travel up to 17 mi from nesting cliffs to hunting areas. Preferred

hunting habitats are areas which attract abundant bird life, such as cropland, meadows, river bottoms, marshes, and lakes (USFWS, 1984)

No peregrine falcons were observed within the Rocky Flats Plant site during the field survey conducted during August 1990. There are 43 known nest sites throughout the State of Colorado, of which 13 were occupied in 1984 (USFWS, 1984). The Peregrine Falcon Recovery Plan (USFWS, 1984) calls for the direct protection of peregrines and their habitat. One task within the plan is to discourage land-use practices and development which may alter adversely the character of the hunting habitat or prey base within 10 mi of the nesting cliff (including historical sites). There are two historical nest sites located within a 10-mi radius of the Rocky Flats Plant site. One site is 5 mi southwest of the area, and the other is 7 mi northwest of the area. The locations of these historical nest sites place the entire Rocky Flats Plant site within the area of protection of potential foraging habitat. Areas occur, both upland and wetland, within the Rocky Flats Plant site which are appropriate for hunting by the peregrine. Practices which may reduce the numbers, distribution, or availability of prey species should be prohibited (USFWS, 1984).

### 3 2 2 3 Bald Eagle (Haliaeetus leucocephalus)

The bald eagle is a Federal endangered species in Colorado. Although not included on the list of species of concern provided by the USFWS for the Rocky Flats Plant site, the bald eagle was identified as using habitat associated with Great Western Reservoir and Standley Lake (ASI, 1990). The close proximity (0.3 mi and 1.1 mi, respectively) of these water bodies suggest that parts of the Rocky Flats Plant site could be used by wintering bald eagles on an occasional basis.

Bald eagles generally feed on fish, waterfowl, and other birds. They prefer habitat which includes perch trees near the edge of a water body or other open area. Perch trees generally have good visibility, easy accessibility, a large trunk diameter and are usually taller than other nearby trees.

Bald eagles have been recorded in appropriate habitats near the RFP area in the winter months of December through March (Abbot, pers commun , 1990) They usually do not nest in the area but have been known to roost at Standley Lake and Great Western Reservoir (Abbot, pers commun , 1990, Weber, pers commun , 1990) Habitat on the Rocky Flats Plant site does not include the large water bodies preferred by bald eagles, hence, this site is not expected to be used on a more than casual basis, if at all, by bald eagles Casual use could include the hunting of small mammals on the site when their preferred open-water habitat is frozen over and their normal prey base is less accessible

#### 3 2 2 4 Texas Horned Lizard (Phrynosoma cornutum)

The Texas horned lizard ranges from southeastern Colorado south to Texas and west to southeastern Arizona An isolated population is known to occur in Louisiana, and the species has been introduced into Florida The species inhabits arid and semiarid open country with a sparse growth of plants such as bunch grass, cactus, juniper, acacia, and mesquite Loose soils are generally present in Texas horned lizard habitat Mating occurs in April and May, and the clutch of 14 to 37 eggs is laid in burrows during May and June The young horned lizards hatch in approximately 6 weeks Ants are an important component in the diet of the horned lizard

In Colorado, the Texas horned lizard is known from south of the Arkansas River in southeastern Colorado, where it can live at elevations up to 6000 ft MSL (Anderson, 1981) Records of P cornutum from Boulder and Denver counties were judged to be invalid from the standpoint of natural habitat and appear to be based on escaped or released pets (Anderson, 1981) At this time, no current data are available on whether an escaped/released population of the Texas horned lizard exists on the Rocky Flats Plant site area A complete survey for appropriate substrates would be necessary to further assess the potential for this species to occur on the site If present in the Rocky Flats Plant site and the extended study area, xeric upland habitats (Figure 1) would be the most likely areas to provide potential habitat

### 3 2 2 5 White-Faced Ibis (Plegadis chichi)

The white-faced ibis breeds in scattered locations in the western United States, Mexico and South America. Within the United States, it is known to breed from California to southern Idaho, including Nevada, Utah, Colorado, and parts of the Texas coastline. It winters in the southernmost parts of California and into Mexico. Preferred white-faced ibis habitat includes large marshes, with inaccessible reed beds or willow-dominated vegetation. Breeding occurs in colonies, and the ibis frequently joins rookeries of other marsh birds. A typical nest may contain 3 to 4 pale greenish eggs on a large stick platform built in low trees or in dense standing vegetation near or over marshes. Both partners share in nest building, incubation, and rearing of the young. Incubation is about twenty-one days. The breeding range of the white-faced ibis has become more limited due to human encroachment (Udvardy, 1977).

In Colorado, the white-faced ibis is a migrant bird that inhabits aquatic habitats such as lakes, reservoirs, marshes, streams, and rivers, and agricultural habitats such as croplands, orchards, shelter belts, dwellings, and tree farms (Bissel, 1978a). Its occurrence has been noted as unusual to common (Bissel, 1978a). On the Rocky Flats Plant site, potential habitat is present and includes streams, meadows, ponds, and agricultural fields (Figure 2).

### 3 2 2 6 Ferruginous Hawk (Buteo regalis)

The ferruginous hawk nests from the Canadian prairie provinces to Oregon, Nevada, Arizona, and Oklahoma. It winters in the southern half of its breeding range, including the southwestern states from southern California to southwestern Texas. Habitat for the ferruginous hawk consists of prairies, brushy open country, and badlands. A variety of materials are used in nest construction and may include roots, sticks, sagebrush, or even old cattle bones. The clutch may have 3 to 5 white blotched or spotted eggs and tends to vary in conjunction with prey abundance (Udvardy, 1977). These hawks prefer to nest in trees but have been found nesting in bushes, ground ledges,

riverbanks, and hillsides. Their diet consists mainly of prairie dogs, ground squirrels, and to a lesser extent, locusts, Jerusalem crickets, and birds.

In the area of the Rocky Flats Plant site, the ferruginous hawk is a likely breeder in shortgrass prairie (dominated by buffalo grass or blue grama), croplands, mountain meadows, parks, (Bissel, 1978a). It is likely to occur in the study area during the breeding season (Bissel, 1978a). The Rocky Flats Plant site provides abundant habitat that may be used by the ferruginous hawk (Figures 1 and 2).

### 3 2 2 7 Western Snowy Plover (Charadrius alexandrinus nivosus)

The western snowy plover's range is cosmopolitan. In the western United States, year-round range is found along the Pacific Coast from Washington southward. Additional breeding range is found in portions of the intermontane west, including parts of Colorado. Its required habitat includes riverbanks, alkali flats, sand dunes, coral beaches and other shores. The eggs are usually laid on dry sand and other open substrates without a nest. The average clutch size is 3, and the buff-spotted eggs tend to blend in with the substrate, making them difficult to spot. The nest is tended alternately by both parents.

In various parts of Colorado, the western snowy plover has been recorded as a migrant bird, a likely breeder, and a definite breeder (Bissel, 1978a). For breeding, it prefers alkali flats and is considered rare (Bissel, 1978a). During migration, it prefers lakes or reservoirs. Because no suitable nesting habitat is present on the Rocky Flats Plant site, it is not expected to use the site for breeding. Nearby reservoirs may provide habitat for migrant birds.

### 3 2 2 8 Mountain Plover (Charadrius montanus)

The mountain plover's breeding range extends from eastern Montana to Wyoming and into eastern Colorado. It winters in central California, and south and east into the Mexican states of

Sonora and Chihuahua. The mountain plover is an upland bird, and it prefers dry short-grass prairie or plains habitat often far from water. Its typical clutch contains 3 dark olive eggs in a scrape, no nest is built. It mainly feeds in small flocks, mostly on insects. This gregarious bird may form large flocks, particularly during migration and in the winter months (Udvardy, 1977). With the intense cultivation of the prairie belt, the nesting habitat of this plover has been reduced drastically (Udvardy, 1977).

In various parts of Colorado, the mountain plover is considered a migrant bird, a likely breeder, a definite breeder, and a straggler (Bissel, 1978a). In the area of the Rocky Flats Plant site, the mountain plover is considered a definite breeder which inhabits the shortgrass prairie and is considered to be rare to fairly common (Bissel, 1978a). Xeric upland habitat present on the Rocky Flats site is potentially suitable for the mountain plover (Figure 1). Although no mountain plovers were observed during the August 1990 surveys, this species may occur on the site.

### 3 2 2 9 Long-billed Curlew (Numenius americanus)

The long-billed curlew is found from southern Canada throughout the Great Basin, east to Texas and northwestern Oklahoma. It winters from the southwestern states to the grasslands of the Mexican plateau and the coastal lagoons of western Mexico, it is also found along the Gulf Coast of the United States and southern Florida. Its main habitat consists of salt marshes, mud flats, and beaches, nesting occurs on upland prairies. A typical clutch contains four olive eggs that are heavily spotted with brown and lavender. These are laid in a grass-lined depression on open ground. These birds are territorial nesters, but feeding, roosting, and migration occurs in flocks. They avoid cover and only feel safe in the open (Udvardy, 1977). Formerly, this bird was hunted for its meat, but now it is fully protected (Udvardy, 1977).

In various parts of Colorado the long-billed curlew is a migrant bird, a likely breeder, and a definite breeder (Bissel, 1978a). In the area of the Rocky Flats Plant site, it is considered a migrant bird using grassland, lakes or reservoirs, and marshes. Its presence in the area is

considered unusual (Bissel, 1978a) On the Rocky Flats Plant site, xeric and mesic uplands as well as aquatic habitat are present and provide potentially suitable habitat for the long-billed curlew (Figures 1 and 2)

### 3 2 2 10 Preble's Meadow Jumping Mouse (Zapus hudsonius preblei)

The jumping mouse's range extends from southern Alaska, the southern tier of Canadian provinces and Wyoming, south to northeast Oklahoma and northeast Georgia Its main habitat is in moist fields, but it may also occur in brush, brushy field, marsh, and woods with thick vegetation The preble's meadow jumping mouse is the only subspecies of the meadow jumping mouse which occurs in Colorado Preble's meadow jumping mouse is found in moist lowland areas or riparian vegetation During late April or early May, males emerge from their nests first, 1-2 weeks later females emerge, and the first mating takes place Gestation lasts about 19 days Often two litters of 2-9 young (usually 5-6) are produced per year, with peaks occurring in June and August By the end of October, nearly all meadow jumping mice have retired to hibernation nests of shredded grass in a protected place, under a board, in a hollow log, beneath a clump of grass, often in a bank, mound, or other raised area Its main diet includes the seeds of grasses and other green plants, berries, insects, and fungus scratched from surface litter

In Colorado, the Preble's meadow jumping mouse is a definite breeder In the area of the Rocky Flats Plant site, it is considered a definite breeder in marshes, moist lowlands and riparian vegetation, although its abundance is undetermined (Bissel, 1978b) Records for the Preble's meadow jumping mouse are historical, however, appropriate habitat appears to be present at the Rocky Flats Plant site (Figure 2), and the species should be considered potentially present

### 3 2 2 11 Swift Fox (Vulpes velox)

The swift fox's range extends from south Alberta, Saskatchewan, and Manitoba south through eastern Montana and Wyoming, northeastern Colorado, the Dakotas, Nebraska, western Kansas

and Oklahoma, eastern New Mexico, and northern Texas. Its habitat consists of shortgrass prairies and other arid areas with loose soils. These mammals mate from January to February, usually for life, three to five young born from March to April in a chamber about 3 feet below the surface with no nesting material. The female suckles the young for 10 weeks. The young stay with the female until the fall. This mostly nocturnal, solitary fox excavates its own den or enlarges a badger or marmot den in open country. The typical den has 3 to 4 entrances about 8 inches wide. A mound of earth, sometimes scattered with small bones or scraps of prey is generally present near the entrance to the den. Swift fox scat are small, irregular, and cylindrical. Its tracks are less than 1.5 inches long and all prints show four toes and claws. The swift fox eats rabbits, ground squirrels, rats, mice, birds, insects, grasses, and berries.

In Colorado, the swift fox is a definite breeder in the eastern part of the state (Bissel, 1978b). Its breeding habitat includes grasslands, and it is considered common in eastern Colorado (Bissel, 1978b). Although there is no documentation of the swift fox occurring in the area of the Rocky Flats Plant site, xeric and mesic uplands which provide potential habitat are present, and the species could be a component of the local fauna (Figure 1).

### 3.3 Regulatory Compliance

Because the Rocky Flats Plant is a Federal facility, any actions which may significantly disturb the environment on the site has to be assessed under the National Environmental Policy Act (NEPA) of 1969. This includes assessing the impacts of all actions that may affect endangered species. This endangered species evaluation was conducted to provide background information to enable the Rocky Flats Plant facility to comply with NEPA and other applicable laws and regulations, for future proposed actions. In addition to NEPA, representative laws and regulations for which this evaluation may provide compliance information include, but are not limited to, the following:

- the Endangered Species Act,
- the Clean Water Act, and
- the Migratory Species Act

#### 4.0 ACKNOWLEDGMENTS

This report was prepared under the general administrative oversight of Dr Timothy D Steele, Task Leader and Manager, Physical Sciences Group of Advanced Sciences, Inc (ASI) The report was prepared and associated field investigations were performed by Messrs Phil Bunch, ASI Senior Scientist, and Ron Freeman, ASI Manager, Natural Resources Group This study was completed in partial fulfillment of the NEPA-related task order authorized under BOA Contract No SBA 65314PB, on behalf of EG&G Rocky Flats, Inc ASI's Project Manager was Mr Michael G Waltermire, P E , and EG&G's Project Manager was Mr Scott McGlochlin, NEPA DIVISION

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**Appendix A - Maps of Endangered Species/Habitat Locations**

Figure 1 - Upland Habitats, Rocky Flats Plant Site

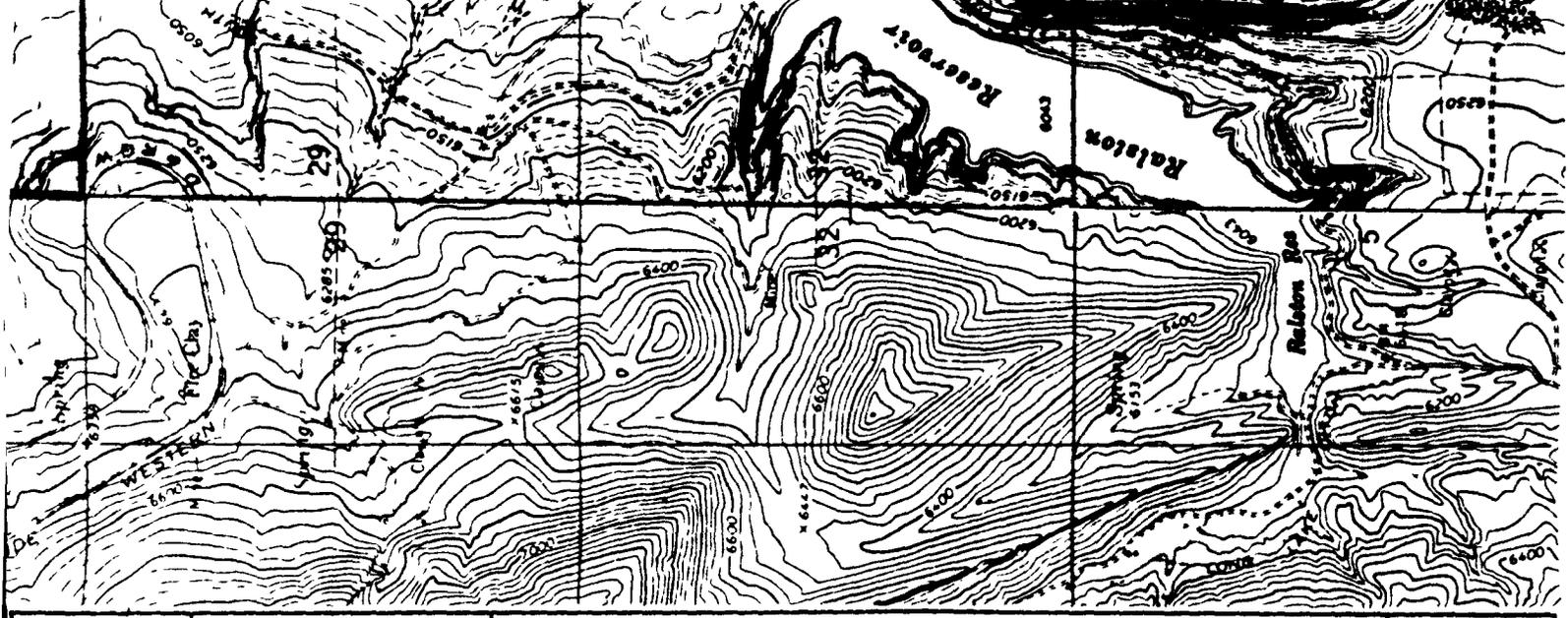
Figure 2 - Wetland and Transition Habitats, Rocky Flats Plant Site

Figure 3 - Prairie-Dog Colonies, Rocky Flats Plant Site

**LOCATION MAP**  
**UPLAND HABITATS**  
**ROCKY FLATS PLANT SITE**  
**1990**

**LEGEND**

- XU XERIC UPLAND HABITATS
- MU MESIC UPLAND HABITATS
- CF CULTIVATED FIELDS
- DS HIGHLY DISTURBED SITES
- DA DEVELOPED AREAS



BASE MAPS USGS 7 5 MINUTE TOPOGRAPHIC QUADRANGLES GOLDEN COLO (1980) & LOUISVILLE COLO (1979)

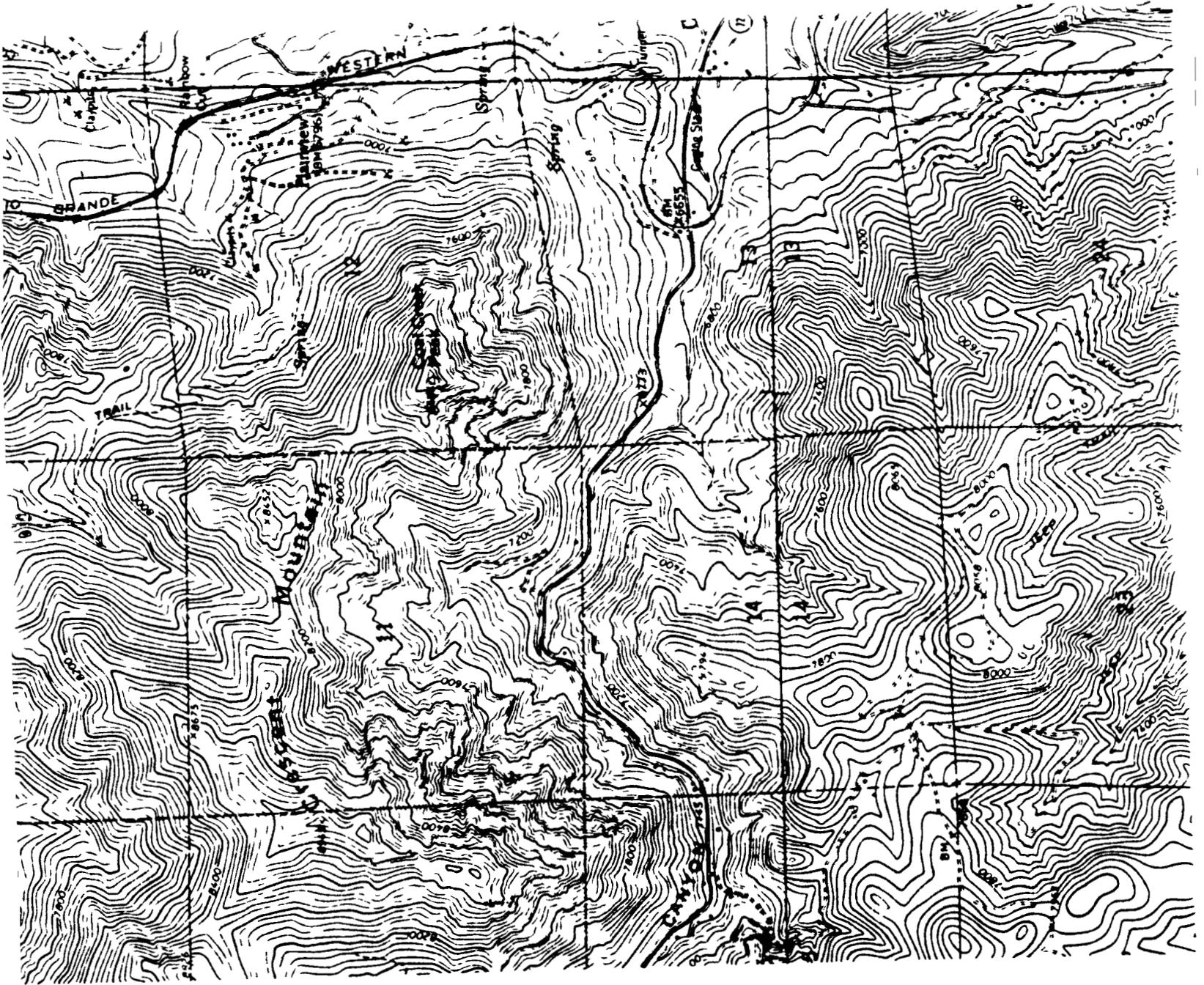


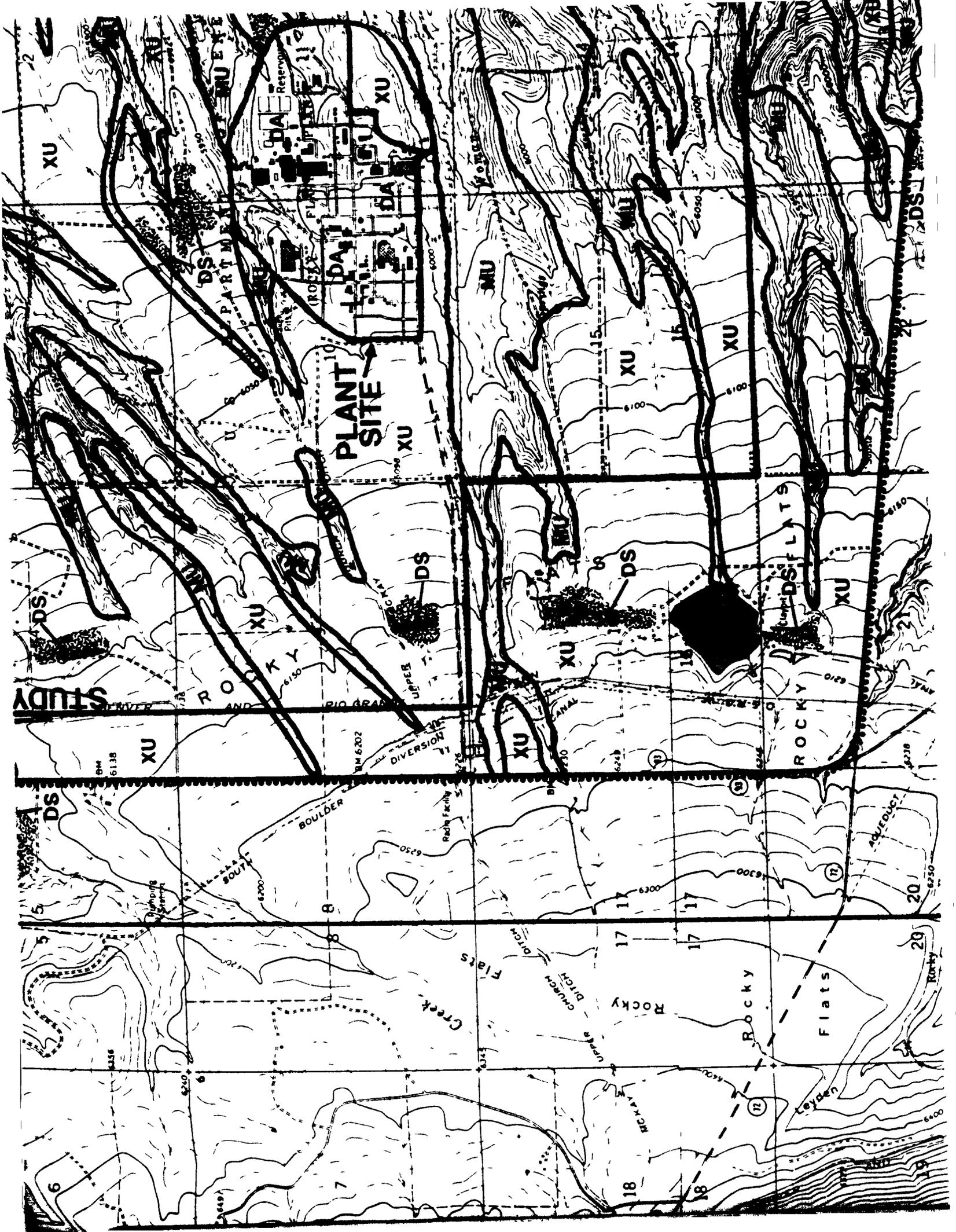
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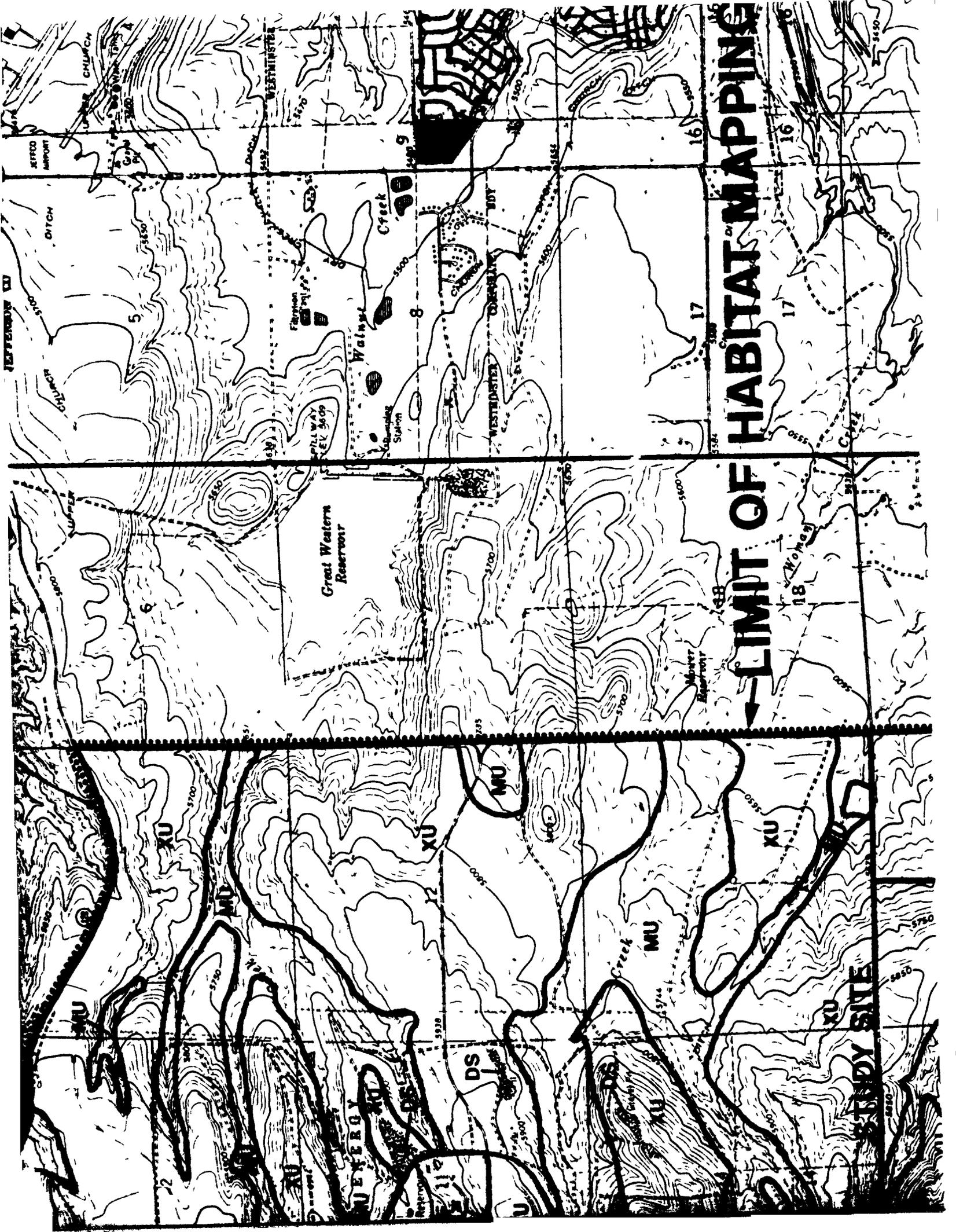
FIGURE 1











← LIMIT OF HABITAT MAPPING

Great Western Reservoir

Moyer Reservoir

Wainut Creek

Creek MU

STUDY SITE

ENERGY

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XU

XU

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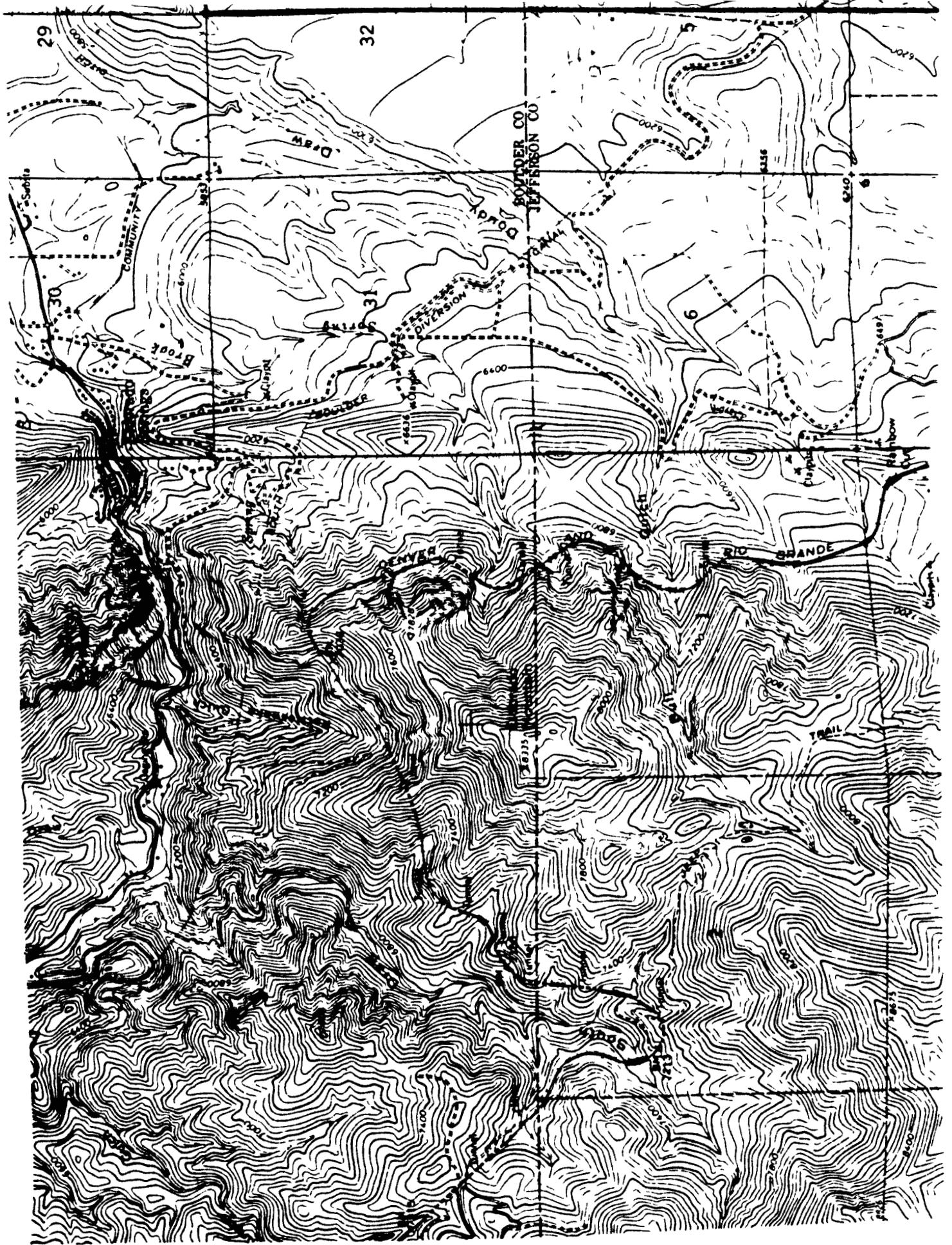
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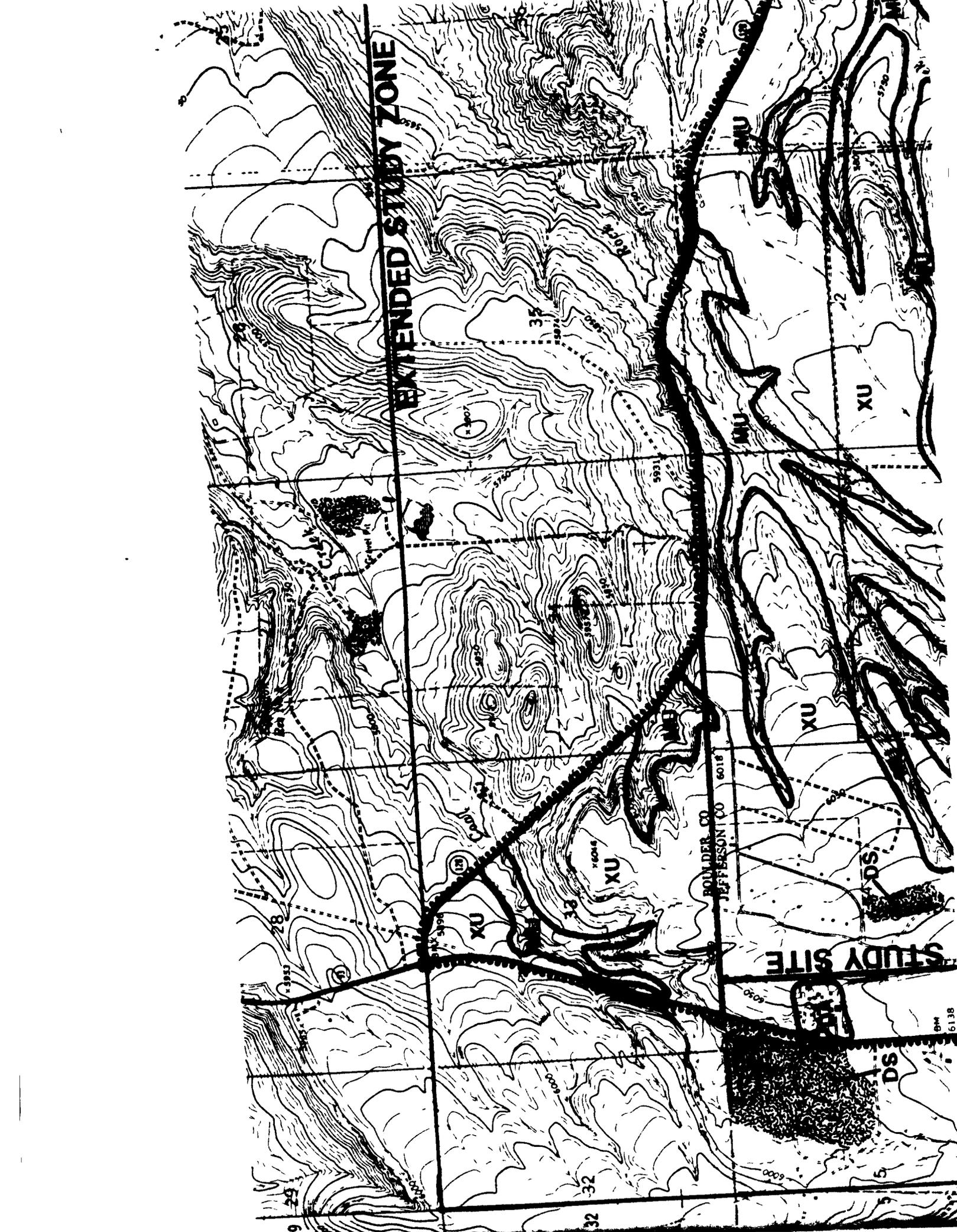
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EXTENDED STUDY ZONE

STUDY SITE

BOULDER CO  
JEFFERSON CO

XU

XU

XU

XU

DS

DS

Rocky

Canyon

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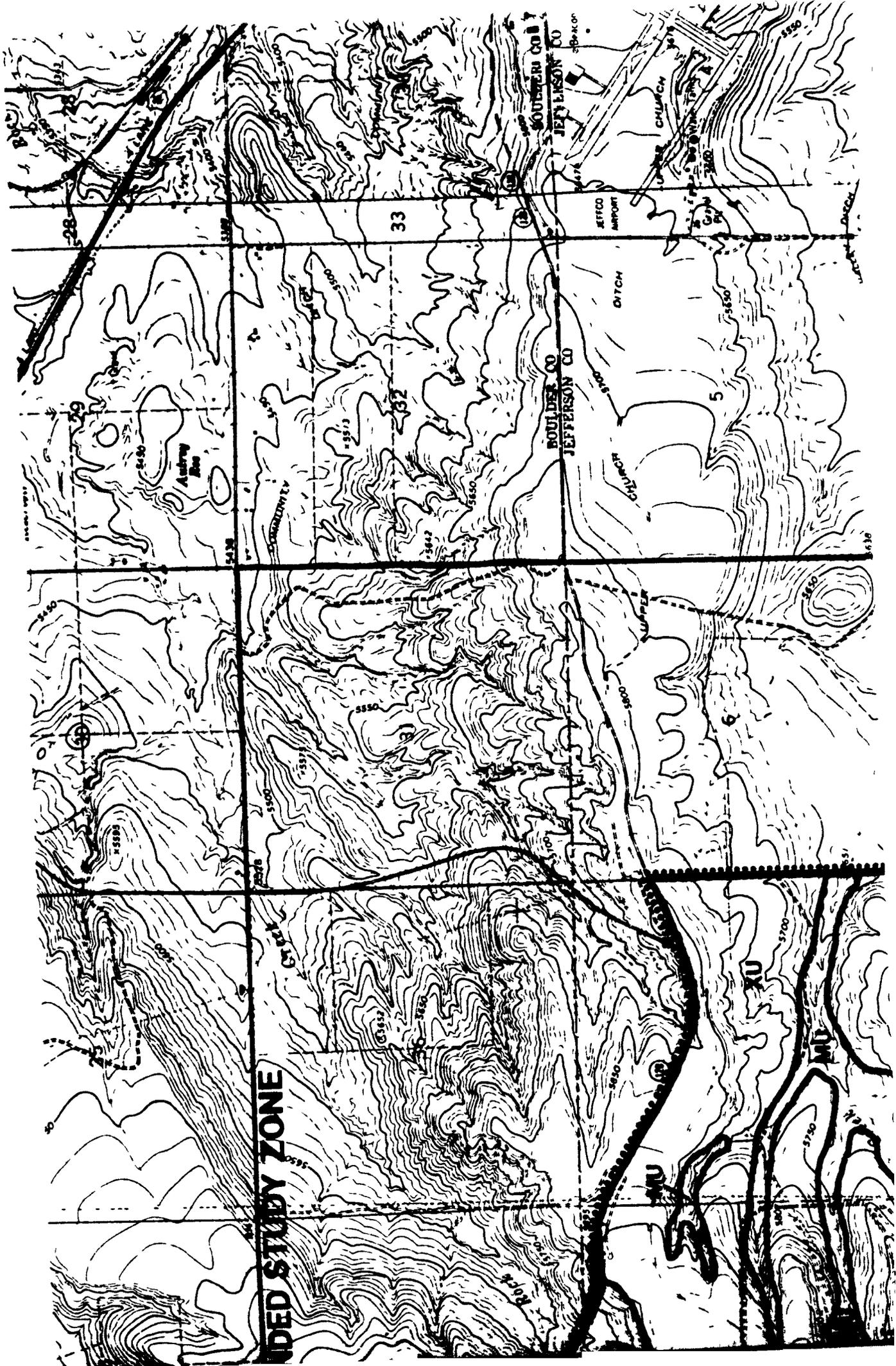
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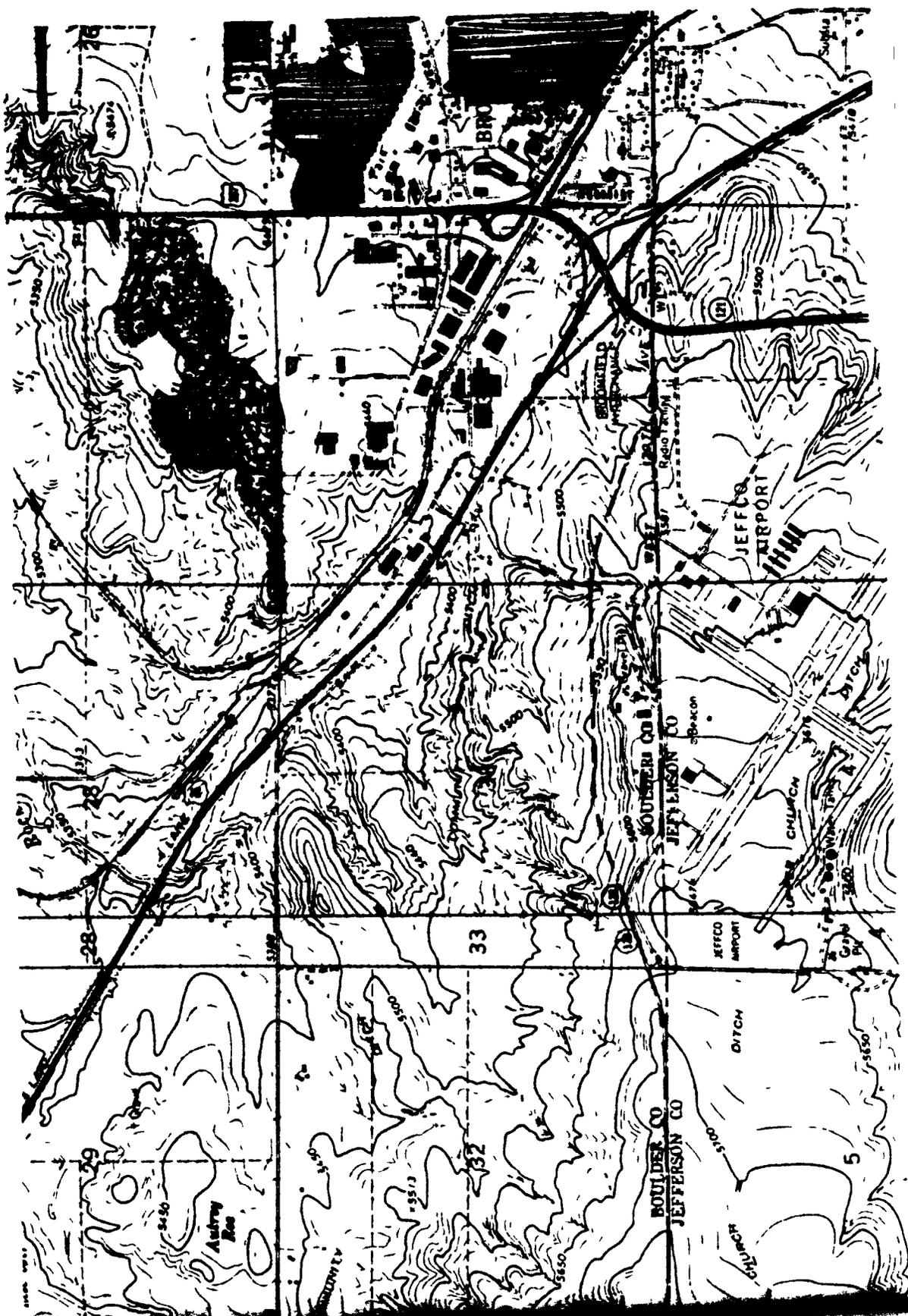
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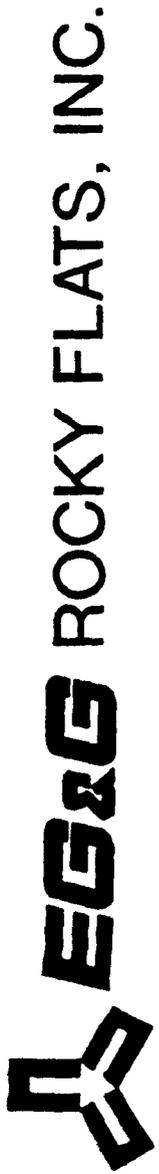
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STUDY ZONE





# LOCATION MAP WETLAND AND TRANSITION HABITATS ROCKY FLATS PLANT SITE 1990

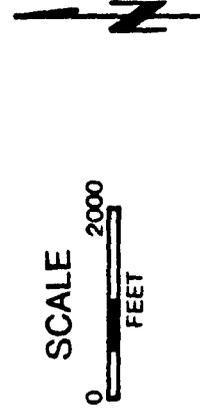
## LEGEND



WETLAND AND TRANSITIONAL HABITATS



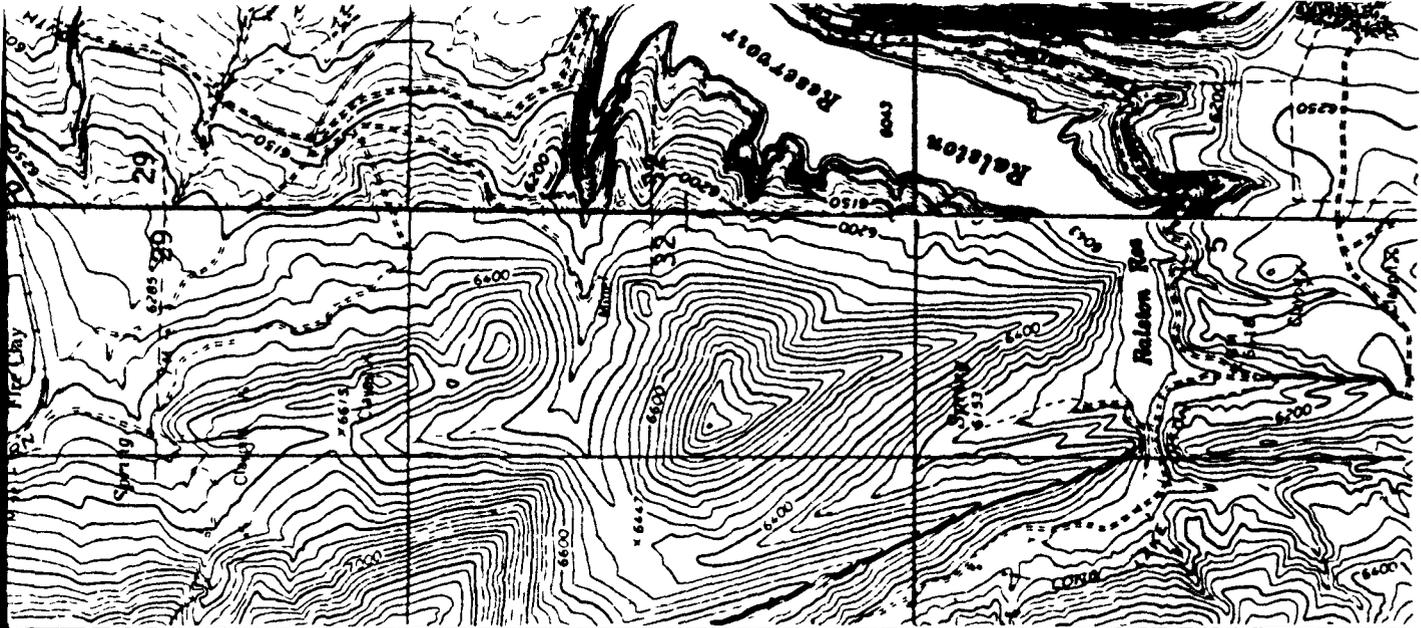
OPEN WATER HABITATS

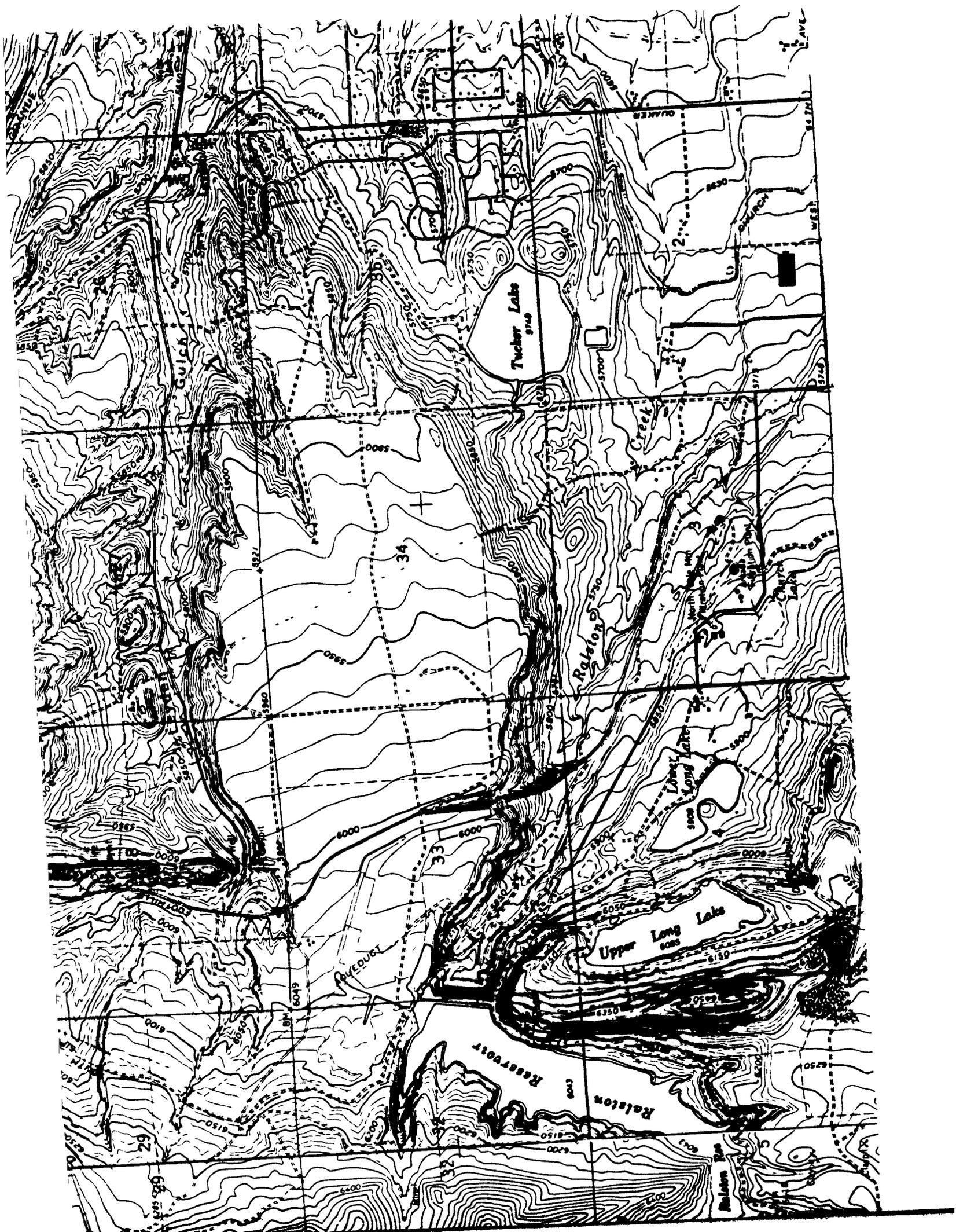


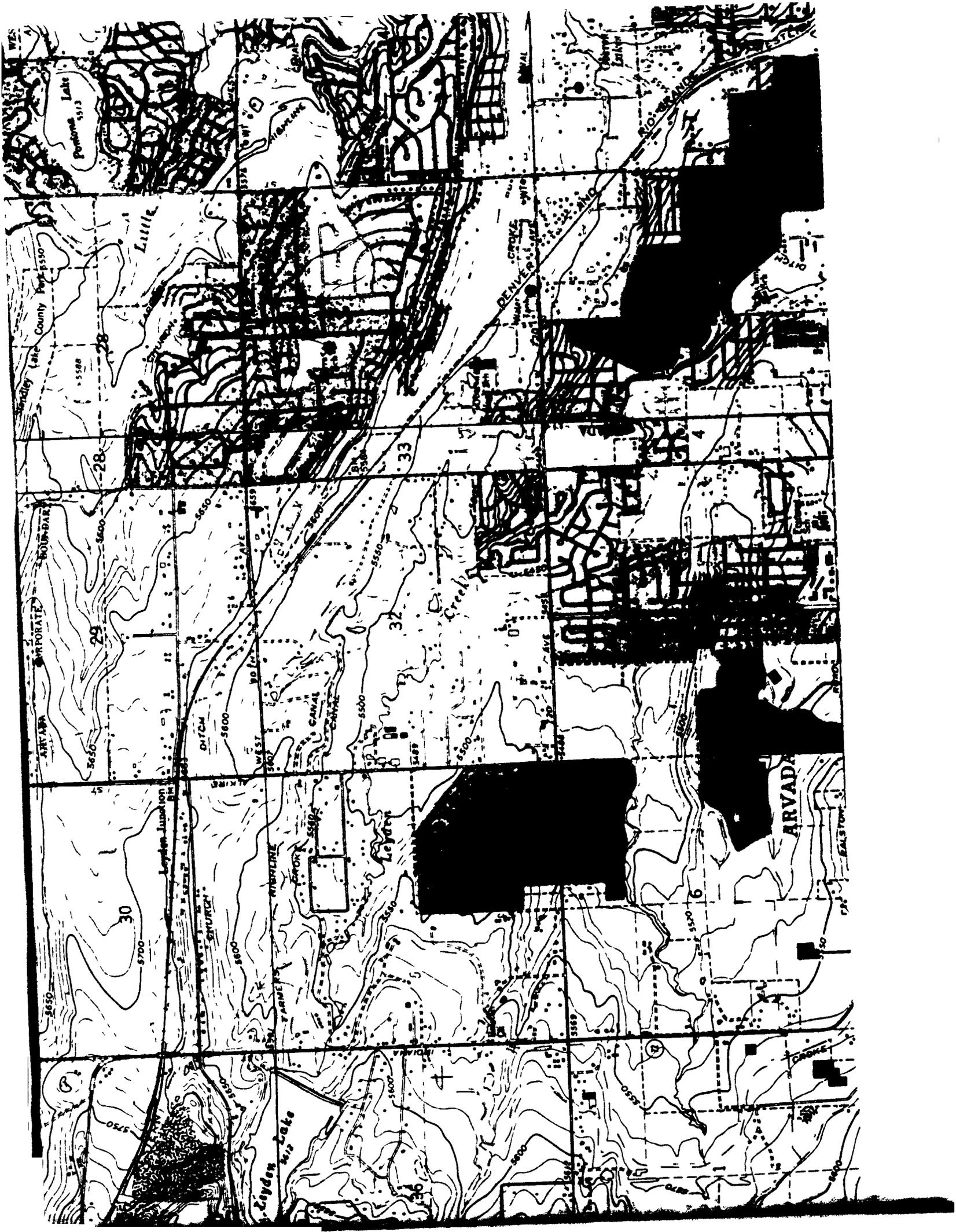
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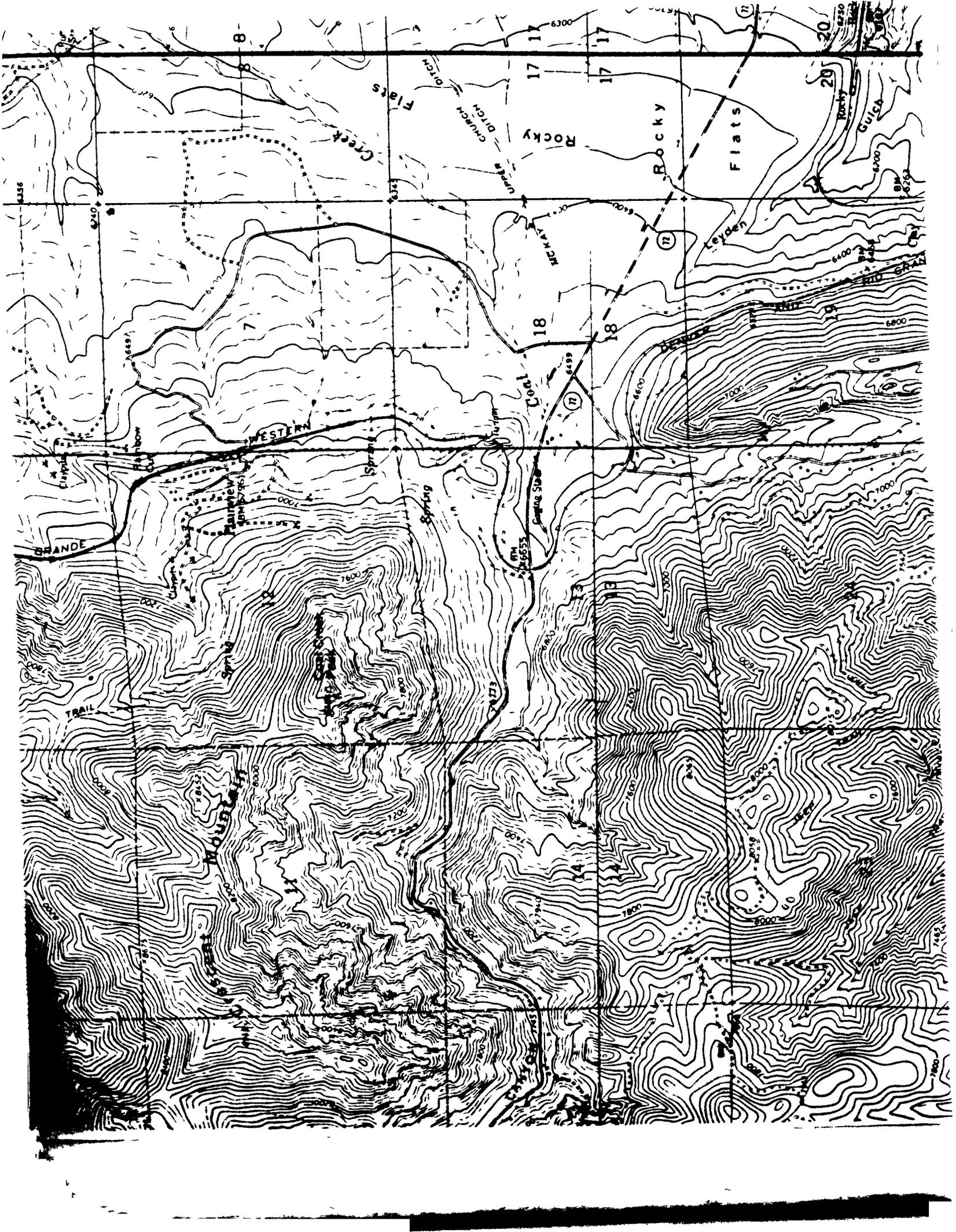
FIGURE 2

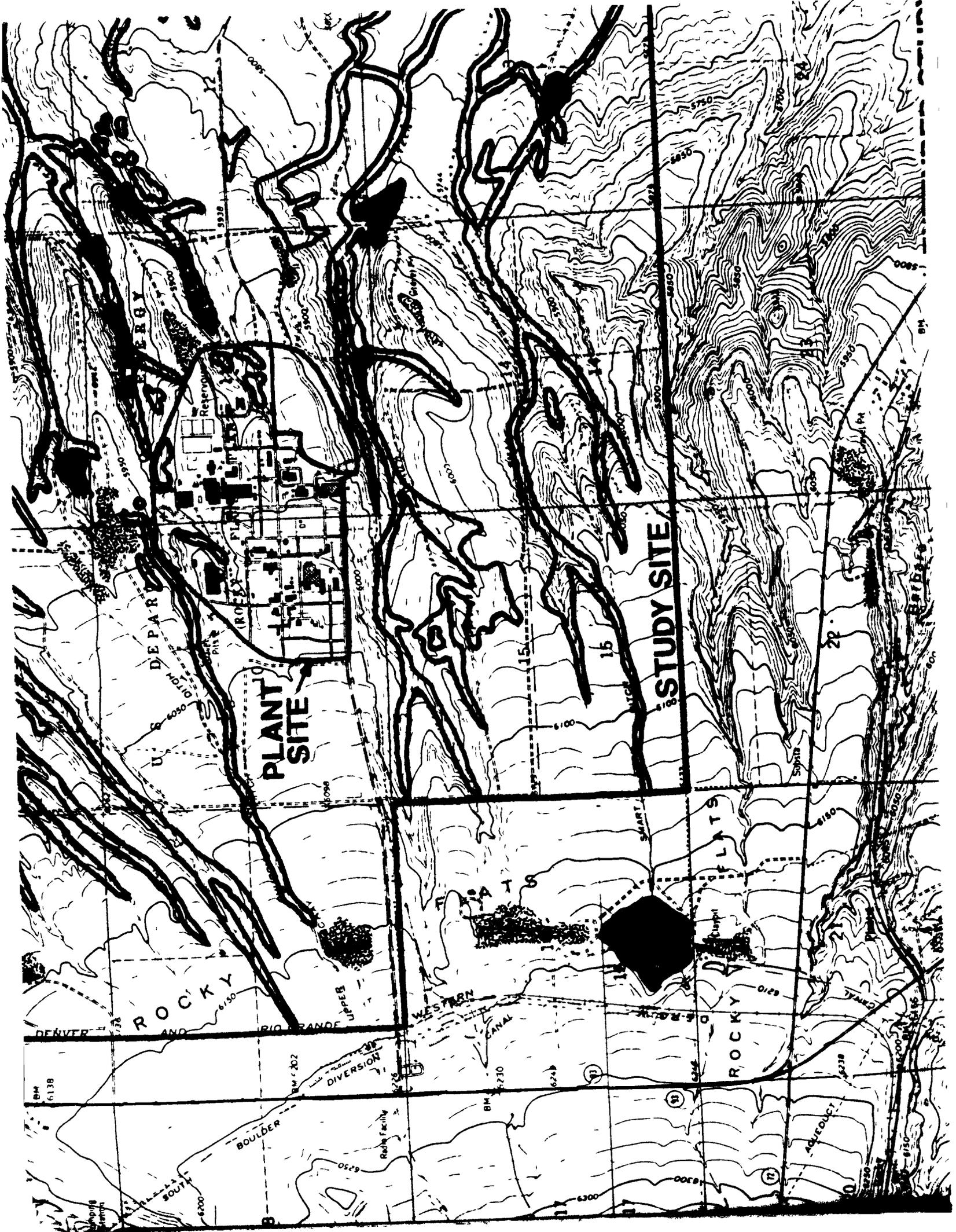












PLANT SITE

STUDY SITE

ROCKY

ROCKY

DENVER

AND

BIO-RANGE

WESTERN

D-R-O-K-E

DEPARTMENT OF ENERGY

ROCKY MOUNTAIN PLANT

SOUTH BOULDER DIVERSION

WESTERN CANAL

SARTON DELTAS

AQUEDUCT

BM 6138

BM 6202

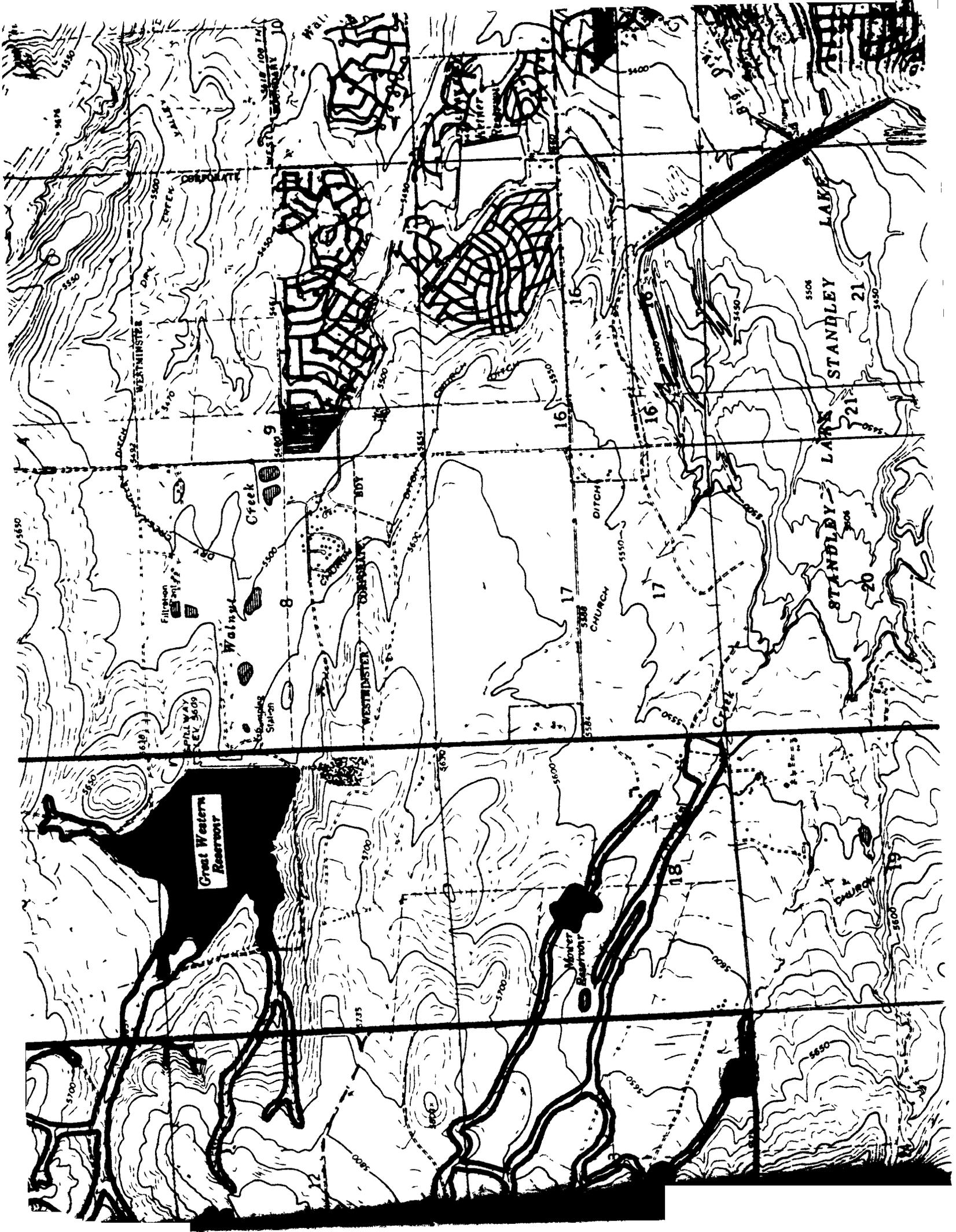
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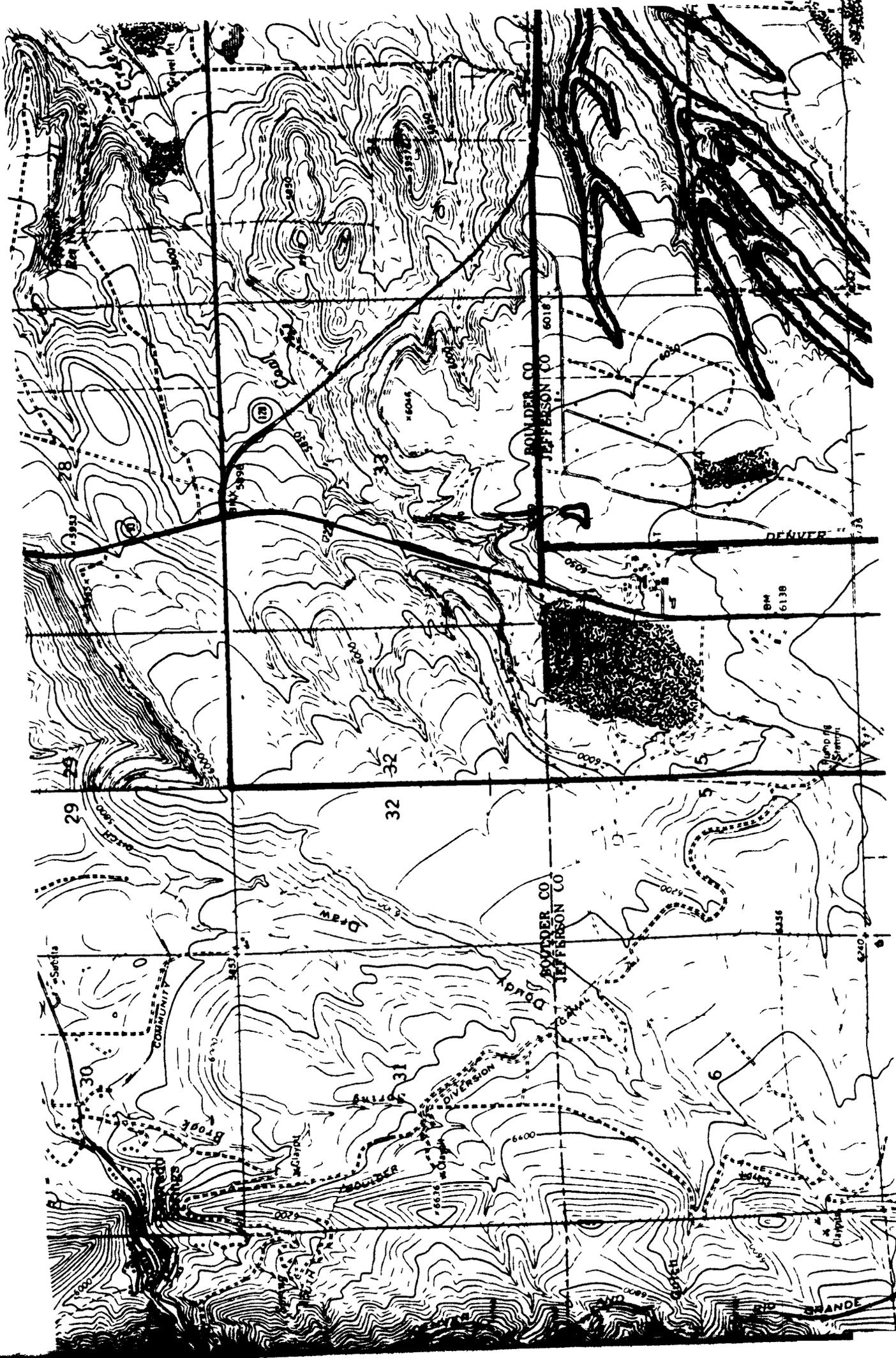
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EXTENDED STUDY ZONE

STUDY SITE

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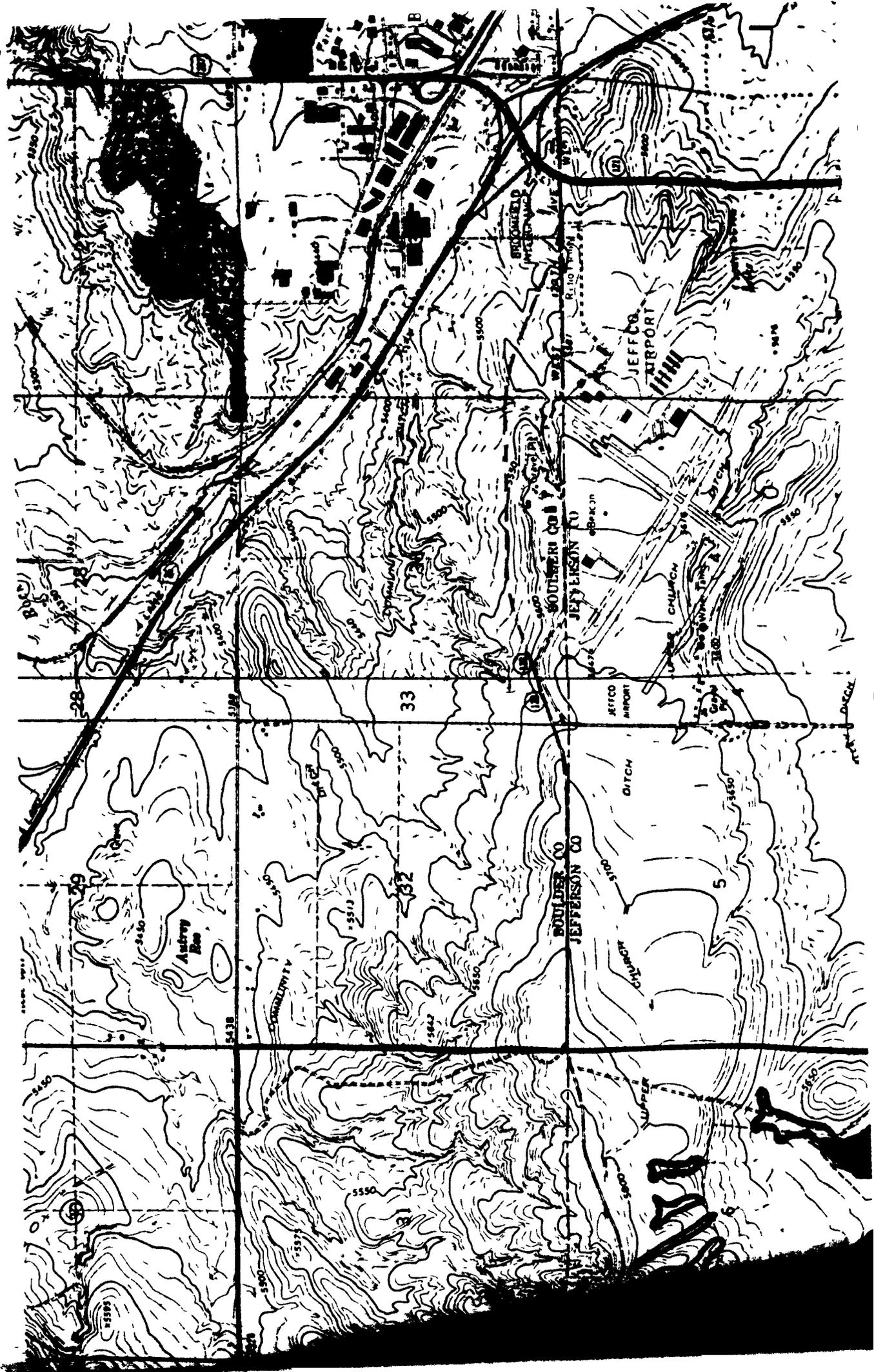
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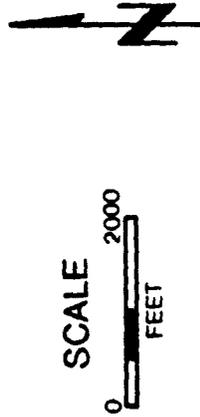


**EG&G** ROCKY FLATS, INC.

**LOCATION MAP**  
**PRAIRIE DOG COLONIES**  
**ROCKY FLATS PLANT SITE**  
**1990**

**LEGEND**

PC 10 PRAIRIE DOG COLONY

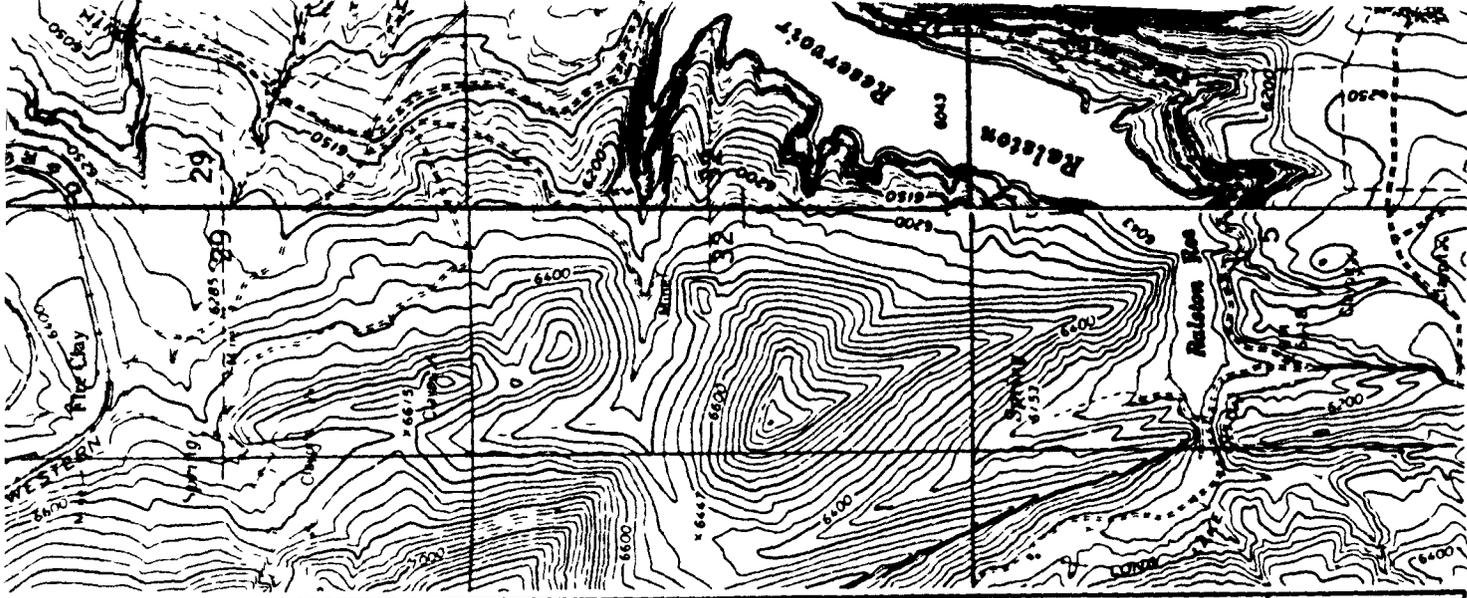


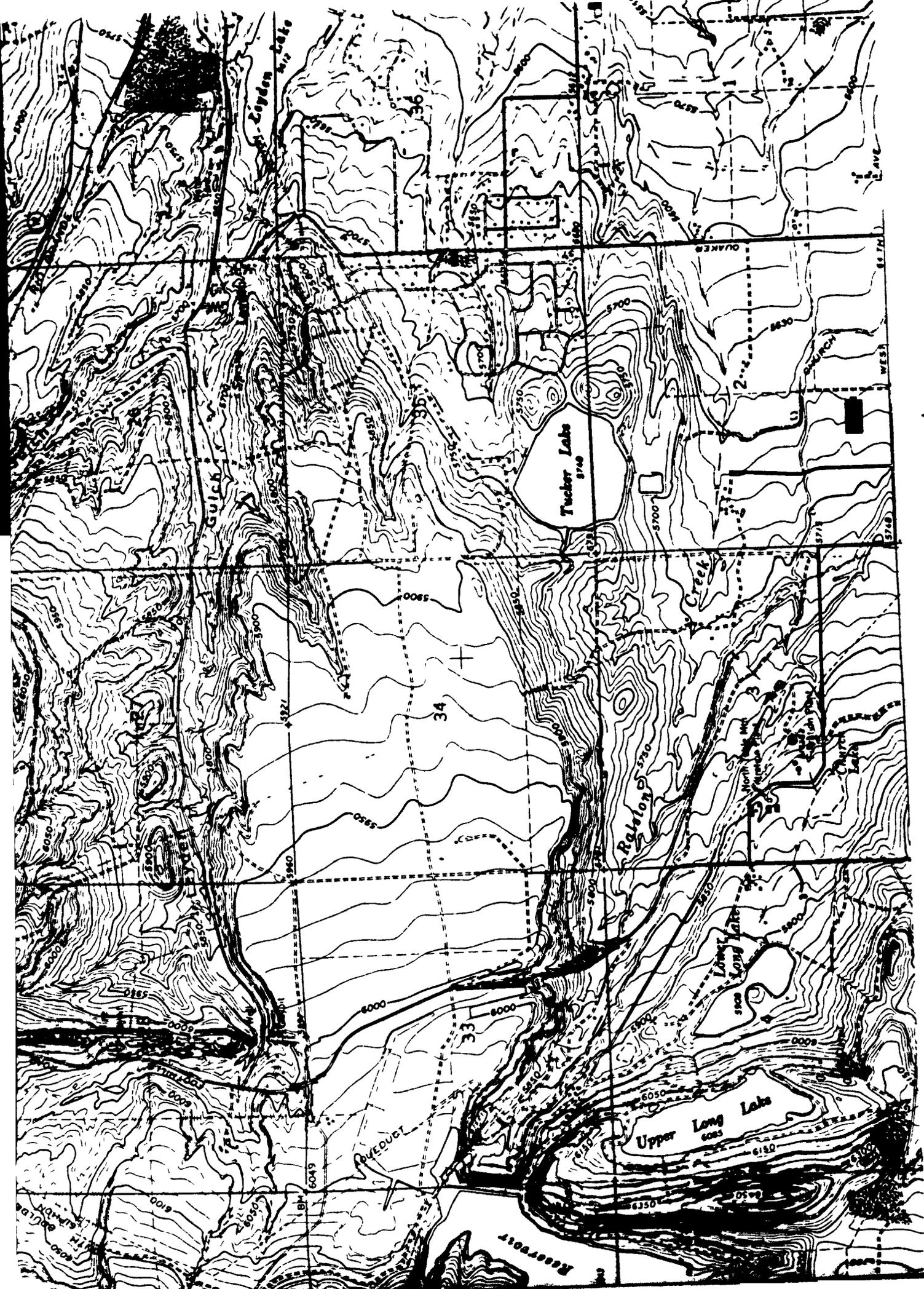
BASE MAPS USGS 7 5 MINUTE TOPOGRAPHIC QUADRANGLES GOLDEN COLO (1980) & LOUISVILLE COLO (1979)

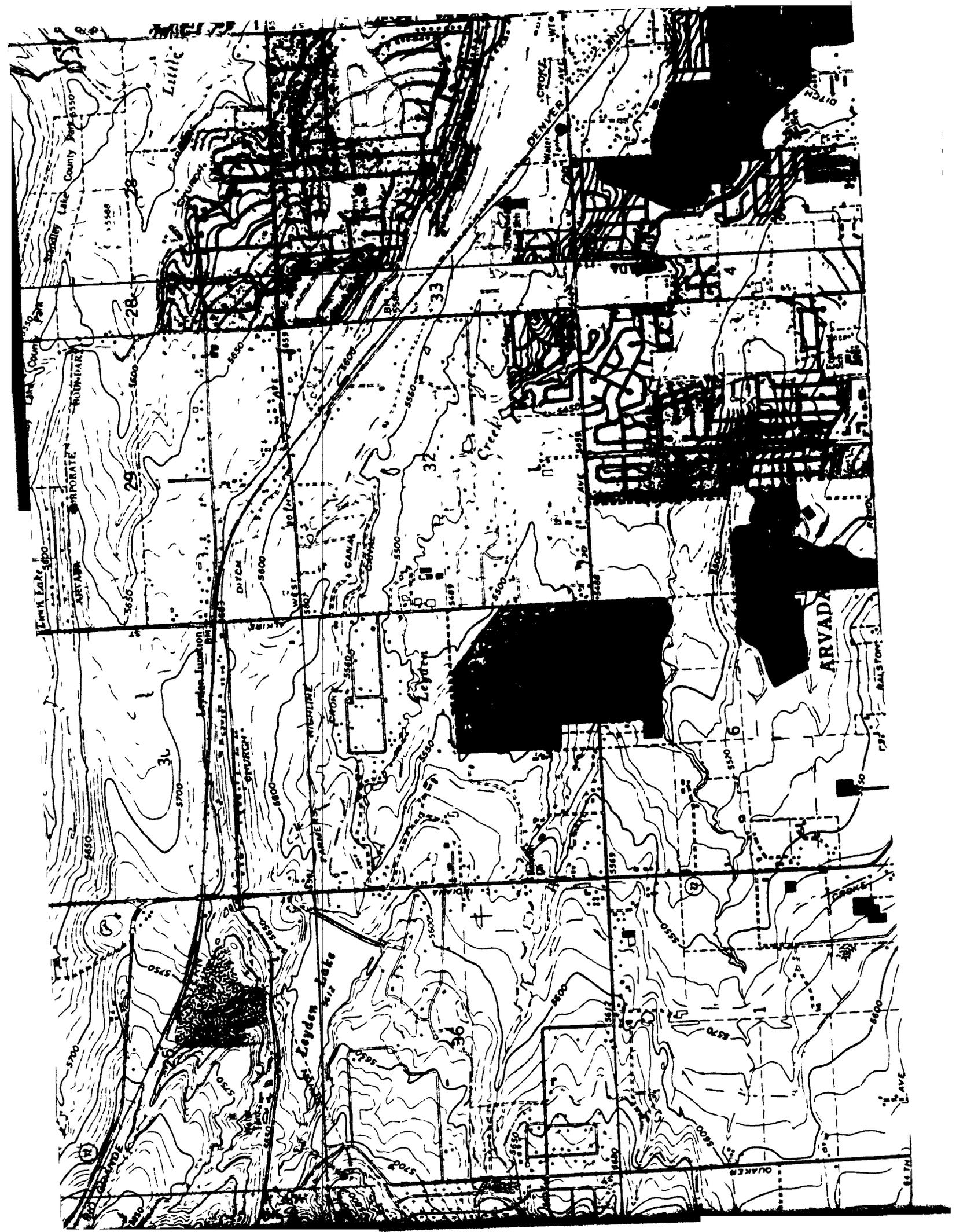


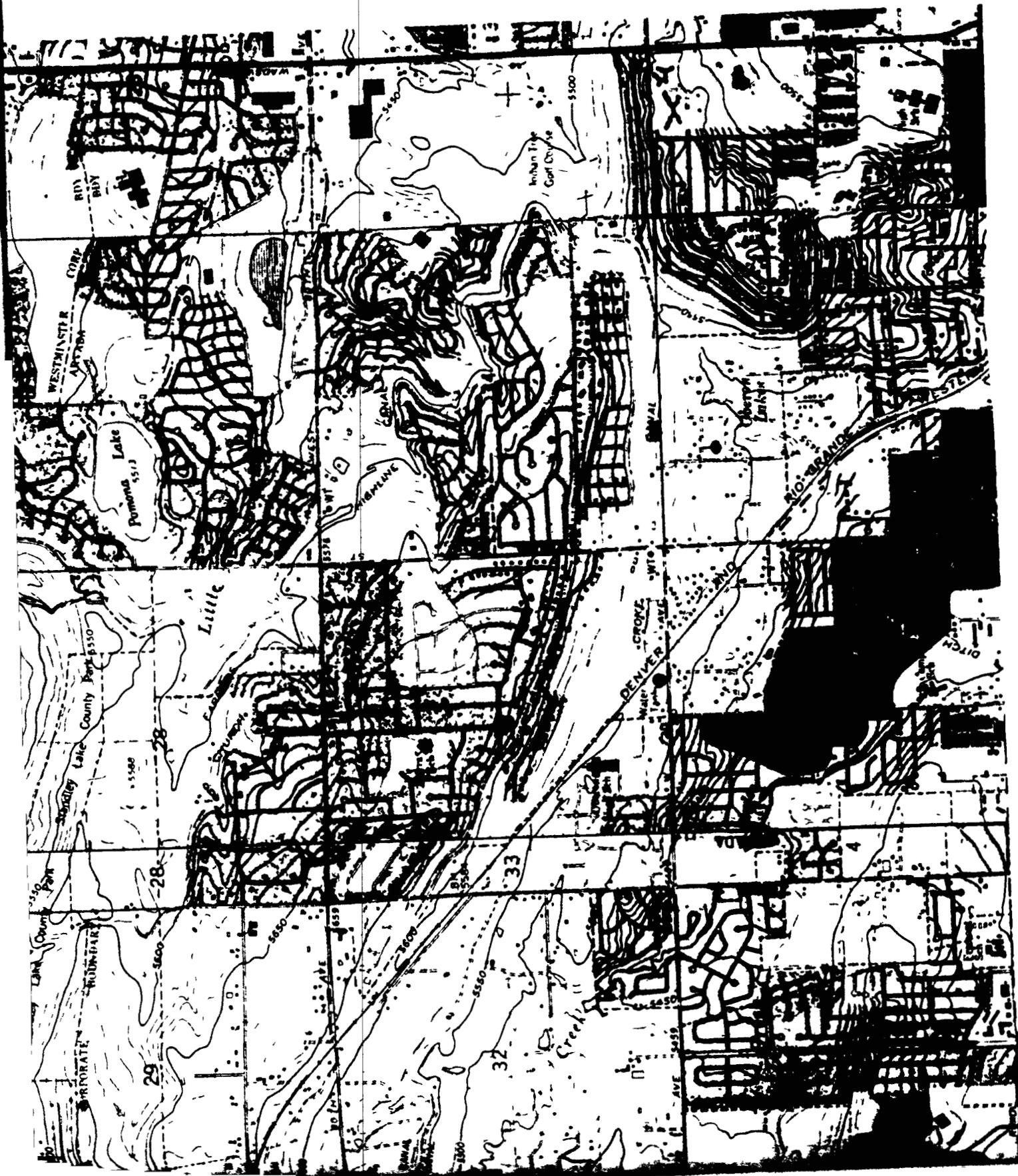
**ADVANCED SCIENCES, INC.**

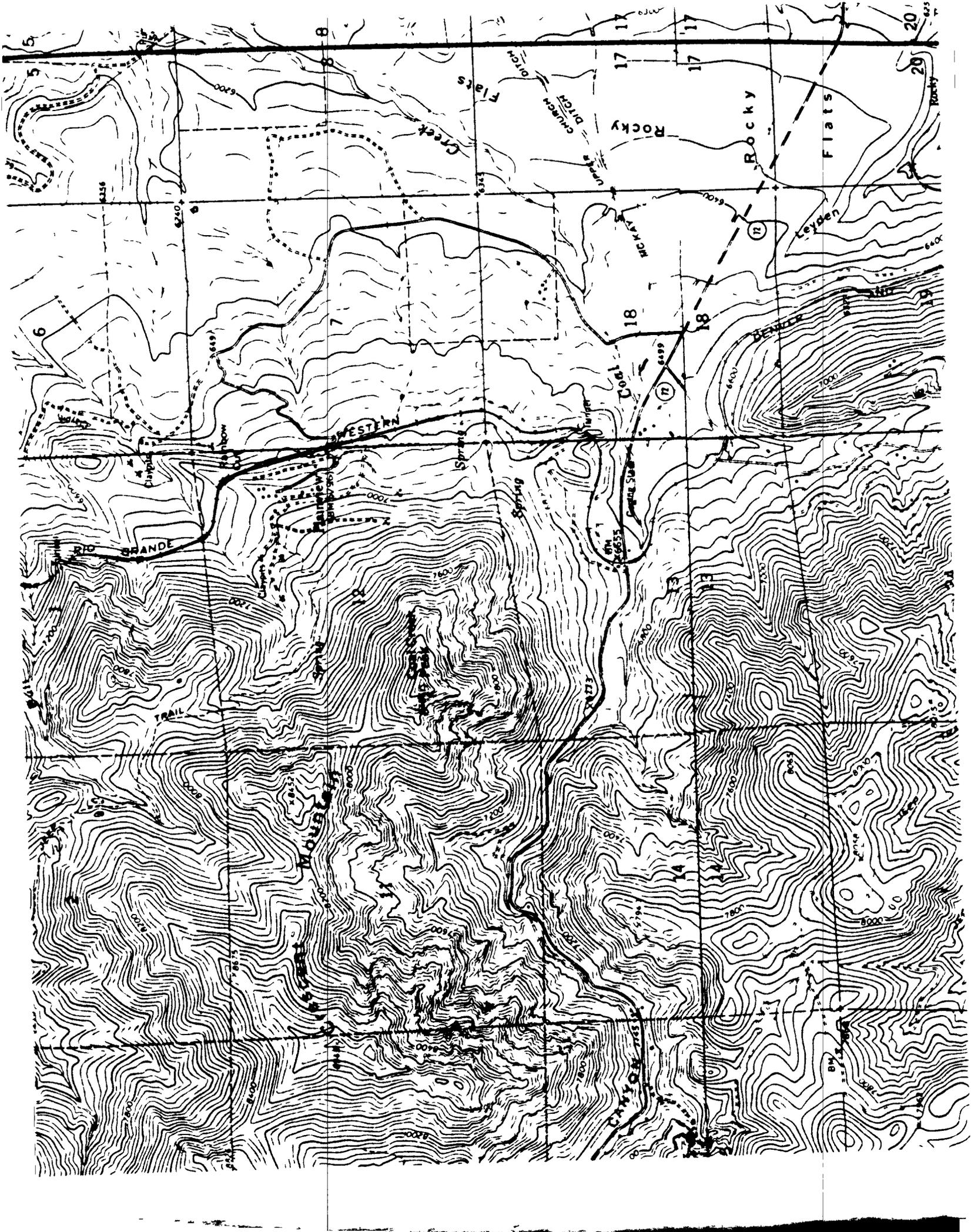
FIGURE 3

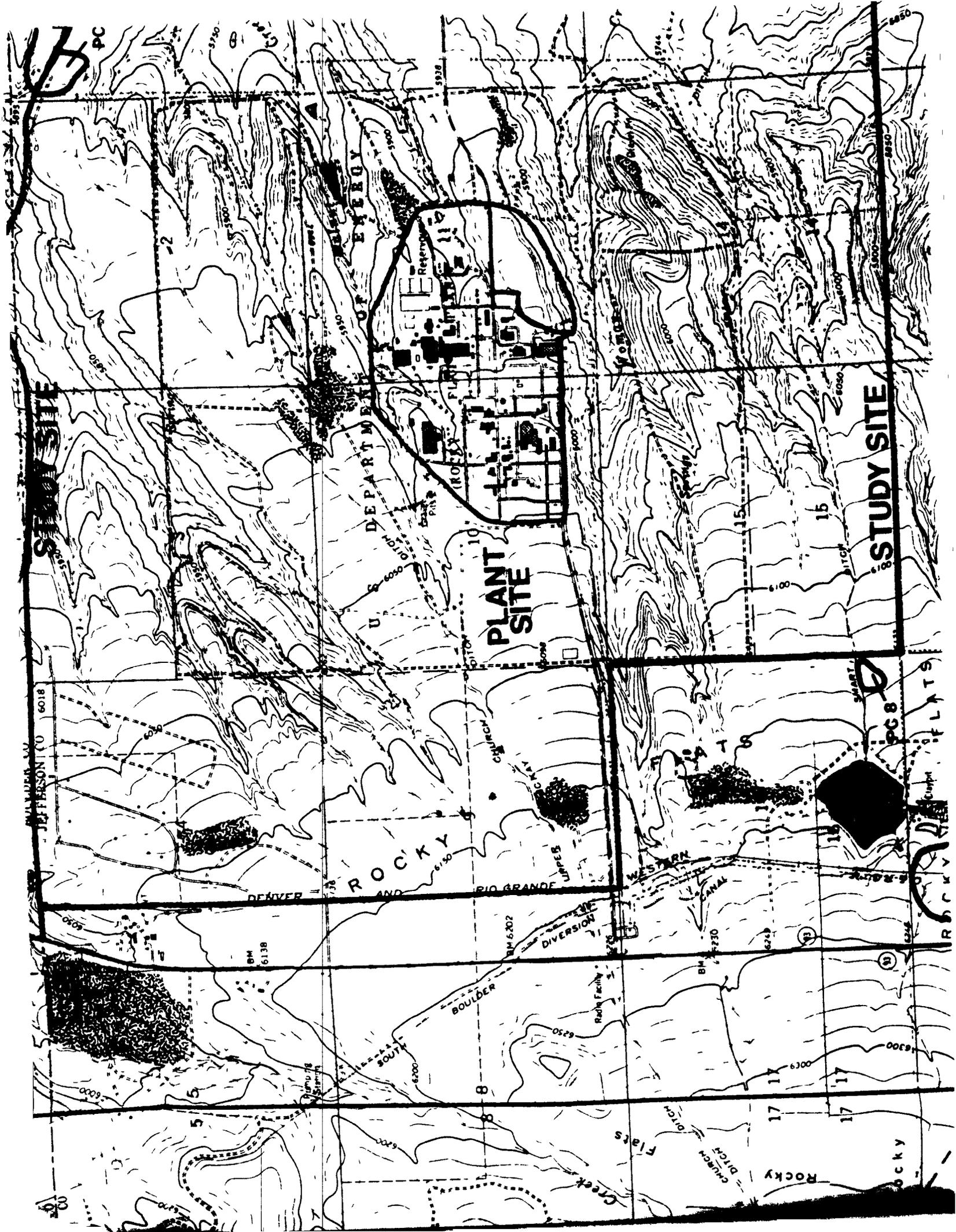


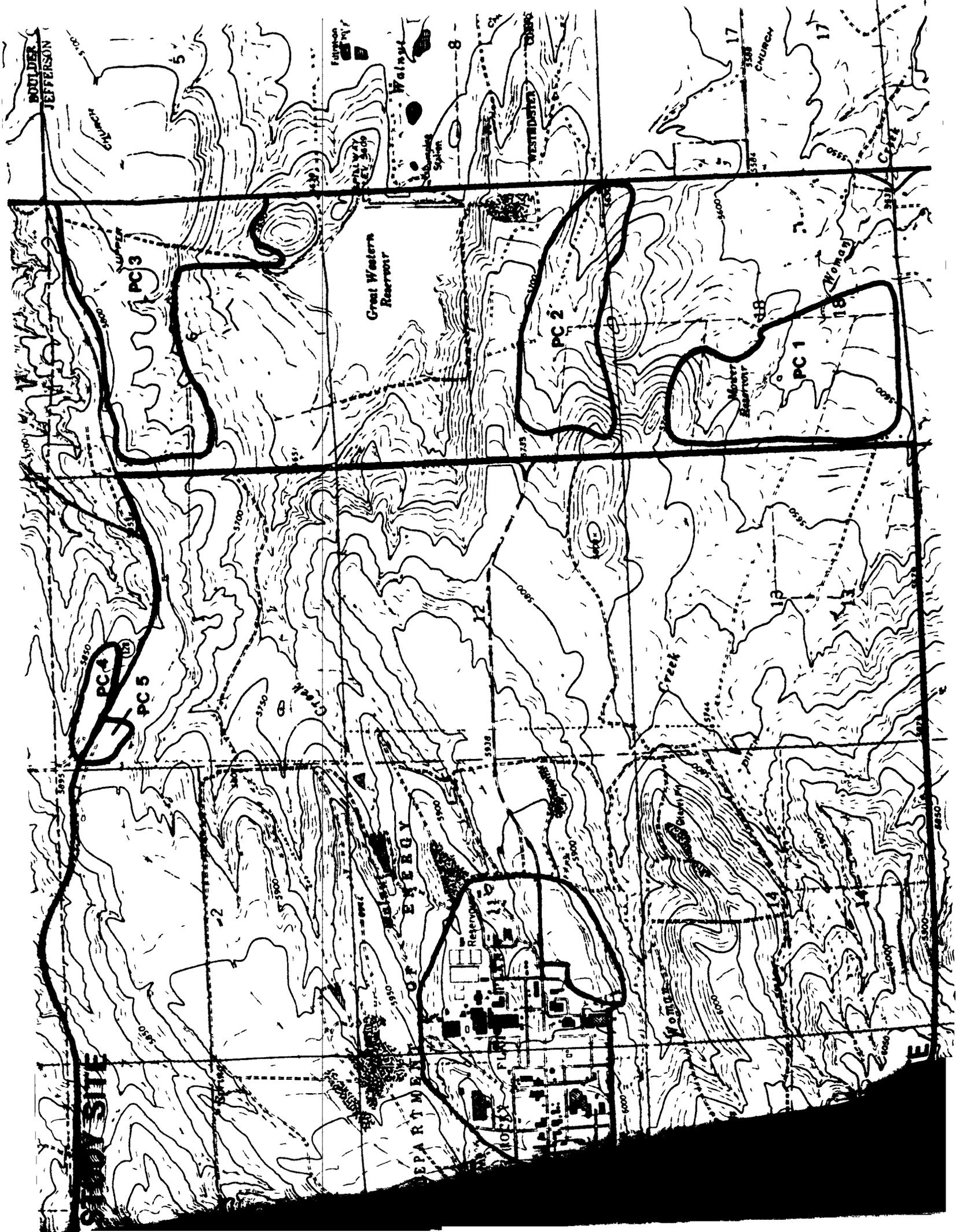












BOULDER  
JEFFERSON

PC3

PC2

PC1

PC4

PC5

Great Western  
Reservoir

Monkey  
Reservoir

EPA REGIONAL  
OFFICE

Reservoir

17

17

19

19

14

14

18E

18E

19

18

17

STADIUM

CHURCH

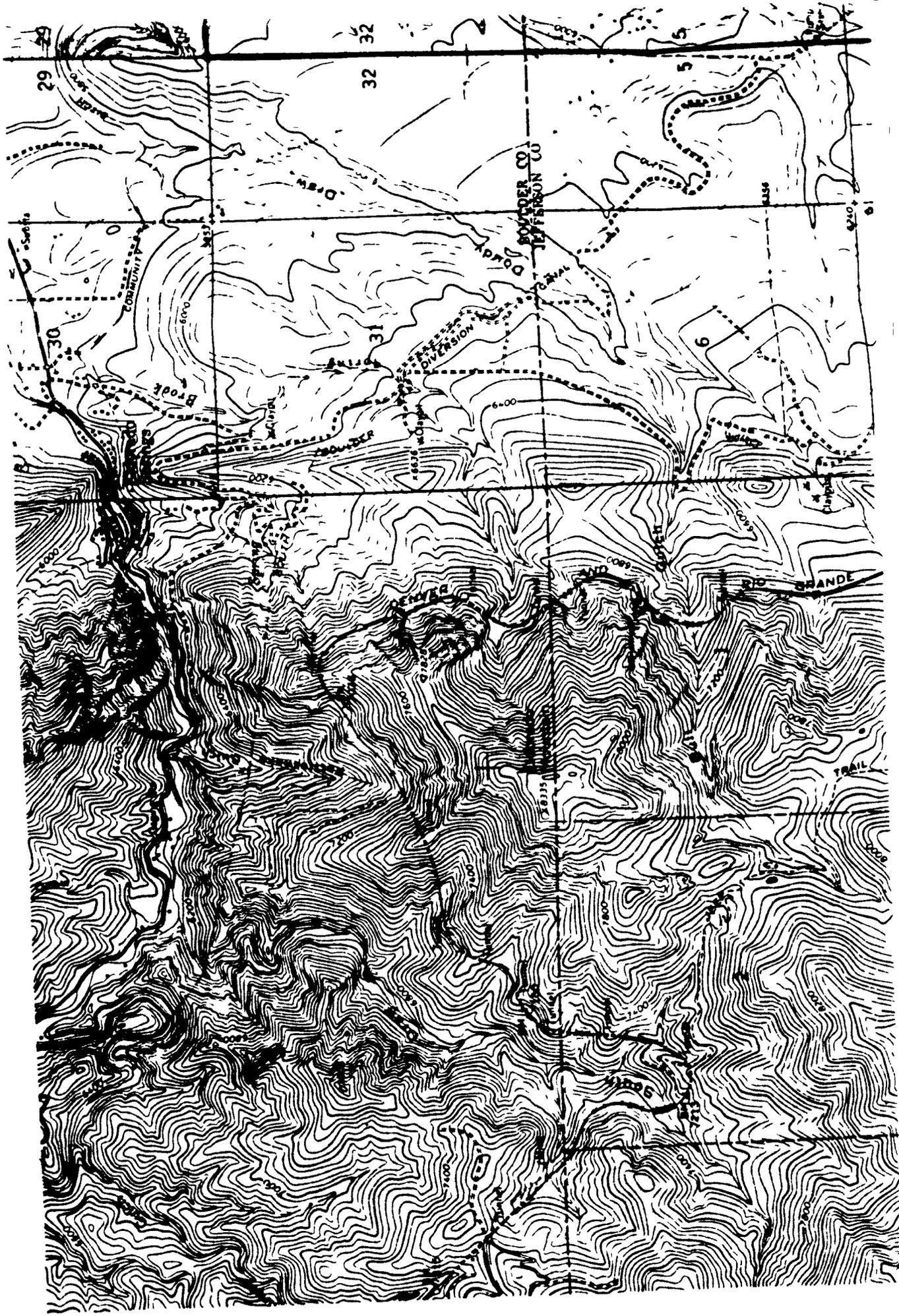
FAIRBANK

WALNUT

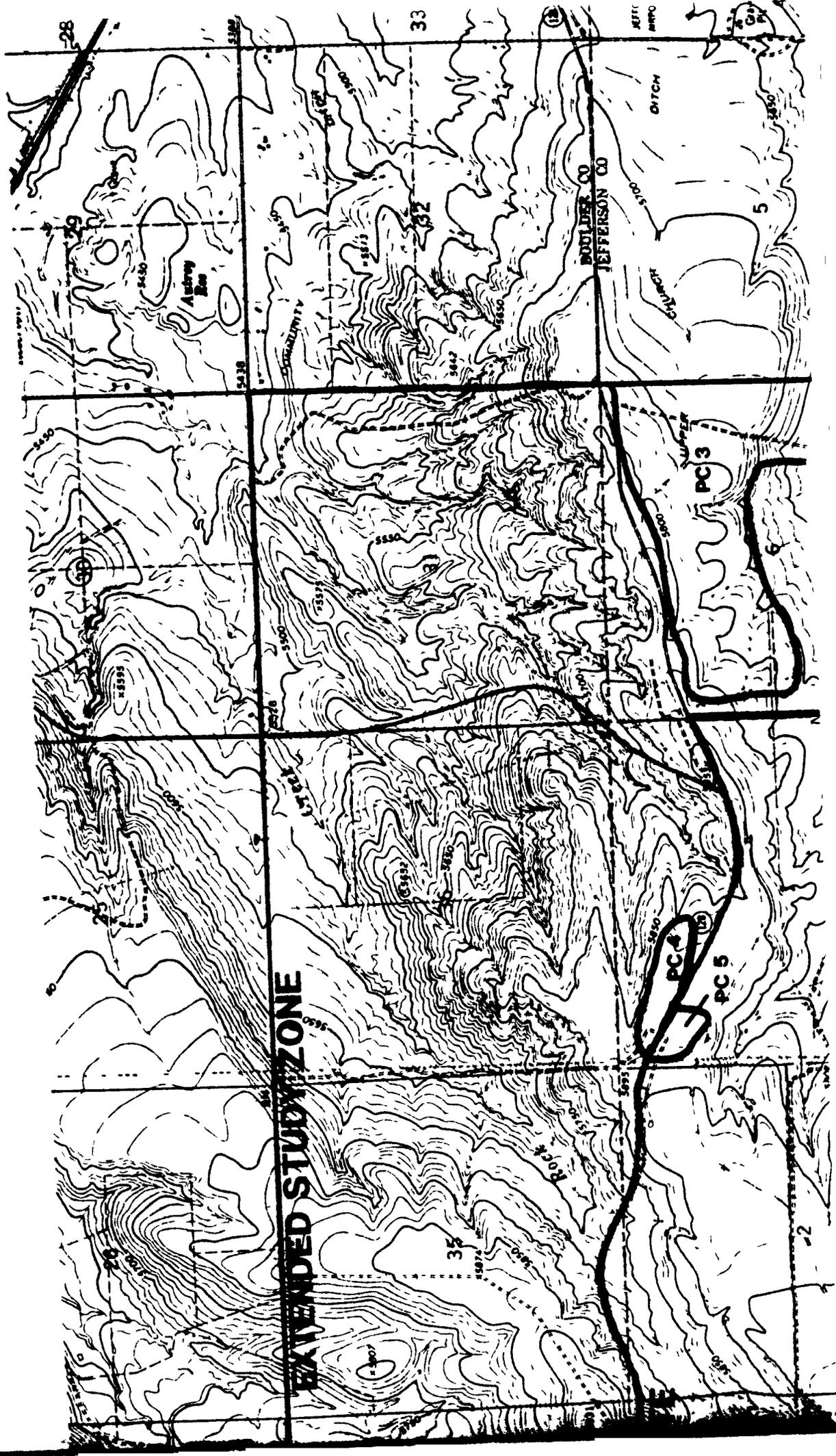
WESTMINSTER

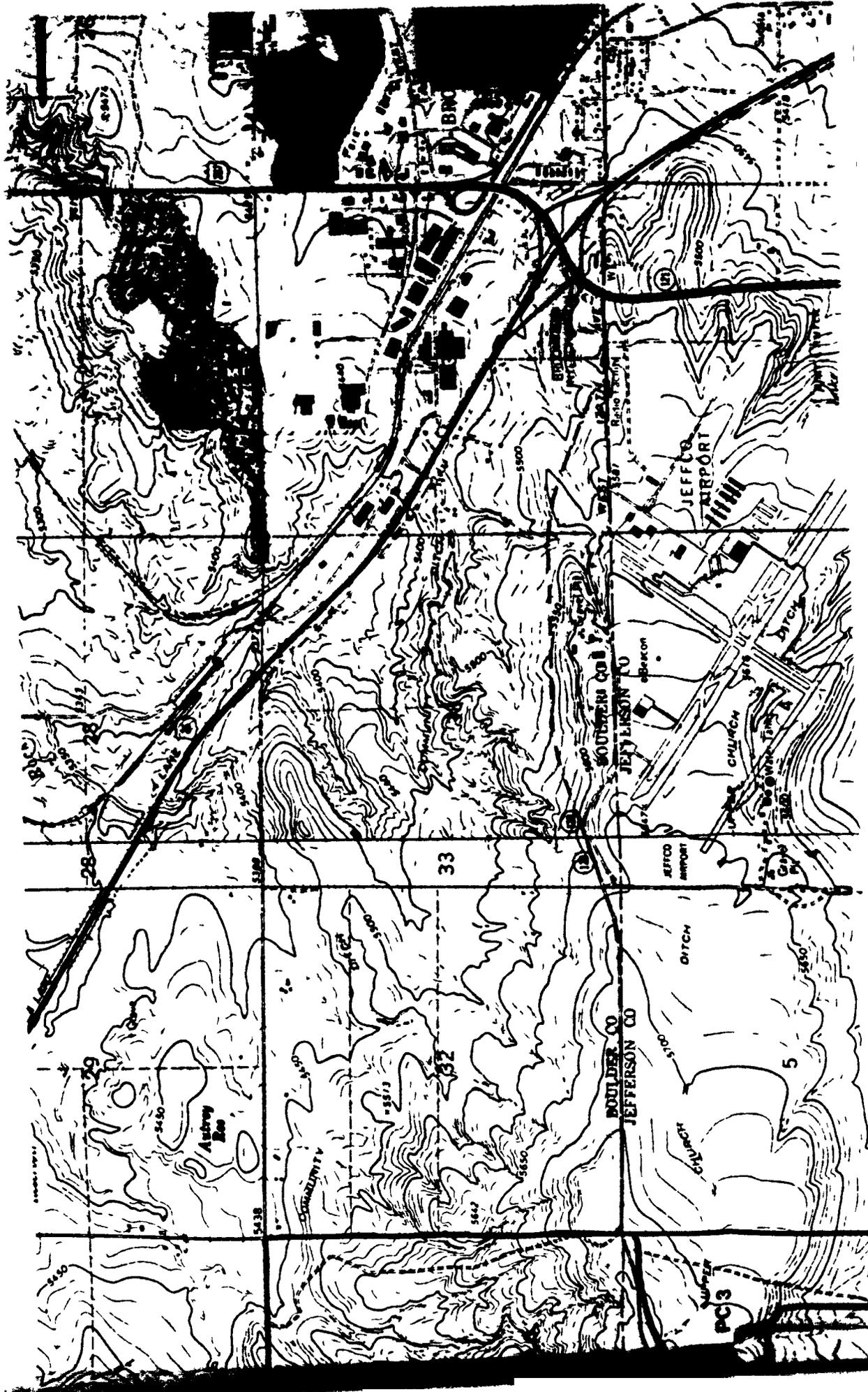
CHURCH











**Appendix B - Results of Colorado Natural Areas Program Database Search**

# STATE OF COLORADO

Division of Parks & Outdoor Recreation  
Colorado Natural Areas Program

1313 Sherman Street, Rm 618  
Denver Colorado 80203  
Phone (303) 866-3437

## INFORMATION REQUEST



Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Agency: \_\_\_\_\_ Date Needed: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Project Name: \_\_\_\_\_  
Project Description: \_\_\_\_\_  
Location: \_\_\_\_\_ County: \_\_\_\_\_

### Legal Description (INCLUDE A COPY OF MAP):

T: \_\_\_\_\_ R: \_\_\_\_\_ Sections: \_\_\_\_\_  
T: \_\_\_\_\_ R: \_\_\_\_\_ Sections: \_\_\_\_\_  
T: \_\_\_\_\_ R: \_\_\_\_\_ Sections: \_\_\_\_\_  
T: \_\_\_\_\_ R: \_\_\_\_\_ Sections: \_\_\_\_\_

USGS Quad(s): \_\_\_\_\_

Roy Romer  
Governor  
Ron G Holliday  
Director  
David W Kuntz  
Program Administrator

### INFORMATION NEEDED (Circle appropriate items)

#### I. ELEMENTS EXPECTED OR KNOWN TO BE PRESENT IN PROJECT AREA

##### A. Elements to be Included:

Rare Plants

Plant Communities

##### B. Types of Information Requested for Elements Indicated:

List of Elements	Locality Info.	Status	Description
Other _____			

#### II. ELEMENT SPECIFIC INFORMATION

A. Element Name(s): \_\_\_\_\_

##### B. Types of Information Needed:

Locality Info.	Distribution	Status	Description
Other _____			

All purchasers of data from the Colorado Natural Areas Program are advised that the accuracy and/or interpretation of data provided may be subject to error and shall not be guaranteed. In addition, the State shall not be liable for any cost, loss, or damage resulting from furnishing inaccurate data.

The requestor understands and accepts the terms and conditions of this offering and assumes liability for misuse of information as is evidenced by signing this request.

Requestor Name (Print)

Requestor Signature/Date

### Appendix C - Tabulation of Contact Reports

[Documentation of contacts are on file with ASI and EG&G Rocky Flats, Inc ]

- Abbott, Bini (Jefferson County Nature Conservancy) Personal Communication to ASI (Mark Uppendahl) on April 2, 1990
- Carlson, L W (Colorado State Supervisor, USFWS) Letter from the U S Fish and Wildlife Service dated May 17, 1989, to A E Whiteman (Area Manager; DOE, Rocky Flats).
- Chu, N (USFWS, Golden, Colorado) April 12, 1990 Letter from the U S Fish & Wildlife Service
- Coles, J Letter dated August 27, 1990, to ASI from the Colorado Natural Areas Program
- Jennings, W F Letter dated July 25, 1986, to Dick Antonio, Open Space Agricultural Manager, Real Estate Services/Open Space
- Jennings, W F Letter dated August 3, 1986, to Dick Antonio, Open Space Agricultural Manager, Real Estate Services/Open Space
- Leachman, Bob (USFWS) Personal Communication, September 7, 1990 Phone Conversation with A Hayworth (ASI)
- Leachman, Bob (USFWS) Personal Communication, December 4, 1990 Phone Conversation with P Bunch (ASI)
- Strine, E (COE) Personal Communication, August 16, 1990 Phone Conversation with P Bunch (ASI)
- Von Loh, J Personal Communication, July 10, 1990 Meeting with P Bunch (ASI)
- Weber, Dave (CDOW) Personal Communication, April 2, 1990 Phone Conversation with Mark Uppendahl (ASI)
- Weber, Dave (CDOW) Personal Communication, August 20, 1990 Phone Conversation with P Bunch (ASI)
- Weber, Dave (CDOW) Personal Communication, July 13, 1990 Phone Conversation with A Hayworth (ASI)
- Wiemer, Judy (USFWS, Golden, Colorado) Personal Communication, February 1, 1991 Phone Conversation with P Bunch (ASI)

**Appendix D - Plant Species Known to Occur at the Rocky Flats Plant Site**

Appendix D - PLANT SPECIES KNOWN TO OCCUR AT THE  
ROCKY FLATS PLANT SITE

<u>SPECIES NAME</u> <sup>1)</sup>	<u>COMMON NAME</u>
<u>Achillea lanulosa</u> *	Yarrow
<u>Agropyron trachycaulum</u> *	Slender Wheat-grass
<u>Agrostis gigantea</u> *	Redtop
<u>Amaranthus graecizans</u> *	Prostrate Pigweed
<u>Ambrosia psilostachya</u>	Western Ragweed
<u>Andropogon gerardii</u>	Big Bluestem
<u>Arctium minus</u>	
<u>Arenaria fendleri</u>	Sandwort
<u>Arnica fulgens</u> *	Orange Arnica
<u>Aristida basiramea</u> <sup>2</sup>	Forktip Threawn
<u>Artemisia campestris</u> *	
<u>Artemisia frigida</u> *	Pasture Sagebrush
<u>Asclepias speciosa</u> *	Showy Milkweed
<u>Aster spp</u>	Aster
<u>Barbarea orthoceras</u> *	Winter-ress
<u>Bouteloua curtipendula</u> *	Side-oats Grama
<u>Bouteloua hirsuta</u>	Hairy Grama
<u>Bromus tectorum</u> *	Cheat-grass
<u>Buchloe dactyloides</u> *	Buffalo-grass
<u>Carduus nutans</u> L ssp <u>macrolepis</u> *	
<u>Carex heliophila</u>	Sedge(sun-loving)
<u>Carex nebrascensis</u> *	Nebraska Sedge
<u>Chamaesyce glyptosperma</u>	Spurge
<u>Chenopodium botrys</u>	Jerusalem-oak
<u>Chorispora tenella</u>	Blue Mustard
<u>Chrysothamnus nauseosus</u> *	Rabbitbush
<u>Cirsium arvense</u> *	Canada Thistle
<u>Cirsium undulatum</u>	Wavy-leaved Thistle
<u>Clematis ligusticifolia</u>	Western Virgins Bower
<u>Convolvulus arvensis</u> *	Small Bindweed
<u>Coryphantha missouriensis</u> *	Nipple Cactus
<u>Crataegus erythropoda</u> *	Hawthorn
<u>Dyssodia papposa</u>	Fetid Marigold

Sheet 1 of 3

**Appendix D - PLANT SPECIES KNOWN TO OCCUR AT THE  
ROCKY FLATS PLANT SITE**

<u>SPECIES NAME</u> <sup>1)</sup>	<u>COMMON NAME</u>
<u>Echinocereus viridiflorus</u> *	Hen-and-chickens
<u>Epilobium adenocaulon</u> *	Willow-herb
<u>Eriogonum alatum</u>	Winged Eriogonum
<u>Fallopia convolvulus</u>	Black Bindweed
<u>Gahum aparine</u>	Goosegrass
<u>Gaura parviflora</u> *	Butterfly Plant
<u>Glycyrrhiza lepidota</u> *	Wild Liquorice
<u>Gutierrezia sarothrae</u> *	Snakeweed
<u>Helianthus annuus</u> *	Common Sunflower
<u>Heterotheca villosa</u> *	Golden Aster
<u>Hydrophyllum fendleri</u>	Waterleaf
<u>Hypericum perforatum</u> *	Klamath Weed
<u>Juncus arcticus</u> *	Rush
<u>Koeleria macrantha</u> *	June-grass
<u>Lactuca serriola</u>	Prickly Lettuce
<u>Lepidium perfoliatum</u> *	Clasping Pepper-grass
<u>Liatris punctata</u>	Blazing Star
<u>Lomatium orientale</u>	Salt-and-pepper
<u>Medicago sativa</u> *	Alfalfa
<u>Melilotus alba</u> *	White Sweet-clover
<u>Mentha arvensis</u> *	Field Mint
<u>Muhlenbergia montana</u>	Mountain Muhly
<u>Nepeta cataria</u>	Catnip
<u>Oenothera brachycarpa</u> *	Evening Primrose
<u>Paronychia jamesii</u> *	Nailwort
<u>Pinus ponderosa</u> *	Ponderosa Pine
<u>Poa compressa</u> *	Canada Blue-grass
<u>Polygonum aviculare</u> *	Devils Shoestrings
<u>Populus sargentii</u> *	Plains Cottonwood
<u>Prunella vulgaris</u> *	Heal All
<u>Rosa arkansana</u>	Arkansas Rose
<u>Rudbeckia hirta</u> *	Black-eyed Susan

Sheet 2 of 3

Appendix D - PLANT SPECIES KNOWN TO OCCUR AT THE  
ROCKY FLATS PLANT SITES

<u>SPECIES NAME</u> <sup>1)</sup>	<u>COMMON NAME</u>
<u>Salix exigua</u> *	Sandbar Willow
<u>Salsola iberica</u>	Russian Thistle
<u>Schizachyrium scoparium</u>	Little Bluestem
<u>Secale cereale</u>	Rye
<u>Solidago sp</u> *	Goldenrod
<u>Sitanion longifolium</u>	Squirreltail
<u>Stipa comata</u> *	Needle-and-thread
<u>Symphoricarpos occidentalis</u> *	Snowberry
<u>Taraxacum officinale</u> *	Dandelion
<u>Tragopogon dubius</u>	Salsify
<u>Typha latifolia</u> *	Cattail
<u>Verbascum thapsus</u> *	Great Mullin
<u>Viola canadensis</u> *	Violet
<u>Viola papilionacea</u>	Violet
<u>Vulpia octoflora</u> *	Six-weeks Fescue

<sup>1</sup> Species known to occur but not observed are from Clark et al (1980)

- Listed as present on the site by the Colorado Natural Areas Program (1990)

\* Plant species observed on the Rocky Flats Plant site during the survey

08/27/90

COLORADO NATURAL AREAS INVENTORY  
ELEMENT OCCURRENCE RECORD

\*\*\*\*\*

EPCODE: PMORC2B100.001

TAXON: SPIRANTHES DILUVIALIS

COMMON NAME: DILUVIUM LADY'S TRESSES

SURVEY DATE: 1989-08-26    LAST OBSERVED: 1985-    FIRST OBSERVED: 1982

LOCATION

STATE: CO            COUNTY: JEFF

QUAD CODE: 3910571 3910572            MARGIN NUMBER: 2

QUAD NAME: ARVADA, GOLDEN

TOWNSHIP-RANGE: 003S 069W            SECTION: 21            MERIDIAN: 6P

TRS-COMMENTS: SE4NE4NE4SW4/NW4SW4

LATITUDE: 394630            LONGITUDE: 1050707            PRECISION: SC

NATURAL REGION:            WATERSHED: 10190004

DIRECTIONS: PROSPECT PARK, OVER FOOTBRIDGE TO SOUTH SIDE CLEAR CREEK, 1/2 MILE DOWNSTREAM TO POWERLINES, OLD CHANNELS 50 FT DOWNSTREAM FROM LINES.OFF W 44TH AVE WHEAT RIDGE, ALONG PAVED BIKE TRAIL

HABITAT: GEOL: RIVER VALLEY ALLUVIUM            ASPECT:  
SOIL: SAND, GRAVEL            SLOPE:            ASSOC TAXA: LOBELIA SY-  
PHILITICA, LIMNORCHIS HYPERBOREA, SALIX SPP., POPULUS DELTOIDES

ELEVATION: 5380 ft.            SIZE: 1 acres

POPULATION DATA: 546 PLANTS COUNTED IN FOUR PATCHES. BEST BLOOM SEEN SINCE POPULATION DISCOVERED.

BUD: % - -            FRUIT: 10% 89-08-26            FLOWER: 90% 89-08-26            EST #: 546

COMMENTS: BIKE TRAIL VERY CLOSE TO PLANTS, MEANDERING CREEK BOTH CREATES AND DESTROYS HABITAT.

MANAGEMENT UNITS: LJCCPPROS1COUS

STATE NATURAL AREA:            ADDITIONAL MANAGEMENT UNITS ?:

SITE NAME: PROSPECT PARK

OWNER(S): JEFFERSON CO., WHEAT RIDGE O.S.

BEST SOURCE: JENNINGS, W. (89-26). 1989. COLO. MO. SMU./JENNINGS, W.F. SMALL GRANTS REPORT, DEC. 1989. ROOT (S.N.).1985.KHD.

TRANSCRIBER: 86-01-29 SOK            UPDATE: 90-05-02 NAN



COLORADO NATURAL AREAS INVENTORY  
ELEMENT OCCURRENCE RECORD

\*\*\*\*\*

EOCODE: CTOPBAAAAA.001

TAXON: ANGE-BOCU-BOGR-ANSC XERIC TALLGRASS PRAIRIE

COMMON NAME: BIG BLUESTEM-SIDEOATS GRAMA-BLUE GRAMA-LITTLE BLUESTEM XERIC T  
ALLGRASS PRAIRIE

SURVEY DATE: 1983-10-01 LAST OBSERVED: 1983-10-01 FIRST OBSERVED: 1983

LOCATION

STATE: CO COUNTY: BOUL

QUAD CODE: 3910582 MARGIN NUMBER: 11

QUAD NAME: LOUISVILLE

TOWNSHIP-RANGE: 001S 070W SECTION: 15 MERIDIAN: 6P

TRS-COMMENTS: NE4, S14NW4

LATITUDE: 395802 LONGITUDE: 1051208 PRECISION: SC

NATURAL REGION: 35B WATERSHED: 10190005

DIRECTIONS: ON NW-FACING SLOPES OF DAVIDSON MESA, SE OF DAVIDSON DITCH  
BETWEEN CHERRYVALE RD. AND THE BOULDER TURNPIKE.  
NAME: DAVIDSON MESA

HABITAT: GEOL: FOX HILLS SS? & PLEIST. UPLAND GRAVELS; ASPECT: NW  
SOIL: TERRACE ESCARP. & VALMONT COBBLY CL LM; SLOPE: 0-25 DEG  
ELEV: 5530-5720 TOPOG: SIDESLOPE AND TOP OF MESA

ELEVATION: 5620 ft. SIZE: 100 acres

POPULATION DATA:

COMMENTS:

NEED:

MANAGEMENT UNITS: LCBOSBOUL1COUS

SNAAPBOUL1COUS

STATE NATURAL AREA:

ADDITIONAL MANAGEMENT UNITS ?:

SITE NAME:

OWNER(S): CITY OF BOULDER OPEN SPACE

BEST SOURCE: BAKER, W.L. 1983. FIELD SURVEY TO DAVIDSON MESA OF OCTOBER  
1, 1983.

TRANSCRIBER: 83-10-01 WLB

UPDATE: 83-12-01 WLB



08/27/90

COLORADO NATURAL AREAS INVENTORY  
ELEMENT OCCURRENCE RECORD

\*\*\*\*\*

EOCODE: PMPOAOK050.002

TAXON: ARISTIDA BASIRAMEA

COMMON NAME: FORKTIP THREE-AWN

SURVEY DATE: LAST OBSERVED: 1973-09-05 FIRST OBSERVED: 1973

LOCATION

STATE: CO COUNTY: JEFF

QUAD CODE: 3910582 MARGIN NUMBER: 13

QUAD NAME: LOUISVILLE

TOWNSHIP-RANGE: 002S 070W SECTION: 02 MERIDIAN: 6P

TRS-COMMENTS: SEC. 3,10,11,14,15

LATITUDE: 395305 LONGITUDE: 1050815 PRECISION: M

NATURAL REGION: WATERSHED: 10190005

DIRECTIONS: 7 MI S OF BOULDER, ON ROCKY FLATS PEDIMENT; NEAR CROSSING OF  
W BOUNDARY AND WOMAN CK. IN SEC. 15.

HABITAT: GEOL:  
SOIL:  
ASSOC TAXA:

ASPECT:  
SLOPE:

ELEVATION: 6000 ft. SIZE: 0 acres

POPULATION DATA: \*

BUD: % - - FRUIT: % 73-09-05 FLOWER: % - - EST #:

COMMENTS:

MANAGEMENT UNITS: FPENWROCK1COUS

STATE NATURAL AREA:

ADDITIONAL MANAGEMENT UNITS ?:

SITE NAME: WOMAN CREEK, ROCKY FLATS

OWNER(S): DOE, ROCKY FLATS

BEST SOURCE: KUNKEL, G. & L. SHULTZ (393). 1973. COLO.

TRANSCRIBER: 89-10-13 TSN

UPDATE: 89-10-30 NAN

08/27/90

COLORADO NATURAL AREAS INVENTORY  
ELEMENT OCCURRENCE RECORD

\*\*\*\*\*

EOCODE: PDLYT0B030.001

TAXON: ROTALA RAMOSIOR

COMMON NAME: TOOTH CUP

SURVEY DATE: LAST OBSERVED: 1979-08-08 FIRST OBSERVED: 1979

LOCATION

STATE: CO COUNTY: BOUL

QUAD CODE: 3910582 MARGIN NUMBER: 15

QUAD NAME: LOUISVILLE

TOWNSHIP-RANGE: 001S 070W SECTION: 03 MERIDIAN: 6P

TRS-COMMENTS:

LATITUDE: 395940 LONGITUDE: 1051250 PRECISION: M

NATURAL REGION: WATERSHED: 10190005

DIRECTIONS: W. OF CHERRYVALE RD AND BASELINE LAKE. 4 MI E. OF BOULDER.  
TEMPORARY POOL, FILLED IN EARLY SUMMER BY OVERFLOW FROM BASE  
LINE LAKE, NOW EMPTY BUT STILL MUDDY IN LOW AREAS.

HABITAT: GEOL:  
SOIL:  
ASSOC TAXA: AMMANIA ROBUSTA

ASPECT:  
SLOPE:

ELEVATION: 5148 ft. SIZE: 0 acres

POPULATION DATA: \*

BUD: % - - FRUIT: % - - FLOWER: % - - EST #:

COMMENTS:

MANAGEMENT UNITS: PRIVATE OWN COUS

STATE NATURAL AREA: ADDITIONAL MANAGEMENT UNITS ?:

SITE NAME: BASELINE LAKE

OWNER(S): PRIVATE

BEST SOURCE: WITTMAN, R. (896). 1979. COLO.

TRANSCRIBER: 82-02-10 WAB UPDATE: 90-02-05 NAN

08/27/90

COLORADO NATURAL AREAS INVENTORY  
ELEMENT OCCURRENCE RECORD

\*\*\*\*\*

EOCODE: PMORC2B100.003

TAXON: SPIRANTHES DILUVIALIS

COMMON NAME: DILUVIUM LADY'S TRESSES

SURVEY DATE: LAST OBSERVED: 1986-07-17 FIRST OBSERVED: 1985

LOCATION

STATE: CO COUNTY: BOUL

QUAD CODE: 3910582 MARGIN NUMBER: 12  
QUAD NAME: LOUISVILLE  
TOWNSHIP-RANGE: 001S 070W SECTION: 03 MERIDIAN: 6P  
TRS-COMMENTS: NW4

LATITUDE: 395959 LONGITUDE: 1051300 PRECISION: SC  
NATURAL REGION: WATERSHED: 10190005

DIRECTIONS: 150 PACES WEST OF SOUTH BOULDER CREEK AND 50 YARDS SOUTH OF  
BASELINE ROAD.

HABITAT:

ELEVATION: 5280 ft. SIZE: 1 acres

POPULATION DATA: EST NO INDS:21

COMMENTS: ACCORDING TO SHARP, 10 YEARS THIS PLANT WAS VERY ABUNDANT  
(100S) BUT POP. SUFFERED FROM SPRAYING FOR CARDUUS.

MANAGEMENT UNITS: LCBOSBOUL1COUS

STATE NATURAL AREA:

ADDITIONAL MANAGEMENT UNITS ?:

SITE NAME: BASELINE-BOULDER CREEK

OWNER(S): CITY OF BOULDER

BEST SOURCE: JENNINGS, WILLIAM. 360 MARTIN DRIVE, BOULDER CO 80303/  
SHARPS, J.A. (S.N.). 1985. COLO. ACC#: 417130.

TRANSCRIBER: 86-01-29 SOK UPDATE: 89-07-19 KSP

08/27/90

COLORADO NATURAL AREAS INVENTORY  
ELEMENT OCCURRENCE RECORD

\*\*\*\*\*

EOCODE: PMORC2B100.005

TAXON: SPIRANTHES DILUVIALIS

COMMON NAME: DILUVIUM LADY'S TRESSES

SURVEY DATE: 1989-07-21 LAST OBSERVED: 1989-10-29 FIRST OBSERVED: 1986

LOCATION

STATE: CO COUNTY: BOUL

QUAD CODE: 3910582 MARGIN NUMBER: 3  
QUAD NAME: LOUISVILLE  
TOWNSHIP-RANGE: 001S 070W SECTION: 9 MERIDIAN: 6P  
TRS-COMMENTS: NE4;SEC10NW4;SEC16NE

LATITUDE: 395835 LONGITUDE: 1051330 PRECISION: SC  
NATURAL REGION: WATERSHED: 10190005

DIRECTIONS: SOUTH OF SOUTH BOULDER ROAD, WEST OF SOUTH BOULDER CREEK,  
AND NORTH OF US 36 (BOULDER TURNPIKE). IN LOW, MOIST SWALES  
AND ON ADJACENT SHALLOW SLOPES.

HABITAT: GEOL: RIVER VALLEY ALLUVIUM ASPECT:  
SOIL: SLOPE: FLAT  
ASSOC TAXA: LOBELIA SYPHILITICA, SIDALCEA NEOMEXICANA

ELEVATION: 5350 ft. SIZE: 40 acres

POPULATION DATA: 105 PLANTS COUNTED 7/21/89. 179 PLANTS COUNTED 8/20/89,  
NUMEROUS DEAD STEMS AND OVERWINTER GREEN LEAF ROSETTES SEEN  
10/29/89. EST #:  
BUD: % - - FRUIT: 20% 89-07-21 FLOWER: 80% 89-07-2

COMMENTS: POPULATION DISCOVERED 1986. 3800 PLANTS COUNTED NORTH OF  
TURNPIKE IN 1986. PLANT COUNT LOWER SINCE.

MANAGEMENT UNITS: LCBOSBOUL1COUS  
STATE NATURAL AREA: ADDITIONAL MANAGEMENT UNITS ?:  
SITE NAME: HWY 36-BOULDER CREEK  
OWNER(S): CITY OF BOULDER OPEN SPACE

BEST SOURCE: JENNINGS, W. (86-6,7,9) 1986. RM. CS. COLO. KHD. JENNINGS, W.F.  
(89-22, 89-25). 1989. COLO.

TRANSCRIBER: 89-06-08 KSP UPDATE: 90-01-25 NAN

08/27/90

COLORADO NATURAL AREAS INVENTORY  
ELEMENT OCCURRENCE RECORD

\*\*\*\*\*

EOCODE: PMORC2B100.010

TAXON: SPIRANTHES DILUVIALIS

COMMON NAME: DILUVIUM LADY'S TRESSES

SURVEY DATE: 1989-08-26 LAST OBSERVED: 1989-10-29 FIRST OBSERVED: 1988

LOCATION

STATE: CO COUNTY: BOUL

QUAD CODE: 3910582 MARGIN NUMBER: 14

QUAD NAME: LOUISVILLE

TOWNSHIP-RANGE: 001S 070W SECTION: 15 MERIDIAN: 6P

TRS-COMMENTS: NW4 NW4

LATITUDE: 395820 LONGITUDE: 1071305 PRECISION: SC

NATURAL REGION: WATERSHED: 10190005

DIRECTIONS: CHERRYVALE RD SOUTH OF US 36, WALK 525 PACES DUE WEST FROM  
DITCH CROSSING BY OLD STONE BARN.

HABITAT: GEOL: FOX HILLS SANDSTONE  
SOIL:  
ASSOC TAXA: RUSSIAN OLIVE

ASPECT:  
SLOPE: NORTH

ELEVATION: 5450 ft. SIZE: 20 acres

POPULATION DATA: 5 PLANTS ON EAST SIDE OF WET SLOUGH THAT FLOWS NW THROUGH  
TALLGRASS PRAIRIE REMNANT.

BUD: % - - FRUIT: 40% 89-08-26 FLOWER: 60% 89-08-26 EST #:

COMMENTS: REPORTED BY DAVE COOPER, 1988, WHO REPORTED "NUMEROUS  
PLANTS".

MANAGEMENT UNITS: LCBOSBOULICOUS

STATE NATURAL AREA: ADDITIONAL MANAGEMENT UNITS ?:

SITE NAME: CHERRYVALE

OWNER(S): CITY OF BOULDER OPEN SPACE

BEST SOURCE: JENNINGS, W.F. 1989. SMALL GRANT REPORT. DEC. 1989.

TRANSCRIBER: 89-12-09 WFJ UPDATE: 90-01-24 NAN