0017

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Explanation:

1981 East Mountain Exploration Plan

cc:

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ACT/015/018A

UTAH POWER & LIGHT COMPANY

1981 EAST MOUNTAIN EXPLORATION PLAN

It is planned to conduct a limited surface exploration program above the permitted area of the Deer Creek, Wilberg, and Des-Bee-Dove coal mines located near Huntington, Utah.

Proposed are five (5) exploration drill holes and three (3) seismic survey lines as shown on the enclosed surface ownership map.

Drill hole CM-7 and the proposed access road were approved in 1977 but were not completed. We have included CM-7 in this proposal as we plan to drill the hole this year.

In accordance with Federal Regulations 30 CFR 211 and the Utah Permanent Coal Mining Regulations, the following is submitted:

Name and address of responsible person:

Mr. M. Heward
Manager, Mining and Exploration
Utah Power & Light Company
P. O. Box 899
Salt Lake City, Utah 84110
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RECEIVED
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OIL, GAS & MINING

Surface - Ownership other than United States:

Kent Barton
Utah Power & Light Company
Betty Jane Poulsen and
Guy Karl Seely, Trustees

Sub-surface - Ownership other than United States:

Utah Power & Light Company

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METHOD OF EXPLORATION

It is proposed to drill (5) drill holes with depths that vary from 800 to 2500 feet. Exploration will be accomplished by means of surface drilling utilizing a rotary drill rig.

Exploration Equipment:

Drill Rig:

1 - 2000 rotary drill rig

The drilling rig will require supporting compressors and a water truck, usually of 80 to 100 barrel capacity.

The drill rig will require a flat-bed truck for carrying drill pipe and casing.

1 - D8H Crawler Tractor

1 - Landscape Tractor/Trailer

1 - Semi-Truck/Flat Bed Trailer

1 - Logging Truck (Geophysical Probe Truck)

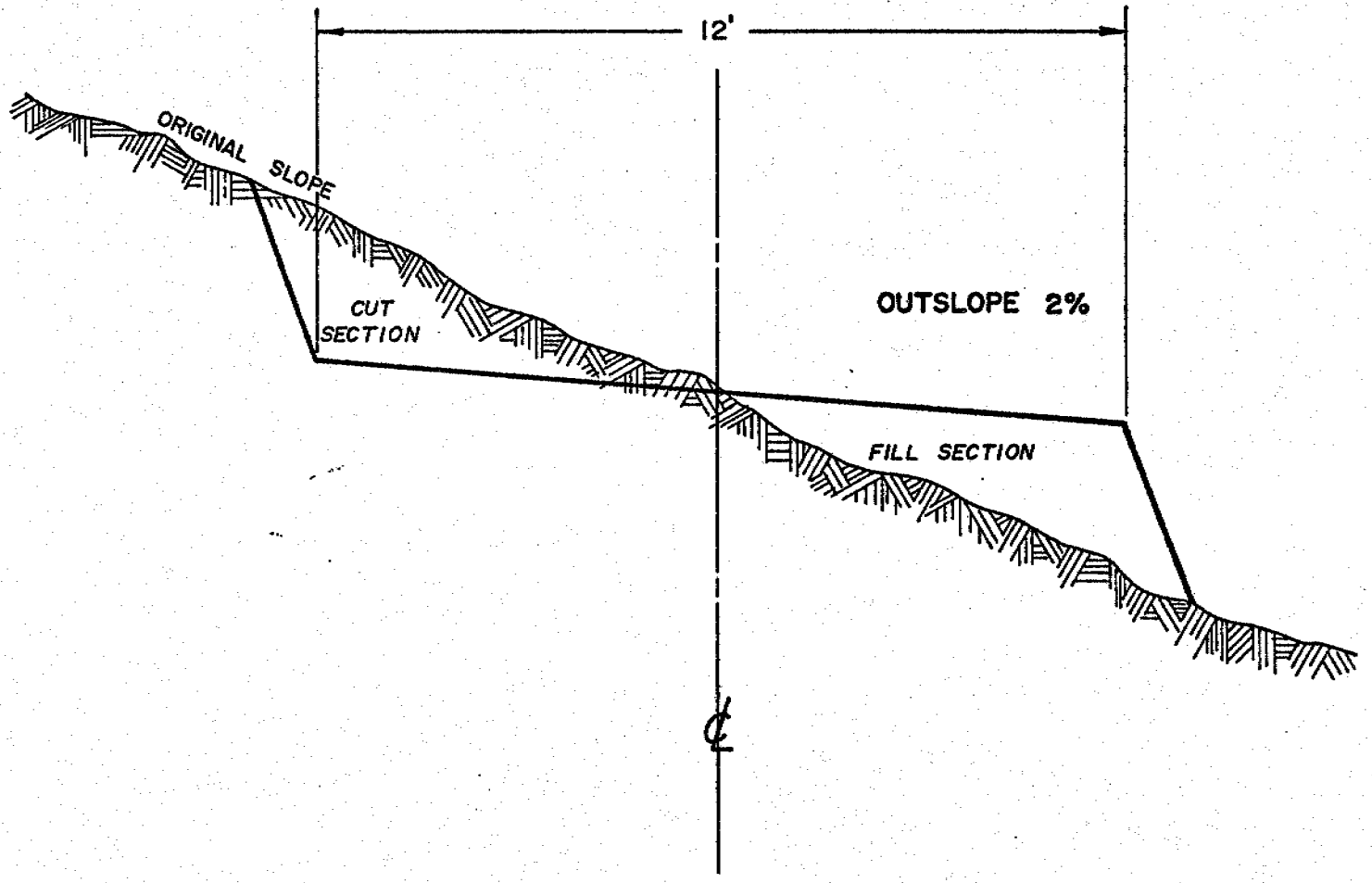
Pickup Trucks (Crew Transportation)

1 - 700 CFM Compressor and Booster

Access roads, pads and mud pits are constructed using a crawler tractor (Cat) and backhoe. On near flat areas blade work will be minimal, only the low growing brush will be removed by back-blading the surface.

Preservation of topsoil is managed by stripping the drill pads and stockpiling the topsoil adjacent to the drilling site.

Drilling sequence is as follows:



TYPICAL ROAD CROSS-SECTION

UTAH POWER & LIGHT COMPANY

DEPARTMENT OF MINING & EXPLORATION

NO SCALE

APRIL 25, 1979

Once the drilling site and access road have been approved, a crawler tractor constructs a minimum width road from the existing road system to the proposed drill site. This rough construction road is built balancing the cuts and fills as shown on the attached drawing. The drill pad, usually 50 x 75 feet is laid out to fit the slope of ground allowing for the least amount of cut.

If the drill site is level the area is back-bladed to remove the vegetation leaving the topsoil in place, otherwise, the site is cleared of brush and the topsoil stripped and stockpiled awaiting reclamation work. Mud pits are then excavated. Upon completion of site preparation the drill rig is driven to the site and set up to begin drilling. Ancillary equipment such as compressors, booster, water truck and flat-bed (drill pipe) trucks are positioned on the pad.

Once drilling has begun it continues until the exploration hole is completed or in the case of a planned core hole, casing is set at the prescribed depth. During the drilling period, drilling materials and cement are delivered to the site awaiting plugging of the hole.

After reaching the planned depth the drill string is removed from the hole and the geophysical logging truck is positioned to probe the hole. Upon recording the necessary data (geophysical logs) the hole is plugged using a two to one cement/water slurry plugging the entire length of the hole drilled. The drilling rig and support equipment are then moved to the next prepared site. The drilling site is cleaned of waste and trash and reclamation of the site will begin as soon as the mud pits have lost their fluids.

POLLUTION CONTROL MEASURES

Fire Prevention:

In the past fire hazard has not been a major problem. The clearing of drill sites reduces the chance of machine related ignitions and the storing of combustible fuels in a safe area further lessens any fire hazards associated to drilling. Each drilling rig is attended both day and night and if needed, a 3000 gallon water truck is available for fire suppression.

Soil Erosion:

Short-term soil erosion protection is accomplished by road design, that is, during road construction the roads are designed to the minimum grade possible and out-sloped for drainage (see road cross-section sketch). Reclamation work requires all roads not obliterated to have water bars installed and all disturbed areas will be seeded.

Water Polution Control Measures:

What little surface water exists on East Mountain is found in the form of springs, seeps and small ponds. These waters are used primarily for stock and wildlife and some are developed with tanks and troughs. All access roads and pads located across or adjacent to live or intermittent streams will require culverts or other protective measures to safeguard water quality. Ground water encountered during drilling will be evaluated for monitoring purposes.

Present O.S.M. regulations are specific in monitoring ground water (hydrologic balance) for determining future impacts associated with mining. Measures to protect the migration of ground water will be to cement the hole completely.

Air Polution:

We anticipate no significant impact to the air quality due to the drilling and other than watering roads for dust suppression no specific measures are planned.

Damage to Fish and Wildlife:

The area of drilling is abundant with wildlife and is known primarily for its deer and elk harvest each Fall. Past experience has proven that wildlife disturbance is minimal. The drilling period occurs after the calving season and the area of drilling activities is small and isolated.

Fisheries:

There are no major fisheries within the drilling influence zone.

OTHER NATURAL RESOURCES

Of the planned 5 drill pads and associated access roads, it is estimated that approximately 6 acres will be disturbed. For the most part, this disturbance will occur on open grass-covered range land. Some aspen and small conifer trees may be removed to provide access but, no merchantable timber will be affected. Specific action to reduce this impact will be revegetive seeding and selective routing of the access roads and drill pads.

PUBLIC HEALTH AND SAFETY

Due to the remoteness of the drilling area, public safety involvement is small.

As an operator, Utah Power & Light Company requires by contract that the drilling contractor is knowledgeable and complies with all state and local laws related to his drilling operations and that all equipment

used in conjunction with this project meet the safety standards of the federal, state, and local governing agencies.

Method of Plugging Drill Holes:

Again, upon completion of the drill hole, a proper cement slurry shall be placed in the hole through the open-ended drill pipe using 200 foot segmented lifts for inducing a pressure grout for plugging the drill hole. A hole location marker shall be placed on the surface of the hole to witness its location. This hole plugging procedure is a stipulation by the Geologic Survey prior to approval of coal exploration drilling plans.

SURFACE RECLAMATION

Reclamation Schedule:

It is planned to reclamate each site as soon after completion as possible. We have found from prior drilling in this area that the mud pits require at least two weeks or more to dissipate their fluids. After the reclamation sequence has started it will continue until complete.

The average time to drill a 1500 foot hole in this area is about three days, reclamation work per site will average two days. We are planning to complete the reclamation work this year.

Grading and Backfilling:

Using a crawler tractor, mud pits will be filled in, the drill pad bladed, contoured to its original shape and the previously stockpiled topsoil spread evenly over the disturbed area.

Access roads having gentle grades will have culverts removed, berms pulled in and road graded to remove ruts. Roads with grades in excess of 12% or side slopes too steep to safely work a crawler tractor

will require a backhoe to pull back the fill areas. Otherwise, steep roads will be smoothed, outsloped for drainage and waterbarred to U. S. Forest Service specifications.

Method of Soil Preparation and Fertilizer Application:

There is no special soil preparation planned excepting harrowing the disturbed areas after seeding. No fertilizer is planned unless stipulated by the surface owner.

Type and Mixture of Grass Seed:

Intermediate Wheat ---------- 16 lbs.

Smooth Broome ---------- 7 lbs.

Yellow Sweet Clover or Rambler Alfalfa ----- 2 lbs.

Method of Planting and Quantity:

All grass seeds are broadcast by a hand-held rotary broadcaster. Areas seeded are cultivated and raked with a tractor-drawn tooth harrow. The rate of application is approximately 25 pounds per acre.

Estimated Timetable and Completion Date for Reclamation Work:

Again, once reclamation of a drill site begins all phases are continuous, that is, cat work, spreading topsoil, ditching, seeding, and harrowing. All drill sites and access roads will be reclamated as soon after the hole has been completed as possible.

Completion is scheduled by November 15, 1981 contingent on drilling success and the starting date. It is anticipated to utilize the entire summer months for drilling.

Included in this submittal are topographical and land status maps showing existing roads, major drainages, cultural features and the proposed drilling sites with proposed access roads.

1981 PROPOSED DRILLING

EAST MOUNTAIN

Hole #	Location	S	T S	R E	T.D.	Federal Lease Numbers
CM-7	SW¼SE¼	24	17	7	800	SL-050133
EM-35	SE¼SW¼	17	17	7	2320	U-083066
EM-36	NE¼NE¼	17	17	7	2380	U-084923
EM-37	Lot 1	7	17	7	2500	U-084923
EM-38	Lot 2	5	17	7	2040	U-084923

SEISMIC LINES

Extension to Line A:

The seismic line which was completed on East Mountain in 1980 (Line A) provided valuable data regarding faults which will affect the mining of coal. One possible fault was located at the north end of the seismic line near drill hole EM-12C. In order to collect more data regarding this fault and any other faulting, it is proposed that this seismic line be extended to the north to our permit line.

Line B:

Seismic Line B is proposed to collect additional data along the Roans Canyon fault graben identified by Line A. Shallow auger holes ($\lesssim$ 10' deep) will be drilled along the line on one to two hundred foot centers. Each hole would be loaded with an explosive charge of about 2 pounds. The access road leading to drill holes EM-30 and EM-41 will be used to get the recording truck near enough to the seismic line.

Line C:

Seismic Line C is proposed to provide data regarding the Maple Gulch faulted graben. This is needed to evaluate the possibility of mining through the faults in this area. This seismic line will be run along the road leading to drill hole CM-7. Shallow auger holes ($\lesssim$10' deep) will be drilled along the line on one to two hundred foot centers. Each hole would be loaded with an explosive charge of about 2 pounds.

ENVIRONMENT

The area of exploration is located on East Mountain in the high plateau and canyonland area of eastern Utah near Huntington.

Soils

In the general vicinity of Huntington, soils range from deep, alkaline types in the valleys to very shallow soils and bare rock on the steep slopes of East Mountain (Wilson, et al, 1975). The dry, desert soils of the valley east and south of the mines are used mainly for range and pasture. Irrigated cropland occurs in small areas where water is available. These valley soils receive 8 to 14 inches of precipitation annually and have a low to moderate erosion potential (Wilson, et al, 1975).

The soil types of the mountainous areas surrounding the exploration area are characteristic of canyon slopes, geologic folds and faults. Bare rock and shallow soils over sandstone bedrock occur over most of the area. These soils support valuable watersheds, recreational areas and wildlife habitat. Runoff in these areas is high and contributes to heavy sedimentation and erosion problems. These erosion characteristics indicate that the revegetation potential is poor (Wilson, et al, 1975).

Vegetation

The dominant vegetation types are characteristic of central Utah (Foster, 1968). Pinion-juniper woodland is on the dry, south slopes and intergrades with sagebrush and grassland types at higher elevations on East Mountain. Spruce-fir-Douglas fir forest occupies the ravines, ridge top, and the more mesic north slopes at elevations above 8,000 feet (Holmgren, 1972).

Riparian woodland occurs along Deer Creek in the northern portion and trees are scattered along Grimes Wash. In mesic areas surrounding springs and seeps on the mountain tops, small meadows are present.

Pinion pine (Pinus edulis), juniper (Juniperus osteosperma), mountain mahogany (Cercocarpus spp.), and serviceberry (Amelanchier utahensis) are the common woody plant species. These forms provide an open canopy. Pinion pine and juniper density in the vicinity of the mine ranges from 240 to 420 trees/acre (University of Utah Research Institute, 1975b). The understory of pinion-juniper habitat is sparse and consists of scattered clumps of Indian ricegrass (Oryzoposis hymenoides) and forbs. Total vegetative cover in this area is generally less than 10 percent (University of Utah Research Institute, 1975b) because of steep slopes and southern exposure. Much of the remaining surface is bare rock. Plant species characteristic of pinion-juniper are listed in Appendix 1.

White fir (Abies concolor), Douglas fir (Pseudotguga menziesii), and Engelmann spruce (Picea Engelmanii), are the characteristic overstory species in the spruce-fir-Douglas fir vegetation type. Stands of aspen (Populus tremuloides) are scattered throughout the conifer vegetation. The understory associated with the conifers includes snowberry (Symphoricarpos oreophilus), buffaloberry (Shepherdia canadensis), twinflower (Linnaea borealis), blueberry (Vaccinium caespitosum), and miterwort (Mitella stenopetala). Annuals make up a very minor part of the cover. Conifer density on Horn Mountain, southeast of the mine property, ranged from 150 to 230 trees/acre (University of Utah Research Institute 1975b). Vegetative cover in this area is approximately 25% (University of Utah Research Institute, 1975b). Plant species

characteristic of the spruce-fir-Douglas fir type as listed in Appendix 2.

The piparian woodland is limited to Deer Creek and scattered trees along Grimes Wash. Cottonwood (Populus angustifolia) and willows (Salix spp.) dominate the streamsides. A frequent shrub is narrowleaf rabbitbrush (Chrysothamnus linifolius) and grasses occur in abundance.

Seven plants on the proposed federal list of endangered species (USDI, 1976) occur in Emery County (Table 1), but no rare or endangered species are known from the immediate area (Welsh, et al, 1975). Most of the endangered plant species in Emery County occur in the San Rafael Swell (Welsh, et al, 1975) in the eastern part of the county.

Fish and Wildlife

The southern area is in pinion-juniper habitat. A number of important vertebrate species are typical of this habitat within the region. The sparse vegetation and steep, dry conditions present at the Wilberg portal are less suitable for wildlife than are densely vegetated portions of pinion-juniper habitat on gently sloping terrain south and east of the mine property.

The mule deer is the most conspicuous large mammal in pinion-juniper habitat in the mine vicinity. Other mammal species found in this habitat include black-tailed jackrabbit, mountain cottontail, coyote, badger, striped skunk, deer mouse, pinion mouse, least chipmunk, hoary bat, and western big-eared bat (Brown, et al, 1958).

Typical birds in pinion-juniper habitat include the mourning dove, pinion jay, western bluebird, western kingbird, American kestrel, and chipping sparrow (Brown, et al, 1958). Chukar partridge inhabit the rock escarpment areas near the Wilberg portal.

TABLE 1

PROPOSED ENDANGERED PLANT SPECIES OCCURRING IN EMERY COUNTY *, **

Plant Species	Distribution
Cycladenia jonesii	San Rafael Swell, Emery County; Castle Valley, Grand County
Erigeron maguieri	Calif Spring Wash on San Rafael Swell, Emery County
Eriogonum Smithii	San Rafael Desert, Emery County
Festuca dasyclada	Joes Valley, Emery County; Sanpete County, Colorado
Gaillardia flava	Price River, Emery County
Parthenium ligulatum	Duchesne County; Emery County
Sclerocactus wrightiae	San Rafael Ridge, Emery County; Wayne County

* USDI, 1976
** Welsh et al, 1975

Dry surface conditions and the absence of standing water virtually preclude the presence of amphibians from pinion-juniper habitat in the immediate vicinity, but several reptile species are common. The side-blotched lizard, eastern fence lizard, sagebrush lizard, racer, gopher snake, and western rattlesnake are representative species in this habitat type through the region (Stebbins, 1966).

Open stands of spruce-fir-Douglas fir forest with Douglas fir as a dominant species occur on sheltered north-facing slopes at higher elevations within the exploration area. Spruce-fir-Douglas fir and pinion-juniper habitats intermingle in canyon bottoms and at intermediate elevations to form a transition zone between the two vegetation types. Aspen groves in the spruce-fir-Douglas fir communities offer excellent calving areas for elk (U. S. Forest Service, 1976). Mule deer, snowshoe hare, and blue grouse are important game species in forested areas. Non-game mammals which inhabit forest areas include bobcat, beaver, porcupine, red fox, coyote, mountain vole, deer mouse, hoary bat, and silver-haired bat.

Many bird species frequent the forested portions of East Mountain. Conspicuous breeding birds include band-tailed pigeon, plain titmouse, Clark's nutcracker, raven, turkey vulture, great horned owl, red-tailed hawk, and golden eagle.

Amphibian species such as the chorus frog and western toad inhabit mesic areas of the site. Reptiles are probably not abundant, but the short-horned lizard, sagebrush lizard, gopher snake, and western terrestrial garter snake inhabit sagebrush and forests sagebrush ecotones in the site region.

Sagebrush and grassland habitat, and some mesic vegetation types occur on the relatively flat upper benches of East Mountain. Meadow habitat

is limited to small drainage areas and a few springs. These habitats, combined with the forest edge ecotonal areas, are suitable for elk, mule deer, sage grouse, ruffed grouse, blue grouse, and snowshoe hare.

The additional moisture, increased vegetation, and structural diversity of the vegetation in the forest-sagebrush and forest-grassland ecotones provide habitat for more vertebrate species than is provided by pinion-juniper woodland.

Although there are no fisheries in the immediate vicinity, the tributaries which drain the area flow into Huntington Creek which does support a fishery (U. S. Forest Service, 1976). According to the U. S. Forest Service (1976) the upper portions (32 miles) of Huntington Creek are rated as Class III (of significant importance to the State fishery program) whereas the lower 24 miles are rated as Classes V and VI (of little or no value to the State fishery program). The tributaries (Deer Creek and Meetinghouse Creek) enter Huntington Creek in the lowest reaches of the Class III segment. Fish species which may be found in the Class reaches of Huntington Creek include brown trout, cutthroat trout, rainbow trout, brook trout, speckled dace, mountain sucker, and mottled sculpino.

Important Species

Important wildlife species are defined as those which are of recreational or economic value, are essential to the structure and function of the ecosystems in which they occur, or which have special status (e.g. endangered, declining, protected, etc.) within the region.

Several important species occur on and near East Mountain. The status, known distribution in the region and general habitat preference of each are discussed below.

a. Game Species:

o Mule Deer (Odocileus hemionus) - Mule deer range throughout all habitats on East Mountain. Pinion-juniper on the lower slopes of East Mountain are used as winter range. During other seasons deer concentrations are greater at high elevations. Although deer populations have declined over the past several years, the deer herd and habitat in the mine vicinity are in good condition (Dolton, 1977).

o Elk (Cervus canadensis) - Elk inhabit the sagebrush, and forest areas at the upper elevations on East Mountain, but do not ordinarily range into pinion-juniper habitat. The seven year average of elk censused on East Mountain (1970-1976) was 76 antlerless and two antlered individuals seen per year (Dolton, 1977). This census included larger groups only and does not reflect a total population estimate (Dolton, 1977).

o Mountain Lion (Felis concolor) - This species inhabits rugged mountains and forest areas in the region and may occasionally occur on East Mountain (Dolton, 1977).

Snowshoe Hare (Lepus americanus) - This species occurs in forested portions of mountainous areas in the region. It inhabits higher elevations on East Mountain (Dolton, 1977).

o Mountain Cottontail (Sylvilagus nuttalli) - Mountain cottontails inhabit brushy areas and forests, particularly on rocky slopes throughout the region (USDI Bureau of Land Management, 1976).

o Blue Grouse (Dendragapus obscurus) - Open conifer stands with brushy understory at higher elevations provide suitable habitat for this species. Blue grouse occur on East Mountain. The greatest density of the species in

Utah is in the northern Wasatch Range (Rawley and Bailey, 1972).

o Ruffed Grouse (Bonasa umbellus) - Brushy woodlands (aspens, willows, and conifers) near streams and springs are suitable habitat. This species occurs at higher elevations on East Mountain.

o Chukar Partridge (Alectoris graeca) - This species prefers steep, rock, semiarid slopes with low shrubs and rock outcrops. This species was introduced in Utah from 1951 to 1968. During this period 185,911 individuals were released at 191 different locations (Rawley and Bailey, 1972). The species is now widely distributed throughout Utah and other western states.

o Mourning Dove (Zenaidura macroura) - This is an important game bird in many parts of North America. Mourning doves prefer open field and forest edge habitat, but occur over a broad range of vegetation types throughout the 48 conterminous United States. The species occurs in pinion-juniper and forest edge habitat on East Mountain.

b. Special Status Species:

No federally listed endangered or threatened species are known to occur on the site property (USDI, Fish and Wildlife Service, 1976). The black-footed ferret (Mustela nigripes), a federally endangered species, has recently been reported near Ferron, several miles south of the site (Dolton, 1977). This species is not likely to occur on site because preferred habitat (A prairie dog town) (USDI Bureau of Land Management, 1972a) is not present. American peregrine falcon (Falco peregrinus anatum) has been observed within 25 miles of the site in the winter of each of the past three years (Dolton, 1977). It is probably a winter visitor in the area (USDI Bureau of Land Management, 1972b), although, historically peregrine falcon aeries existed in the San Rafael swell area 30 miles southeast of the site.

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Land Use:

Land in the exploration area of East Mountain is used for range forage, wildlife habitat, timber, recreation, and mineral extraction. The timber value of spruce and fir in the area is minimal. Most of the timber is classified as noncommercial (USDI Forest Service and BLM, 1976) since inaccessibility, size class distribution and market conditions limit the economic feasibility of commercial operations.

This area includes range allotments, the Gentry Mountain Cattle and Horses Allotment and the East Mountain Cattle and Horses Allotment on the Ferron Ranger District. Areas occurring in the Gentry Mountain Cattle and Horses Allotment are classified as non-range because of the steep terrain, inaccessibility, and scarcity of vegetation. A portion of the East Mountain Cattle and Horses Allotment is primary range (includes preferred forage-producing areas that are accessible and have available water). The range condition in this unit is fair and improving (USDI Forest Service and BLM, 1976). Some of the principal species are Western yarrow, orange sneezeweed, Kentucky bluegrass, crested wheatgrass, big sagebrush, and twistleaf rabbit brush. The range allotments are managed on a rest-rotation grazing cycle (USDI Forest Service and BLM, 1976).

GEOLOGY

The area of interest for exploration is centered on East Mountain, a part of the Wasatch Plateau located near Huntington in Emery County.

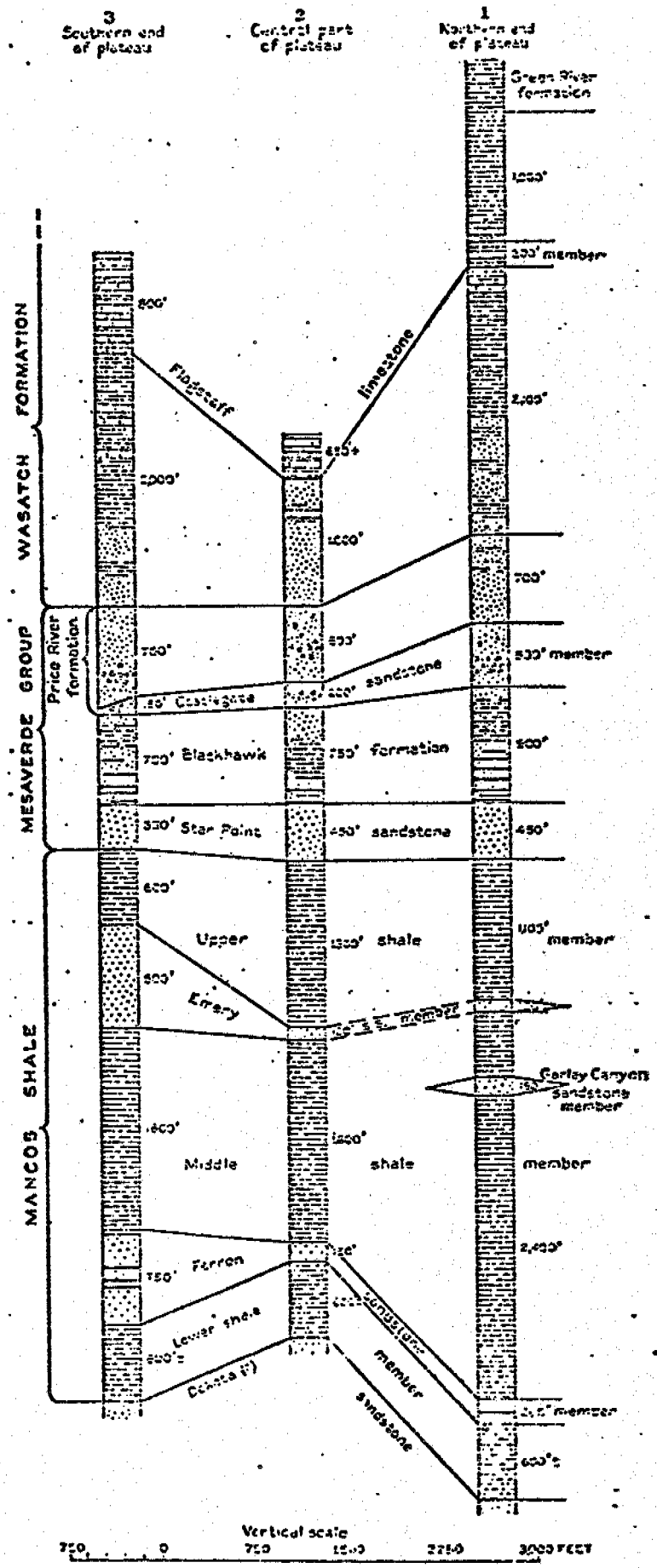
East Mountain is a prominent topographical mesa rising over 5,000 feet from the flatlands of Castle Valley. The eastern limits are marked by precipice sandstone cliffs intersected by narrow and steep drainages.

Particularly the exploration area lies within the drainages of Straight Canyon and Cottonwood Canyon on the south and west respectively, and Huntington Canyon on the north.

Significant geologic conditions in the project area pertain to the stratigraphy and structure of the area. The sedimentary strata in which the coal seams are enclosed generally consist of massive and bedded sandstones which are interbedded with siltstones and mudstones. The detailed interrelations of these various lithologies have been graphically illustrated in the stratigraphic section on the following page (Figure 3).

The lithologic logs of surface drill holes from locations drilled on the property also show the stratigraphic formations of the area. These logs indicate the two coal seams are of mineable thickness in the area. The upper, or Blind Canyon Seam, and the lower, or Hiawatha Seam, are both interstratified with the lenticular sandstones, siltstones, and mudstones of the lower portion of the Blackhawk Formation. The Hiawatha Seam forms the basal unit of the Blackhawk Formation and is underlain by the massive Star Point Sandstone.

The Blackhawk Formation which ranges from 700' to 800' thick in the area, consists of every-increasing amounts of sandstone in its upper portions, and is conformably overlain by the Castlegate Sandstone. The Castlegate averages about 200' thick in the area and consists nearly entirely of massive, medium to coarse-grained sandstone. The Castlegate forms a massive cliff and is conformably overlain by the lenticular sandstones of the Price River Formation. The Price River is about 600' thick and grades upward from predominantly sandy beds to interbedded sandstone, siltstone, and mudstone. The formation



COLUMNAR SECTIONS OF ROCKS IN THE WASATCH PLATEAU COAL FIELD

FIGURE NO. 3

is overlain conformably by the slope-forming mudstones, siltstones, sandstones, and occasional limestone lenses of the North Horn Formation. The North Horn Formation ranges from 900' to 1100' thick in the area and is unconformably overlain by the lowermost remnants of the Flagstaff Limestone.

The weathering of strata in the area has resulted in the exposure of the coal seams along lower canyon walls and mesa cliffs. The sediments which enclose the coal seams form steep slopes which are capped by the cliff-forming Castlegate Sandstone. The earth materials just above the Castlegate form steep slopes that gradually lessen in intensity higher in the stratigraphic section, particularly in the North Horn Formation. The Flagstaff Formation caps the highest points of the East Mountain Mesa.

Structurally, the area is fairly simple. The gentle down-folded strata crossing the area from southwest to northeast form the Straight Canyon Syncline. Dips into the syncline range from 2° to 4°. The Flat Canyon Anticline is located just to the north of the subject area.

The coal-bearing strata is locally offset and displaced as much as 150' by a series of north-south trending normal faults near the escarpments that face Castle Valley. These faults are usually "clean" and do not have significant amounts of fault gouge or other fractures associated with them.

Only a few widely spaced drill holes have been completed in the northern portion of the property, the reliability of interpretations concerning coal seam distributions and thicknesses is lower than that for the mine areas that have been intensely drilled and mapped.

The drilling and geologic mapping program that is proposed should add considerably to our knowledge of the thickness variations and distribution of the Blind Canyon and Hiawatha coal seams.

WATER

Surface water within the exploration area are mostly mountain springs and seeps which have improvements of small ponds and troughs for stock watering.

A large portion of East Mountain is relatively flat, intersected by numerous steep canyons that contain intermittent streams that feed two major drainages.

The higher and steeper northern section of East Mountain is drained by Huntington Creek whereas the lower southern portion flows into Cottonwood Creek. Access across these drainages is provided by existing culverts excepting the mouth of Rilda Canyon where a fording is used to cross Huntington Creek with heavy equipment.

ARCHEOLOGY

East Mountain is a narrow plateau with steep slopes and extends for about twelve miles in a northwest to southeasterly direction. The northern and eastern slopes drain into Huntington Creek while the western and southern slopes drain into Spoon Creek in Upper Joes Valley and into Cottonwood Creek. Both Huntington Creek and Cottonwood Creek drain to the southeast into the Castle Valley system.

The peaks on East Mountain range in elevation between 10,706 feet in the northwest to 9,600 feet in the southeast. The plateau varies in topography from flat to steeply sloping, and ranges from a quarter of a mile to a mile in width. The southwestern slope of the mountain drops 2,750 feet in 1.5 miles while the northeastern slopes are more gentle and decrease from the 10,200 foot to the 7,000 foot elevations in a horizontal distance of about 3.5 miles.

The primary year-round water resources on the mountain result from scattered seeps along the upper slopes draining the mountain's sandstone acquifers which are supplied by seasonal patterns of precipitation.

Because of the mountain's steep slopes, access to its upper meadows and terraces is most easily accomplished on foot by climbing its long, narrow eastern ridges above Huntington Creek, or by climbing the western slopes in the vicinity of Upper Joes Valley and Flat Canyon. Prehistoric access to the plateau was probably predominantly accomplished on those slopes since the steepness and the frequent sandstone cliffs along the southwestern, southern, and southeastern slopes probably discouraged easy movement between the higher meadows and Castle Valley.

As an aid to determining the extent and location of presently known prehistoric sites distributed in the area, a records search was carried out involving files of the Antiquities Section of the Division of State History and files of the Environmental Research Section of the Utah Power & Light Company. As a result of these file checks, known prehistoric sites within the East Mountain area can be categorized into three sets, i.e., lower elevation sites located between 5,800 and 7,200 feet, middle elevation sites located between 7,200 and 9,000 feet, and higher elevation sites located above 9,000 feet.

Existing records and current research have demonstrated that prehistoric human activity in the area has diminished as elevation is increased. Newly discovered sites along Grimes Creek, the sites found adjacent to the new Huntington Power Plant and site 42Em176 near the mouth of Huntington Canyon can all be considered as falling in the lower elevation category and are predominantly within the pinion-juniper ecosystem. In 1971, Raymond

Matheny's field crews identified a number of archeological sites in Huntington Canyon which have since been covered by the Huntington Reservoir. Those sites and site 42Em722 in Crandall Canyon can all qualify as falling within the second and middle elevation category which consists primarily of the montane ecosystem.

The higher elevation category which involves the upper montane and sub-alpine ecosystems includes only one known site, 42Em721, which is located on Trail Mountain to the west of East Mountain. This site and the majority of sites situated in the middle elevations consist of lithic fragment scatters having low to marginal significance in National Register terms. In contrast, the sites found in the lower elevation zone are not only more abundant, but often are of greater significance, having been the foci of year-round habitation related activities.

During the past five years archeological sweeps (surveys) were limited to planned exploration disturbances.

In 1977 public law 95-87 was enacted. Regulations promulgated under this act expanded environmental requirements for permitting coal mines.

One such requirement was to broaden cultural resource information above underground mining activities.

A 15% random survey was conducted during the summer of 1980 and the report of the survey is included in the Mining and Reclamation Applications now pending with the State of Utah.

Prior to exploration work, an archeological survey will be conducted, covering all proposed new roads, drill sites and seismic lines. Results of these archeological surveys will be forwarded to you.