0008

United States Department of the Interior

U-082996

GEOLOGICAL SURVEY

Office of the Area Mining Supervisor
Conservation Division
8426 Federal Building
125 South State Street
Salt Lake City, Utah 84138

February 17, 1977

Mr. Reed Christensen
Forest Supervisor
Manti-LaSal National Forest
350 East Main Street
Price, Utah 84501

Dear Reed:

Enclosed for your files is a copy of our Environmental Analysis on the Trail Mountain mine. We have taken your comments into account and have made the necessary changes.

We can't completely agree with your recommendations, though they may be justified, concerning the placement of culverts and a coal retaining wall. The surface facilities, since they are located on fee land, come under the jurisdiction of the Utah 1975 Mining and Reclamation Act. We have consulted the Utah Division of Oil, Gas, and Mining, and it stated in the enclosed letter that in its opinion the present surface facility setup is adequate.

Sincerely yours,

Ralph J. Blumer

Ralph J. Blumer
Mining Engineer

Enclosure

copy to ~~D-2~~ & ~~D-3~~

RECEIVED
MANTI-LASAL N.F.
FEB 18 1977

AC	TO	RO
	Supvr.	
	R-V-L Staff	
	T-Fire Staff	
	Engineer	WB
	LU Planner	
	AO	
	AA	
	Personnel	
	Resource	✓
	Filed	

D-2
D-3

ENVIRONMENTAL ANALYSIS REPORT

Trail Mountain Coal Company
Federal Coal Lease Number U-082996

Ferron Ranger District
Manti-LaSal National Forest
Region Four

RECEIVED
FEB 28 1977
DIVISION OF OIL,
GAS, & MINING

Prepared by Barry G. Johnson Date 2-3-77
Forester

Approval Recommended by [signature] Date 2-4-77
District Ranger

Approval Recommended by Fred Thompson for William Esley Date 2-4-77
Forest Engineer

Report Approved Reed C Christensen Date 2/4/77
Forest Supervisor

TABLE OF CONTENTS

		Page
I.	Description of Project	1
II.	Description of Existing Environment	1
	A. Geology	1
	B. Climate	2
	C. Soils	3
	D. Water	4
	E. Air	4
	F. Vegetation	5
	G. Wildlife	5
	H. Esthetics	6
	I. Range	6
	J. Paleontological and Archeological	6
	K. Recreation	6
	L. Minerals	7
	M. Fire	7
III.	Environmental Impacts of the Proposed Action	7
	A. Soils	7
	B. Water	7
	C. Air	8
	D. Vegetation	8
	E. Wildlife	8
	F. Esthetics	8
	G. Range	8
	H. Recreation	8
	I. Minerals	9
	J. Fire	9
	K. Subsidence	9
IV.	Favorable Environmental Effects	11
V.	Adverse Environmental Effects that Cannot be Avoided	11
VI.	Relationship Between Short-Term Uses of Man's Environment and the Maintenance of Long-Term Productivity	11
VII.	Irreversible and Irretrievable Commitment of Resources	12
VIII.	Alternatives to the Proposed Action	12
IX.	Consultation With Others	12
X.	Management Requirements and Constraints	13
XI.	Appendix	15

NEGATIVE DECLARATION

ENVIRONMENTAL ANALYSIS REPORT

Ferron Ranger District
Price Ranger District

Manti-LaSal National

The proposed activity is not considered to be a major Federal action significantly affecting the quality of the human environment (requiring an environmental statement pursuant to Section 102 (2) (C) of the National Environmental Policy Act of 1969 (PL-91-190) or to be highly controversial. Those actions that could adversely affect the quality of the physical and biological components in the project area will be sufficiently minimized to prevent long-term environmental impacts. Overall social and economical effects of the proposal are considered to be beneficial. Consultation with others on the proposed project did not reveal significant adverse reaction. These determinations are based upon evaluations made in the attached Environmental Analysis Report.

Reed C Christensen

REED C. CHRISTENSEN
Forest Supervisor

I. Description of Project

Trail Mountain Coal Company of Orangeville, Utah, owns Federal Coal Lease No. U-082996. This lease covers 40 acres of the Ferron Ranger District, Manti-LaSal National Forest. It is located in the SW¼SE¼ of Section 25, Township 17 South, Range 6 East, Salt Lake Meridian, Emery County, Utah. The south boundary of this lease is also the Forest boundary. The property to the south is State Section 36, outside of the Forest boundary. To the north of this forty is fee land and fee coal belonging to John Bell, owner of Trail Mountain Coal Company. Forest property is located on the east and west sides of the lease (see map).

The mining plan proposes no surface development work on Federal land. Only the Federal coal will be removed. The anticipated impact on the surface resources will be minimal.

Lease No. U-082996 will be mined and developed in such a manner and for the purpose of establishing access to the coal in State Section 36 to the south. If the mine is expanded and developed to the south, the entries under this lease will serve as a main haulage way. Therefore, they will be maintained throughout the life of this portion of the mine. Surface disturbances through subsidence, if they occur, will be in the distant future.

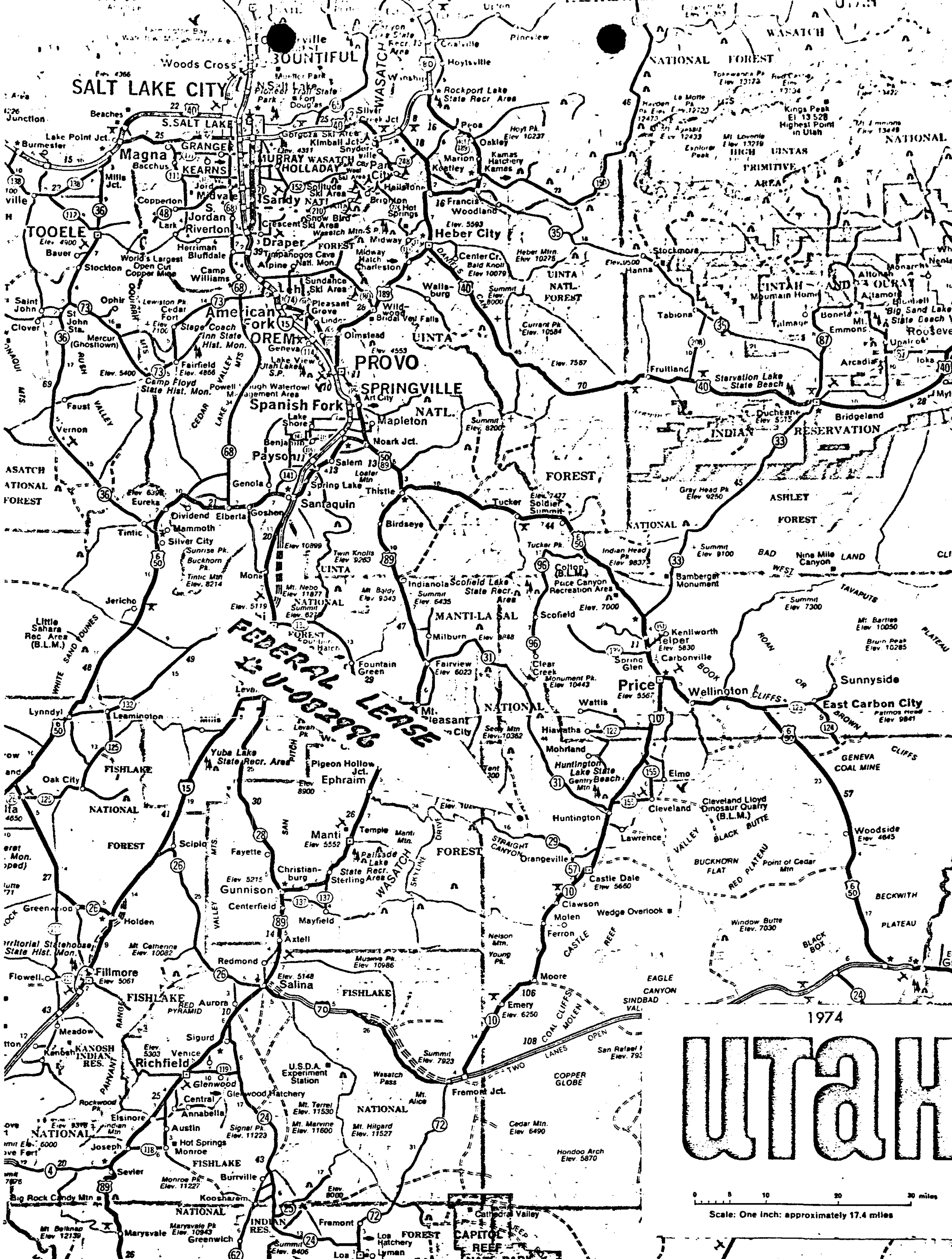
II. Description of Existing Environment

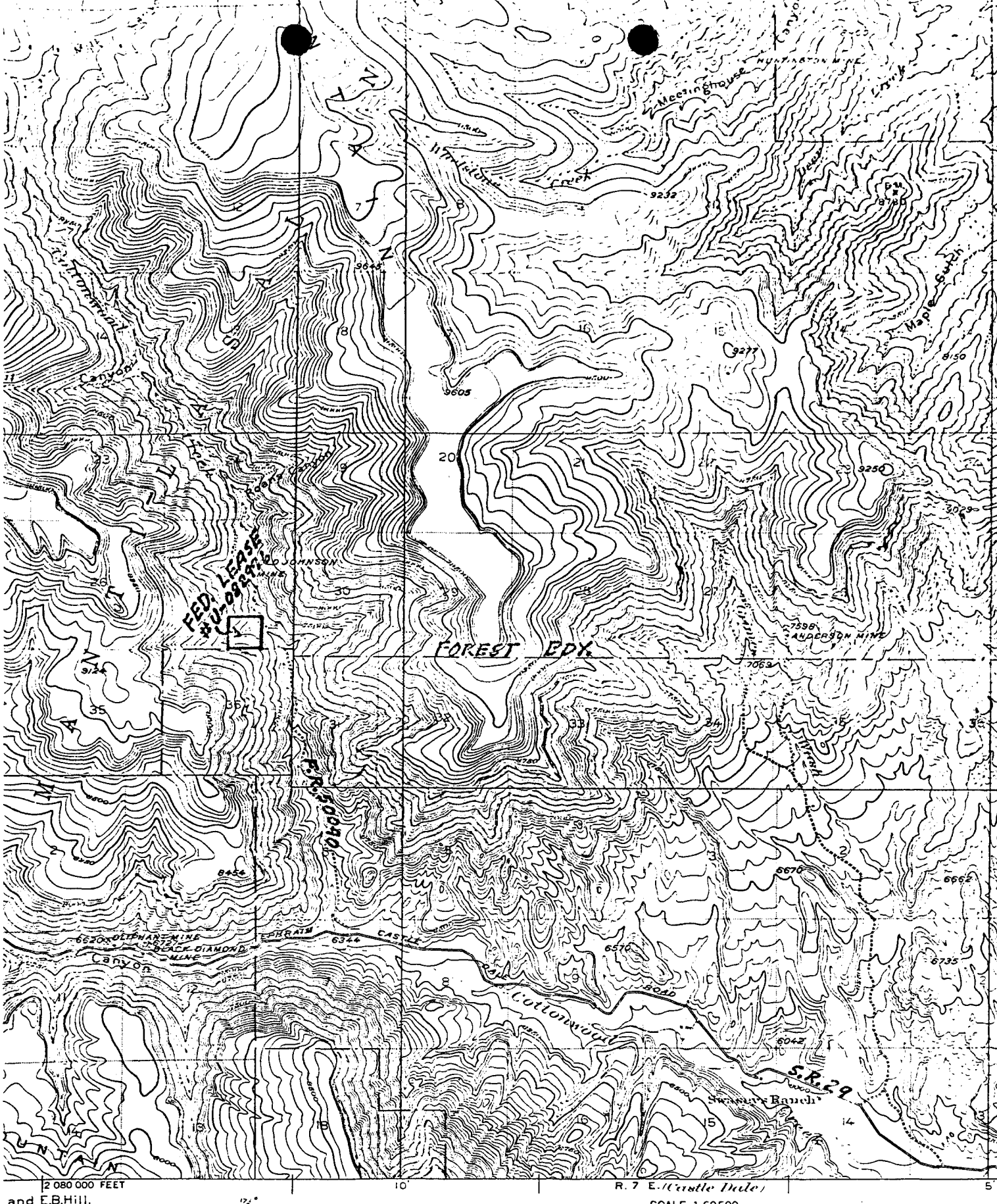
A. Geology

There are five important geologic formations on the District. These are the Flagstaff Limestone, North Horn, Price River, Castle Gate, and Blackhawk. They occur as broad bands running in a north-south direction.

This mining proposal deals with four of these formations. The uppermost formation of the area is the North Horn. It makes up the top of Trail Mountain. The soil is heavy textured and unstable, tending to slip and slump. Depth and production vary a great deal. Management techniques have to be modified when dealing with these soils because of the wide variation in construction and production qualities. These soils erode easily and contain many deep gullies.

The next band of soils, under the North Horn Formation, is derived from the Price River Formation. These soils do not cover as large an area as the North Horn, but they provide some of the District's most important cattle range and big game winter range. The topography of these soils


SALT LAKE CITY
BOUNTIFUL
Woods Cross
S.SALT LAKE
Magna
GRANGER
KEARNS
MURRAY
HOLLADAY
Midvale
Sandy
Jordan
Riverton
Draper
TOOELE
Stockton
WASATCH NATIONAL FOREST
Park City
Heber City
Hoytsville
Rockport Lake State Recr. Area
Oakley
Kamas
Francis
Woodland
Kings Peak El 13 528 Highest Point in Utah
HIGH UINTAS PRIMITIVE AREA
UINTA NATL. FOREST
Stockmore
Hanna
Tabiona
Fruitland
Starvation Lake State Beach
Duchesne
UINTAH AND OURAY INDIAN RESERVATION
Roosevelt
Bridgeland
Myton
American Fork
Lehi
OREM
PROVO
SPRINGVILLE
Spanish Fork
Mapleton
Payson
Salem
Santaquin
Genola
Goshen
Elberta
Eureka
Mammoth
Silver City
Tintic
Thistle
Birdseye
Tucker
Soldier Summit
ASHLEY NATIONAL FOREST
Indianola
Scofield
MANTI-LA SAL NATIONAL FOREST
Fairview
Mt. Pleasant
Kenilworth
Helper
Carbonville
Price
Wellington
Sunnyside
East Carbon City
Huntington
Cleveland
Elmo
Castle Dale
Orangeville
Ferron
Moore
Emery
Woodside
Nephi
Levan
Lynndyl
Leamington
Oak City
FISHLAKE NATIONAL FOREST
Ephraim
Manti
Gunnison
Centerfield
Mayfield
Axtell
Redmond
Salina
Scipio
Holden
Fillmore
Flowell
Meadow
Kanosh
KANOSH INDIAN RES.
Richfield
Glenwood
Sigurd
Aurora
Elsinore
Monroe
Joseph
Sevier
Marysvale
Koosharem
Burrville
Loa
Lyman
Fremont
Fremont Jct.
CAPITOL REEF
FEDERAL LEASE
U-002996
1974
UTAH
Scale: One inch: approximately 17.4 miles



and E.B.Hill.

CATION

ht-duty

improved dirt

State Route

TRUE NORTH

MAGNETIC NORTH

APPROXIMATE MEAN DECLINATION, 1923

SCALE 1:62500

1 ½ 0 1 2 3

3000 0 3000 6000 9000 12000 15000 18000 210

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 50 FEET

DATUM IS MEAN SEA LEVEL

is generally flat to rolling and are located in the intermediate elevations. The soils themselves are generally light, shallow, and fairly productive with moisture generally the limiting factor in management.

At the bottom of the Price River Formation is the Castle Gate sandstone member. It is important because of the problems associated with it. This member is chiefly the "cliff formers" and presents problems in access. Because they overlay the Blackhawk Formation, access from higher to lower elevations is extremely difficult except in the canyon bottoms.

The bottom of Cottonwood Canyon and the mine site are located in the Blackhawk Formation. The land forms associated with exposures of this coal-bearing formation are characterized by steep cliffs and deep, narrow canyons. They may be heavily faulted.

Six coal beds are present in this area. Only coal beds four feet thick and over are considered mineable by the U.S.G.S. The only bed in this area that is mineable is the 7.5-feet thick Hiawatha bed. 1/ It is overlain by 20.5 feet of very fine-grained sandstone that should be competent. In some locations, there are two to three thin rider seams. The coal sets on a 1.3 feet of siltstone which is underlain by 1.5 feet of shale. Underneath this shale is massive competent Star Point Sandstone.

B. Climate

The lease elevation ranges from 7,000 to 7,750 feet. Precipitation is light because of the shadow effect caused by Trail Mountain to the west. The area receives approximately 14 inches 2/ of precipitation annually, mainly in the form of rain during the spring and summer months. Rain storm vary in intensity from a gentle sprinkle to violent thunderstorms coming from the southwest. The more intense thunderstorms are usually of short duration.

The mean maximum and minimum temperatures for the month of January are 22° F. and 8° F., and for July 68° F. and 48° F. with maximum temperatures in the mid 90's. There are 80-100 freeze-free days in the year with temperatures above 32° F. 3/

1/ Wasatch Plateau Coal Field, Utah Drilling Project, U.G.M.S. 1976

2/ Precipitation - Frequency Atlas of the Western United States

3/ Freeze-Free Season Map, State of Utah

The prevailing winds are generally from the southwest or northwest with the normal up and down canyon diurnal variations. During the summer months the winds are light except in the vicinity of thunderstorms. During the frontal passage, strong winds 25 to 40 m.p.h. occur in this area.

C. Soils

The soils within the lease area vary from shallow on the slopes to relatively deep in the bottom of the draws and Cottonwood Canyon. They are sandy soils derived primarily from the Price River, Castle Gate, and Blackhawk Formations.

These soils are in mapping unit B, association 5.[4/] (See map and soil descriptions in appendix B). This association consists of about 35 percent Typic Agriborolls, 20 percent Lithic Agriborolls, and 20 percent Typic Haploborolls. The other 25 percent is mainly Pachic Agriborolls, Argic Cryoborolls, and Rock Outcrop. They are neutral to moderately alkaline soils. The surface layers are dark-brown and grayish-brown gravelly loam and gravelly sandy loams. The subsoils are brown and reddish-brown, loamy-skeletal and clayey-skeletal. The substrata are pink and pinkish-white loamy-skeletal with calcium carbonate accumulations. Some areas have lime cemented layers.

The soils in this association are well drained. Permeability is slow to moderate. Runoff is medium to rapid and sediment production is low. The hydrologic groups are mainly B and C for the deep soils and D for the shallow soils.

These soils are used mainly as range, wildlife habitat, recreation, and water yielding areas.

Dr. Andrew Godfrey's report[5/] places the lease area in Stability Zone 2. (See Appendix A). This zone consists of areas of dormant or fossil landslides. Areas underlain by the same geologic formations as active slides, but with more favorable slope, aspect or climate; or areas with deep gullies which are cutting away the toes of slopes and may lead to landslides. These areas will probably become unstable if subjected to improperly designed construction activities. However, in some instances, they could be made stable by remedial engineering works.

4/ Soils of Utah, Agriculture Experiment Station, Bulletin 492, USU, Logan, Utah

5/ A Field Reconnaissance of Mantle Instability on the Manti Division of the Manti-LaSal National Forest: by Dr. Andrew E. Godfrey

D. Water

The 1968 water rights map does not show any water on this 40-acre piece of land except for Cottonwood Creek. An inspection of the area did not show any water sources on this piece of land.

Cottonwood Creek contains water year around. During dry summer spells the flow is reduced to a small stream. But, because of the large watershed at the head of the canyon, during spring runoff and thunderstorms a tremendous volume of water is capable of rushing down this narrow canyon. (Photos in appendix C).

Cottonwood Creek merges with Straight Canyon approximately two miles south of the lease. The water from Straight Canyon is used for irritation and culinary purposes. Both Orangeville and Castle Dale use water from this stream for culinary purposes. The point of diversion is four and one half miles below the Forest boundary.

Studies were conducted on the water quality of this watershed by Keith R. McLaughlin, Forest Hydrologist. They covered the period from 1967 to 1972. The resulting report[6/] classified the water in Straight Canyon as meeting Utah State Division of Health's standards for Class "C" water and nearly meeting Class "B" standards. Class "C" waters shall be protected as to be suitable at all times for domestic water supplies which are treated before use by coagulation, sedimentation, filtration, and disinfection. Class "B" waters shall be protected against controlable pollution as to be suitable at all times for domestic water supplies which are treated before use by disinfection only.

E. Air

The air is thought to be clean and unpolluted. An air-sampling device was installed approximately five miles south of the lease area adjacent to the TV transmitter on the East Rim in the fall of 1973. Monthly air samples have been taken, but only limited results are currently available. The Total Suspended Particulate for 1974 is as follows:

Sample Date	TSP Vg/M^3
May 29	16
June 28	14
July 30	17
August 29	17

(Vg/M^3 = micrograms/cubic meter)

6/ The Results of Water Quality Monitoring on the Straight Canyon Barometer Watershed: by Keith R. McLaughlin

The State standard is 90 micrograms/cubic meter. The silver and iodide analysis has not been completed.

Locally the suspended particulates would be higher in the vinicity of Forest Road 50040, Cottonwood Canyon road. This unimproved dirt road receives moderate use which temporarily adds dust particles to the atmosphere. Activities at the Trail Mountain mine also add particulate, sounds, and smells through the use of equipment, generators and the movement of coal.

F. Vegetation

Vegetation is sparse, because of the steep slopes, shallow soils, massive outcrops and dry climate. Only the hardier plants common in arid regions are found. The principal native vegetation is pinyon pine, juniper, big sagebrush, bitterbrush, oakbrush, Indian rice-grass, and galleta grass.

There are no known rare or endangered plant species on the lease area.

G. Wildlife

Limited numbers of deer and elk may occasionally use the area for winter range, or move through the area to the water and vegetation along Cottonwood Creek and Straight Canyon. It is in Deer Herd Unit No. 35, open to buck only hunting in 1976, and elk herd unit No. 12, open to bull and "Hunter's Choice Permits."

Bobcat and cougars may reside in the area utilizing the ledges and rocks for protection. Coyotes may also be present in small numbers.

Golden Eagles are occasionally seen along with a number of hawks, sage grouse, and a variety of song birds.

A few cottontail and black-tailed jack rabbits, squirrels, mice, gophers, and marmots are found throughout the area. There are also several reptile, spider, and insect species present.

Cottonwood Creek is considered a spawning area for cutthroat and brown trout.

There are no known endangered or threatened species in the area.

H. Esthetics

The area consists of a steep, narrow canyon. The most dominant features are the large rocks and massive ledge structures that rim the canyon. The canyon is dissected by Cottonwood Creek, a small perennial stream.

The Visual Resource Management objective for this area is modification, which means that management activities may dominate the original characteristic landscape. The variety class is common and visitor sensitivity level, average. The distance zone is viewed as foreground and middleground from Road 50040.

I. Range

The lease area is in the Trail Mountain cattle and horse allotment. In 1976 there were 906 cattle grazed on this allotment. The terrain and vegetation of the lease doesn't lend itself to heavy grazing. The area is lightly used. There are no range improvements or studies on the lease area.

Road 50040 receives heavy use as a stock driveway during the spring and fall. This road serves as access for the Trail Mountain C&H and East Mountain C&H allotments.

J. Paleontological and Archeological

There are no known paleontological evidence or archeological sites on the proposed lease area. Access to the coal on Forest land will be from entries on fee land. As a result of this, any unknown paleontological and archeological areas would not be disturbed.

K. Recreation

There are no developed recreation sites on or near the lease area. Joe's Valley Reservoir, a heavy impact recreation area during the summer and fall, is located approximately five miles to the west. Access to Joe's Valley from the Emery County side is via State Highway 29 from Orangeville. The lower seven miles of this road is also used by Trail Mountain Coal Company for access to and coal haulage from their mine in Cottonwood Canyon.

Indian Creek Campground is located approximately ten miles north of the lease. It is also a very popular recreation area during the summer and fall. One of the main access routes to the campground is Forest Road 50040, through Cottonwood Canyon. This road is adjacent to the lease area and the Trail Mountain Coal Mine. It is also used for access and haulage.

During the fall, these upper basins and canyons receive heavy deer and elk hunting pressure.

Other recreational uses of the area consist of sightseeing and hiking.

The National Forest Travel Plan places the lease in the unrestricted travel area. This area is open to legitimate public vehicle use. Some routes may be temporarily closed under certain conditions to prevent resource damages.

L. Minerals

Coal is present on the lease area. The Hiawatha Coal Seam outcrops above the Star Point Sandstone on the lease. Drill hole #5, drilled by the State of Utah in Straight Canyon, indicates the continuance of the coal seam through the lease area.

This area is also leased for gas and oil under lease Number U-24355.

There are no other known minerals of commercial value on the lease area.

M. Fire

The natural fire occurrence is low. Fires that do occur are caused primarily by lightning.

III. Environmental Impacts of the Proposed Action

A. Soils

The proposal is to undermine the lease area with no surface occupancy or disturbance. The only impact this proposal would have on the soils is the possible occurrence of mine subsidence. For more information see section K on subsidence.

B. Water

Cottonwood Creek has already been disturbed by the existing facilities at the Trail Mountain Mine. (See photos in appendix C and Report in appendix D). The culverts that have been installed to allow access to the mine are not large enough to handle predicted two-year storm occurrences. Also soil, debris and coal slack have been allowed to enter the stream.

Further development and expansion of the mine is looked on as further degradation of the stream.

The mine is making water. If this water is allowed to enter the stream, it would introduce oils and greases, also heavy metals, such as lead, cadium, chromium, and nickel.

There is also a bath house and shop adjacent to Cottonwood Creek. If the drain field isn't constructed properly it could add pollutants to the stream.

C. Air

The air quality in the vicinity of the mine would be reduced with increased activity. Dust and smoke particles will be put into the atmosphere. Noise and smells are also associated with these activities. Increased use of Road 50040 by miners and coal trucks will add to the dust problems from this road. Although this problem should be alleviated in the future by a joint venture that is corrently underway with the County to oil the road from the mine to State Highway 29.

D. Vegetation

The vegetation on the lease will not be disturbed.

E. Wildlife

By expanding this mine, the wildlife that use the area will be subjected to increased pressures, annoyances, and encroachments on their range.

The fish in Cottonwood Creek below the mine site, if not eliminated, are near elimination by the pollutents from the mining operation. The culverts that have been installed at the mine serve as fish migration barriers, thus the upper reaches of the stream are essentially eliminated for fish habitat.

F. Esthetics

The esthetics of the area will not change appreciably from the mining of this lease.

G. Range

With increased road use by the mine company, problems could be encountered in moving cattle on and off of the Forest by this access route.

H. Recreation

The biggest impact to recreation will be the congestion caused on State Highway 29 and Road 50040 by the increased number of coal trucks. The mining of this lease will generate approximately 36 coal trucks per day from the mine.

I. Minerals

At present, there are no conflicts between the mining of the coal on this lease and the existing gas and oil lease. If in the future conflicts between mining and gas and oil exploration occur on the same land area, problems could arise and coordination between the uses would be necessary.

J. Fire

The increase in man's activity would increase the probability of a man-caused fire during the summer and fall seasons.

K. Subsidence

Subsidence of the land surface is a major factor in coal mining activities and in the future use of the land surface above mine workings. The magnitude and effects subsidence will have upon these activities and uses are not fully understood. It is known that subsidence does occur over mined out coal seams, and that several factors influence the rate and extent to which it will occur. Of these, the mining method, thickness of the coal seam, and the depth and lithology of the overburden materials are the most significant.

In both conventional and continuous room and pillar mining, part of the coal bed is left as pillars to support the overburden. These pillars are not removed until the mine boundaries have been reached. For this reason significant subsidence in most cases cannot occur or begin to occur until the pillars are removed late in the mine life. Subsidence has been known to occur where room and pillar mining was used and pillars were not removed. Here, however, overburden materials were thin and weak.

The depth from the surface to the coal varies, but it will be in a range from 0 to 500 feet. This depth will influence the amount of subsidence at the surface as broken rock occupies a larger volume of space than unbroken rock. Fractures associated with the caving will propagate upward until the void left by coal removal is filled with broken rock. The amount of rock above the seam that will be fractured depends upon the depth of the seams, the volume of coal removed, and the nature of the overburden.

The nature of the lithology of the materials overlying the coal can have a great effect upon the amount and rate of subsidence, and also upon the method of mining and of coal recovery.

Curved like a bow, zones of compressive stress called compression arches, tend to occur above and below the mine panels and transfer the overburden load in coal extraction areas to adjacent solid coal boundaries or barrier pillars. The caving and flexure of strata in the distressed zone encompassed by the arches into the mine cavities tend to increase the stresses again in the mine workings. Flexure of strata also produces tensile and compressive stresses within lithologic units and shear stresses across litholigic boundaries. As time goes by, the mine voids are widened, the compression arches migrate higher in the overlying strata and eventually may reach the surface. The migration continues to transfer overburden stresses back into the extraction area from the mine boundaries or barriers. The rate of migration of compression arches, and consequently the rate of stress transfer, depends on thickness and strength of overburden strata, duration and rate of mining, mine geometry, and mining sequence.

Subsidence of the land surface should be expected in varying degrees over the lease area from very little, to perhaps several feet in some areas. The effects of subsidence are expected to be similar to those observed at other mines in the vicinity. It is expected that subsidence will be gradual and, in most cases, will begin to some degree at the onset of the mining and will continue beyond the life time of the mining.

Subsidence effects have been casually observed at several locations. Only casual observations were made. Measured data are unavailable which have evaluated the magnitude and effect of the subsidence.

Most features observed are subtle and include small slumps on steep slopes, slight depressions, and some tipping of trees and shrubs. Drainage patterns did not appear significantly changed or erosion increased. From casual observation, the present land use did not appear to be affected or changed significantly.

There were no observed features developed from mine subsidence that pose possible hazards to human life, or are deleterious to present land uses.

The effect subsidence had upon the natural ground water flow system in areas which have subsidence could not be determined by observation and is, therefore, unknown. This would require a monitor and inventory program established prior to mining. It is expected, however, that mining and subsidence will have some significant effect upon the natural ground water flow. Interception of water courses by mining and fracturing of aquifers by subsidence may alter flow patterns, increase recharge, and change spring flows.

Subsidence could possibly affect the surface resources. The greatest impact could occur if mining takes place too close to the surface and the ledges. This could result in large blocks of ledges falling off into the Cottonwood drainage.

IV. Favorable Environmental Effects

There will be no favorable environmental effects realized as a result of this project.

There will be an economic boost to the local economy. The coal from this lease will make a contribution to easing the Country's energy crisis.

V. Adverse Environmental Effects that Cannot Be Avoided

The present surface mine facilities are laid out in such a manner as to prevent future expansion and development without serious damages to Cottonwood Creek. Cottonwood Creek will have to be piped in order to expand the facilities over the top of the drainage.

Dust and fumes from the mine and equipment at the loading facility will be placed into the air. The lowering of the air quality is anticipated to be confined to the immediate vicinity. Air movements will generally disperse these items in a short period of time.

Dust from vehicle travel will also be placed into the air. This would be temporary. Some settlement of these dust particles will occur on adjacent land areas and vegetation.

The wildlife in the vicinity of the mine and along the access route will be disturbed by the increase in activities.

Increased man's activities will increase the risk of man-caused fires.

VI. Relationship Between Short-Term Uses of Man's Environment and the Maintenance of Long-Term Productivity

Mining of the coal in this lease does not constitute a long term impact to the surface resources. After this mine has extracted all available coal and is no longer utilized, the surface facilities can be removed, the site reshaped, revegetated, and returned to production.

VII. Irreversible and Irretrievable Commitment of Resources

The only irretrievable resource commitment we are dealing with in this project is the coal. Coal is a non-renewable resource. If it is extracted and used, it is gone for all future generations.

VIII. Alternatives to the Proposed Action

A. No Action

No action would essentially mean recommending not to mine the coal on the lease. This would result in closure of the Trail Mountain mine. The impacts sustained through mining this lease will not justify such an action.

B. Permit mining the lease with no environmental constraints

This alternative would allow for maximum production at minimum expenditures for the company. It would cost the tax payers and future generations the costs of environmental damages sustained. The impacts to the surface resources will be much greater under this alternative.

C. Permit mining of the lease with specific constraints

With this alternative there can be a mutually beneficial mix between coal production and environmental protection, neither component being maximized. Specific controls will be protection of the east escarpment of the lease by restricting mining too close to the outcrop and protection of Cottonwood Creek at the mine site.

IX. Consultation With Others

A public meeting was held October 5, 1976, at the Emery County Courthouse in Castle Dale, Utah, to discuss this proposal. Trail Mountain Coal Company, Forest Service, Utah Division of Wildlife Resources, Bureau of Land Management, U.S. Geological Survey, Utah State Division of Oil, Gas and Mining, College of Eastern Utah, and the Emery County Progress newspaper were represented at this meeting. (For details of the meeting see appendix E). After the formal meeting at the courthouse the group traveled to the mine site for an on-site inspection of the facilities, mine plan, and the lease area.

The group was in general agreement that the lease could be mined without considerable additional environmental impacts. There was concern expressed, however, about the size of the culverts used in Cottonwood Creek for crossings. It was felt that they would be inadequate to control a heavy runoff situation.

The creep of the coal stockpile and the facilities' encroachment upon the stream were also discussed. Further expansion and development show a real potential for stream degradation unless protection measures are taken.

The project was discussed with the Emery County Commissioners on February 2, 1977. They are favorable to mining and development in the area; it could mean an economic boost.

X. Management Requirements and Constraints

1. It is recommended that the project be approved: That Trail Mountain Coal Company be allowed to mine the coal from Federal Coal Lease No. U-082996 with the following constraints.

2. Protection from subsidence by proper mining practice. This would include:

   a. Not mining close to the ledges.

   b. Not removing pillars close to the ledges.

   It is not known how close to the surface this area can be safely mined. It will be necessary to do some research into this matter to arrive at a safe distance.

3. It is recommended that the Trail Mountain Coal Company install a large arch culvert in Cottonwood Creek at their mine facility. This culvert should be large enough to handle the expected runoff from a 100-year storm. It should be long enough to protect the stream for its entire length where adjacent to the mine, stockpile, and loadout facilities.

   This type of culvert would protect the stream from debris and also restore fish passage through the area.

4. Drainage facilities should be constructed on site to prevent washing of the parking, storage, and loading areas into the stream.

5. All effluent from the mine site that is allowed to enter the stream must meet State Class "C" standards. The Company should be responsible to take the necessary water samples to document that it does meet these standards.

6. Structures should be constructed around the coal stockpile to prevent it from creeping into the stream.

7. Provide for through access and public safety along road 50040 and State Highway 29 at all times.

8. The company should take all precautions necessary and required by State and Federal laws to prevent and control on-site fires.

9. Require air pollution control devices as required by law.

XI.

APPENDIX

A. Dr. Godfrey's Stability Zones Map

B. Soils Map and Description

C. Photos

D. Report on Cottonwood Creek by Jim Anderson

E. Public Meeting in Castle Dale

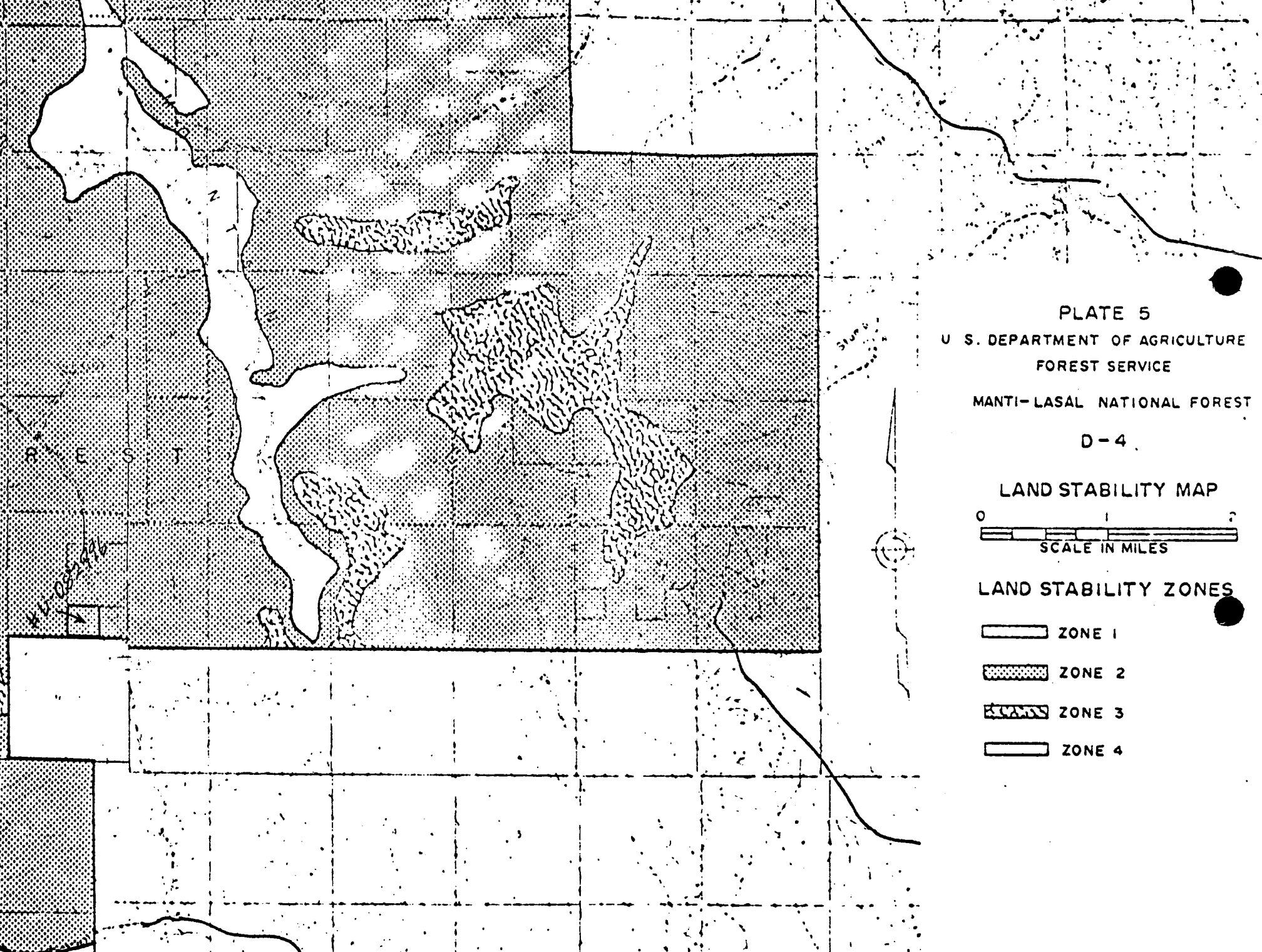


PLATE 5
U S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
MANTI-LASAL NATIONAL FOREST
D-4
LAND STABILITY MAP
0
1
2
SCALE IN MILES
LAND STABILITY ZONES
ZONE 1
ZONE 2
ZONE 3
ZONE 4

UTAH LAKE
Lake Shore
Spanish Fork
Spring Lake
Santaquin
Eureka
Elberta
Goshen
Mammoth
Silver City
Mona
Nephi
Fountain Green
Levan
Mount Pleasant
Fairview
Chester
Lynndyll
Leamington
Oak City
Deseret
Oasis
Scipio
Fayette
Sterling
Orange
Centerfield
Aurelia
Flowell
Fillmore
Meadow
Kanosh
Aurora
Sevier
Sigurd
Glenwood
Elsinore
Joseph
Salina
Redmond
Kooshare
Marysvale
Beaver
Junction
Kingston
Antimony
Bicknell
Torrey
Fish L.
Clear L.
Muddy
Sevier River
Beaver R.
Muddy R.
Fremont R.
Sevier Bridge Resvr.
Piute Resvr.
Otter Creek Resvr.
Central Utah Canal
Willow Springs Wash
Desert Wash
Salt Wash
Dry Creek
Logging Grove
Bullion
Tropic Slough
Willow Cr.
Sweetwater Cr.

B. Dominantly dark-colored soils of the mountains and plateaus that are usually moist in some parts during the summer, have an average annual precipitation of 35 to 55 centimeters (14 to 22 inches), a mean annual soil temperature of less than 8° C (47° F), and a mean summer soil temperature of more than 15° C (59° F).

This group of associations is shown on the soil map in dark green crosshatching. There are 9 different associations, numbered 5 through 13, in this group.

The soils in these associations are located in the eastern and southern parts of the state mainly in the Colorado River Drainage Basin. Elevations range from about 6,000 to 8,400 feet but are generally less than 8,000 feet. Slopes vary widely, ranging from undulating to rolling plateaus in some associations to steep and very steep mountain slopes in other associations. Generally these soils occur adjacent to and below the Cryoborolls in group A, shown in purple on the map.

The climate is dominantly moist subhumid and dry subhumid and characterized by moderately cool summers. The mean annual soil temperature at 20 inches is less than 8° C (47° F) and the mean summer soil temperature is more than 15° C (59° F). The average annual precipitation ranges from 35 to 55 centimeters (14 to 22 inches). Much of the precipitation occurs as snow in the winter months. A significant amount occurs as rainfall during the summer months, the soils being usually moist in some parts during the summer.

The vegetation consists of ponderosa pine, oakbrush, and associated mountain forbs and grasses on the rolling to steep slopes from 7,000 to 8,400 feet elevation. Pinyon pine, juniper, oakbrush, and associated grasses, forbs, and shrubs are on areas below 7,000 feet.

These soils are used as range, wildlife habitat, recreation, and water yielding areas. Ponderosa pine is harvested for lumber.

Good range and forest management are essential on these soils to maintain the vigor and abundance of the best plant cover and to protect the soil from accelerated erosion.

5. Typic Argiborolls-Lithic Argiborolls-Typic Haploborolls Association

This association occurs in large areas on Diamond Mountain in northeastern Utah, on the Roan Plateau north of Thompson and south of the Uintah Basin, east of Soldier Summit, and in the Kolob Plateau in southwestern Utah, southeast of Cedar City. Elevations range from about 7,000 to 8,400 feet. Slopes are steep and very steep.

This association consists of about 35 percent Typic Argiborolls, 20 percent Lithic Argiborolls, and 20 percent Typic Haploborolls. The other 25 percent is mainly Pachic Argiborolls, Argic Cryoborolls, and Rock outcrop.

The Typic Argiborolls are deep and moderately deep neutral to moderately alkaline soils. The surface layers are dark-brown and grayish-brown gravelly loam and gravelly sandy loams. The subsoils are brown and reddish-brown loamy-skeletal and clayey-skeletal. The substrata are pink and pinkish-white loamy-skeletal with calcium carbonate accumulations. Some areas have lime cemented layers. Representative soil series are Showalter and Widtsoe.

The Lithic Argiborolls are shallow, neutral to moderately alkaline soils. The surface layers are dark-brown and grayish-brown gravelly and cobbly loams. The subsoils are loamy-skeletal and clayey-skeletal and underlain by bedrock at depths of less than 20 inches. No representative soil series have been identified for this subgroup.

The Typic Haploborolls are deep, neutral to moderately alkaline soils. The surface layers are brown and grayish-brown gravelly loams and silty clay loams. The subsoils are brown coarse-loamy, fine-loamy, fine-silty and loamy-skeletal. The substrata are pink and reddish-yellow, loamy-skeletal. Some soils have calcium carbonate accumulations in the lower layers. Representative soil series are Datino and Panguitch.

The soils in this association are well drained. Permeability is slow to moderate. Runoff is medium to rapid and sediment production is low. The hydrologic groups are mainly B and C for the deep soils and D for the shallow soils.

The principal native vegetation is pinyon pine, juniper, oakbrush, big sagebrush, bitterbrush, Indian ricegrass, and some ponderosa pine.

These soils are used mainly as range, wildlife habitat, recreation, and water yielding areas. Areas of ponderosa pine are used for timber production.

6. Typic Argiborolls-Typic Ustorthents Association

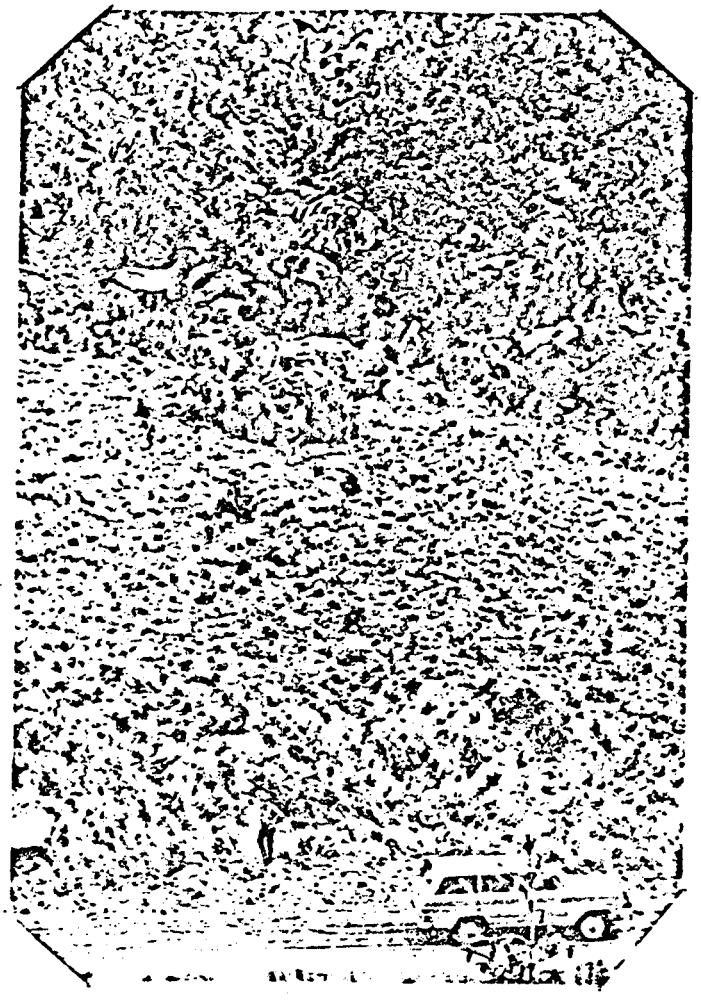
This association is located in the south central part of Utah south of the town of Alton on hills and alluvian fans. Elevations range from about 6,300 to 7,500 feet. Slopes are sloping or rolling to steep.

This association consists of about 40 percent Typic Argiborolls and 35 percent Typic Ustorthents. The other 25 percent is mainly Borollic Haplargids and Ustic Torriorthents.

The Typic Argiborolls are deep, neutral to moderately alkaline soils. The surface layers are dark-brown gravelly loams. The subsoils are brown clayey-skeletal. The substrata are pinkish-white loamy-skeletal with calcium carbonate accumulations. A representative soil series is Showalter.

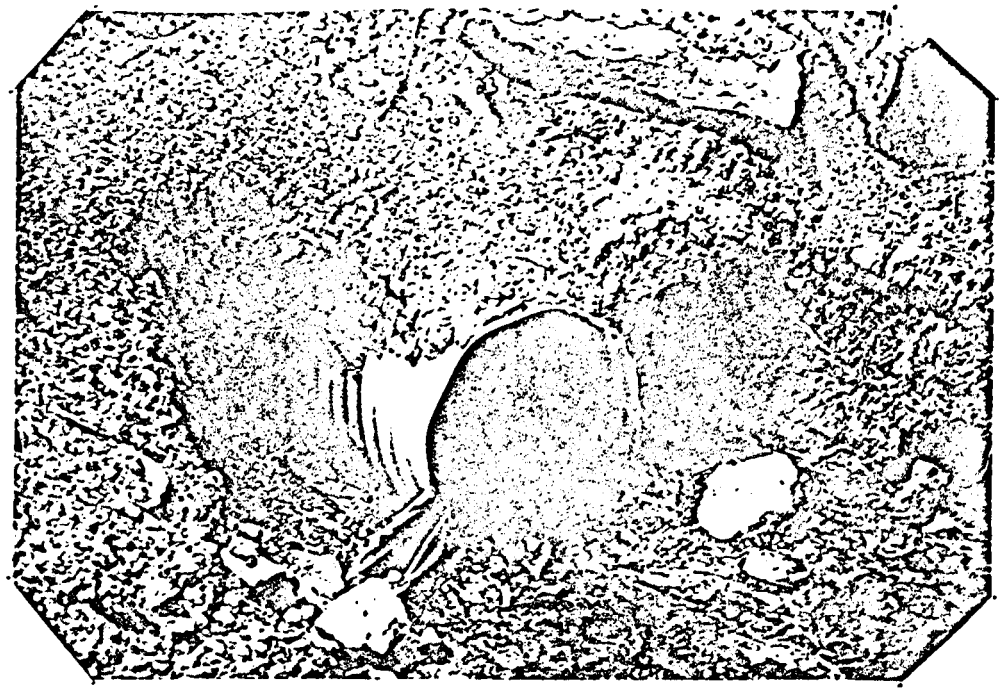
The Typic Ustorthents are shallow and moderately deep, mildly to moderately alkaline soils, 10 to 36 inches deep over shale. The surface layers are pale-brown and dark-brown clay loams and silty clay loams. The underlying layers are pale-brown and dark-brown fine loamy and clayey. Representative soil series are Lockerby, Menefee, and Ruko.

The soils in this association are well and moderately well drained. Permeability is slow and very slow. Runoff is medium to very rapid and sediment production is moderate. The hydrologic groups are mainly C and D.

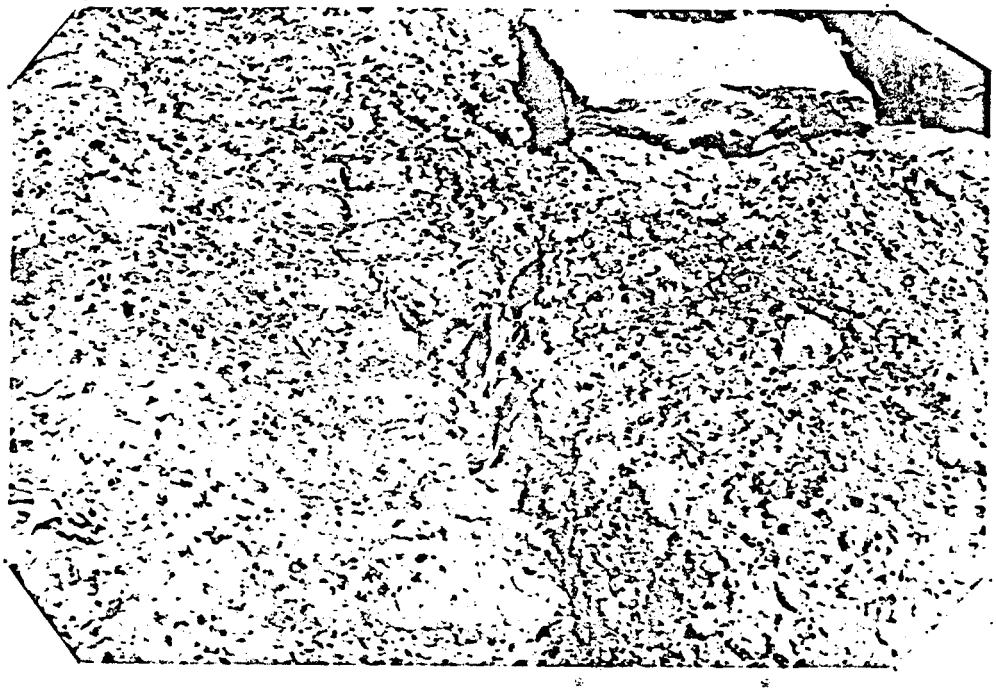


Typical upstream watershed, north of mine site

First culvert at mine site, upstream, 24" CMP, note fill material

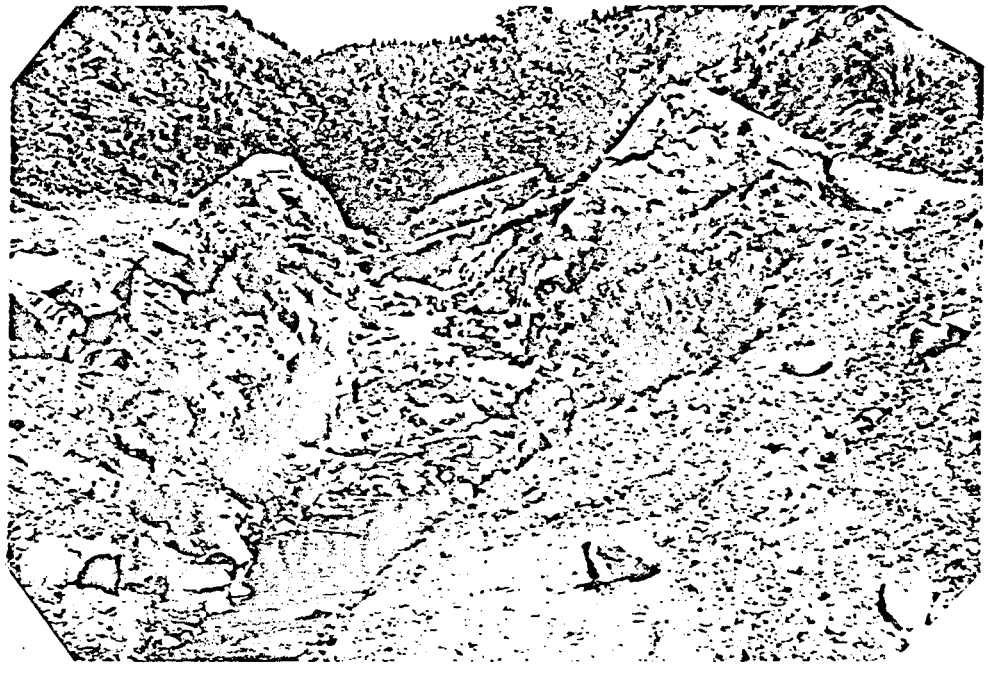


First culvert entrance, 24" CMP, note erosion around pipe

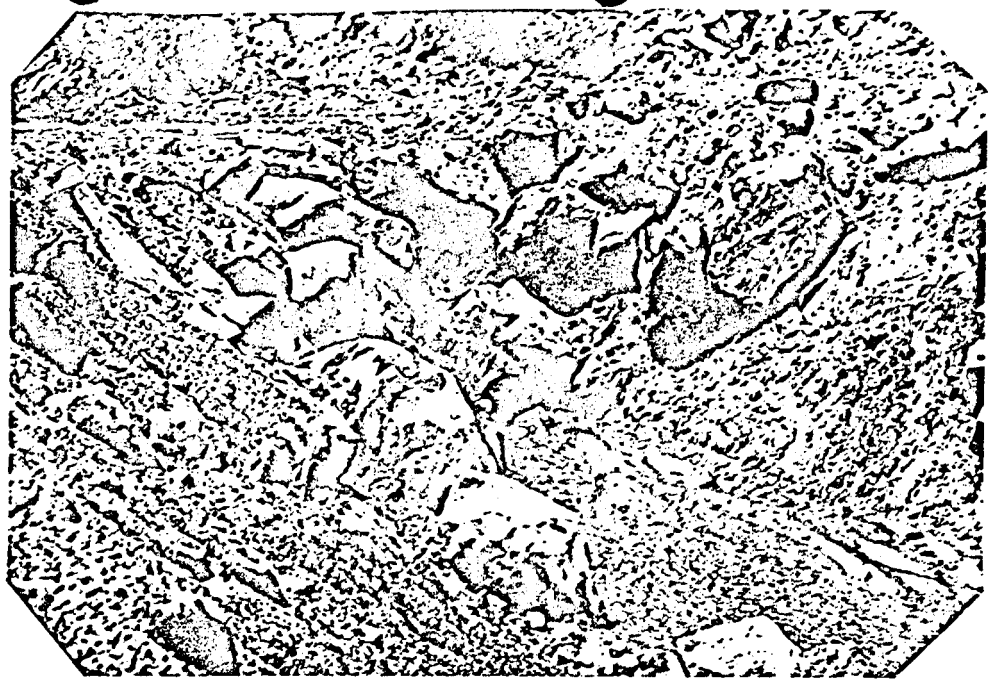


Loose fill on top of first culvert

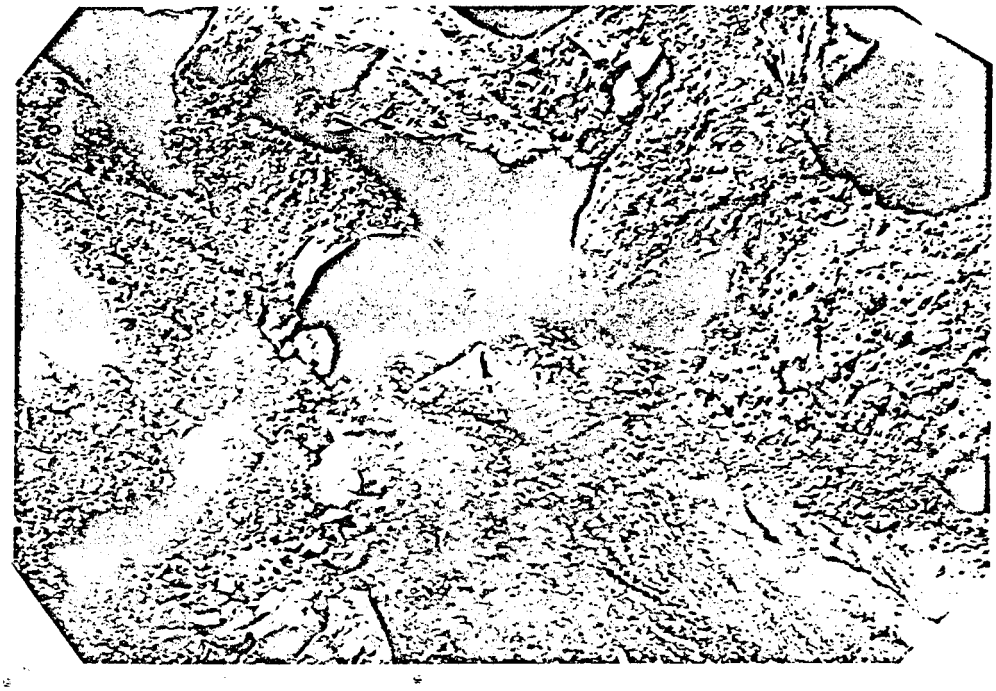
Downstream end of first culvert



Cottonwood Creek channel adjacent to mine facilities, between the two culverts

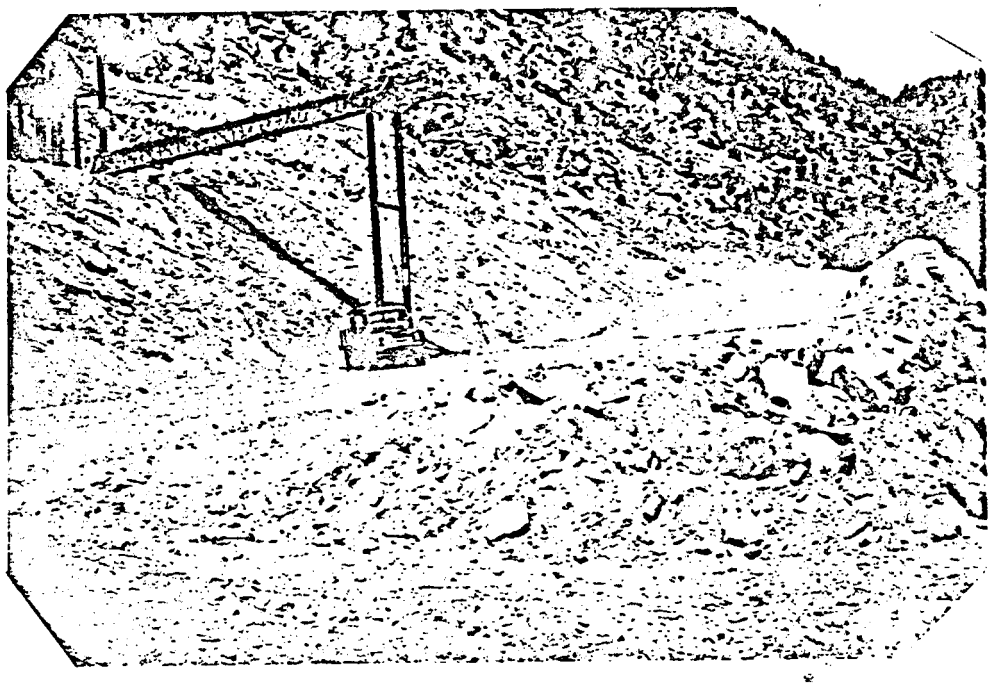


Entrance to second, lower culvert, 24" CMP



Closeup of entrance to second culvert, no catch basin

Downstream of second culvert



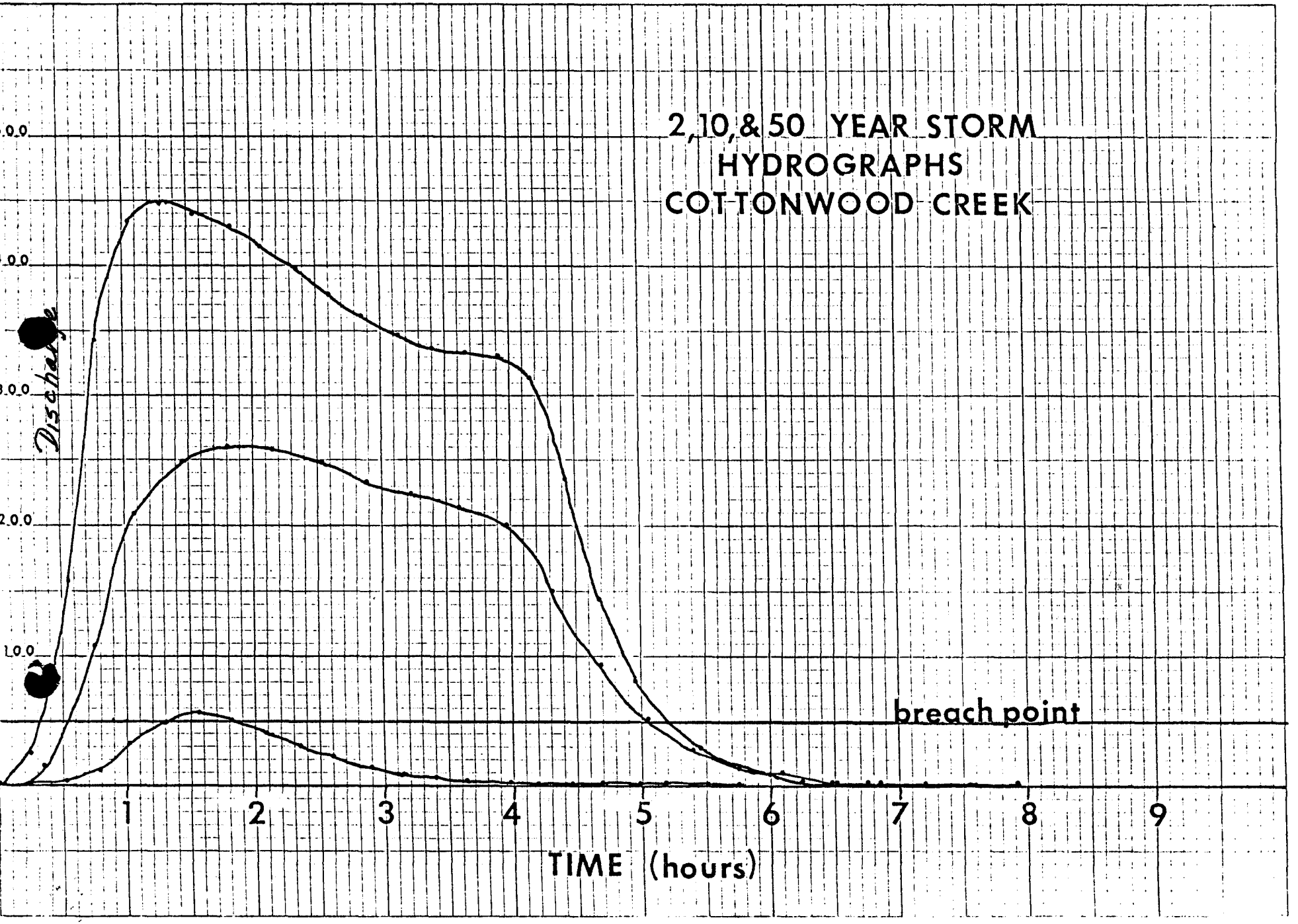
Loadout facility at Trail Mountain Mine, no drainage improvements

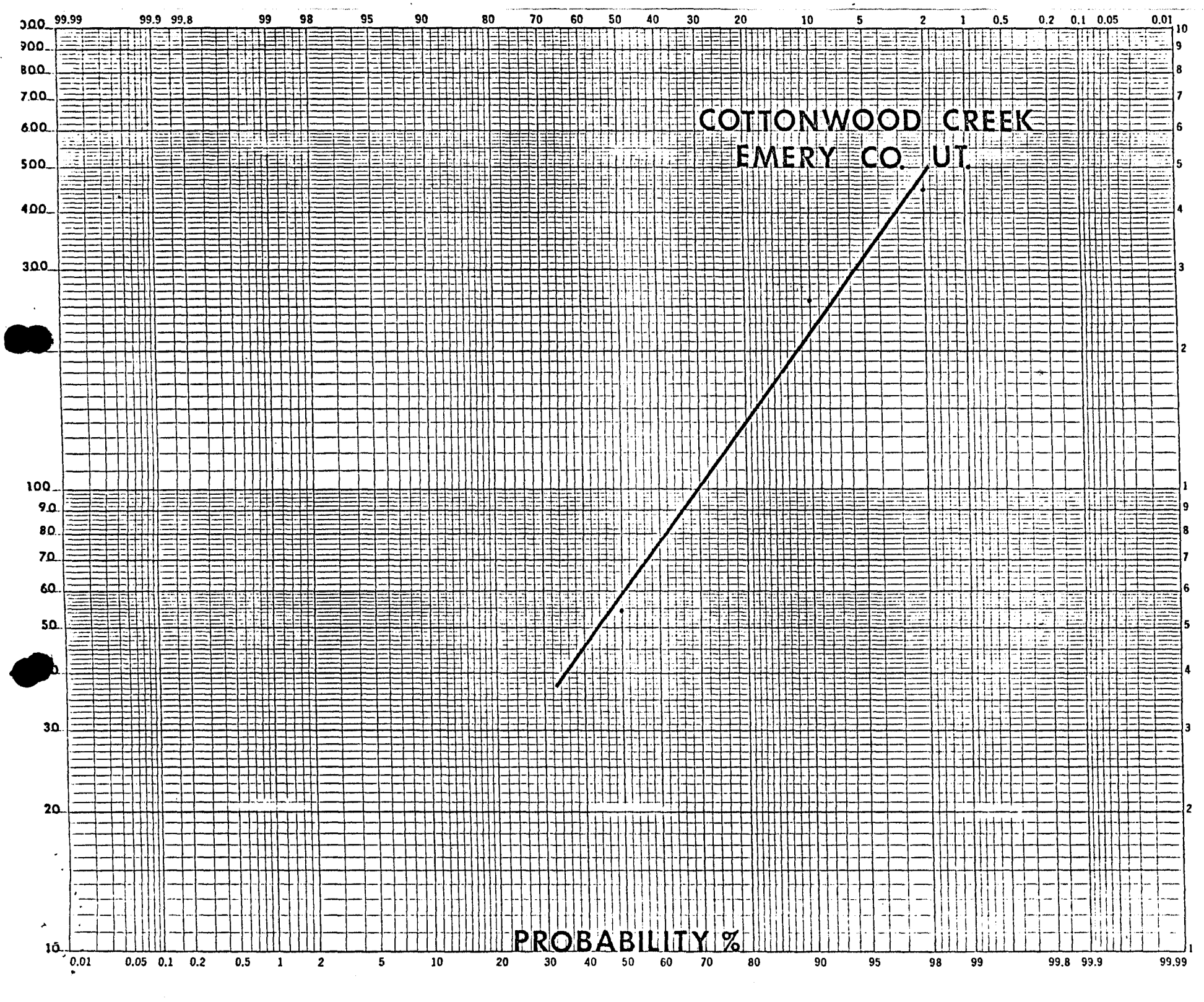
Lower edge of loadout platform, erosion resulting from surface washing

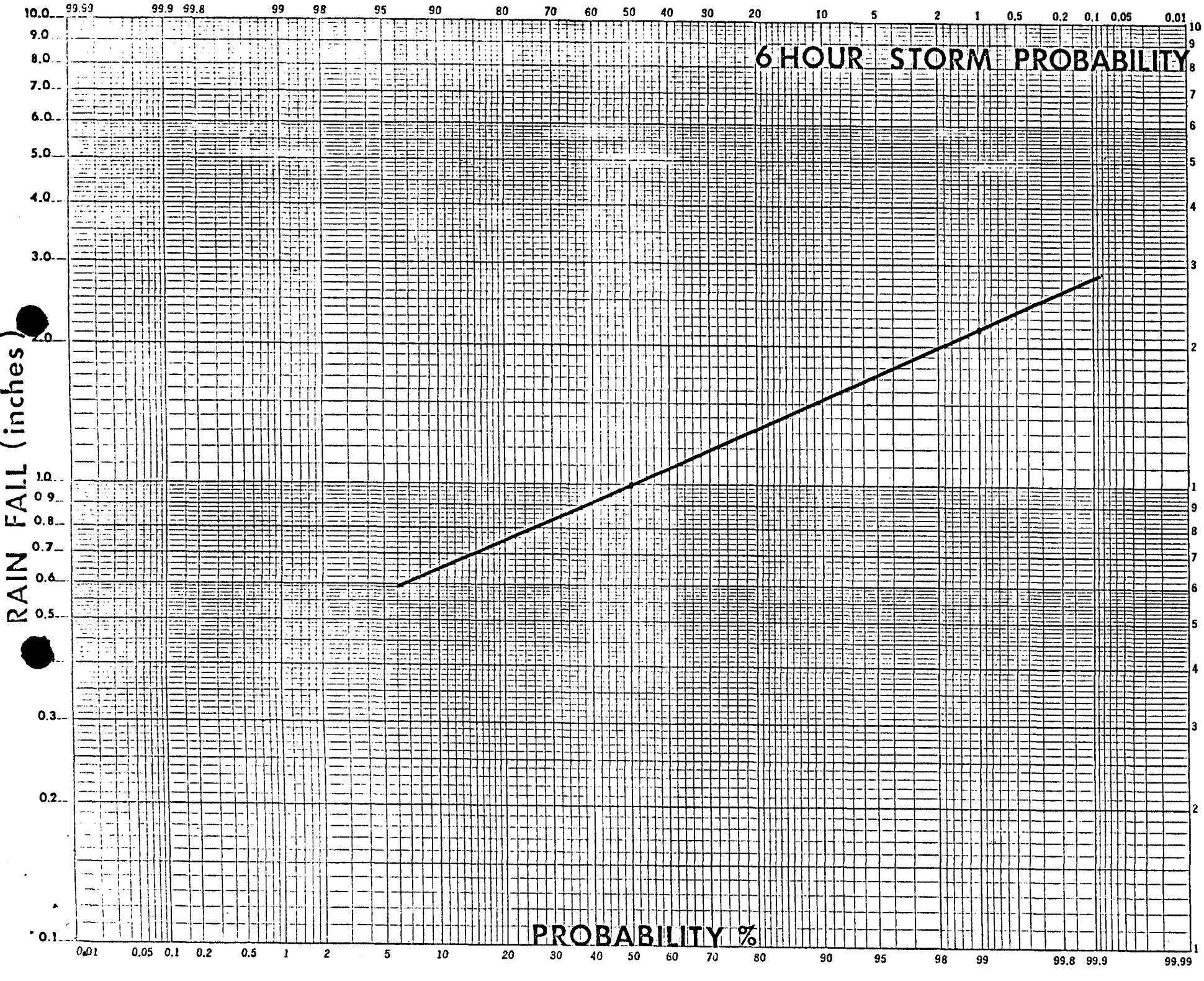
The redevelopment of a coal mine in Cottonwood Canyon has created some potential hazards to downstream properties. The construction of the mine site has included the placement of two 24-inch culverts in the creek to allow the streamflow from Cottonwood Creek passage through access roads which intersect the creek. Forest Service observation of this situation prompted speculation that the culverts might be inadequate to handle storm runoff from the Cottonwood Creek watershed. Field work to assess the hydrology of the watershed was undertaken and the results from this effort were used to make design storm hydrographs. These hydrographs were developed using the methods set forth in the Soil Conservation Service National Engineering Handbook, Section 4. To compute the maximum flow through the culverts a nomography, developed by the corregated steel pipe industry, was utilized. The nomograph showed that a 24-inch culvert with 18 feet of water backedup behind it could pass 50 cubic ft. of water if flowing clear and without submergence on the lower side. Flows greater than this would cause over topping of the culvert and result in down cutting through the weakly compacted and already slumping sides of the channel creating a possible flood wave and depositing thousands of cubic yards of sediment into a channel that supplies two communities with culinary and irrigation water.

Examining the hydrographs it was determined that streamflow produced by a thunderstorm centered on the lower half of Cottonwood Creek would cause a failure of the structures now in place on the average of every

2 years. Design storms of 10 year and 50 year reoccurrance intervals were also developed and plotted with the 2 year storm hydrograph.


2,10,& 50 YEAR STORM
HYDROGRAPHS
COTTONWOOD CREEK
Discharge
breach point
1
2
3
4
5
6
7
8
9
TIME (hours)


COTTONWOOD CREEK
EMERY CO. UT.
PROBABILITY %
99.99 99.9 99.8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01
0.01 0.05 0.1 0.2 0.5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.8 99.9 99.99
1000 900 800 700 600 500 400 300 100 90 80 70 60 50 30 20 10
10 9 8 7 6 5 4 3 2 1 9 8 7 6 5 4 3 2 1


6 HOUR STORM PROBABILITY
RAIN FALL (inches)
PROBABILITY %
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.9
0.8
0.7
0.6
0.5
0.3
0.2
0.1
99.99 99.9 99.8 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01
0.01 0.05 0.1 0.2 0.5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.8 99.9 99.99

Minutes of Public Hearing on Trail Mountain Coal Mine, held Tuesday, October 5, 1976 at the Emery County Court House, Castle Dale, Utah.

Ralph Blumer, U.S.G.S., Salt Lake City, Utah conducted the meeting. Those in attendance were:

John L. Bell	Trail Mountain Coal Company
John Niebergall Fred Thompson Barry Johnson Roger Thomas Doris J. Nelson	United States Forest Service
Larry B. Dalton	Utah Division Wildlife Resources
Rich Kness	B.L.M.
Jim Travus Don C. Alcord Ralph Blumer	U.S.G.S.
Ron Daniels	Utah State Division of Oil, Gas & Mining
Kent Eden	C. E. U.
Marc Haddock	Emery County Progress

Mr. Blumer explained to those present that proposed action on Federal lands require an Environmental Impact Analysis to see if an Impact Statement is necessary. The purpose of the meeting was for input into the EIA.

Public input is incorporated into the analysis. Written comments are accepted up to 30 days from date of meeting, then the analysis is sent to the Forest Service for their concurrence and then sent to the U.S.G.S. officer in Denver for approval.

John Bell, owner of the Trail Mountain Coal Mine, explained that he owns 60 acres of private land that he is mining. All surface facilities are on his own land. The adjoining acres of public land comes under Federal lease. Mr. Bell said that he acquired the Federal lease from Earl Robertson. Twenty acres actually has coal. He wants to move underground and stated that there would be no surface disturbance.

He stated there are approximately 20-30 acres of recoverable coal within the 40 acres. There is no surface exposure and the Company does not intend to disturb the surface in any way. Mr. Bell stated ~~that he~~ hoped to eventually produce 1,000 tons of coal per day.

GEOLOGICAL SURVEY
OCT 27 1976
SALT LAKE CITY, UTAH
MINING BRANCH

The entries to the mine will be through fee land. (If the proposal is approved, the present mine portals, which are located on private land, will be used for access to the area.) Bell's plans are to continue to mine toward the 40 acres of Federal land. His program is to put production up to 1,000 tons of coal per day. If the mining within the mine can be increased the production could go to 4,000 ton per day. The mine is operating under a short term contract. The expected life of the mine is only about 2 years.

Bell said they are designing everything they are presently doing, at extra expense, to extract coal in Federal lands. (Applied for ½ 25 and section 26.)

All facilities are on private land and additional facilities will also be on private land.

Jim Travus talked briefly on the mine explosion in the early 1950's and at this point stressed mining regulations. He said all old working lines had been by-passed and that they now had a much better mining plan.

Bell said the mine has some shares in the Cottonwood Irrigation Company. He said the road had been widened so that there is roon for two vehicles to and from the mine.

Water for the bathhouse will come from a stream and treated. If the Company cannot meet requirements with water from Cottonwood Creek they will have to truck water from Orangeville. John Niebergall asked if the mine was wet. John Bell said hardly at all and they did not see it as a problem. If water is in the mine they had planned to recycle it, but Colorado River compact says no. EPA is looking to evaporate it off. The Forest Service representatives said that if the water met class C standards it could be placed into existing drainages.

It was mentioned that at Consolidated Coal Company's mine near Emery, Utah the water coming out of the mine is higher quality than local water quality. The water picks up saline and other impurities after it leaves the mine. It is a problem all coal companies have to work with.

It is planned that Utah Power & Light Company will run a line 11½ miles from their Orangeville sub-station to the mine site. It should take a year to complete. At the present time electricity at the mine is being supplied by a diesel generator. Even though a diesel generator can be operated as cheaply as electricity, they think a long range plan of working with Utah Power and Light Company would be better. It would cost Bell $326,000.00 to construct the powerline.

A telephone line has recently been installed in the mine.

It will be June of 1978 before the regional EIS for coal leasing is complete. Even though John has private land and a 40 acre lease he will still have to bid on additional coal land (Estimated that there is approximately 150 million ton in Upper Joe's). It was mentioned that it is physically impossible to use the older mines in Straight Canyon.

The Forest Service is concerned with water pollution from the mine. The Company has plans in the future for a washing plant -- located on private land. At the present time the coal is going to Swisher Coal Company's washing plant to wash the white rock out.

Bell said that the market has been slow, but that the new power plants must use low sulphur coal. By 1978 it estimated the coal supply will be short by around 10 million tons.

Bell said presently 11 men were employed at the Bell mine. Just a short time ago they had 20 employees. In the future employment could go to 100 men with 2 shifts. In the very near future 35 men will be employed.

It was asked if there were any plans to extend the railroad. Some of the men present looked for the rail to go to the Consolidated Coal mine near Emery within two years depending on income.

Subsidence was discussed with everyone in agreement that it is a difficult occurence to predict.

The meeting was brought to a close by stating that all State requirements have to be met.

The group then adjourned to the mine site.

PUBLIC MEETING CASTLE DALE, UTAH

Emery County Court House
John L. Bell
Trail Mountain Mine
October 5, 1976 - 9 a.m. to 12 noon

Name	Place	Represents
Larry B. Dalton	Price	Utah Div. of Wildlife Resources
Doris J. Nelson	Ferron	Forest Service
Rich Kness	Moab	BLM
Jim Travis	Salt Lake	USGS Conservation Div
Don C. Alvord	Salt Lake	USGS Mineral Evaluation
John Niebergall	Ferron	U.S. Forest Service
John L. Bell	Orangeville	Trail Mountain Coal Co,
Ralph Blumer	Salt Lake	USGS Conservation Division
Kent Eden	Price	College of Eastern Utah
Ron Daniels	Salt Lake	Utah State Div. of Oil, Gas & Mining
Brian Buck	Salt Lake	Utah State Div. of Oil, Gas & Mining
Marc Haddich	Castle Dale	Emery County Progress
Fred Thompson	Price	Forest Service
Barry Johnson	Price	Forest Service
Rogers Thomas	Price	Forest Service