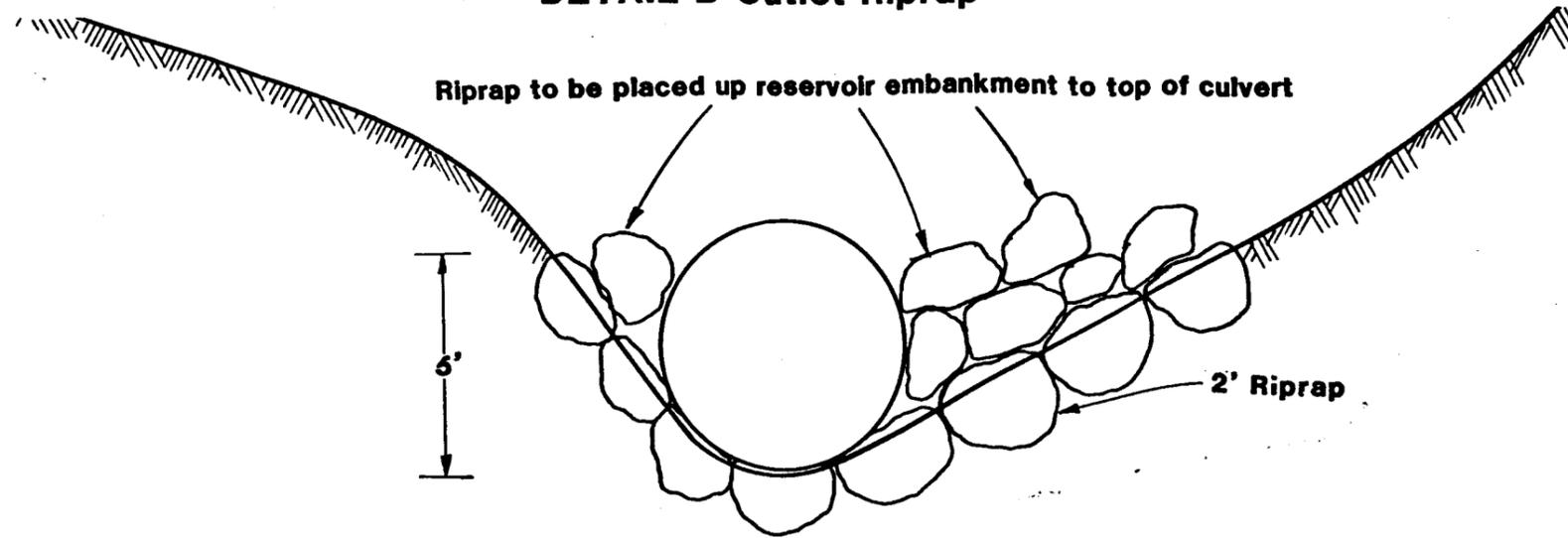
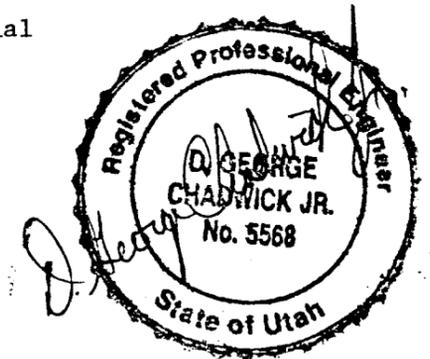
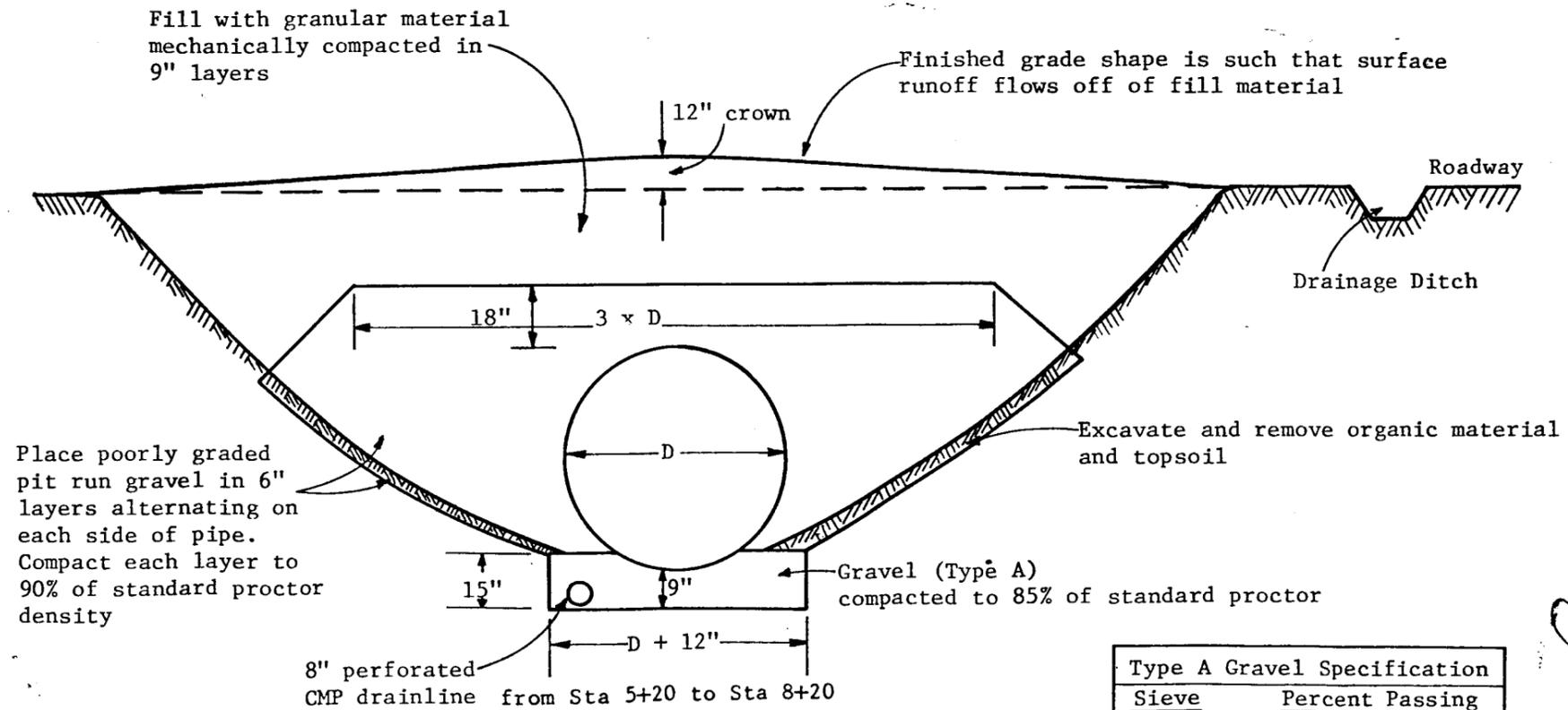


DETAIL B Outlet Riprap



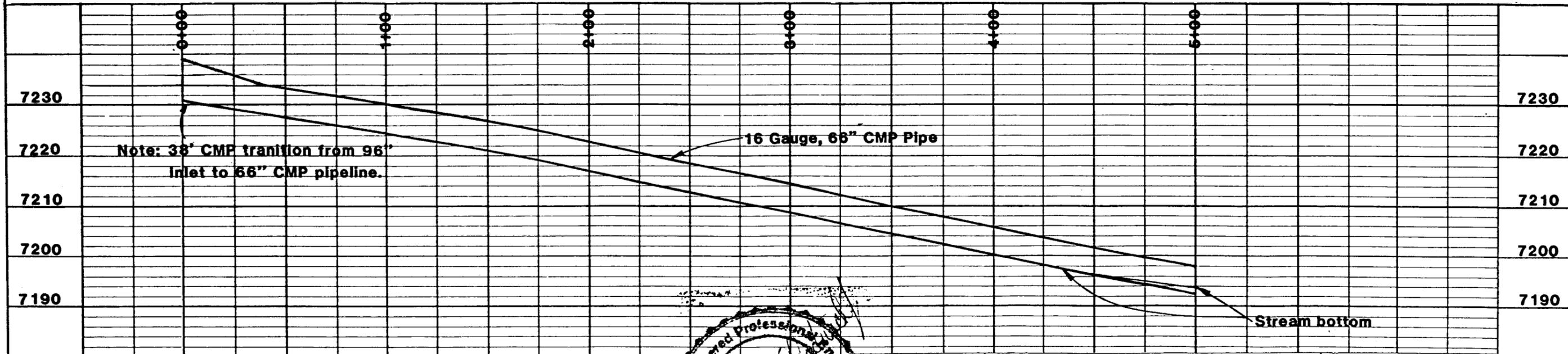
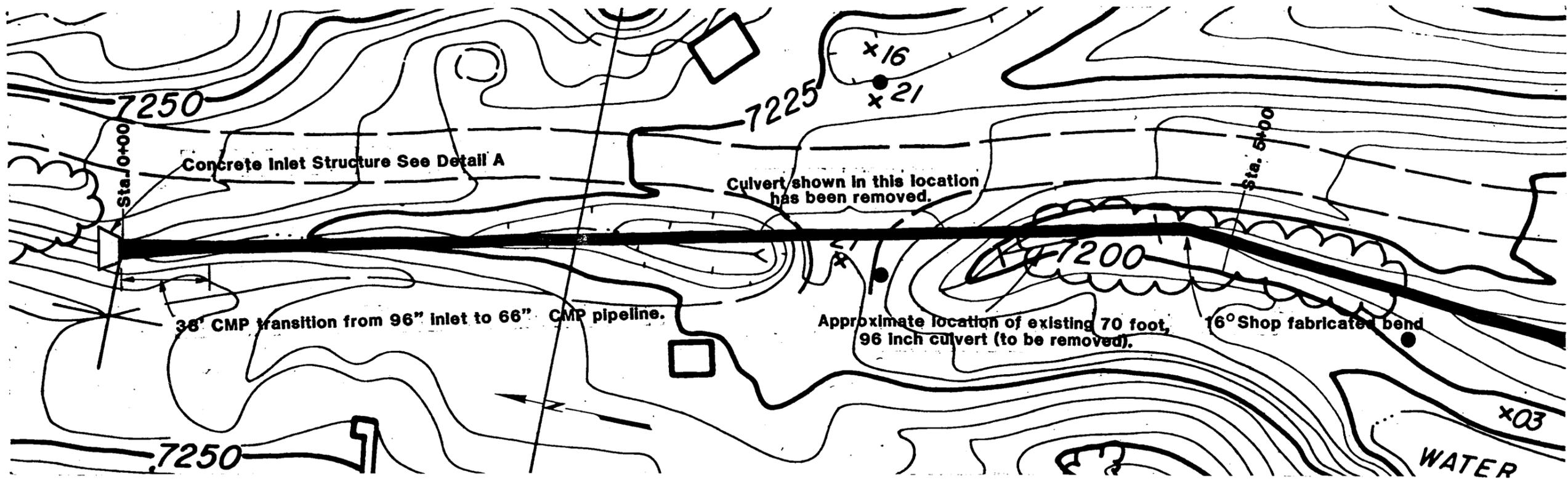
DETAIL C Typical Bedding Details



DESIGNED <i>JYH</i>	NATOMAS TRAIL MOUNTAIN	Prepared by VAUGHN HANSEN ASSOCIATES Salt Lake City, Utah
DRAWN <i>JYH</i>		
DATE <i>9/81</i>		
CHECKED <i>JS</i>	FIGURE 7-13a. CULVERT DETAILS	
SHEET NO. E		

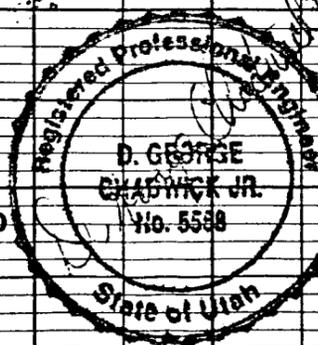
Typical Bedding Details

Type A Gravel Specification	
Sieve	Percent Passing
1 1/2" sieve	100
1" sieve	90-100
3/8" sieve	25-100
No. 4 sieve	10-100
No. 16 sieve	5-80
No. 50 sieve	0-30
No. 100 sieve	0-10
Cu = $\frac{D_{60}}{D_{10}}$ greater than 4	



Note: 38' CMP transition from 96" Inlet to 66" CMP pipeline.

Note: See Detail C for Backfill and Bedding requirements.
 An 8-inch CMP drainline is to be installed in the bedding beneath the 66-inch culvert from Sta. 5+20 to Sta. 8+20. See Detail C



DESIGNED *DJC*
 DRAWN *JVH*
 DATE 9/81
 CHECKED *JVS*
 SHEET NO.
 A

NATOMAS TRAIL MOUNTAIN

FIGURE 7-13a.
 CULVERT DETAILS

Prepared by
 VAUGHN HANSEN
 ASSOCIATES
 Salt Lake City, Utah

NATOMAS
TRAIL
MOUNTAIN
COAL
COMPANY

December 16, 1981

Mr. James Smith, Jr.
Division of Oil, Gas, & Mining
4231 State Office Bldg.
Salt Lake City, Utah 84116

Dear Mr. Smith:

We would like to submit for your approval, the enclosed drawing of our proposed footing and retaining wall project that will surround our existing substation to prevent stabilization loss of the fill area the substation is built on.

This retaining wall will be very similiar to the retaining wall and dock facility you approved for us several months ago.

Acceptance of this proposal will be appreciated.

If you have any questions concerning this proposal, please contact Andrew King or myself at 748-2140.

Sincerely,

Allen P. Childs
Engineer

AC/jc
Encl.

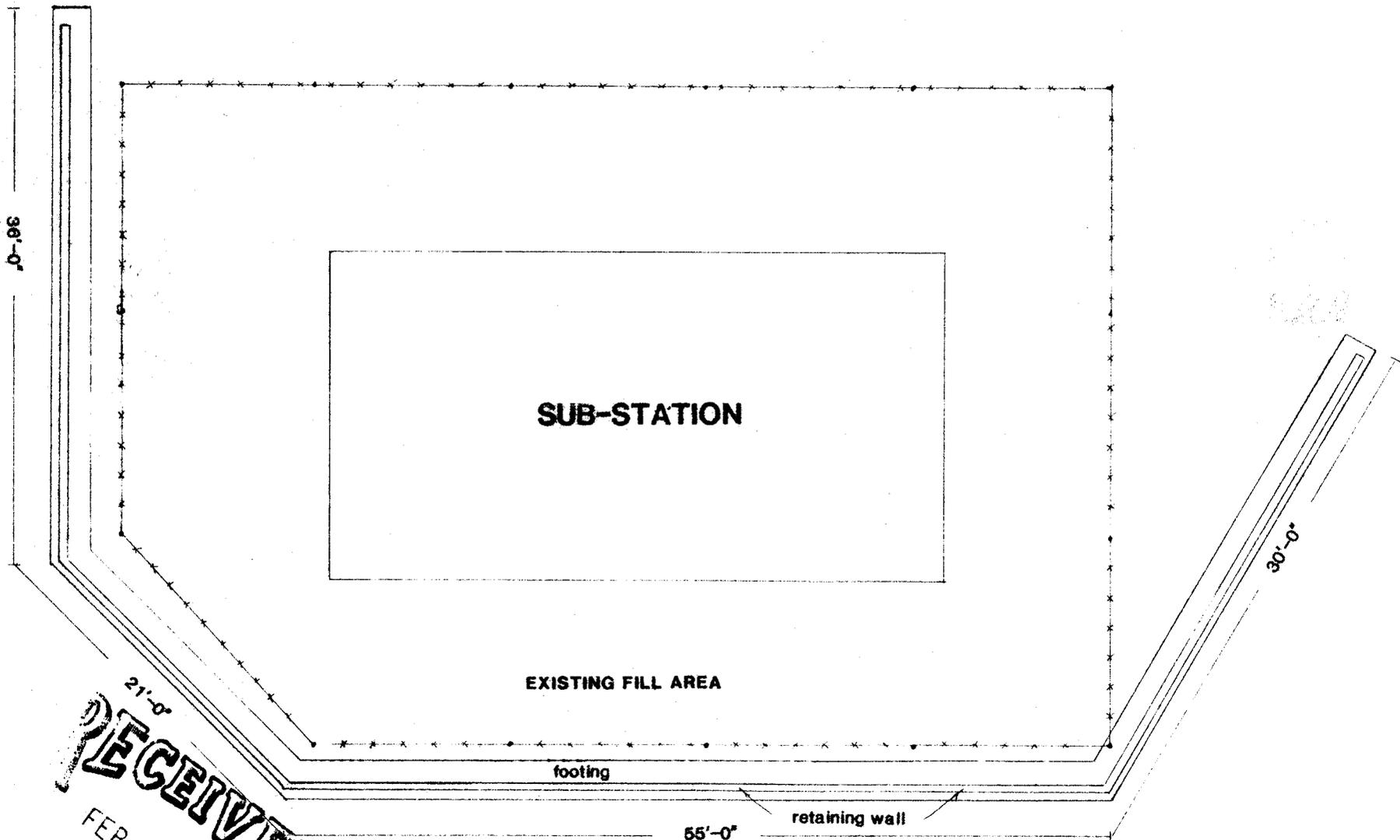
File ACT/045/009
~~Copy to Gil for~~
~~review~~

RECEIVED
FEB 08 1982

**DIVISION OF
OIL, GAS & MINING**

JIM

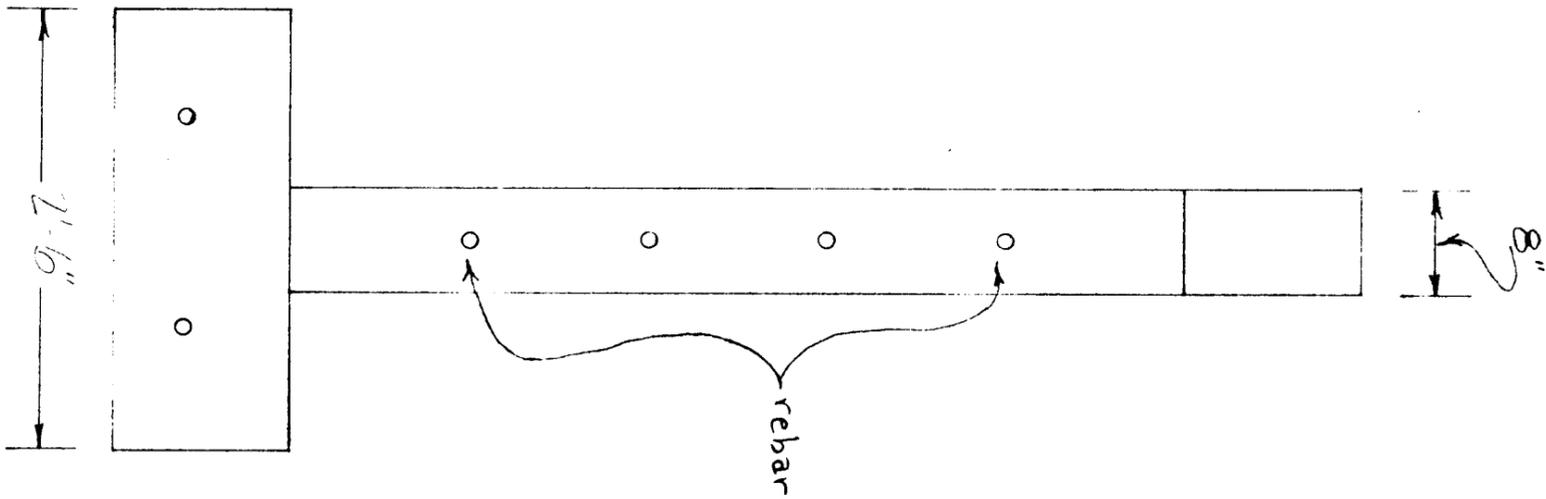
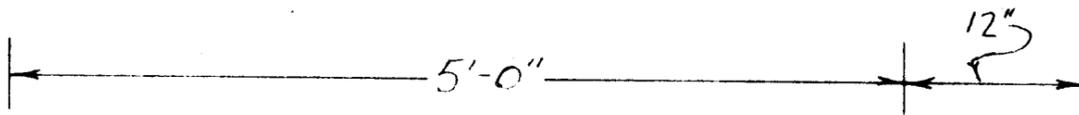
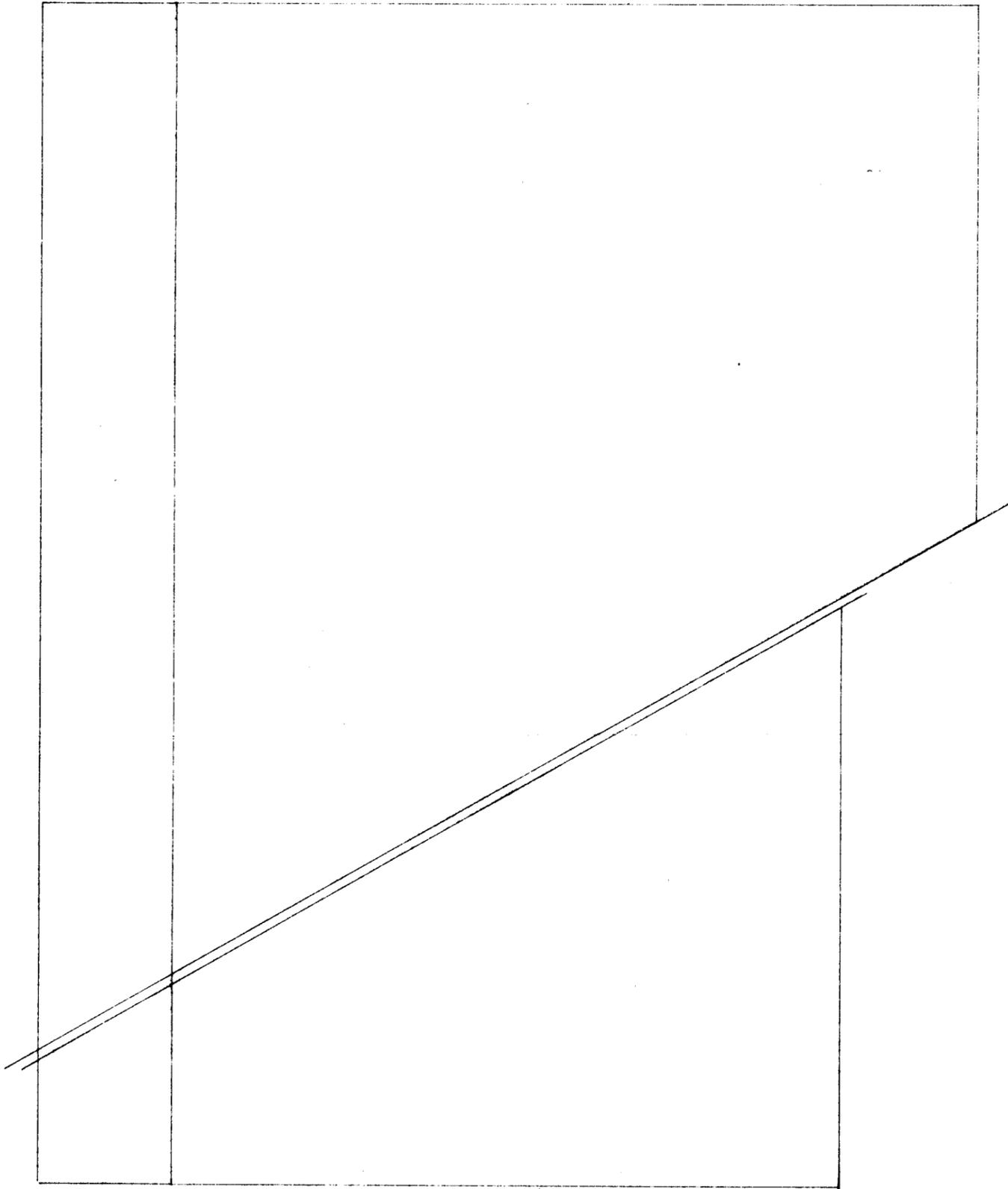
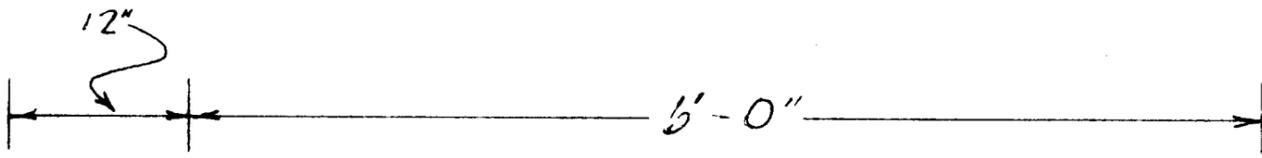
FEB 09 1982



RECEIVED

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DIVISION OF
CIL, GAS & MINING





TRAIL MOUNTAIN COAL CO.

Orangeville Area

Emery County, Utah

MINING AND RECLAMATION PLANS
FEDERAL LEASE U-082996

MINING PLAN APPROVED BY U.S.G.S.
BRANCH OF MINING OPERATIONS

Date: SEPT 15, 1977

By: Jackson H. Moffitt
Area Mining Supervisor

James J. Oravi
Deputy Area Mining Supervisor

Joseph B. McLean
Senior Staff Mining Engr.

Ralph J. Blum
Mining Engineer



Company Name	Trail Mountain Coal Co.
Mine Name	Trail Mountain Mine
Address	P.O. Box 356
TOWN, COUNTY, STATE	Orangeville, Emery, Utah 84537
Telephone Number	(801) 748-2140
Identification Number	42-01211
Operator	John L. Bell
Operator's Title	Owner
Operator's Address	P.O. Box 356, Orangeville, Utah
Person responsible for mine operation to be sent orders & notices	Raymond R. Sitterud
Title	Mine Superintendent
Owners of Property	United States Government

PREFACE

This report describes in detail mining and subsequent reclamation plans for the Trail Mountain Mine in the Orangeville area of Central Utah in Emery County.

Since the proposed operation will include the mining of Federal lands, these plans have been prepared for submittal to the Area Mining Supervisor, U.S. Geological Survey, Salt Lake City, Utah

The Lease will be mined by Trail Mountain Coal Company which is owned and operated by John L. Bell, Orangeville, Utah

INTRODUCTION

LOCATION AND ACCESS

The existing operations and expansion of the Trail Mountain Mine is located in Emery County, approximately 10 miles northwest of Orangeville, Utah. The surface facilities are located in Cottenwood Canyon and are on fee land held by John L. Bell. The Federal land held by Mr. Bell is adjacent to his fee land and consists of 40 acres under lease U-082996.

Entry to the operation is made through Orangeville from State Highway 10, up State Highway 29 and Cottenwood Canyon.

GENERAL DESCRIPTION OF LANDS INVOLVED

The Trail Mountain Mine is located in T. 17 S., R. 6 E., sec. 25. Mr. Bells' holdings consist of 60 acres of fee and 40 acres of Federal leasehold. (The operation is located adjacent to Cottonwood Creek). The Federal land is administered through the Price, Utah office of the Manti-LaSal National Forrest.

Land use of the area covered by this report consists mainly of grazing land for deer, elk, bear, snowshoe rabbit, and many smaller animal species indigenous to the area. Recreational use consists almost entirely of deer and elk hunting. There are no established recreation facilities in the area, but there is some use of the road up Cottonwood Canyon as an entrance to Bear Mountain on the Manti-LaSal National Forrest.

REGIONAL FEATURES

The proposed area is on the west side of the North-trending valley of Cottonwood Creek. Cottonwood Creek runs north-south until it reaches the mouth of Straight Canyon, at which time it runs easterly through Orangeville. Cottonwood Creek is bordered on the west by Trail Mountain

9,500 to 9,900 feet.

CLIMATE

In Castle Valley, of which Cottonwood Canyon is a part of, the rainfall is low and the prevailing temperatures are in general moderate. The average precipitation is approximately 8.0 inches annually. The temperature ranges from highs of 95° F. to lows of -5° F. with a mean temperature of 47° F.

FLORA AND FAUNA

The vegetation is scant, and only the hardier plants common in arid regions are found. Shad scale, salt brush, scrub cedar, sagebrush, greasewood, pinon and galleta grass prevail in the lowlands and on the cliffs. In places scrub oak is abundant.

The area is inhabited by many small species of animals. They consist of the showshoe hare, cottontail rabbit, marmots, tree squirrels and ground squirrels. Some deer and elk may also be found in the area. No rare or endangered species are known to inhabit the area.

ARCHEOLOGICAL AND HISTORICAL CONSIDERATION

There are no known archeological sites on the proposed area.

The present land has been disturbed for many years, originally by the Johnson mine site and more recently by the Robertson workings. Access to the workings of the coal on Federal land will be from entries on fee land. As a result of this, any unknown archeological areas would not be disturbed.

LAND STATUS AND HISTORY ACQUISITION

The acquisition of the leasehold and the fee land dates back a number of years. Earl J. Robertson initiated the present mine in 1943. By 1962, the recoverable coal reserves on fee land had diminished to such a point

that more coal reserves were needed. Robertson then filed for a competitive lease on an adjacent 40 acre tract of Federal land lease number U-082998. The lease was issued to him on July 1, 1962. The present mine was operated until 1965, but the leasehold wasn't mined. After Robertson's death in 1972, the land was probated and finally purchased by John Bell on April 23, 1974. The existing mine was then reopened by Bell in 1975.

GEOLOGY

GENERAL

The geologic formation of the Wasatch Plateau coal field, of which this property is part of, ranges in age from the lower part of the Upper Cretaceous to the lower part of the Eocene. The exposed formations include many varieties of sandstone, conglomerate, shale and limestone. Their total thickness in the Plateau and Castle Valley exceed 10,000 feet. The most prominent members are the Mancos Shale, Star Point Sandstone, Blackhawk Formation, Castlegate Sandstone and Flagstaff Limestone. The Coal beds are part of the Blackhawk Formation.

COAL BEDS

Six coal beds are present in this area. Only coal beds four feet thick and over are considered minable by the USGS (1). The only bed in this area that is minable is the Hiawatha bed - - 7.5 feet thick. 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 1.3 feet of siltstone which is underlain by 1.5 feet of shale. Underneath this shale is massive competent Star Point Sandstone.

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

COAL RESERVES AND QUALITY

Using an average thickness of 7 feet in the computation of coal reserves on the leasehold, coal in place was estimated at ^{470,000} ~~245,000~~ tons and recoverable coal was estimated at ^{245,000} ~~122,500~~ tons using a 50% recovery. An average coal analysis shows - 12,800 BTU/lb, 43.20% Volatiles, 7.0 % ash, 5.0% moisture, 44.8% fixed carbon and 0.6% sulfur.

PROPOSED MINING

MINE DEVELOPMENT

The mine will be developed by driving four entries south along the western boundary of the lease, bypassing the old workings of the Robertson mine. The entries will be driven from fee land.

The lease is bisected by a canyon, and it is planned to mine the area south of the canyon first.

Pillar extraction will not be done immediately. Plans are now underway to acquire adjacent leases. The mining of these properties will be from the three entries that will be driven in the present lease. Pillar extractions prior to the mining of the adjoining property may endanger the recovery of the coal on the adjacent leases. Pillar extraction will be done as the final steps in the overall mining plan.

PROPOSED MINING METHODS AND EQUIPMENT

The mine will utilize "continuous miners" as the main means of extracting the coal. Conventional mining methods will also be used. Nineteen foot entries will be driven by the continuous miners, with nineteen foot crosscuts. The entries and cross-cuts will be on 75-foot centers. (see appendix A.) Nine ton shuttle cars will move the coal from the face to a conveyor belt. Roof bolting will be done where necessary.

Presently it is planned to use two continuous miners and one conventional method. Two shuttle cars will be used for each mining area. Equipment will be electric or Diesel approved by MESA.

MINE PRODUCTION

Mine production will be approximately 500 tons per day for the first six months. Production will increase to 1,000 tons per day as development continues and production of the coal begins. With increased energy demand the operation could increase to 1,000,000 tpy.

SURFACE FACILITIES

All surface facilities are on fee land. The facilities consist of an enclosed fan, a conveyor system for stock piling, a concrete block building containing the diesel powered generator, a scales and a concrete block building, now under construction to house shop area, lunchroom and bath house.

COAL TRANSPORTATION

The coal will be transported 40 miles from the tipple to the Price, Utah area by truck and trailer. They will utilize the existing road in Cottonwood Canyon which leads to State Highway 29, through Orangeville and Castle Dale, to State Highway 10. State Highway 10 intersects Interstate 70 which leads to Price, Utah where the coal will be shipped out by rail.

POLLUTION CONTROL MEASURES

Culverts have been placed in Cottonwood Creek so that the flow of the stream will not be hindered. Any flow from the hydrologic system of the mine will be channeled into a settling pond. Any of the excess mine water that can't be reused in the mine will be skimmed of any oil and drained into Cottonwood Creek. This water will be monitored to prevent contamination of the stream, and will be by approval of EPA and Utah State discharge permits. Embankments will be placed around the coal stock piles

to prevent any fines from being washed off the pile into the stream.

No polluting refuse will be dumped into the surface water system or introduced into the ground water system. Sewerage treatment at the site will be designed to prevent any human wastes from entering the water system. Solid refuse will be disposed of on fee land at the mine site. Location and method will be approved by the State and M.E.S.A.. If for any reason the site can not meet standards set by these agencies, solid refuse will be trucked to a sanitary land fill designated by the county presently in use at Orangeville. Burning of solid refuse would not be conducted unless it could be done in a controlled fashion that would eliminate any fire danger and air pollution.

Some dust will be produced by the trucks hauling from the mine. A joint venture is planned with the county to oil the road from the mine to State Highway 29. Dust will also be produced as a result of rock-dusting in the mine. Coal dust in the mine will be retarded by the use of water sprays on the machinery and also by rock-dusting.

Some noise pollution will be present as a result of the mine workings. The generator and diesel engine have been enclosed in a concrete block building which reduces noise. Some noise is also produced by the exhaust fan.

MINE SAFETY

The mine will meet all M.E.S.A. standards. Entries will be rock-dusted to within eight feet of the working face. Fire extinguishers are placed in critical areas in the mine and in the generator house, fan house and oiling station. Rock dust is placed in the mine at key locations.

The roof will be bolted where necessary using three to six foot roof bolts.

SUBSIDENCE

Subsidence may occur as a result of the proposed mining operation.

In an area such as this where a relatively small area of coal is mined, little subsidence will probably occur. If the mine were to be substantially enlarged, some subsidence may reach the surface. Subsidence may be 30 to 70 percent of the coal seam resulting in up to 5 feet of subsidence at the surface. No pillars will be extracted where subsidence would result in the massive failure of the canyon walls.

GENERAL INFORMATION

WATER REQUIREMENTS

Trail Mountain Coal Company presently holds five shares of water in Cottonwood Creek. John Bell currently holds an additional number of shares which could be turned over to Trail Mountain Coal Company if the need arises in the future. Presently they are utilizing some of this water in the mining operation. The water for culinary use will be treated in a chlorination and filtering system prior to use, or it will be hauled from the Orangeville water system.

WATER REQUIRED

Continuous Miner*	25 gal/min.
Culinary Use	20 gal/man/day

* Includes conveyor belt watering system and roof bolter.

TOTAL WATER REQUIREMENTS (Max.)

2 Continuous Miners/shift operating two shifts (3 hours operational/shift)	18,000 gal/day
35 Men @ 20 gal/man/day	<u>700 gal/day</u>
total	18,700 gal/day

ELECTRICAL SUPPLY

The electricity is presently supplied from an 800 KW generator powered by a 1200 H.P. diesel engine. Arrangements are now underway with the Utah Power & Light Company to furnish the mine with the necessary power.

can not be delivered by the Utah Power & Light Company.

SANITARY WASTE DISPOSAL AND TREATMENT

Discussions with the state health department has indicated that they prefer waste disposal through septic tanks and dreaain fields at the mine site. Plans are now underway for the necessary system.

PERSONNEL REQUIREMENTS.

At the present time, six men are currently operating the mine. When full production is reached in 1977, approximately 35 people will be required in the two operating shifts.

Projected Mine Employment:

Supervisors	1
Mine Bosses	3
Safety Engineers	1
Miners	18
Maintenance	6
Supplies	3
Clerical	3
Total	<u>35</u>

SOCIAL SERVICES AND ECONOMICS

Due to the large increase in mining and power production in the adjacent area, housing may become a problem. Currently the employees live in Orangeville and Castle Dale. We expect to fill our employment requirements from the people presently residing in the surrounding area. As a result of this, there should be little effect on the current housing situation.

When the mine is in full production, the anticipated annual payroll will be about \$410,000. This figure is for 35 employees, both salary and

The added income produced by this operation will generate much needed tax dollars in this area.

The school system in the area has increased its capacity in expectation of the increase in population due to expanded mining operations. Police and fire protection is adequate at the moment, but will have to be increased in the future.

SOCIO-ECONOMIC DATA CARBON AND EMERY COUNTIES

	<u>Carbon County</u>	<u>Emery County</u>
Population 1973 (est)	17,000	6,800
Density/square mile	11.6	1.5

EMPLOYMENT STATUS

Total Civilian Work Force	6,020	3,090
Total Employment	5,810	2,720
Mining	1,030	640
Construction	150	710
Agriculture	110	230
Manufacturing	250	50
Wholesale & Retail	1,160	245

COUNTY FINANCES

Assessed Valuation in M	35.1	23.1
Tax Rate Mills/Hundred	66.51	52.597
Bond Indebtedness 1-1-74 \$525,000		\$217,000

ABANDONMENT

REMOVAL OF SURFACE FACILITIES

With the acquisition of more Federal coal, the existing mine will be in operation for an estimated 40 years. It is our plan to remove the surface facilities at the time of abandonment. State regulations will be followed concerning this abandonment.

SEALING OF MINE OPENINGS

During the operations, all openings not needed in the regular course of work, will be fenced to prohibit the entry of animals and unauthorized persons.

Upon temporary abandonment, the openings will be fenced and posted.

Upon permanent abandonment, the openings will be sealed with block or poured concrete and backfilled.

All sealings will be done in accordance with Onshore Mining Program Series, Part 623 - Operations - Inspection, Chapter 6 - Abandonment, U.S. G.S. Conservation Division Manual.

RECLAMATION PLAN

GENERAL

The surrounding area has no commercial value except for some possible future coal mining. It does have some non-commercial value as a wildlife area. The surface facilities cover an area of approximately six acres. This area has been previously disturbed by past mining operations, so the present mine plan will not disturb any virgin land.

RECLAMATION SCHEDULE

Once mining has terminated permanently, the planned reclamation will proceed in an orderly manner.

The surface facilities will be removed from the location for resale, or disposed of in an approved land fill.

Grading will begin upon removal of the surface structures. The surface will be graded to the approximate original contour. The topsoil in the area is sparse and very rocky. Little topsoil is available due to previous work on the surface facilities. Any topsoil that can be recovered, will be replaced.

Seeding of the topsoil will follow. The surface will be mulched to

Trail Mountain Coal Company
Mining and Reclamation Plan
Orangeville, Utah

ADDENDUM No. 1



John L. Bell, Lessee
U-082996

April 22, 1977

ADDENDUM NO. 1
Trail Mountain Mining and Reclamation Plan

The following information is being added as an addendum to the mining plan to bring it in compliance with 30 CFR 211.

211.10 Soils
(c) (2)

The soils are, for the most part, developed from parent materials derived from sandstone, mudstone, and shales. In texture they range mostly from medium to heavy, with usually a high percentage of stones. Alkalinity in varying degrees, but usually light, is common. The soils are of medium to high erodibility. Generally they are shallow to medium in depth, with shallowness typical on the ridges and greater depths common in the valley bottoms.

Geologic Conditions, and Potential Geologic Hazards

Physiography and Surface Features - The leasehold lies in the central portion of the Wasatch Plateau, a part of the highland rim of the Colorado Plateau Physiographic Province. Chiefly underlain by sandstone and shale units ranging from Cretaceous to Eocene in age, the rocks of the Wasatch Plateau have been gently warped into a system of broad, gently plunging, folds and monoclines locally complicated by north trending rift faults. Structurally, the Wasatch Plateau can be considered transitional ground occurring between the San Rafael Swell to the east and the highly faulted region of the Basin and Range Physiographic Province to the west.

Surface features and siting of the leasehold are shown on figure 1, adapted from the Hiawatha, Utah 15' quadrangle. The principal drainage, Cottonwood Creek, cuts deeply into the plateau from the southeast, forming steep canyon walls and V-shaped valleys with a general relief that ranges from about 6,000-10,000 feet above sea level. Relief within the tract is 600 feet, the altitude ranging from about 7,040 feet on the east in Cottonwood Canyon to about 7,650 feet on the west. Hillsides with average grades of from 60-90 percent over slope distances to 1,000 feet and more are prevalent, and essentially vertical cliffs 50 feet and greater in height are common. Excepting local deposits of colluvium including landslide and talus deposits, the surface of the leasehold is entirely of rocks belonging to the Star Point Sandstone, Blackhawk, and Price River Formations of the Mesaverde Group.

The climate of the area varies with altitude from semi-arid to semi-humid. Although annual precipitation may average only 10-14 inches in the immediate area of the mining plan,

in nearby high plateau areas the annual precipitation ranges from 20 to 30 or more inches. In the higher areas snowfall accounts for much of the precipitation but, throughout the entire region, heavy summer showers (cloudbursts) are characteristic. Maps found in the "Precipitation-Frequency Atlas of the Western United States" (Miller and other, 1973) show that the area of interest lies in a region where a 1.8 to 2 inch rainfall within 6 hours is expected within a 25 year period and a 2.2 to 2.4 inch rainfall in 6 hours is expected within a 100 year period. During the May through October thundershower period, the probability of 1.2 to 1.3 inches of rain within a 6 hour period is one in ten.

Stratigraphy and Structure - The commercial coal beds occur in the Blackhawk Formation, which is the middle unit of the Mesaverde Group of Late Cretaceous age, the upper unit is the Price River Formation and the lower unit is the Star Point Sandstone. The Blackhawk Formation, consisting of sandstone, shale, and coal seams, ranges from 700 to 900 feet thick. The most persistent and economically important coal seams in the district are the Hiawatha seam, which lies at the base of the Blackhawk Formation, and the Blind Canyon seam, occurring from 75 to 125 feet above the base of the Blackhawk. The Hiawatha seam is the only seam that has been traced from its type locality into the district by detailed mapping.

At the leasehold the structure evidently is simple. Spieker (1931) shows no faults closer than 3 miles to the west and no significant faults have been encountered in the mining nearby. Bedding within the tract strikes north-northwest and dips west-southwestward at the rate of about $3\frac{1}{2}$ percent.

Nature of the Coal Deposits - Nine sections of the targeted Hiawatha seam measured by Spieker (1931) within about one-half mile of the federal leasehold ranged in thickness from 3.9 to 9 feet, and averaged 7.5 feet (in the solid). A core hole drilled in 1975 about one mile north, at Roans Canyon, penetrated 8.9 feet of coal in the same seam. No other seams in the area are known to contain coal 4 feet or greater in thickness in minable quantities. Within the federal leasehold the Hiawatha seam is expected to average about $7\frac{1}{2}$ feet in thickness.

At the Trail Mountain mine, where the Hiawatha seam is exposed by high wall and entry areas, the seam is made up of common banded, bright and dull coal, fusain is sparse, and resin is rare. Locally, irregularly shaped dikes of very tough fine-grained clayey sandstone crosscut the seam, but partings of rock or impure coal are very rare. Non-banded (cannel) coal does not appear to be present in the seam. Where examined the floor of the seam was poorly exposed, but it appears to

directly overlie a tough siltstone. The roof rock varies laterally from a fine-grained sandstone up to 10 feet or greater in thickness to a thinly bedded sequence of interstratified siltstone, shale, and coal up to 10 feet or more in thickness.

As received, the combined average of the assays of four samples of coal obtained from mine run in 1976 and of three face samples of freshly exposed coal taken in 1975-76, was 4.69% moisture, 8.38% ash, 39.64% volatile matter, 47.28% fixed carbon, 0.57% sulfur, and 12,517 Btu/lb (files of the District Geologist, Salt Lake City, Utah). Standard deviations among the data, respectively 0.67, 2.41, 1.53, 1.72, 0.02, and 400, indicated good consistency among the samples. On a dry mineral-matter-free basis this composite sample is 50.90% fixed carbon and 45.10% volatile matter, on a moist mineral-matter-free basis it yields 13,778 Btu/lb, and the sample ranks as a high-volatile B bituminous coal (cf ASTM D 388-66, reapproved 1972).

Overburden and Depth of Cover - Within the mining projection, the Hiawatha coal seam is chiefly overlain by consolidated sandstone, siltstone, shale, and sub-commercial coal beds belonging to the Blackhawk Formation. The depth of cover will range from less than 100 feet near the outcrop in the northeastern part of the tract, to a maximum of about 500 feet on the west.

Other Mineral Resources - In addition to coal, the lands of the area are also valuable prospectively for oil and gas. The lands under coal lease U-082996 are also covered by oil and gas lease U-10849, but the value of this land for oil and gas has not been established. The nearest test for oil and gas, located about 4 miles east in sec. 25, T. 17 S., R. 17 E., has been plugged and abandoned.

Paleontologic Values - Terrestrial and aquatic animal and plant fossils of interest to stratigraphic study are widespread in the rocks of the Wasatch Plateau coal field. Fossil occurrences within U-082996 of unusual interest are unknown to the writer. Probably, by the production of fossil bearing waste rock, the proposed operation would do more to advance than to hinder or destroy knowledge concerning the fossils of the region.

Geologic Hazards and Potential Geologic Disturbances of the Mining and Reclamation Plans - The surface facilities and mine entry areas of the mining and reclamation plan are sited entirely on fee land and direct surface impact of the natural rock terrain leased under U-082996 will not occur. Natural geologic hazards common to the Wasatch Plateau coal field

include cloudburst floods and mud-rock flows, boulder and ledge falls, and land slides, all possibilities that experienced operators normally meet by appropriate location and design of surface facilities.

The greatest potential for generating geologic hazards and disturbances within the Federal tract lies in the extraction of the coal. Under the mining plan about 20 acres of the land included in U-082996 will be undermined by a room and pillar system carried out in a single seam having an average thickness of about 7½ feet. Because the mining will be done under a shallow rock cover (maximum of 500 feet), ground control during the life of the mine should present few problems. Owing to this relatively thin cover however, following full retreat and abandonment of the workings, subsidence generated displacements may arrive at the surface in a relatively short time and prove the most damaging aspect of the action. Effects at the surface caused by the downward collapse and lateral flow of the overburden rocks into the mining voids may include tension fractures and funnel shaped pits potentially hazardous to livestock or the unwary human. To the writer's knowledge, however, subsidence over mined out areas within the district have not developed uncontrollable features of a scope that are dangerous to life or detrimental to the present surface uses. In view of the steepness of the hillside and the area frequency of torrential rainfalls accompanied by rapid runoffs, the eventual weakening of the surface rocks by subsidence could lead to significantly accelerated rates of erosion and land sliding.

The leasehold area is within a belt of "greater seismic activity" where four shocks of Richter Magnitude 5.0 or greater per decade per square degree are expected (fig. 2, Simon, 1972 and fig. 2, Smith and Sbar, 1974), which fact increases the possibility of damage and loss of life through landslides or roof falls.

Literature Cited for Geologic Data

- Miller, J. F., Frederick, R. H., and Tracey, R. J., 1973, *Precipitation-Frequency Atlas of the Western United States: NOAA Atlas 2*, 17 p. (text), 42 figs.
- Simon, R. B., 1972, *Seismicity: p. 48-51 in Geologic atlas of the Rocky Mountain region, Rocky Mountain Association of Geologists.*

Vegetation

See letter from Forest Service for endangered species clearance.

Climatological Data - Monthly range of temperature and precipitation from Climatological Data 1975, U.S. Dept. of Commerce. Castle Dale is the closest data station to the operation which is approximately 6 miles from the mine.

	<i>Temperature (°F)</i>	<i>Precipitation (inches)</i>
<i>January</i>	<i>20.8</i>	<i>.29</i>
<i>February</i>	<i>28.9</i>	<i>.23</i>
<i>March</i>	<i>36.8</i>	<i>.85</i>
<i>April</i>	<i>39.7</i>	<i>.06</i>
<i>May</i>	<i>52.1</i>	<i>.21</i>
<i>June</i>	<i>60.8</i>	<i>1.01</i>
<i>July</i>	<i>71.4</i>	<i>1.34</i>
<i>August</i>	<i>67.4</i>	<i>.11</i>
<i>September</i>	<i>60.3</i>	<i>.31</i>
<i>October</i>	<i>47.5</i>	<i>.13</i>
<i>November</i>	<i>33.5</i>	<i>.36</i>
<i>December</i>	<i>27.1</i>	<i>.02</i>
<i>Annual Average</i>	<i>45.5</i>	

The prevailing winds are generally from the southwest with the normal up and down canyon variations. No average wind direction has been determined.

Wildlife

See letter from Forest Service for endangered species clearance.

211.10 *Prior Alternate Use*
(c)(3)ii

The terrain of the lease is steeply sloping. Rainfall annually is low. The soil is thin and rocky. Vegetative cover is sparse or non-existent. All of these in combination result in a land form that is non-productive for vegetation and wildlife. No prior alternate land uses are feasible.

211.10 *Extent of the Coal Deposit*
(c)(6)i

The immediate area has had little exploratory drilling for coal. One hole was drilled about 3 miles away in Straight Canyon. It indicated a coal thickness of 7.5 feet thick. Another hole was drilled in Roans Canyon about 1 mile away.

It indicated 8.9 feet of coal. Coal sections of the outcrop were measured by Spieker (1931) within one half mile of the lease. Thicknesses of 4 to 9 feet were measured. The mine is presently operating in a 7 feet seam.

The coal fields in the Wasatch Plateau are generally lenticular. Taking this and the above information into account, it may be fairly accurate to say that the coal extends to the west at a regular thickness of 7 to 9 feet. The lease definitely contains this thickness of coal, but it would only be a conjecture to state the areal extent of the coal.

211.10

(c) (6)iv Engineering Techniques Proposed to be Used in Mining

The basic engineering techniques are those necessary to safely extract the coal. A 50 foot barrier pillar will be left adjacent to neighboring Federal land. Proper roof support techniques will be used where deemed necessary. All practices will be as prescribed by MESA regulations.

211.10

List of Major Equipment

(c) (6)v

<u>Equipment</u>	<u>Quantity</u>
Continuous Mining Units	2
Cutting Machines	1
Coal Drill	1
Shuttle Cars	6
Loading Machine	1
Roof Bolter	3
Feeder Breaker	2
Maintenance and Man-Trip Carts	4
Rock Duster	1

211.10

(c) (6)vi Estimate of Reclamation Cost

All surface facilities are on fee land and will be reclaimed in accordance with the 1975 Mining and Reclamation Act of Utah.

211.10

Methods and Measures to Comply with Sec. 211.4 and 211.40

(c) (6)vii

211.4 (d) Measures to Control or Prevent Soil Erosion - drainage channels will be rip - rapped when their original course has been changed. All fills have been compacted. There will be no surface disturbance on the Federal lease.

Air pollution - Mine machines are equipped with water sprays to hold down dust. Yard areas will be watered down when dusty.

Surface or ground water pollution - No water will be discharged unless approved by a State discharge permit. Sanitary facilities have been constructed to eliminate discharge of sewage.

Diminution of normal water flow - No impoundments will be constructed across Cottonwood Creek. Adverse impacts upon fish and wildlife - Operations will be limited to a small area. All necessary precautions will be taken to protect the fish and wildlife. Permanent damage to vegetation, crops, or timber - All activities will be so designed to damage as little flora as technically possible.

Creation of Unsafe or Hazardous Conditions - All MESA and State, as well as USGS stipulations, will be adhered to. Mining will be so conducted as to control subsidence in areas where the affects could be damaging.

Damage to Improvements - All possible means will be utilized to protect improvements.

Damage to Recreation, Archeological, etc. - Care will be taken to protect any identifiable artifacts and any other resources encountered. The USGS will be notified upon any significant find. Adverse impacts on adjacent land uses. Mining techniques will be such that subsidence should be restricted to the lease area.

211.40 (a) Performance Standards

- (1) All lands shall be reclaimed when they are no longer needed. All surface facilities are on fee land and are under the authority of the State.
- (2) Acceptable mining techniques will be followed to prevent the discharge of toxic wastes and to protect the structural integrity of the operation.
- (3) All surface areas will be designed to protect them from any adverse effects of mining.
- (4) Topsoil will be stockpiled separately when removed and protected against erosion.
- (5) Any water impoundment will be so designed to serve their designated purpose. Acceptable safety and engineering standards will be followed to protect the impoundment and its surroundings.
- (6) There will be no auger mine holes.
- (7) All possible measures will be utilized to protect the quantity and quality of any water flows. No discharge will occur unless approved by a State EPA Class "C" discharge permit.

(8) All waste and noxious substance disposal shall comply with State and Federal standards.

(9) Blasting and excavations shall not be conducted within 200 feet of abandoned mine workings.

(10) Explosives shall be used only as State and Federal standard permit.

(11) All roads, powerlines and similar utilities will be designed using acceptable engineering standards, and shall be removed when no longer required.

(12) No toxic material will be used on road surfaces. Engineering surveys and designs will be conducted prior to the construction of any road. No roads will be built in streams.

(13) All areas will be revegetated with acceptable cover upon completion of operations.

(14) Public access shall be permitted in areas where no dangers exist.

(15) Coal piles will be designed to eliminate spontaneous combustion.

(16) Coal faces will be covered with an incombustible material upon temporary or permanent abandonment.

(17) No auger mining methods will be utilized.

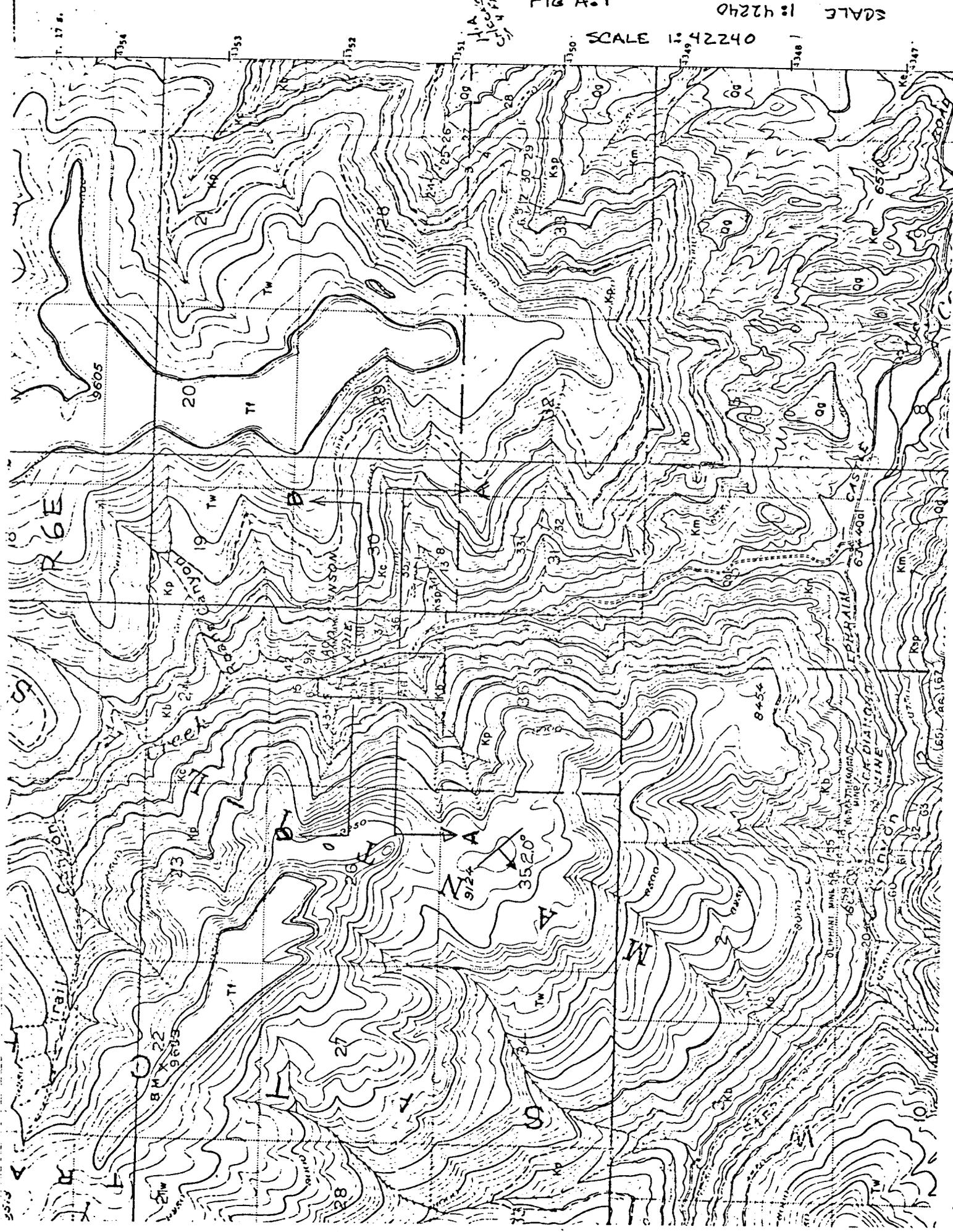
211.10 Compliance steps for air quality control. All steps will be
(c)(6)ix followed to eliminate air pollution. Water sprays will be used where necessary.

211.10 Maximum recovery of coal will be practiced. Top coal will
(c)(6)x not be left unless required for safety reasons. Pillars will be pulled in areas where subsidence will have no significant adverse effects. Pillars will not be pulled within 500 feet of the outcrop. No mining will occur within 50 feet of the outcrop.

Explanation of Figures A.1 thru A.10

- Figures A.1 Area of operations and strike and dip of beds.
- A.2 Cross section A along north boundary of U-082996.
- A.3 Cross section B at tipple on fee land.
- A.4 Samples taken at outcrop in Cottonwood Canyon. Location 36 is situated across the creek from the lease.
- A.5 Typical section in Cottonwood Canyon.
- A.6-10 Description of hole in Roans Canyon approximately 1 mile from the lease. Only the Hiawatha seam at an elevation of 7,109 is minable. This correlates with the section in A.5.

Note: The information for figure A.1 thru A.5 was obtained from Monograph Series No. 3, 1972, Central Utah Coal Fields. The hole description in A.6-thru A.10 was obtained from the Wasatch Plateau Coal Field, Utah Drilling Project U.G.M.S. 1976.



Scale 1:42240

352°

9124

A

B

WILSON

CANYON

CREEK

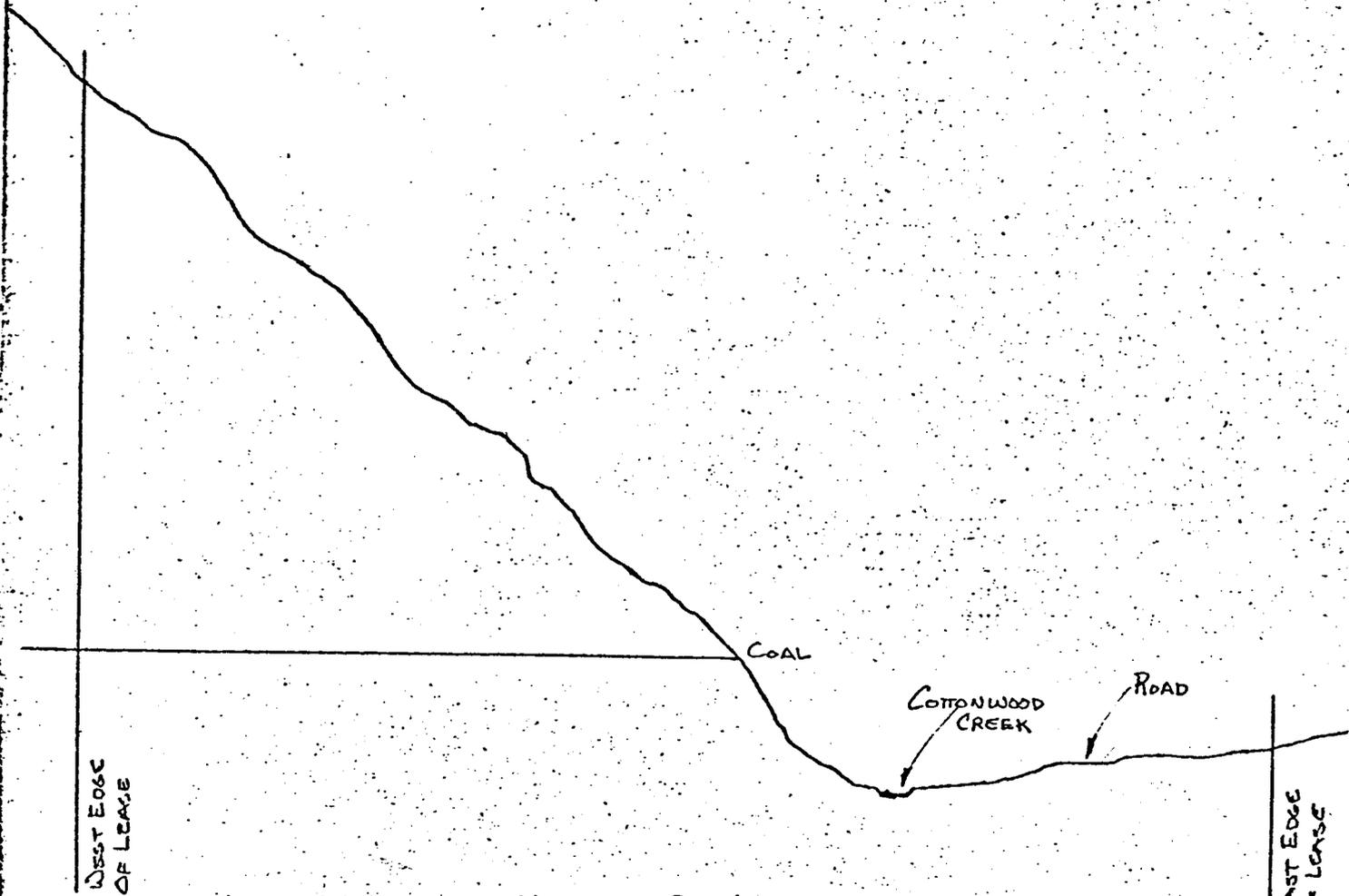
TRAIL

MINE

BLIMPANT MINE

CANYON

CREEK



SEC A
ALONG NORTH BOUNDARY
OF FEDERAL LEASE K-082996
SCALE VERT & HOR. 1" = 200'

FIG A.2

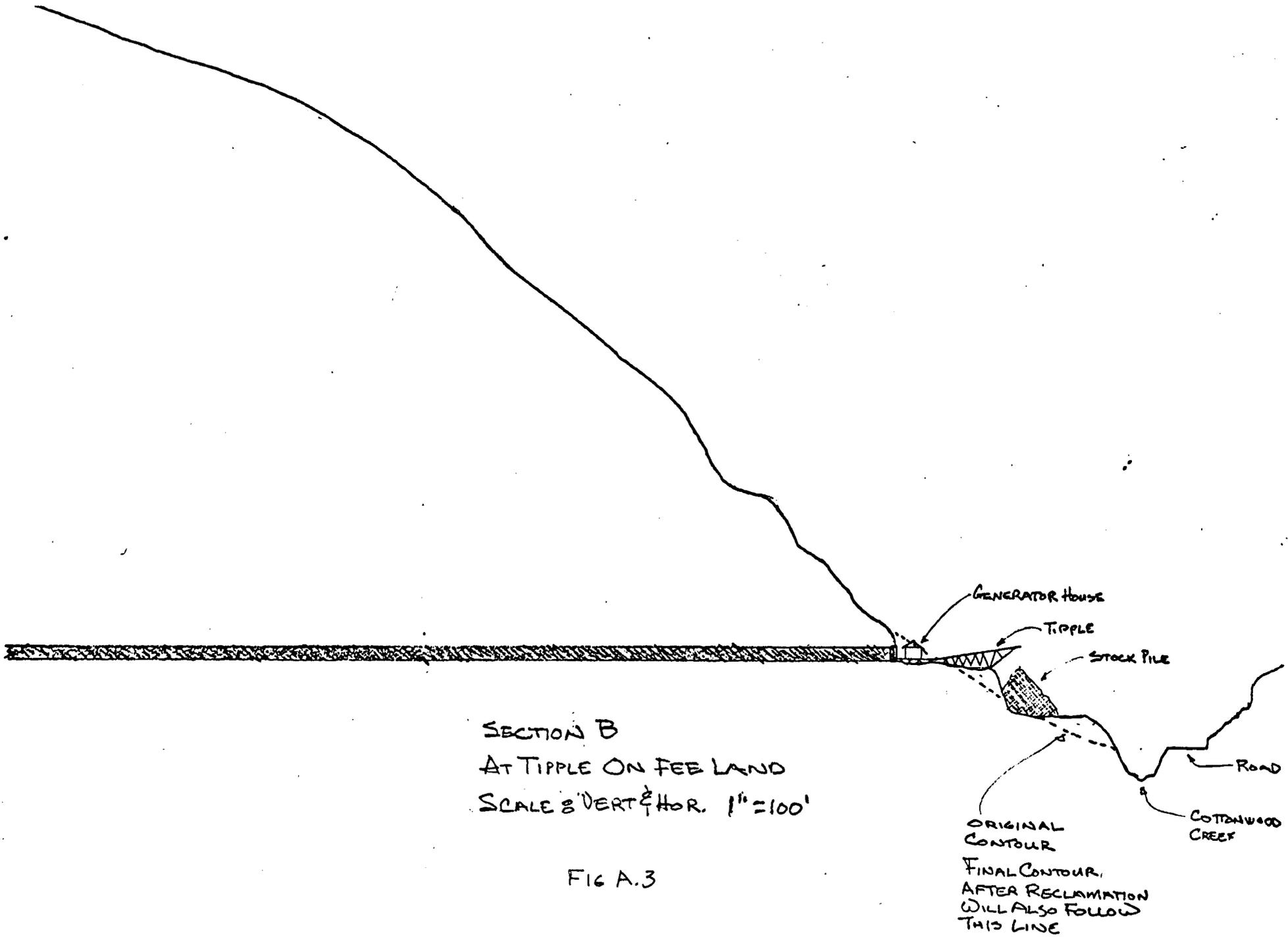
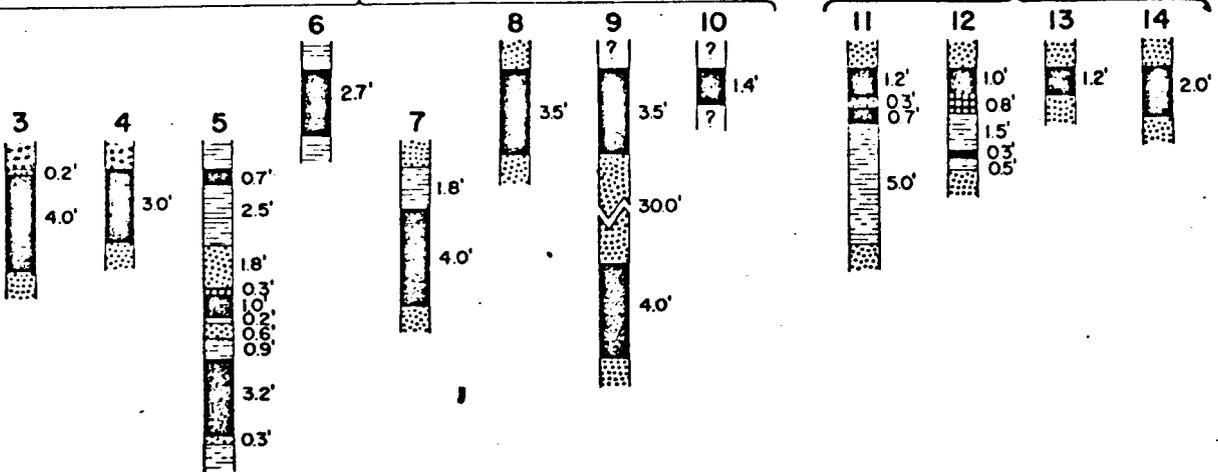
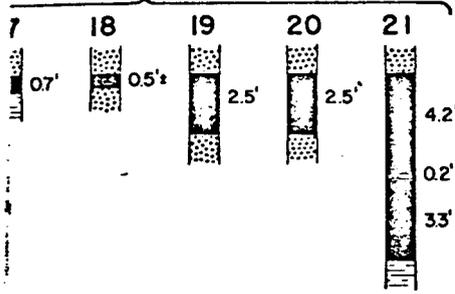


FIG A.3

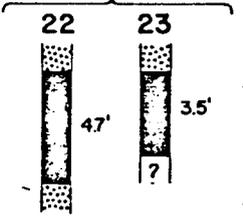
Bear Canyon Bed



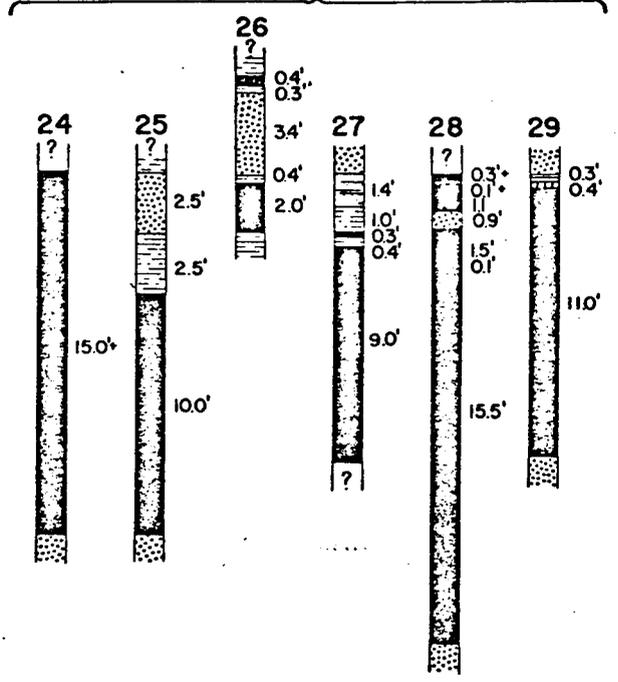
Blind Canyon Bed



Cottonwood Bed



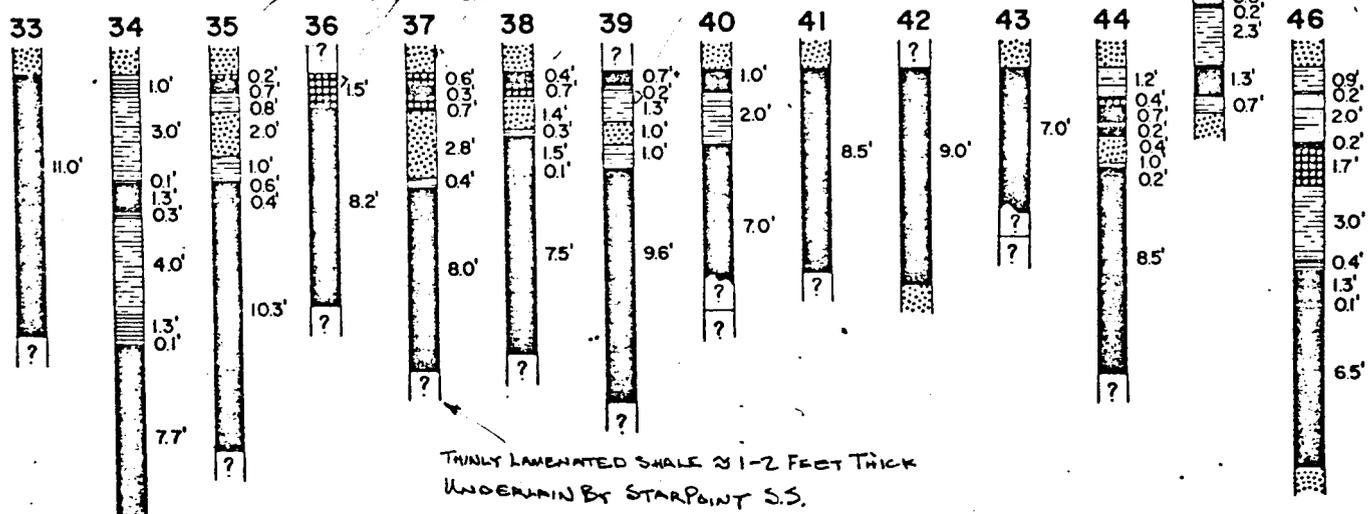
Hiawatha Bed



Hiawatha Bed

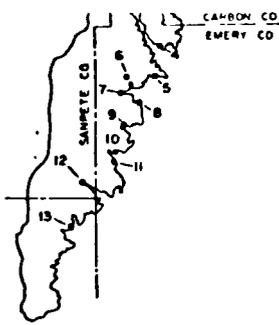
BONEY COAL
SS

SHALE



THINLY LAMINATED SHALE 1-2 FEET THICK
UNDERLAIN BY STARPOINT S.S.

FIG A.4



⑥

COTTONWOOD CANYON SECTION

T.17S., R.6E., SW 1/4 NE 1/4 Sec. 25

④

BEAR CANYON SECTION

T.7E., NE 1/4 SW 1/4 Sec. 24

⑤

GRIMES WASH SECTION

T.17S., R.7E., SW 1/4 SW 1/4 Sec. 26

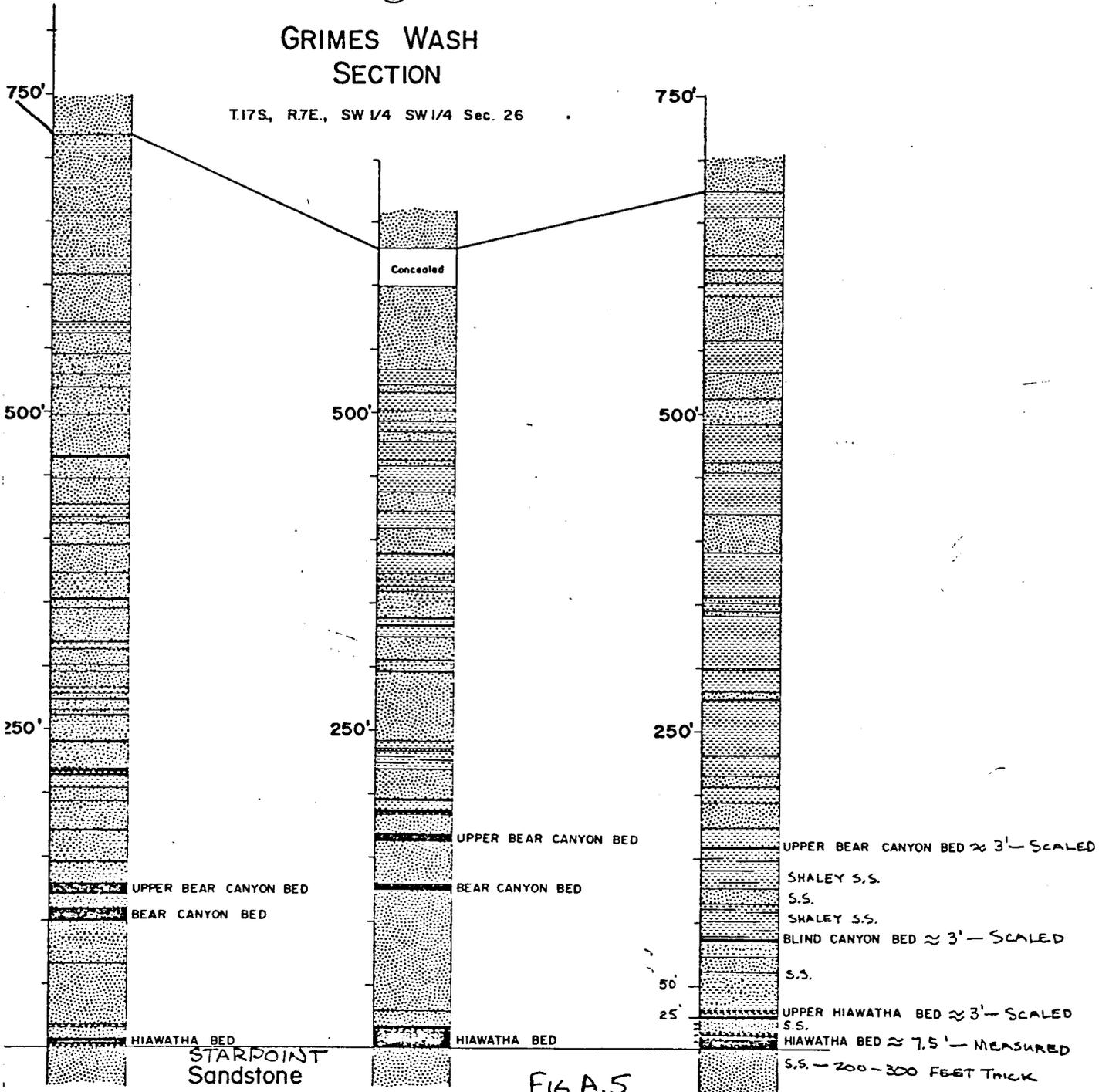


FIG A.5

re 6. (continued)

Project Wasatch Plateau Location 24-1/S-6E Sheet 1 of 5
 Drilling
 Begun 8-5-75 Completed 8-9-75 Total Depth of Hole 369.6'
 Core Recovery (%) 100% Feet 210.8' Ground Elev. 7470'
 Hole Logged by H. Doelling, F. Davis, Driller Boyles Bros.
L. Green, J. Call (U.G.M.S. #4)

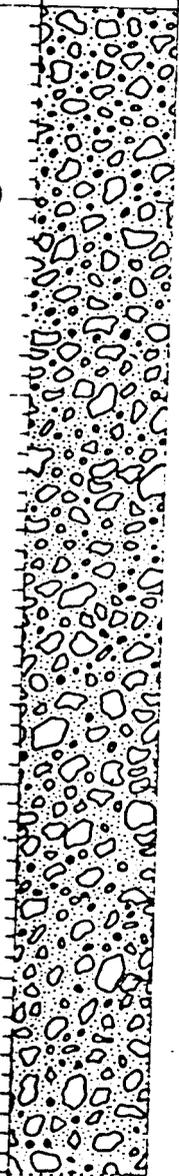
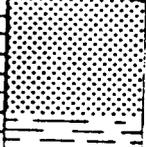
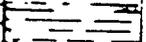
Elevation	Depth	Log	Description
7460	10		0-60 Alluvium, silt, sand, & gravel with boulders
7450	20		
7440	30		
7430	40		
7420	50		
7410	60		60-67 Sandstone, tan, medium grained
7400	70		67-75 Siltstone, black, non-fissile

FIG A.6

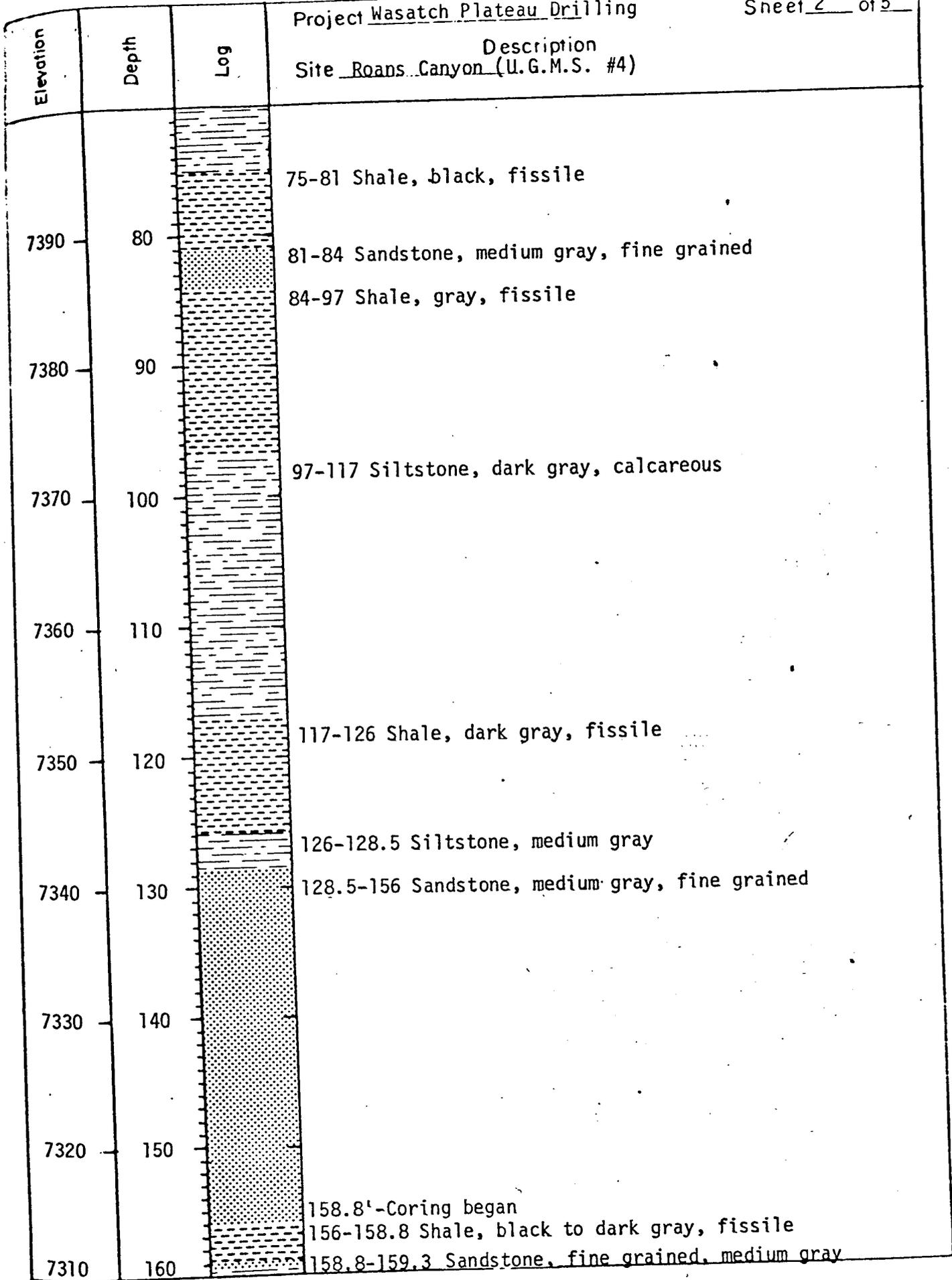


Fig. A.7

Elevation	Depth	Log	Description Site Roans Canyon (U.G.M.S. #4)
7300	170		159.3-160.1 Siltstone, sandy, dark gray, coaly streaks 160.1-165.4 Sandstone, fine-medium grained, dark gray 165.4-166.4 Mudstone, black, argillaceous 166.4-167.7 Sandstone, fine grained, very dark gray 167.7-168.5 Shale, black, carbonaceous 168.5-169.4 Siltstone, very dark gray, sandy 169.4-171.4 Sandstone, fine grained 171.4-173.6 Siltstone, very dark gray, coaly particles 173.6-175.65 Coal, black, shiny, Sample WP-4-1 175.65-176.65 Sandstone, fine grained, dark gray 176.65-177.6 Coal, brittle, scattered pyrite, shiny 177.6-183.1 Sandstone, fine-medium grained
7290	180		183.1-183.8 Mudstone, dark gray, contorted laminations 183.8-186.8 Sandstone, fine grained, medium gray 186.8-187.8 Coal, resinous (upper 2"), shiny, black 187.8-193.7 Sandstone, fine grained, medium gray
7280	190		193.7-194.2 Shale, carbonaceous, dark brown 194.2-223.8 Sandstone, medium gray, fine-medium grained
7270	200		
7260	210		
7250	220		223.8-224.9 Shale, dark brown, carbonaceous, argillaceous 224.9-226.4 Siltstone, medium gray-brown, sandy
7240	230		226.4-233.5 Sandstone, very fine grained, medium gray 233.5-233.9 Shale, very dark brown, carbonaceous 233.9-246.8 Sandstone, very fine grained, dark gray to dark brown, carbonaceous
7230	240		246.8-247.3 Shale, black, carbonaceous, coaly, fissile 247.3-247.8 Shale, gray, argillaceous, fissile 247.8-257.9 Siltstone, light brown, fossiliferous
7220	250		

Elevation	Depth	Log	Description
			Project <u>Roans Canyon (U.G.M.S. #4)</u>
7210	260		257.9-259.4 Sandstone, very fine grained, dark gray, marcasite films
			259.4-260.9 Siltstone, dense, fossil leaves, calcareous
			260.9-267.5 Sandstone, medium gray, very fine grained
7200	270		267.5-268.9 Coal, resinous, black, Sample WP-4-2
			268.9-270.4 Siltstone, shaley partings, coaly specks
			270.4-273.3 Coal, black, resinous, Sample WP-4-3
			273.3-273.7 Coal, bony, resinous, shaly partings
			273.7-274.3 Coal, black, not as resinous
			274.3-275.4 Sandstone, light gray, fine grained
			275.4-275.8 Siltstone, dark gray, coaly partings
7190	280		275.8-276.9 Coal, black, resinous
			276.9-307.4 Sandstone, light gray, fine grained
7180	290		
7170	300		
			307.4-310.5 Siltstone, medium-dark gray, marcasite films
7160	310		310.5-313.0 Sandstone, light-medium gray, very fine grained
			313.0-313.4 Coal, bony, coaly streaks
			313.4-313.9 Shale, carbonaceous, dark brown-black
			313.9-315.2 Siltstone, medium gray, carbonaceous matter on bedding planes
7150	320		315.2-316.6 Coal, black, shiny, brittle
			316.6-319.0 Siltstone, medium gray, non-calcareous
			319.0-320.1 Clay, medium gray, gummy, sticky, soft
			320.1- 320.6 Coal, black, shiny, blocky
			320.6-333.0 Siltstone, medium gray, carbonaceous
7140	330		
			333.0-336.6 Sandstone, medium gray, fine grained
			336.6-344.3 Siltstone, medium gray, carbonaceous
7130	340		

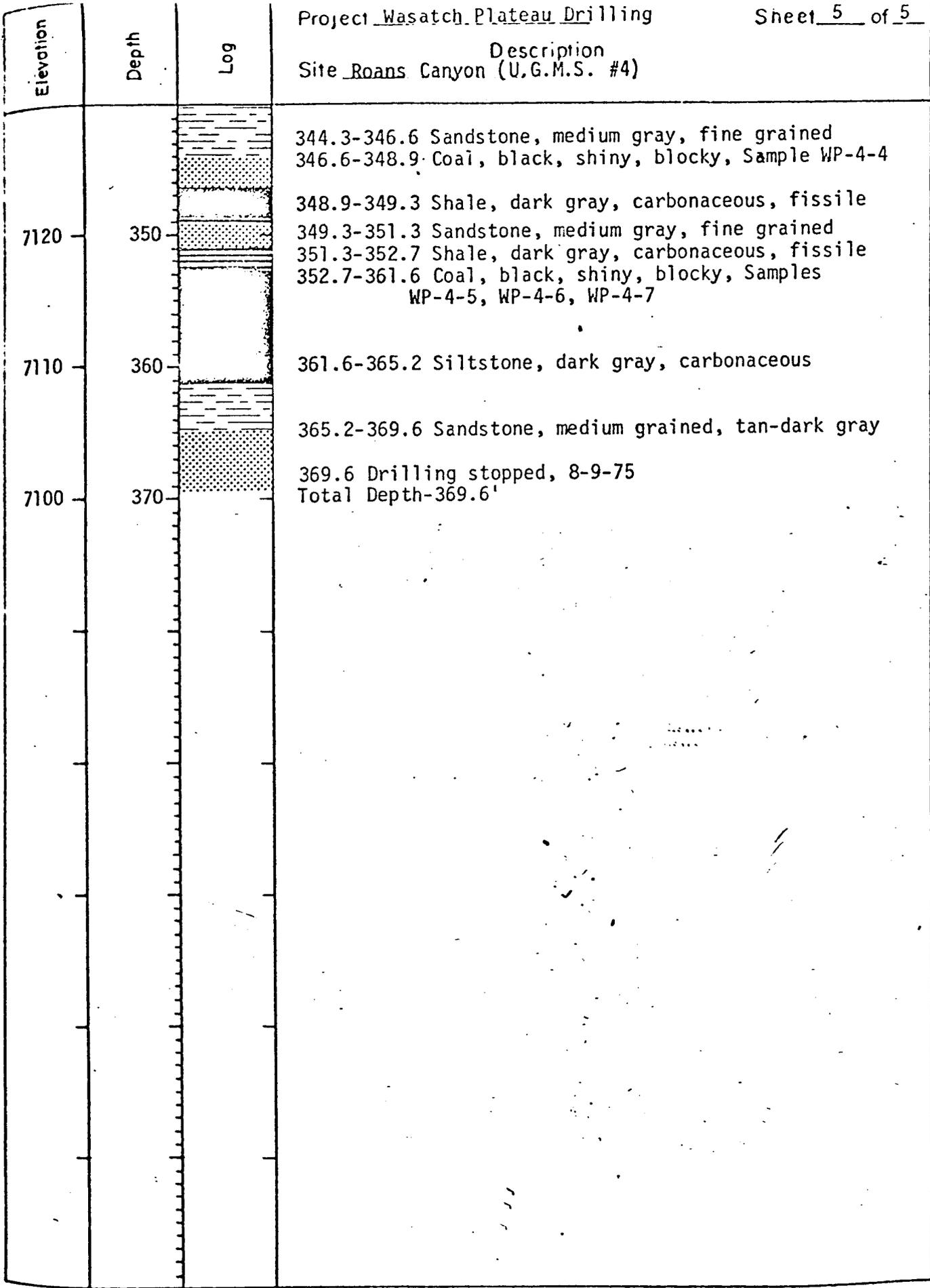


Fig. A, 10



United States Department of the Interior

GEOLOGICAL SURVEY

WATER RESOURCES DIVISION
8002 Federal Building
Salt Lake City, Utah 84138

April 21, 1977

To: Area Mining Supervisor, CD, Salt Lake City, Utah
Attn: Ralph J. Blumer, Mining Engineer

From: District Chief, WRD, Salt Lake City, Utah

Subject: Trail Mountain Coal Co. (John L. Bell) mine plan--coal lease
U-082996 - Addendum No. 1

The following discussion was prepared by Don Price of this office in response to your request for additional hydrologic data to be submitted with the subject mine plan. The discussion includes information (consistent with presently available hydrologic data) required under items 211.10 (C) (6) (Xiii) and (7) (iii) of the coal mining plan checklist 30 CFR 2111. It is subject to revision on acquisition of new hydrologic data.

Hydrology

Surface water

Coal lease U-082996 is entirely within the drainage basin of Cottonwood Creek, a tributary of the San Rafael River which empties into the Green River about 70 air miles southeast of the lease. Mine portal facilities and the mine access road are adjacent to Cottonwood Creek (Exhibit 1). Cottonwood Creek receives regulated flow (about 2.5 miles downstream from the lease) from Joes Valley Reservoir by way of Straight Canyon, and is used chiefly for irrigation in the Orangeville-Castle Dale area. The stream also supports a local sport fishery and supplies drinking water for livestock and wildlife. In addition, Trail Mountain Coal Co. has appropriated some of the streamflow for use in the proposed mining operation.

Runoff in Cottonwood Creek is measured by U.S. Geological Survey gaging station 09324500 near Orangeville (Exhibit 1). During 55 years of record between 1909 and 1970 runoff past that gaging station has averaged 70,420 acre-feet per year. Minimum recorded flow was 1.2 ft³/sec on April 8, 1966, and maximum recorded flow was 7,220 ft³/sec on August 1, 1964.

Runoff in Cottonwood Creek upstream from its confluence with Straight Canyon is not gaged, but is estimated to average about

1,500 acre-feet per year by correlation with runoff records collected in a similar nearby drainage basin. On July 13, 1976, a flow estimated to be about 0.3 ft³/sec was observed in Cottonwood Creek just upstream from the present mine portal. However, flows exceeding 100 ft³/sec are possible in this same reach of the creek during cloud-burst flooding and high seasonal runoff.

Based on a water yield map compiled by Bagley and others (1964), mean annual runoff from coal lease U-082996 alone is estimated to be about 10 acre-feet. This is 0.7 percent of the estimated average annual runoff in Cottonwood Creek above its confluence with Straight Canyon and only 0.01 percent of the average annual gaged runoff past station 09324500.

Chemical quality of surface water in the coal lease area is good. According to Price and Waddell (1973), the discharge-weighted average concentration of dissolved solids in runoff from the area is less than 250 mg/L (milligrams per liter). Between 1933 and 1977 several hundred water samples were collected from Cottonwood Creek at gaging station 09324500 and analyzed by the U.S. Geological Survey or U.S. Bureau of Reclamation. Dissolved-solids concentrations in those samples generally ranged between 200 and 400 mg/L (U.S. Geol. Survey unpublished data). On July 13, 1976, the flow in Cottonwood Creek just upstream from the mine portal was tested with a field conductivity meter; it had a specific conductance of 500 micromhos per cm which indicates a dissolved-solids concentration of less than 400 mg/L--even during low flow periods.

There are very little data regarding sediment discharges in the coal lease area. A sediment yield map of Utah (U.S. Dept. Agric., 1973) indicates that sediment yields in the Cottonwood Creek drainage are relatively high--ranging from 0.5 to 1.0 acre-feet per square mile per year. Consequently, suspended sediment in Cottonwood Creek is assumed to be relatively high--especially during storm runoff. However, release of nearly sediment-free water from Joes Valley Reservoir helps lower the sediment concentration of the streamflow below Straight Canyon.

Ground Water

Ground water is present in most of the rocks that underlie coal lease U-082996. However, there are no known extensive productive aquifers above or immediately below the coal-bearing beds. Price and Waddell (1973) indicate that the rocks in this general area have low permeability and are capable of yielding only about 1 to 10 gal/min of water to individual wells. The depth to the regional water table (main zone of saturation) is not precisely known; it probably ranges from only a few feet along Cottonwood Creek (which appears to be a gaining stream in the lease area) to more than 1,000

feet beneath the divide between Cottonwood Creek and Straight Canyon. The coal-bearing beds on the lease appear to be above the regional water table. However, they probably contain some local perched aquifers as present mine workings on the lease reportedly have intercepted some water.

Chemical quality of ground water in the lease area is good. According to Price and Waddell (1973) dissolved concentration of the water is generally less than 500 mg/L. The flow of Cottonwood Creek at the mine (which when tested on July 13, 1976 consisted of effluent ground water) had an indicated dissolved-solids concentration of less than 400 mg/L.

There are no known uses of ground water in the lease area except indirectly as baseflow to Cottonwood Creek. Any water produced by mine workings may be used for in-mine operations.

Potential Impacts on Hydrology

The proposed mining operation will have an insignificant impact on the local hydrology and on downstream uses of runoff in Cottonwood Creek. Because the lease contributes only about 0.01 percent of the runoff in Cottonwood Creek above gaging station 09324500, the small changes in runoff (probably less than 1 acre-foot per year) that can be anticipated from construction of new surface facilities, mining, and subsequent land subsidence will be negligible.

There will be a small, but insignificant, increase in fluvial sediment in Cottonwood Creek as a result of new surface construction and increased coal haulage. The impact on downstream uses of the water will be insignificant compared to effects of high sediment discharges that result from cloudburst flooding.

Chemical quality of surface water will be essentially unaffected provided there are no accidental spills of oil or other mining-associated contaminants. If the mine workings produce more ground water than can be consumed in the mine, a discharge permit must be obtained from the Environmental Protection Agency to discharge the water from the mine. In addition, any water released to Cottonwood Creek will have to meet State of Utah Class C water-quality requirements (Exhibit 2) to prevent adverse impacts on downstream uses of the streamflow.

Serious flooding is possible in the lease area during cloudburst activity. A Log-Pearson Type III analysis (U.S. Water Resources Council, 1976) of peak discharges measured in Cottonwood Creek at gaging station 09324500 indicates there is a 50 percent probability that a discharge equalling or exceeding 1,200 ft³/sec will occur in any given year at that station. A discharge of this magnitude at the

mine would cause serious damage to the culvert and stream crossing. However, the drainage area upstream from the mine is only about 13 percent of the total drainage area upstream from station 09324500. Therefore, there is a much small probability of such a discharge occurring in any one year at the mine.

References Cited

- Bagley, J. M., Jeppson, R. W., and Milligan, G. H., 1964, Water yields in Utah: Utah Agr. Expt. Sta. Spec. Rept. 18, 65 p.
- Price, Don, and Waddell, K. M., 1973, Selected hydrologic data in the Upper Colorado River Basin: U.S. Geol. Survey Hydrol. Inv. Atlas HA-477, scale, 1:25,000,000.
- U.S. Department of Agriculture, 1973, Potential sediment yields in Utah: Map of Utah, scale, 1:500,000.
- U.S. Water Resources Council, 1976, Guidelines for estimating flood frequency: U.S. Water Resources Council Hydrol. Comm. Bull. 17.

For the District Chief



Don Price
Hydrologist

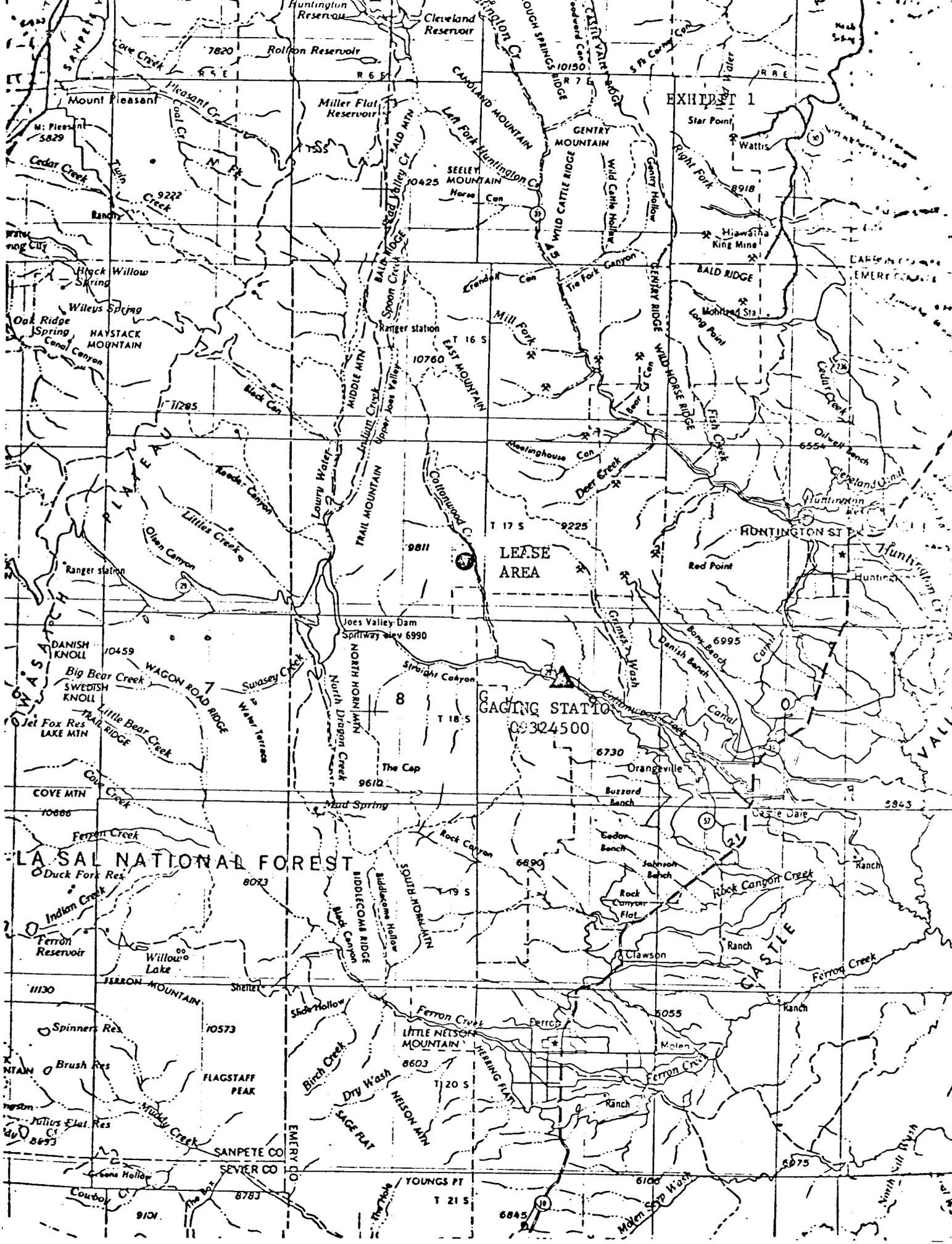


EXHIBIT 1

LEASE AREA

GAGING STATION
09324500

LA SAL NATIONAL FOREST

GASTLE

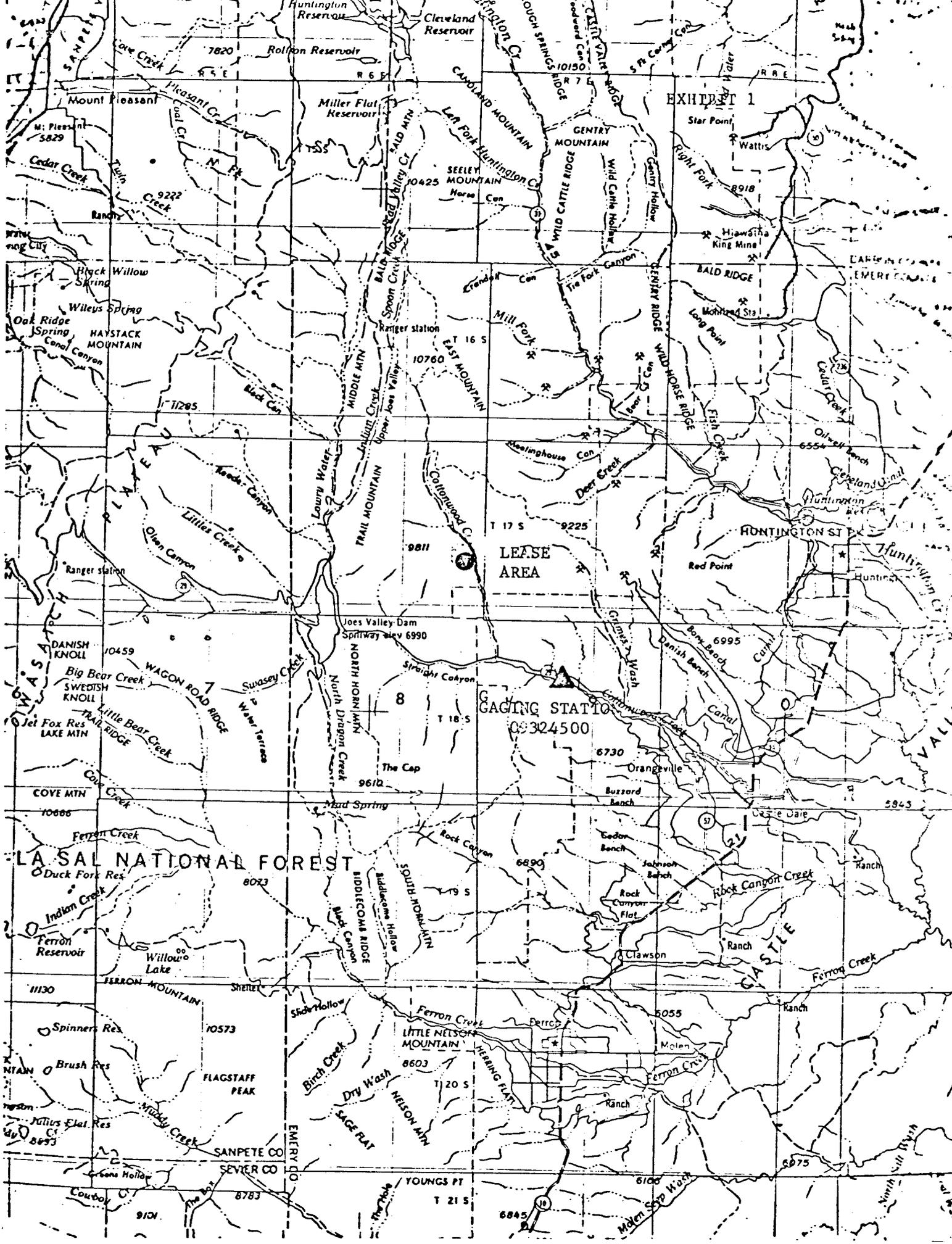


EXHIBIT 1

LEASE AREA

GAGING STATION
09324500

LA SAL NATIONAL FOREST

GASTLE

UTAH STATE DIVISION OF HEALTH
SUMMARY OF CLASS "C" WATER QUALITY REQUIREMENTS
August 2, 1971

EXHIBIT 2

It shall be unlawful to discharge wastes resulting in:

- Objectionable deposits
- Floating debris, oil, scum and other matters
- Objectionable color, odor, taste, turbidity
- Interference with Class "C" water uses

The following standards shall not be violated:

Item	Limits		Item	Limits		Item	Limits	
	Recom- mended Mg/l	Manda- tory Mg/l		Recom- mended Mg/l	Manda- tory Mg/l		Recom- mended Mg/l	Manda- tory Mg/l
TDS	500	-	Cu	1.0	-	NO ₃	45	-
As	0.01	0.05	CN	0.01	0.2	Phenol	0.001	-
Ba	-	1.0	F	1.0	2.0*	Se	-	0.01
CCE	0.2	-	Fe	0.3	-	Ag	-	0.05
Cd	-	0.01	Pb	-	0.05	SO ₄	250	-
Cl	250	-	Mn	0.05	-	MBAS	0.5	-
Cr	-	0.05				Zn	5.0	-

MPN Coliforms 5000/100 upper limit (average)

BOD 5 mg/l upper limit

DO 5.5 mg/l lower limit

Radionuclides not to exceed 1/30 of the MPC_w** values as defined in National Bureau of Standards Handbook 69

CLASS "CC"

2° F. incremental increase and not above 68° F.; DO 6 mg/l minimum

CLASS "CW"

4° F. incremental increase and not above 80° F.; DO 6 mg/l minimum

CLASS "CR"

MPN Coliforms 1000/100 ml. upper limit (average)

CLASS "CCR"

Same as "CC" and "CR" combined

CLASS "CWR"

Same as "CW" and "CR" combined

Uses of Class "C" waters:

Municipal (following complete treatment)

Aesthetics

Irrigation

Stock watering

Fish propagation

Wildlife

Recreation (except swimming)

Industrial supplies

Other as determined by Board and Committee

*Dependent on climate

**Maximum Permissible Concentration in water



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

April 20, 1977

Mailing List Attached

Attached is a Notice of Availability of Proposed Decision for your information. This notice is required in 30 CFR 211.

Sincerely yours,

Ralph J. Blumer
Mining Engineer

Attachment

cc: Denver
RJBlumer:wlp



MAILING LIST FOR

NOTICE OF AVAILABILITY OF MINING PLANS

William K. Dinehart
P. O. Box AI
109 South Carbon Ave.
Price, UT 84501

Reed Christensen
Manti LaSal National Forest
350 East Main Street
Price, UT 84501

Regional Administrator, Reg. VIII
U.S. Environmental Prot. Agcy.
1860 Lincoln Street
ATTN: Director, Off. of Energy Activities
Denver, CO 80295

John Niebergall
Ferron Ranger Dist.
US Geological Survey
50 South Main Street
Ferron, UT 84523

Gordon Anderson
Colorado Plateau Representative
Friends of the Earth
P. O. Box 820
Moab, UT 84532

Gene S. Day, District Manager
Bureau of Land Management
72 South Main
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Moab Utah 84532

The Wilderness Society
Dick Carter, Utah Regional Representative
8 East Broadway
610 Judge Building
Salt Lake City, UT 84111

Peabody Coal Company
D. H. Gambrel, Director Fed. Coal Leasing
301 North Memorial Drive
St. Louis, MO 63102

County Clerk
Orangeville, UT 84537

John L. Bell
P.O. Box 356
Orangeville UT 84537

Wildlife Resources Division
1596 West North Temple
Salt Lake City, Utah 84104

Oil Gas & Mining Division
1588 West North Temple
Salt Lake City, Utah 84104

DEPARTMENT OF THE INTERIOR

Geological Survey

COAL MINING PLAN - UTAH

Notice of Availability of Proposed Decision
for Mine Plan Submitted for Approval

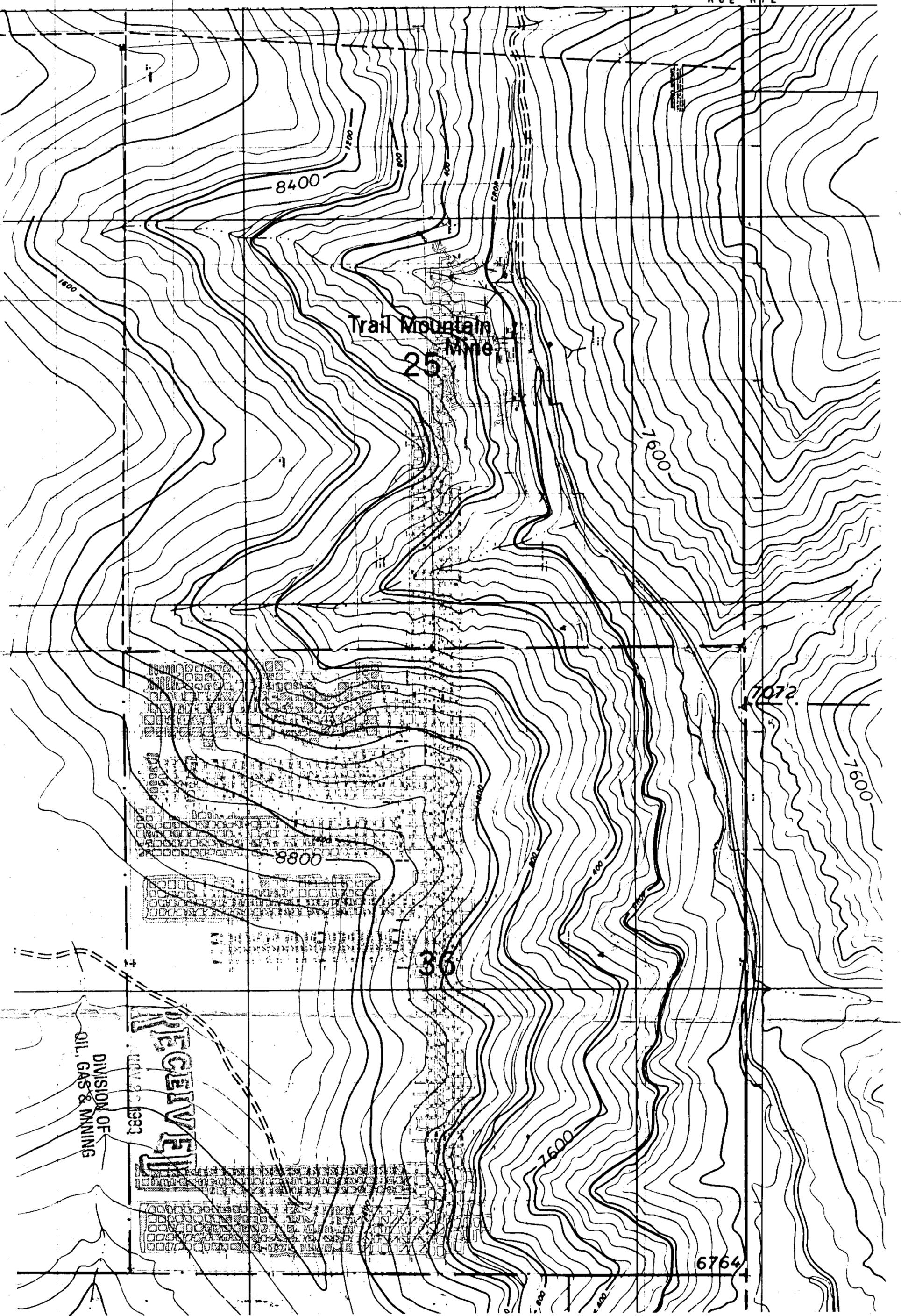
In accordance with the requirements of 30 CFR 211.5 (c)(2), notice is hereby given that Trail Mountain Coal Company, P.O. Box 356, Orangeville, Emery County, Utah 84537, has submitted a mine plan to mine the 40 acre Federal lease U-082996 by underground mining method. The Trail Mountain mine is located in Emery County, Utah in T. 17 S., R. 6 E., SW $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 25. The Trail Mountain mine plan was initially received for review by the Mining Supervisor on September 10, 1976.

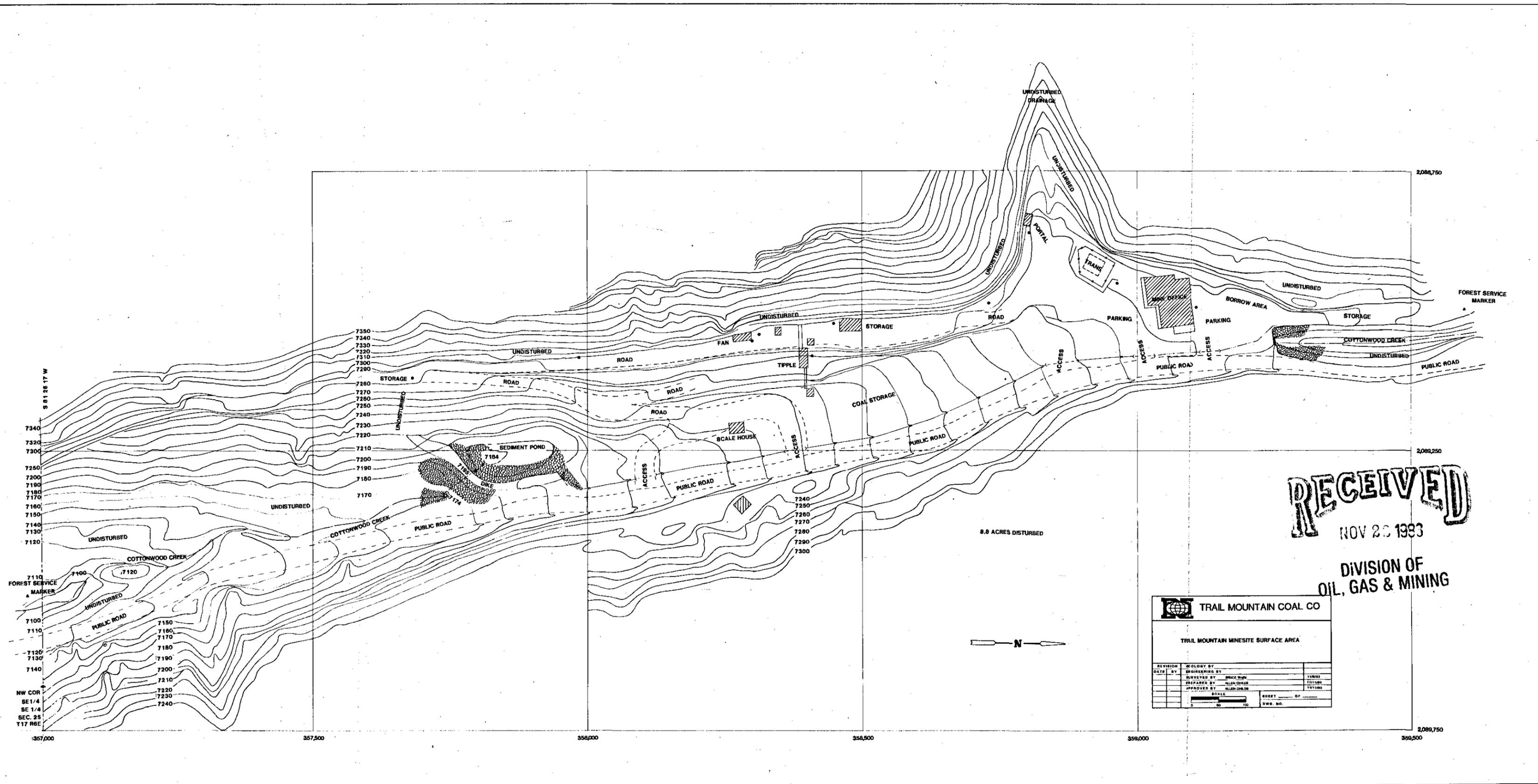
The Trail Mountain mine is an ongoing mining operation on fee land. The Federal lease, containing approximately 28 acres of coal, will be mined through entries located on the fee land. It is estimated that a year will be required to mine out the Federal lease.

The purpose of this notice is to inform the public that the Mining Supervisor proposes to approve the mining plan. Any person having an interest, which is or may be adversely affected, may request a public meeting in writing. Requests for a public meeting should include the name and addresses of the requestor and should be submitted to the Area Mining Supervisor, Conservation Division, U.S. Geological Survey, 8426 Federal Building, 125 South State Street, Salt Lake City, Utah 84138. All requests should be made within 20 days from the date of publication of this notice. No decision on the mine plan will be made prior to 20 days from the date of publication of this notice.

A preliminary public meeting on the proposed mine was held at the Emery County Court House on October 5, 1976, to solicit public comments and suggestions on related environmental and resource aspects of the proposed mine.

James J. Travis
For
Jackson W. Moffitt
Area Mining Supervisor

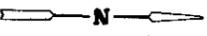




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 NOV 20 1983

DIVISION OF
 OIL, GAS & MINING

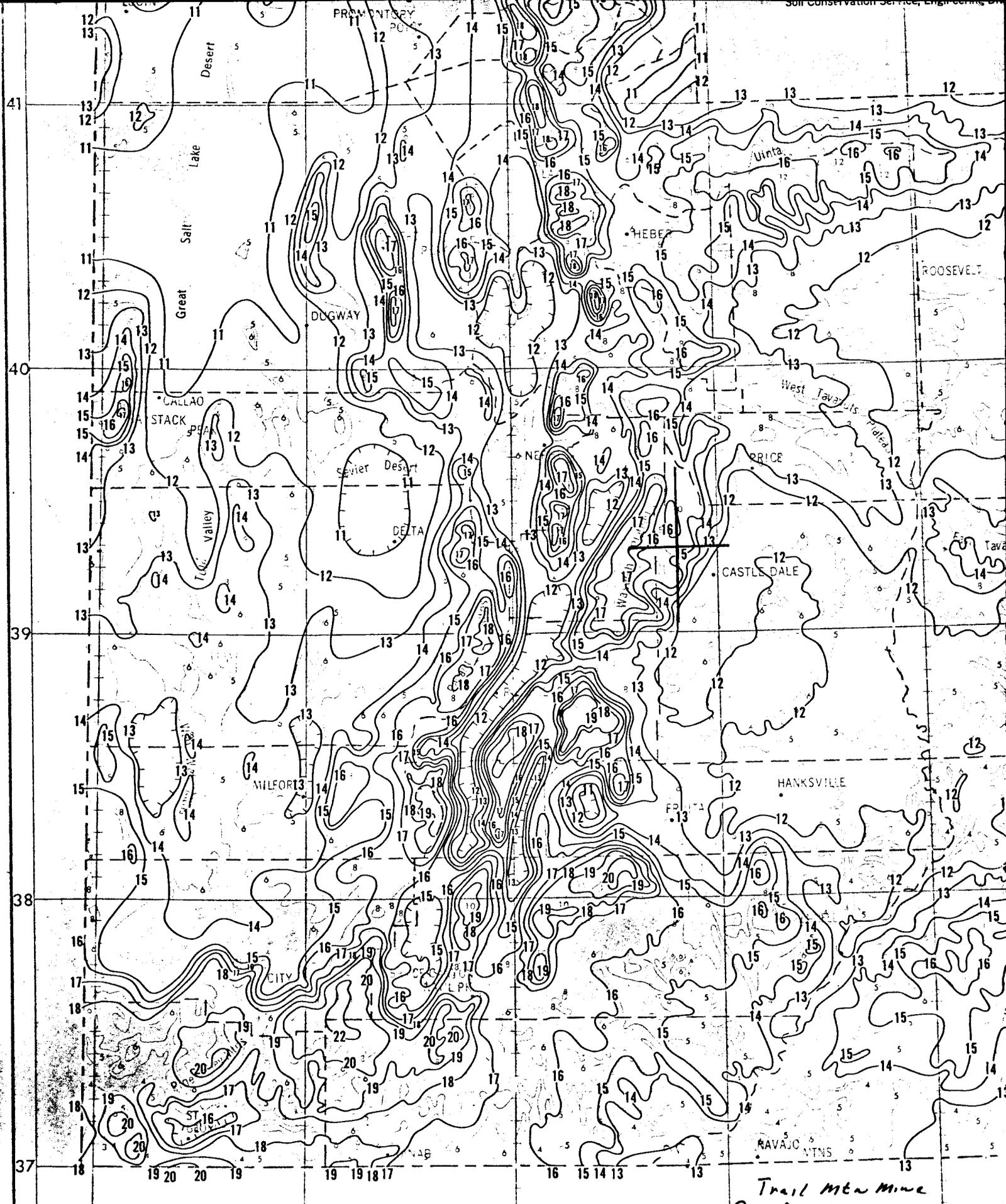
TRAIL MOUNTAIN COAL CO	
TRAIL MOUNTAIN MINESITE SURFACE AREA	
REVISION	DESIGNED BY
DATE	ENGINEERED BY
	DRAWN BY
	CHECKED BY
	APPROVED BY
	SCALE
	SHEET OF
	DWG. NO.



8.8 ACRES DISTURBED

S 81 26 17 W
 7340
 7320
 7300
 7250
 7200
 7190
 7180
 7170
 7160
 7150
 7140
 7130
 7120
 7110
 7100
 7110
 7120
 7130
 7140
 NW COR
 SE 1/4
 SE 1/4
 SEC. 25
 T17 R0E

357,000 357,500 358,000 358,500 359,000 359,500 2,089,250 2,089,750

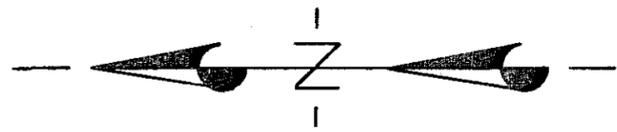


UTAH

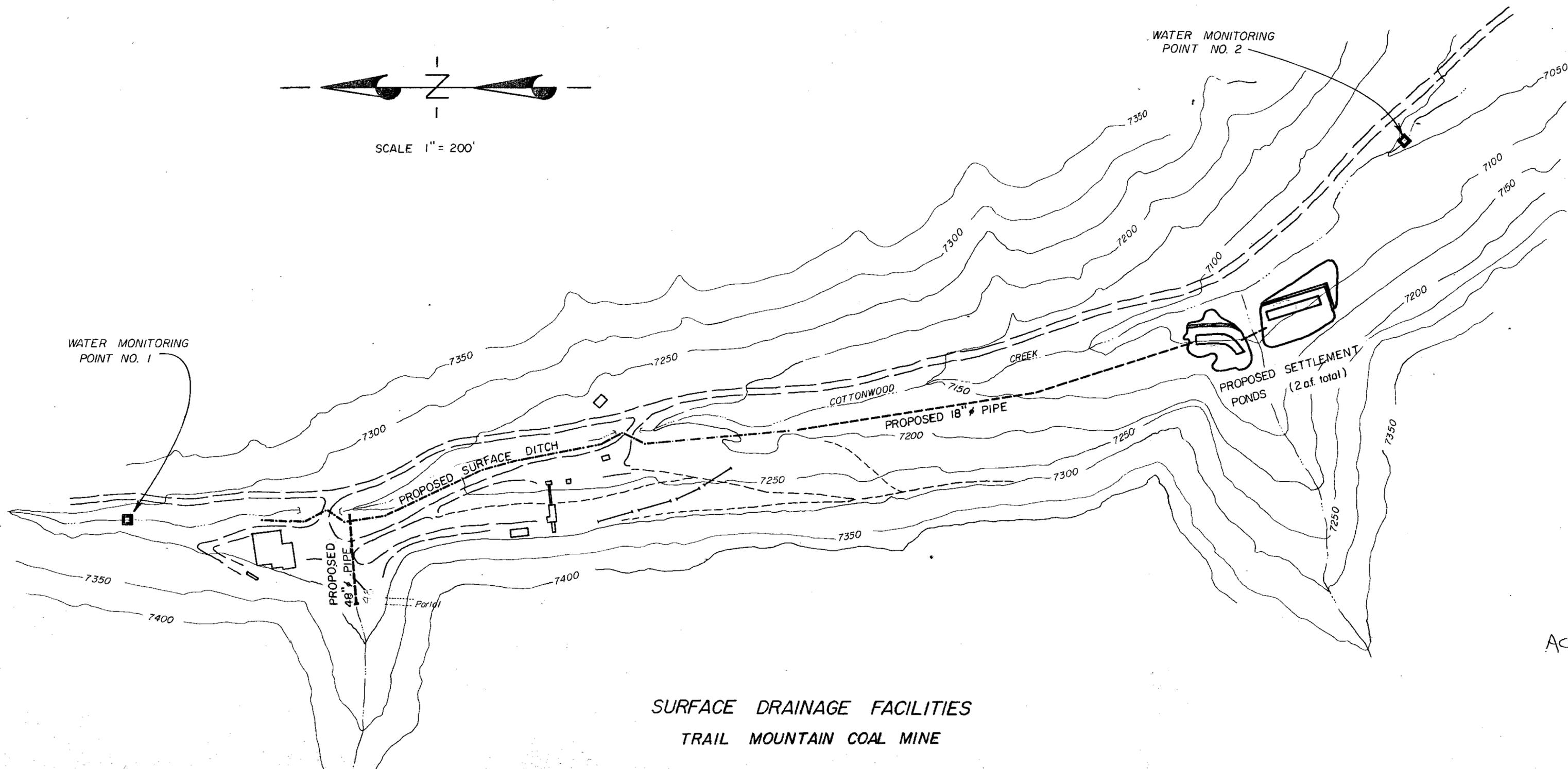
10 0 10 20 30 40
MILES

Figure 21
ISOPLUVIALS OF 10-YR 6-HR PRECIPITATION IN
TENTHS OF AN INCH

Trail Men Mine
@ 39° 19.2'
111° 11.5'



SCALE 1" = 200'



SURFACE DRAINAGE FACILITIES
TRAIL MOUNTAIN COAL MINE

ACT/015/009

4.400	61.3
4.500	59.8
4.600	58.3
4.700	56.6
4.800	54.8
4.900	53.0
5.000	51.1
5.100	49.6
5.200	48.5
5.300	47.8
5.400	47.4
5.500	47.2
5.600	46.8
5.700	46.3
5.800	45.6
5.900	44.6
6.000	42.4
6.100	37.9
6.200	30.4
6.300	21.6
6.400	13.8
6.500	8.3
6.600	4.9
6.700	2.9
6.800	1.7
6.900	.9
7.000	.4
7.100	.1
7.200	.0
7.300	.0

TOTAL DISCHARGE = 30.58 ACRE-FEET

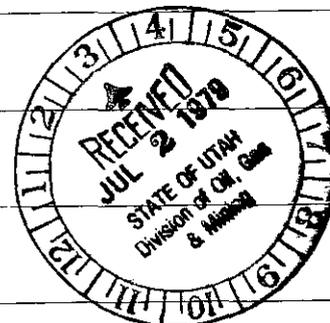
Run-off Total Area - 30.58 Ac-ft
 Run-off Sub Area - 28.57 Ac-ft
 Discharge into Sed. Perd - 2.01 Ac-ft

STORM HYDROGRAPH NO. 2 FOR COTTONWOOD CANYON TOTAL AREA DEC 1978

100 year

INPUT PARAMETERS NP, PPT, NU, DT, CT, TNAME, CN, QFACT, IROUT, PPC
61 1.800 14 .100 1.000 (HOURS) 90.00 1.000 0 .925

TIME (HOURS)	DISCHARGE (CFS)
.000	.0
.100	.0
.200	.0
.300	.0
.400	.0
.500	.0
.600	.0
.700	.0
.800	.0
.900	.0
1.000	.0
1.100	.0
1.200	.0
1.300	.0
1.400	.0
1.500	.0
1.600	.0
1.700	.3
1.800	1.5
1.900	4.1
2.000	9.3
2.100	19.3
2.200	37.6
2.300	67.2
2.400	109.0
2.500	157.6
2.600	200.7
2.700	226.5
2.800	230.6
2.900	215.7
3.000	189.7
3.100	161.9
3.200	138.8
3.300	122.2
3.400	110.5
3.500	101.7
3.600	94.5
3.700	88.3
3.800	82.6
3.900	77.4
4.000	72.7
4.100	68.6
4.200	65.5
4.300	63.1



4.400	56.8
4.500	55.4
4.600	54.0
4.700	52.5
4.800	50.8
4.900	49.1
5.000	47.4
5.100	46.0
5.200	45.0
5.300	44.5
5.400	44.2
5.500	44.0
5.600	43.7
5.700	43.2
5.800	42.5
5.900	41.4
6.000	39.2
6.100	34.5
6.200	26.9
6.300	18.3
6.400	11.2
6.500	6.5
6.600	3.8
6.700	2.1
6.800	1.2
6.900	.6
7.000	.2
7.100	.0
7.200	.0
7.300	.0

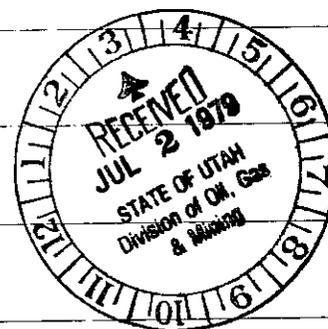
TOTAL DISCHARGE = 28.57 ACRE-FEET

INPUT PARAMETERS NP,PPT,NU,DT,CT,TNAME,CN,QFACT,IROUT, PPC
 61 1.800 14 .100 1.000 (HOURS) 90.00

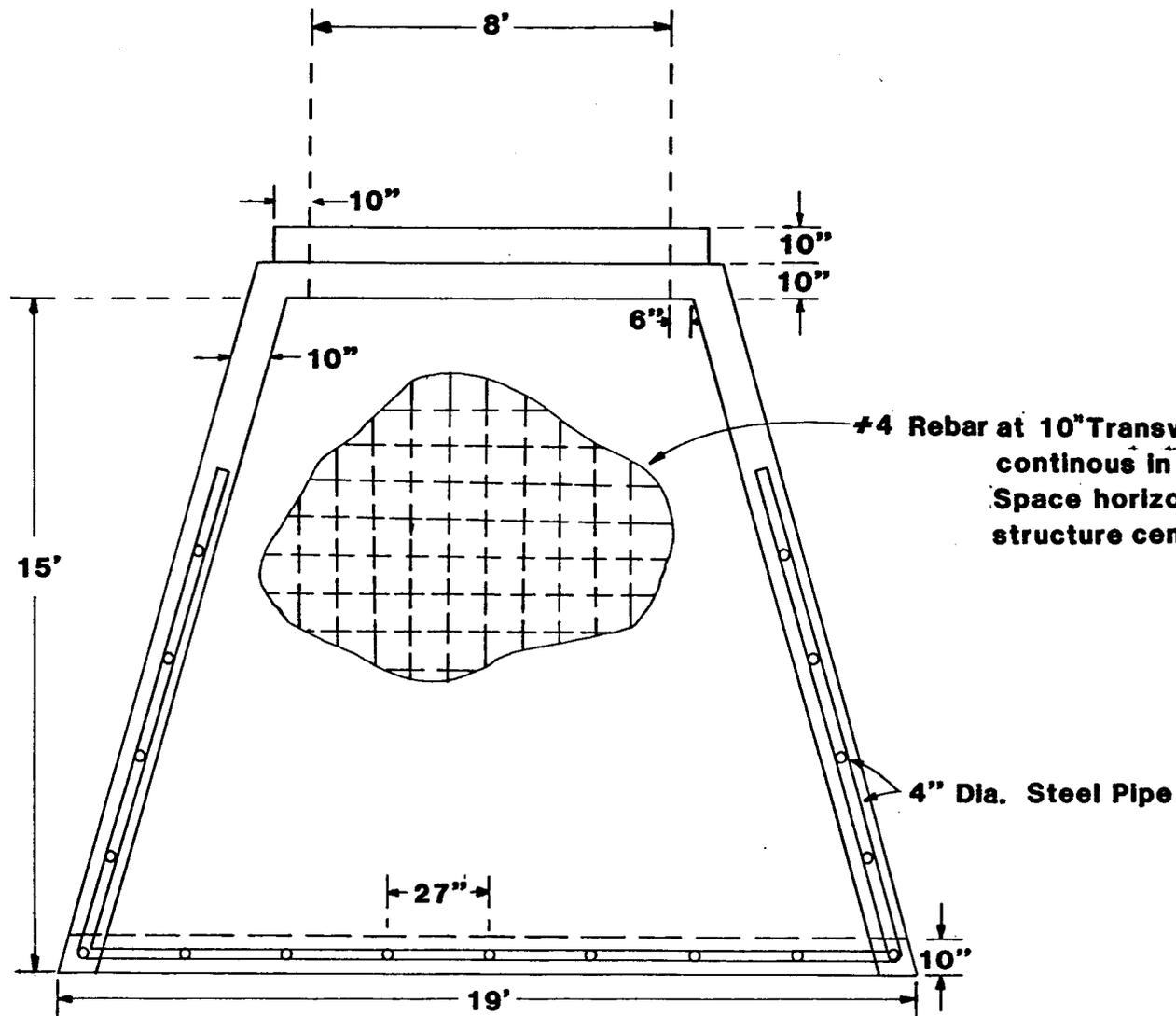
1.000 0 .925

100 Yr

TIME (HOURS)	DISCHARGE (CFS)
.000	.0
.100	.0
.200	.0
.300	.0
.400	.0
.500	.0
.600	.0
.700	.0
.800	.0
.900	.0
1.000	.0
1.100	.0
1.200	.0
1.300	.0
1.400	.0
1.500	.0
1.600	.0
1.700	.4
1.800	1.6
1.900	4.3
2.000	9.6
2.100	19.9
2.200	38.6
2.300	68.6
2.400	110.2
2.500	157.2
2.600	196.7
2.700	217.8
2.800	217.4
2.900	199.7
3.000	172.9
3.100	146.1
3.200	125.0
3.300	110.3
3.400	100.1
3.500	92.5
3.600	86.2
3.700	80.8
3.800	75.8
3.900	71.1
4.000	66.8
4.100	63.2
4.200	60.4
4.300	58.3

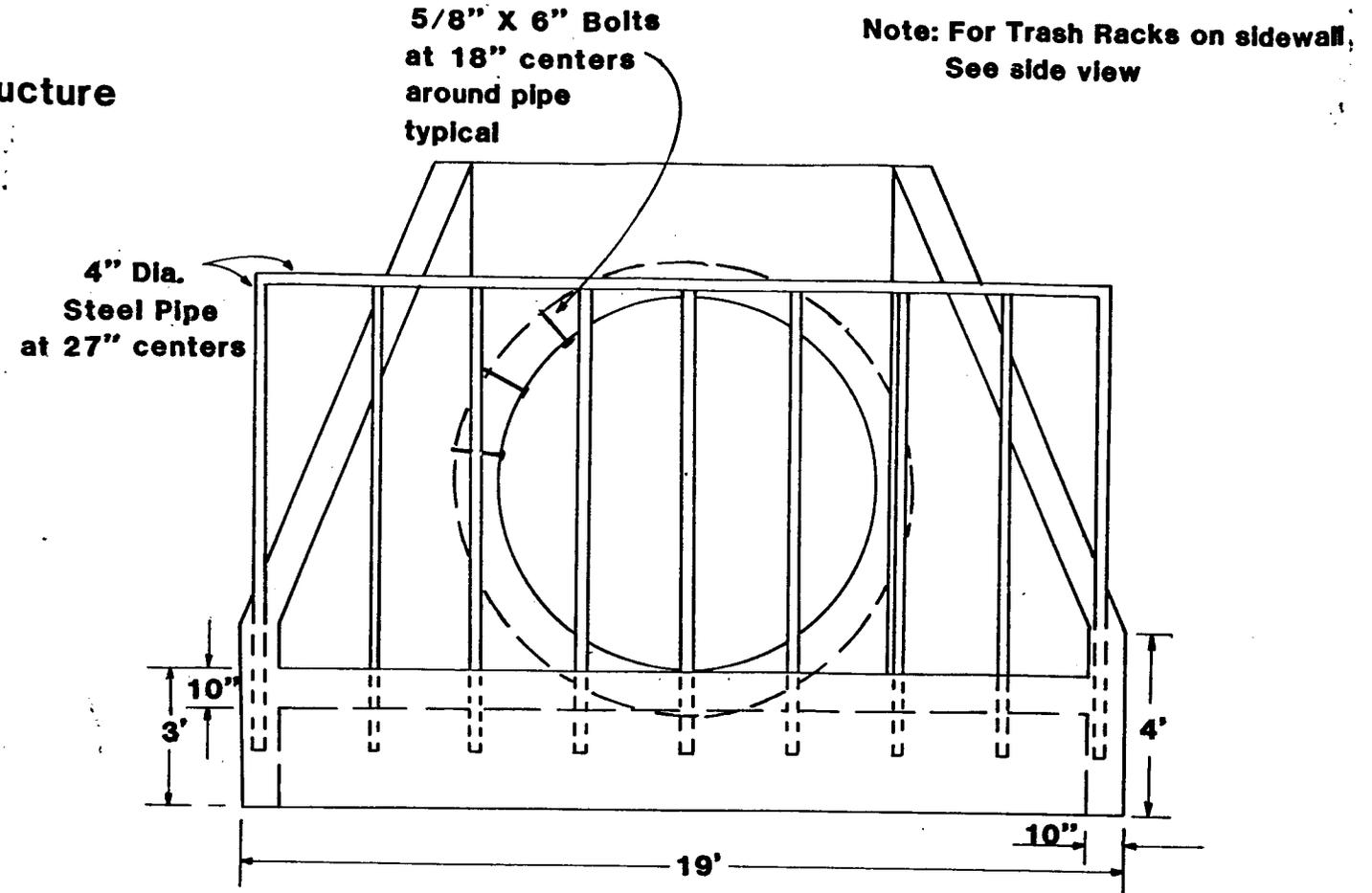


DETAIL A Inlet Structure



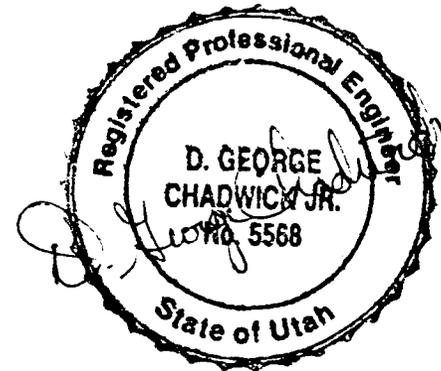
Top View

#4 Rebar at 10" Transverse reinforcement continuous in floor and walls. Space horizontally on structure center line.



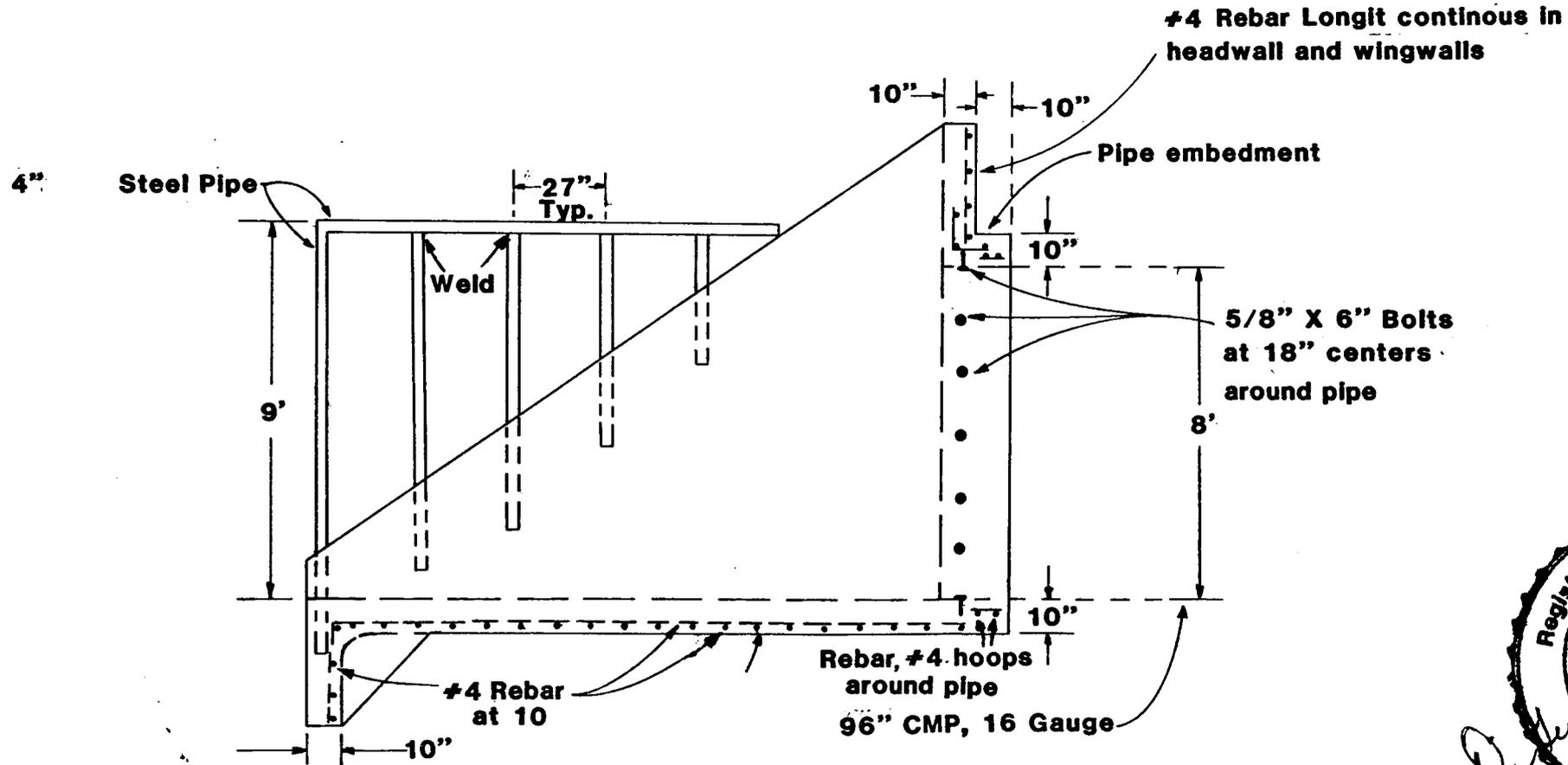
Note: For Trash Racks on sidewall, See side view

Front View

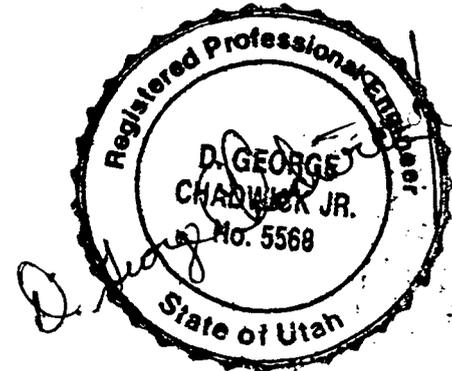


DESIGNED <i>DGC</i>	NATOMAS TRAIL MOUNTAIN	Prepared by VAUGHN HANSEN ASSOCIATES Salt Lake City, Utah
DRAWN <i>JYH</i>		
DATE <i>9/81</i>		
CHECKED <i>J.S.</i>	FIGURE 7-13a. CULVERT DETAILS	
SHEET NO. C		

DETAIL A (continued) Inlet Structure



Side View



DESIGNED <i>DJR</i>	NATOMAS TRAIL MOUNTAIN	Prepared by VAUGHN HANSEN ASSOCIATES Salt Lake City, Utah
DRAWN <i>JVH</i>		
DATE <i>9/81</i>		
CHECKED <i>LP</i>	FIGURE 7-13a. CULVERT DETAILS	
SHEET NO. D		



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dianne R. Nielson, Ph.D., Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

November 1, 1984

Mr. Allen P. Childs, Engineer
Natomas Coal Company
P. O. Box 370
Grangeville, Utah 84537-0370

#15

Dear Mr. Childs:

RE: Revision Request for Diversion Ditch Dated August 21, 1984, Natomas Coal Company, Trail Mountain Mine, ACT/015/009, #3, Emery County, Utah

This letter is to respond to your August 21, 1984 request for a revision on the diversion ditch on the east perimeter of your property boundary.

Division Hydrologist John Whitehead has reviewed your proposal, and as he has discussed with you, some problems exist. The primary one being the practicality of riprapping a disturbed area ditch which would need to be cleaned periodically. On October 11, 1984, you met with John and Tom Munson on-site to discuss the alternative measures for this ditch. The possibilities of asphaltting or concreting the stretch of ditch identified in your revision request were discussed. At present, the Division awaits your response to these alternative suggestions. No further action will be taken on this matter until we hear from you.

Sincerely,

D. Wayne Hedberg
Permit Supervisor/
Reclamation Hydrologist

JW/btb

cc: Allen Klein
Joe Helfrich
Sandy Pruitt
John Whitehead

92940-19

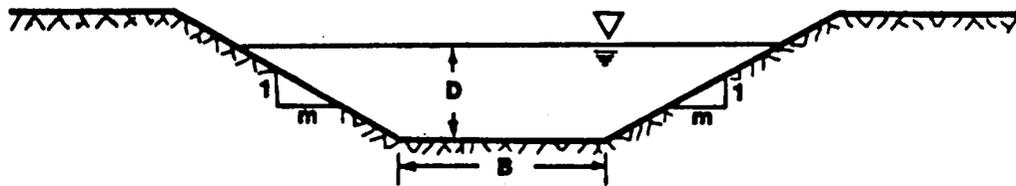


Figure 1. Trapeziodal diversion cross-section to be used in runoff control for the Trail Mountain Mine.

Table I

Design Criteria and Calculations for Diversion Ditch

Manning's, n	0.038	
Maximum Slope (Smax) ft/ft	0.093	
Channel Side Slope (m)	1.500	
Bottom Width (B), ft	2.000	
Flow Depth (D) at Smax, ft	1.300	
Flow Area at Smax, ft ²	2.530	
Wetted Perimeter at Smax, ft	4.690	
Hydraulic Radius at Smax, ft	0.540	
Velocity at Smax, fps	7.940	20.1
Discharge, cfs	11.600	
Freeboard, ft	0.500	
Total Required channel Dept, ft	2.040	
Mean Rock Diameter (D ₅₀)	0.750	

p 756 MRP

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AUG 24 1984

DIVISION OF OIL
GAS & MINING



Diamond Shamrock
Coal Company

August 21, 1984

Wayne Hedberg
State of Utah
Utah Division of Oil, Gas and Mining
4241 State Office Building
Salt Lake City, Utah 84114

RE: Diversion Ditch

Dear Wayne;

At present, Trail Mountain Coal Company has installed on the east perimeter of its property boundary a 1900 foot diversion system of half-round culvert and berm to convey runoff from the disturbed area to a sedimentation pond. The culvert and berm system was designed to pass runoff from the 10-year, 24-hour storm event.

Once runoff flows into the half-round culvert, the system works to perfection. However, at the minesite, we are having problems with a 600 foot section of this system in getting runoff into the half-round. Runoff in this section flows under the half-round causing damage to the half-round and unnecessary erosion. For this reason I request of the Division to be allowed to use in conjunction with the half-round culvert and berm a diversion ditch (see fig. 1 and table 1) in the problem area.

Your immediate attention to this matter would be greatly appreciated. Should you need additional information or have any further questions, please feel free to contact me at 748-2140.

Sincerely;

TRAIL MOUNTAIN COAL COMPANY

Allen P. Childs
Engineer

Enclosures

cc: Dave Lof/UDOGM

APC/gg

.650
 D=0.59
 A=1.72
 WP=4.14

.042
 D=1.54
 A=1.52
 WP=3.95

.045
 D=0.56 W.P=4.02
 A=1.59 1.04 @ .042

Table 7-7. Peak flows and peak flow design related information for diversion ditches and culverts.

1.33 @ .042

D=0.54
 A=1.51
 WP=3.948

Structure	Disturbed Area ac	Undisturbed Area ac	Total Area mi ²	Weighted Cn	Design Storm in	S in	Runoff (Q) in	Hydraulic Length ft	Average Watershed Slope %	Watershed Lag hr	t _p hr	ΔD hr	$\frac{484AQ}{t_p}$	C _t P	Peak Flow (q) cfs
Cottonwood Canyon Culvert	---	11,969	18.7	57	3.2	7.54	0.31	40,000	36.5	1.74	2.09	1.0	1341.3	3.70	510.0
Side Canyon Culvert	---	366	0.57	80	2.4	2.5	0.82	6,375	49.12	0.199	0.22	0.04	1032	.83	80.1
Sediment Pond	8.8	14.7	0.04	78.5	2.4	2.74	0.75	1,900	52.7	0.08	0.09	0.08	144.4	3.91	20.1
Diversion 1	-5.0	18.0													

D=.054
 A=1.52
 WP=3.95
 1.33 @ .042

~~4.04~~ WP
 D=0.54
 A=1.52
 WP=3.95
 1.33 @ .042

.040
 D=0.53
 A=1.47
 WP=3.90
 1.32 @ .042

FANMAN - 2.5
 TYRREZ - 18.2
 TR55 - 24.9
 .149 = SLOPE
 1.5 = SLOPE

.044 ASSUME