Coastal States Energy Company

1979

PROPOSED DRILLING PROGRAM

for

SOUTHERN UTAH FUEL COMPANY

FEDERAL COAL LEASE U-28297

SEVIER COUNTY, UTAH

COASTAL STATES GAS CORPORATION

Loren A. Williams
Vice President
Resource Acquisition

Coastal States
Energy Company

Nine Greenway Plaza
Houston, Texas 77046
(713)877-6408

0010

Subsidiary of
Coastal States
Gas Corporation

March 27, 1979

Mr. Jackson W. Moffitt
Area Mining Supervisor
Branch of Mining Operations
U.S. Geological Survey
Room 8426, Federal Building
Salt Lake City, Utah 84111

Dear Mr. Moffitt:

Submitted with this letter are seven copies of a proposed 1979 drilling program and seven copies of a proposed 1979 seismic program, both programs to be conducted on federal coal lease U-28297. Please note that no archaeological report is attached. Archaeological inspection of seismic lines, drill sites, and certain access routes will begin as soon as the area is accessible.

Very truly yours,

Loren A. Williams

Loren A. Williams

1979

Proposed Drilling Program

for

SOUTHERN UTAH FUEL COMPANY

SEVIER COUNTY, UTAH

Submitted Pursuant to 30 C.F.R. 211.10

To: Mr. Jackson W. Moffitt
Area Mining Supervisor
Branch of Mining Operations
U.S. Geological Survey
Room 8426, Federal Building
Salt Lake City, Utah 84111

From: Loren A. Williams
Vice President, Resource Acquisition
Coastal States Energy Company
Nine Greenway Plaza
Houston, Texas 77046

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EXPLORATION PLAN

1. PROJECT RESPONSIBILITY

Loren A. Williams
Vice President, Resource Acquisition
Coastal States Energy Company
Nine Greenway Plaza
Houston, Texas 77046
Phone: 713-877-6408

2. DESCRIPTION

Geology

The coal which is extracted from the SUFCo No. 1 Mine occurs in the lower portion of the Blackhawk Formation of the Mesaverde Group of sediments of Upper Cretaceous age. Doelling identifies the seam as being the Upper Ivie bed while we call it the Upper Hiawatha. The Blackhawk is overlain by the Price River Formation including the Castlegate Sandstone, and is underlain by the Star Point Sandstone all being members of the Mesaverde Group (Figure 1).

The Price River Formation is the youngest or uppermost competent sedimentary unit exposed in the vicinity of the mine. It is the uppermost member of the Mesaverde Group and consists of gray to white sandstone interbedded with subordinate shale and conglomerate. The formation is resistant to weathering and is a ledge and slope former. In the vicinity of the mine it is the uppermost unit capping the mesa which forms the Old Woman Plateau. The formation is reported to be about 550 feet thick near the mine.

The Castlegate Sandstone is a massive, cliff-forming, white to gray, coarse-grained sandstone, often conglomeratic, and which weathers

brown. It is considered as the basal member of the Price River Formation. It overlies the Blackhawk Formation and is reported as being 90 to 200 feet thick (Doelling). The Castlegate Sandstone, together with the other beds of the Price River Formation, constitutes the cap rock which forms the mesa and plateau landforms in the area of lease U-28297.

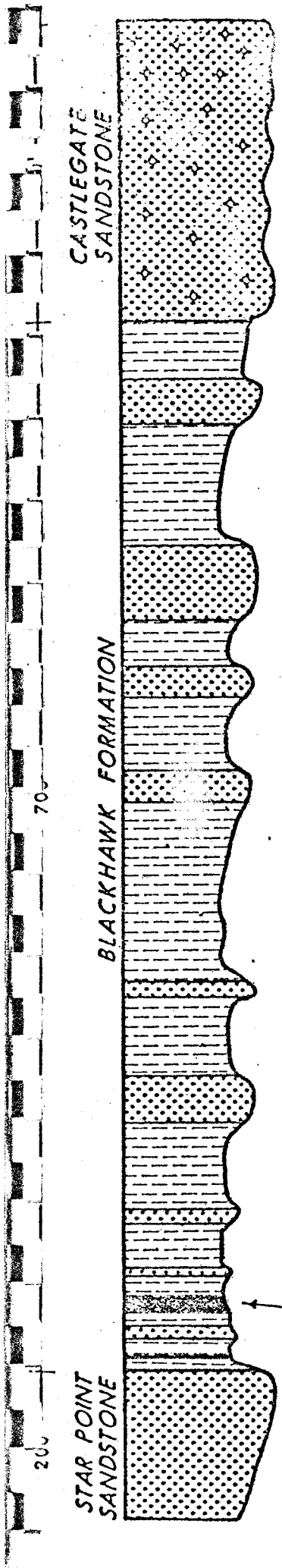
The Blackhawk Formation, according to Doelling, consists of "yellow to gray, fine to medium-grained sandstone, interbedded with subordinate gray and carbonaceous shale (and having) several thick coal seams." He presents a section of the Blackhawk Formation measured in Quitchupah Canyon in the SE-¼, NE-¼ of Section 8, Township 22 South, Range 5 East as having a thickness of about 670 feet. In this section, the Upper Hiawatha (Ivie) bed lies about 50 feet above the base of the Blackhawk.

The Blackhawk Formation is underlain by the Star Point Sandstone, also of the Mesaverde Group. The Star Point Sandstone is reported by Doelling as consisting of a "yellow-gray, massive cliff-forming sandstone often in several tongues separated by Masuk Shale." The Star Point Sandstone is from 200 to 300 feet thick near the mine.

Generally, the sediments have a strike which trends roughly northeast and a shallow dip of about 250 feet per mile to the northwest. Several small faults, most of which have an apparent vertical displacement of about 3 feet or less, have been encountered in the mine workings. One fault has an 8' displacement. These faults have a trend of about N 10 to 15 degrees W and are near-vertical. A joint set occurs parallel to the fault trend and another bears a normal or conjugate relationship.

GENERALIZED STRATIGRAPHIC SECTION

Federal Coal Lease U-28297



LIGHT - GRAY TO WHITE, MEDIUM - TO COARSE - GRAINED SANDSTONE, CONGLOMERATIC IN PART

MEDIUM - GRAY TO BLACK SHALE, SILTY SHALE, AND CLAYSTONE, WITH ABUNDANT LIGHT - GRAY, VERY FINE - TO MEDIUM - GRAINED SANDSTONE BEDS AND LENSES, AND SPARSE MEDIUM - GRAY, THIN - BEDDED SILTSTONE

UPPER HIAWATHA SEAM

AVERAGES 15 FEET IN THICKNESS, THICKER TOWARDS THE NORTHWEST AND THINNER TOWARDS THE SOUTHEAST.

Bottom Of Seam 20 Feet To 40 Feet Above Top Of Star Point Sandstone.

LIGHT - GRAY TO WHITE, VERY FINE - TO MEDIUM - GRAINED, BURROWED SANDSTONE WITH SORTINGS AND GRAIN SIZE INCREASING UPWARDS

FIGURE 1

It is along these faults that much of the underground seepage of water is encountered. This structure has not significantly affected mining to date, but may have an adverse affect on total coal recovery.

Water

Surface drainage from the lease area comprises the eastern extremities of East Spring Canyon. There are no measurable stream flows or springs.

All groundwater aquifers will be protected by cementing the drill hole in compliance with the "Rocky Mountain Area Well Abandonment Requirements."

Hydrology of the area is covered comprehensively in the SUFCo Mine Plan submitted by Coastal States to the USGS, February 12, 1977.

Vegetation

Vegetation changes from one landform to another. On the benches landform, there is a combination of sagebrush-grass community and ponderosa pine stands. Also occurring intermixed in these types are patches of low quality Quaking Aspen, Mountain Mahogany, and Manzanita brush. Ground cover is composed of several native grasses, forbs, and low brush species. Density is generally good.

The steep slopes and scarp faces landform is sparsely vegetated. Pinyon, Juniper, and Mountain Mahogany are scattered over the landform. The site is very harsh and ground vegetation is limited to light quantities of native grasses and forbs in cracks and shelves where soil can accumulate. Composition includes a few drought resistant grasses, annual forbs, Mountain Mahogany and other brush.

Narrow stringers in the canyon bottoms landform are the most productive in the area. Vegetation is primarily native grass, low brush and forbs growing together to form a heavy sod. Brush types include willow, rose, rabbit brush, sand brush and others. Carex grows in some of the wetter spots. Only an occasional tree occurs in the bottom.

The rolling hills landform is covered by an occasional small patch of trees which include Ponderosa Pine, Douglas-fir, Alpine-fir, Spruce and Aspen. More common are brush species including oak, snowberry, and sagebrush. Grasses and forbs are very sparse and include several native species.

No threatened or endangered plants are known to occupy the lease area.

Wildlife

The lease has a similar component of animals common to the Old Woman Plateau. Of the number of animals common to this area, only a few might be impacted by exploration activities. Bald eagles have been observed, and it is believed eagles winter in the steep slopes and scarp faces on the eastern edge of the lease. Mule deer use the area for summer range. Elk winter is in the lease area. Black bear, coyote and mountain lion are present. The intermittent flow of streams is not capable of supporting fishlife. The only rare and endangered species that might occur is the bald eagle.

Land Use

The surface area is grazed by cattle under the Quitchupah C and H

allotment. The allotment is under an intensive rest-rotation management system. Several ranchers in Emery are dependent on the allotment. Structural range improvements include one watering trough and two cattle guards on the access route into the lease. Water in the trough is supplied by a spring.

Recreation is primarily big game hunting. It is light, occurring over a month's period of time each year. Snow-mobiling also occurs.

The timber on the lease area is open grown Ponderosa Pine. All commercial stands occur on the benches. Trees are of low quality because of the poor tree growing site. Cutting is limited to older over-matured trees.

Land use in the surrounding area is covered comprehensively in the U.S. Forest Service report, Final Environmental Statement for Land Use Plan - Salina Planning Unit.

3. DRILLING OPERATIONS

The drilling program in lease U-28297 (proposed locations plotted on Plate 1) as outlined in this report is designed to accomplish several objectives. The first objective is to delineate structures within the Upper Hiawatha coal seam which were noted in holes drilled in lease SL-052583 to the West. The structures are thought to extend across parts of lease U-28297. The program will facilitate the acquisition of more accurate reserve data than is presently available and will also provide data on coal quality, roof and floor rock composition and faulting which may affect future mine planning. The program consists of two parts - primary drilling and contigency drilling. Eight holes (listed on Table 1) are planned which

Coastal States Energy Company feels will accomplish the above mentioned objectives. In the event that structures within the Upper Hiawatha deviate from the anticipated trend, seven contigency holes have been planned. The contigent operations are necessary for an effective drilling program, and have been designed with full consideration for the surface lands and will be carried out in such a manner as to assure minimal permanent surface disturbance. An attempt has been made to locate drill holes along existing roads where possible. At those locations where road work is necessary, it has been deigned to minimize excavation and disturbance of vegetation. Where a side hill cut may be required, it will be done so that the original slope can be restored as close as possible and reseeded.

It is anticipated that one drilling rig (Gardner Denver 1500 or 2000 or equivalent sized truck) will be contracted from a reputable firm. Drill sites will be prepared in the following manner. Any sagebrush or other vegetation presenting a fire hazard will be cleared in an area approximately 40 feet by 60 feet. This area will accommodate the drilling rig, drill service vehicle, water truck, logging truck and vehicles for transporting drilling and supervisory crews. At each site, a mud pit eight feet wide by ten feet long by five feet deep will be dug to contain cuttings and drilling fluid. Topsoil will be stockpiled separately.

Surface casing will be set as follows. A 10½ inch holeopener will drill well through alluvium and any surface water. Surface casing (6 5/8 inches) will be set, and grouted with neat cement if necessary. Surface casing will usually extend about one foot above ground level.

The hole will be drilled as follows:

1. Change to 5 5/8 inch tricone rock bit.
2. Drill to about 200 feet with air.
3. Drill to core point with air-mist injection.
4. Core 30 feet of roof, coal seam, and 5 feet of floor with 4½ inch by 3 inch core barrel.
5. Ream cored interval with 5 5/8 inch tricone rock bit.
6. Drill about 100 feet to total depth.

The logging unit will be on standby in the project area. Immediately after pulling out the drill steel after reaming, the logging probe will be run in the hole. The hole will be filled with water as the probe comes up the hole.

Water will be hauled from an approved source by truck.

Use of air-mist injection will minimize water usage and will also minimize water truck travel on location roads.

Drill water economy cannot be estimated at this time. Drilling mud will be used only in the event of circulation problems.

Protection of the Environment

The preservation of the environment will be taken into account through all phases of this drilling program. All drill sites are planned to minimize disturbance to the terrain.

Pits will be used to contain all water and mud used in drilling. These drilling fluids will not be allowed to run into the stream drainages.

All groundwater aquifers will be protected by cementing the drill hole in compliance with the "Rocky Mountain Area Well Abandonment Requirements."

Throughout all phases of this drilling program, the personnel of the district ranger's office of the U.S. Forest Service will be informed of all drilling and reclamation progress.

It has been the policy of this company to reclaim all drill sites and associated roads to the same condition, or in some cases, better condition than they were prior to drilling. During this drilling program and in the future, we shall continue to protect all aspects of the environment in the region.

Air pollution - no burning will be allowed.

Wild life - drilling operations are curtailed from November 1 through April 1 to avoid interfering with wintering elk.

Other resources - no producing oil, gas, or water wells exist in the lease area.

Public Health and Safety - drilling operations will be conducted in a safe and efficient manner, minimizing the contact with the public and environment.

Laws and Regulation - Responsibility lies within Coastal States Energy Company to comply with all regulations of the BLM, USGS, Forest Service and State of Utah and to assure that contractors and subcontractors know and understand the exploration plan and its stipulations. Sundry

notices will be submitted to the USGS in a timely manner after exploration is completed.

Surface Reclamation

Reclamation will be performed contemporaneously with drilling.

Upon completion of drilling and testing, an attempt will be made to remove drill casing from the holes. The holes will then be cemented bottom to top, then site restoration will be commenced. The site will be cleaned and all material foreign to the natural setting will be buried and removed. Liquids in the pits will be allowed to evaporate and the remaining cake will be removed. The pit will be filled with the stockpiled soil. The area will be raked with a power rake and the seed mixture will be sown with a hand spreader. Seed will be buried by a drag attached to a pickup. Since drilling will take place during the dry summer months, seeding will be postponed until the fall season. No fertilizer will be applied to avoid attracting animals to a greener patch.

Seed Mixture and Density

Crested Wheatgrass - Fairway strain	4# per acre
Sodar Streambank Wheatgrass	4# per acre
Hard Fescue (Durar)	4# per acre
Ladak Alfalfa (innoculated)	2# per acre
	14# per acre

4. ESTIMATED TIME TABLE

The archaeological survey will be conducted as soon as it is possible to get to the area, probably in May or early June, 1979.

The drilling program would begin as soon after May 15, 1979, as feasible and continue through August, 1979. We have estimated that no more than ten days will be required for any one drill site. A list of hole locations and depths is given in Table 1.

TABLE 1

Preliminary Drill Hole Locations

Hole #	Location (T22S, R5E, SLM)	Elevation	Total Depth (estimated)
US-79-1	Sec 7: NW¼ SW¼ SE¼	8490'	920'
US-79-3	Sec 7: SW¼ SE¼ NE¼	8520'	960'
US-79-5	Sec 8: NE¼ SE¼ SW¼	8580'	1010'
US-79-8	Sec 8: NW¼ SW¼ NE¼	8570'	1000'
US-79-11	Sec 5: SE¼ SW¼ SW¼	8515'	965'
US-79-13	Sec 5: NE¼ NW¼ SW¼	8540'	1010'
US-79-14	Sec 5: NE¼ SE¼ NW¼	8550'	1030'
US-79-15	Sec 5: SW¼ SW¼ NE¼	8560'	1030'

Contigency Drill Hole Locations

(To be drilled only if desirable

due to primary drilling results)

Hole #	Location (T22S, R5E,SLM)	Elevation	Total Depth (estimated)
US-79-2	Sec 7: SW¼ SE¼ SE¼	8490'	920'
US-79-4	Sec 8: SE¼ NW¼ SW¼	8530'	960'
US-79-6	Sec 8: SW¼ SW¼ NW¼	8540'	930'
US-79-7	Sec 8: SE¼ SW¼ NW¼	8560'	990'
US-79-9	Sec 8: SW¼ NW¼ NW¼	8540'	970'
US-79-10	Sec 8: NE¼ NE¼ NW¼	8540'	990'
US-79-12	Sec 5: NE¼ SE¼ SW¼	8540'	990'

REFERENCE

Doelling, H. H., 1972, Central Utah Coal Fields: Sevier-Sanpete, Wasatch Plateau, Bookcliffs and Emery, Utah Geological and Mineralogical Survey Monograph Series, No. 3.

1979 Drilling Permit RFH

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United States Department of the Interior

U-020305

GEOLOGICAL SURVEY

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

May 16, 1979

Mr. Loren A. Williams, Vice President
Coastal States Energy Company
Nine Greenway Plaza
Houston, Texas 77046

Dear Mr. Williams:

Eight of the fourteen exploratory drill hole sites proposed by Coastal States Energy Company on Federal Coal Leases U-0142235, U-0147570, U-044076, and U-073120 have been approved. They are numbers 78-10-1, 79-13-1, 78-14-2, 78-22-1, 78-22-2, 78-27-2, 78-35-1, and 78-35-2. The other six sites will require further study.

Enclosed is a copy of the U.S. Forest Service Environmental Assessment Report of the proposed sites. Your operations must conform to the general and site specific stipulation within it.

Your operations must also conform to the USGS Stipulations Covering Surface Drilling Programs and any other pertinent State or Federal regulations. contact USFS

Before you occupy the approved sites, you should contact the Forest Service to ascertain whether or not environmental conditions allow access.

Please notify this office when you are prepared to begin operations. If you have any problems or questions please notify Gerry Lebing or me. contact USGS

Sincerely yours,

Jackson W. Moffitt

Jackson W. Moffitt
Area Mining Supervisor

Enclosures

RECEIVED
JUL 27 1979

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

USGS STIPULATIONS
COVERING
SURFACE DRILLING PROGRAMS
WRMA

1. Archeological, historical, and endangered species clearances are required prior to the approval of any operation. done

2. Any operation will immediately cease upon the discovery of any significant archeological or historical site. The Area Mining Supervisor shall be immediately notified of any such find. ✓

3. When artesian flows or water horizons with possible development potential are encountered, the Area Mining Supervisor and the surface management agency shall be notified immediately so that a determination can be made concerning their development potential. Where possible, clean water samples shall be collected by the operator for analysis by the USGS. ✓

4. Drill holes shall be cemented with proper slurry from the bottom to the collar. The lessee shall be responsible for the proper plugging of each hole unless a written request to keep the hole open is made by the Area Mining Supervisor. If drill hole cannot be fully cemented, possibly due to sloughing or fractures, the Area Mining Supervisor must be notified, and his instructions for subsequent plugging followed. ✓

5. The slurry shall be made using 5.2 - 5.5 gallons of water per bag of cement. The drill stem shall be lowered to the bottom of the hole and sufficient slurry pumped through the stem to fill 200 feet of the hole. The drill stem will then be raised 200 feet and the process repeated. The drill hole shall be completely plugged using this method.

6. The Area Mining Supervisor shall be notified as to the time when the first hole is to be plugged so that a representative of this office can arrange to observe the procedure if circumstances permit. Subsequent observations of other holes being plugged will be arranged as deemed necessary. Contact USGS

7. The hole location is to be marked by placing an approved marker such as a capped pipe, steel fencepost, or metal plate in the concrete plug. Such markers are to show hole number, year drilled, lessee name, and as feasible, the section, township, and range in which hole is located. Top of concrete plug, if located in cultivated field, must be set below normal plow depth (10 to 12 inches).

8. Mud pits must be backfilled and leveled. Liquids or mud in the pits must be pumped out and removed from the premises or allowed to dry before they are backfilled.

9. Drill sites must be cleaned and all material, including drill cuttings, foreign to the natural setting must be burried or removed. Trash will be removed from the area. Revegetation of disturbed area will generally be required. If excavation is required in preparing a drill site, topsoil will be stockpiled separately. Before the drill site is permanently abandoned, the location will be regraded to a natural contour and the topsoil redistributed. Type, method, and scheduling of revegetation will be specified by the surface management agency through the Area Mining Supervisor.

10. The Area Mining Supervisor shall be notified as to the anticipated completion date of the program.

contact USGS

11. A monthly report shall be submitted to the Area Mining Supervisor within 10 days after the end of the month. It will include:

    (1) The holes completed during the month and the total depth of each hole.
    (2) The date each hole was completed.
    (3) The date each hole was plugged.
    (4) The type of drilling-plug or core.

12. The following reports shall be submitted to the Area Mining Supervisor in duplicate after the completion of the program:

    (1) Hydrologic logs using the attached form.
    (2) Geophysical and lithologic logs and all geologic interpretations of each log.
    (3) Coal analysis.
    (4) Total acreage of surface disturbed per hole, including acreage disturbed by access roads.

Note: All information submitted must contain the lease number. All logs must contain the surface elevation of drill hole and the location of the drill site. The sites will be located using coordinates and or measured distances from the nearest section line.

REPORT OF WATER OBSERVED DURING TEST DRILLING Lease No. _____

Test-hole no. _____ Date completed: _____

Company: _____ Project: _____

Location: ____ 1/4 ____ 1/4 ____ 1/4 Sec. ____ T ____ S, R ____ E Lease No. _____

_____ ft N/S _____ ft E/W from ____ corner, sec. _____

Surface management: BLM ___ USFS ___ Fee ___ Subsurface management: BLM ___ USGS ___

Elevation (collar): _____ Total depth: _____

Drilling method: Air mist ___ Fluid ___ Both ___ Static water level: _____

Hole diameters: _____

Depth of water-bearing rock	Yield (gpm)	Water sample?	Material, rock type	Remarks

Remarks: (Depths of loss of circulation, changes of drilling rate, change of drilling method or fluid, no water, ect.)

ENVIRONMENTAL ASSESSMENT REPORT

Coal Exploration (Cored Drilling)
Coastal States Energy Company

Federal Coal Leases
#U-0142235, #U-0147570, #U-044076,
#U-073120 and #U-0[illegible]0305

Price Ranger District
Manti-LaSal National Forest
Region 4

GEOLOGICAL SURVEY
MAY 14 1979
SALT LAKE CITY, UTAH
MINING BRANCH

Report Prepared By: Duain E. McFarry Date: 5-7-79
Geologist

Approval of Report
Recommended By: [illegible] Date: 5/7/79
District Ranger

W. K. Bailey Date: 5/10/79
Forest Engineer

Report Approved By: Lee C Christensen Date: 5/10/79
Forest Supervisor

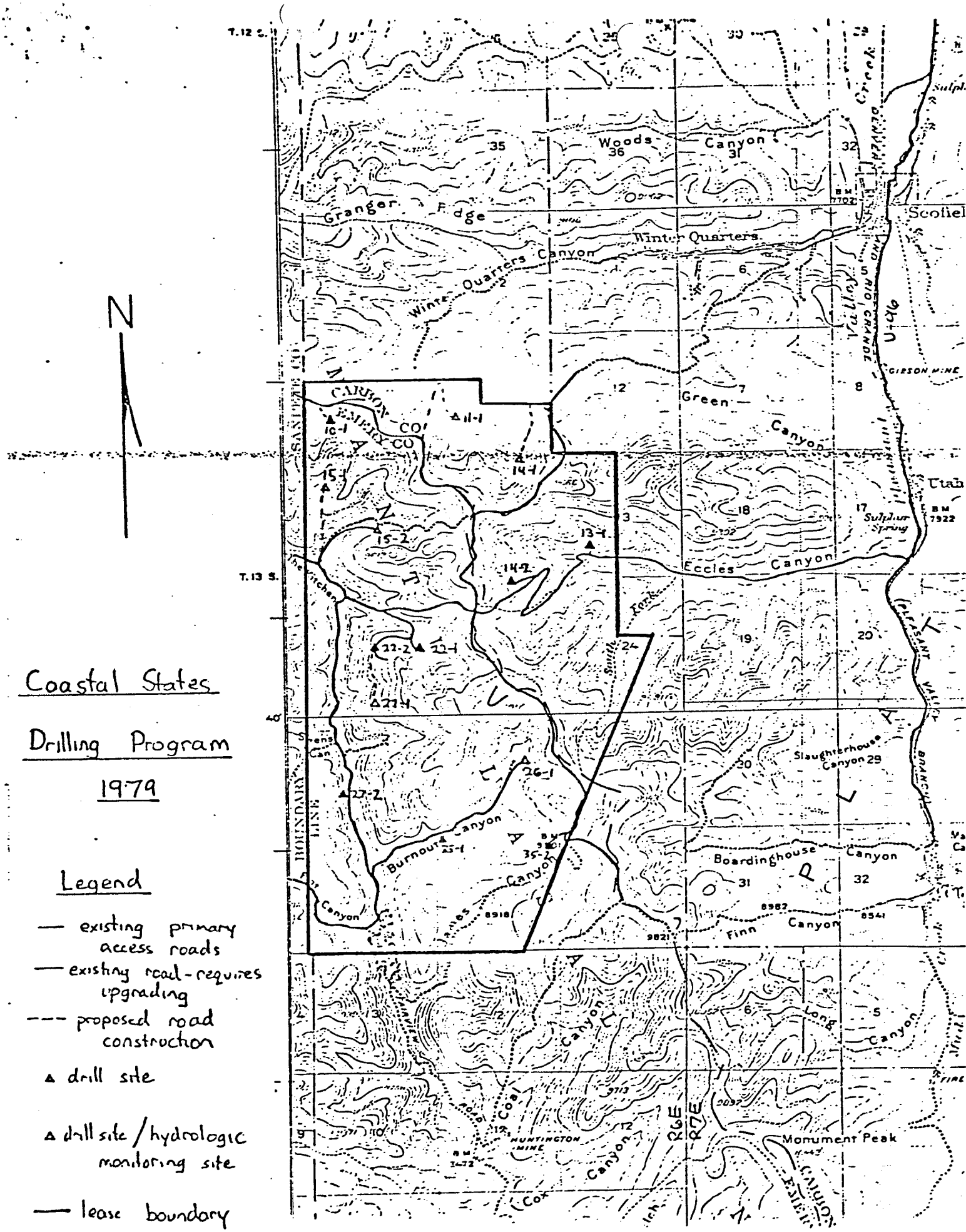

Figure 1.

DEM
7-79

I. Introduction

A letter dated August 31, 1978 to Mr. Jackson W. Moffitt of the U.S. Geological Survey from Mr. W. T. Davis of Energy Fuels Corporation, Denver, Colorado, proposed the drilling of thirteen coal exploration holes on Federal coal leases Nos. U-0142235, U-0147578, U-044076, U-073120 and U-0230305. Most of the leased area and all of the proposed drill hole locations are within the Price Ranger District of the Manti-LaSal National Forest. (See Figure 1). Official notification of this proposal was received by the Manti-LaSal National Forest from the U.S. Geological Survey on September 13, 1978.

The coal leases involved in this project are currently held by Routt County Development, Ltd., a subsidiary of Energy Fuels Corporation; however, a proposal to sub-lease these tracts to Coastal States Energy Company is on file with the U.S. Bureau of Land Management but has not yet been acted upon. Due to this uncertainty in the lease ownership status, the proposal was submitted jointly by Routt County and the intended sub-lessee, Coastal States. The actual field operations will be supervised by Coastal States Energy Co.

Coal exploration programs have been conducted on these leases since the late 1950's and, possibly, even earlier. Data regarding these early operations are not currently available; however, at least thirteen holes were drilled on the leased area between the late 1950's and early 1970's. A minimum of 52 holes have been drilled within the lease area prior to this proposal. Numerous holes have also been drilled nearby on adjacent leases.

In 1974, Sanders Associates, Inc. conducted an exploratory drilling program on these leases for Kanawha and Hocking Coal and Coke Co. (i.e. Valley Camp of Utah, Inc.) and Oak Creek Development Co. (i.e. Routt County Development Co.) who were the lessees at that time. Eleven holes were drilled and approximately 9,000 feet of new access

roads were constructed for this project disturbing an area of approximately 3.4 acres. All of the roads and drill sites were closed out and reclaimed at the close of the project.

During 1975, Sanders Associates, as agents for Routt County Development Co., conducted further exploration on these leases. Eleven more holes were drilled for this project. Approximately 1,000 feet of new road was constructed and 1,000 feet of old road reopened to gain access to some of the sites, resulting in a disturbed area of approximately 1.4 acres. These roads and drill sites were closed out and reclaimed upon completion of the project.

During 1976, Sanders Associates conducted another joint coal exploration program on these leases for Routt County and Valley Camp. Nine holes were drilled for this project; two of these with a skid rig. Approximately 0.7 acres were disturbed by the drill site construction. No road construction was required to gain access to any of the sites.

In 1977, Sanders Associates again conducted an exploration program on the leased area for Routt County and Valley Camp. Eight holes were drilled and a new access road approximately 8,000 feet in length was constructed disturbing an estimated area of 2.8 acres. The road and drill sites were closed out and reclaimed upon completion of the project.

Beautiful Hedge

Drilling on this project was originally planned for completion during the 1978 and 1979 field seasons. No drilling took place during 1978 because of some unresolved problems with the proposed operations and because of inaccessibility due to early winter storms. Subsequent to the original proposal, Coastal States submitted a proposal on March 23, 1979 to drill one additional hole for hydrologic monitoring purposes in conjunction with this project.

On-site inspections of the initial thirteen proposed drill sites were conducted on August 29, 1978 by Roger F. Holland of Coastal States Energy Co., Allen L. Vance of the U.S. Geological Survey and Barry J. Johnson and Dwain E. McGarry of the U.S. Forest Service, and on October 25, 1978 by Allen L. Vance of the U.S. Geological Survey and Ira W. Hatch, Barry J. Johnson and Dwain E. McGarry of the U.S. Forest Service. Formal meetings between representatives of Coastal States and the U.S. Forest Service were held on February 27, 1979 and March 5, 1979. Numerous aspects of the proposed drilling program and Coastal's proposed mining operation, as well as specific environmental concerns, were discussed at these meetings. Detailed memoranda of both meetings are on file at the Price Ranger District Office.

This assessment report will be the document by which the Forest Service transmits its surface management coordination requirements to the U.S. Geological Survey. Specific requirements will be emphasized by underlining appropriate statements in this report and will be summarized at the close of this report in Section X, "Management Requirements and Constraints."

II. Description

Coastal States now proposes to drill fourteen drill holes on the indicated leases during the 1979 field season. They are located in the eastern half of T. 13 S., R. 6 E. This includes the areas of Eccles Canyon, Winter Quarters Canyon, Winter Quarters Ridge, Trough Springs Ridge, and upper Huntington Canyon. (See Figure 1).

The proposed drilling program is designed to obtain the data lacking from the previous exploration programs that is necessary for adequate evaluation of the geologic, groundwater and coal conditions for development of a planned underground coal mining operation. The following

information is of particular concern:

1. Core and electrical logging of the drill holes will be performed to obtain additional stratigraphic and structural geologic data regarding the nature and extent of existing coal seams.

2. Additional data regarding the thickness and extent of the existing coal seams for use in estimation of probable coal reserves within the lease boundaries.

3. Physical characteristics of the coal and enclosing sedimentary rocks that are important for mine engineering concerns.

4. Several large "data gaps" where the above information is scant or nonexistent from previous exploration will be filled by information obtained from these carefully located drill holes.

5. Several of the proposed drill holes are at locations for hydrologic monitoring as necessary for compliance with Federal regulations.

6. Stratigraphic and lithologic data will be collected from selected drill holes to establish a portion of the baseline geologic data for subsidence monitoring.

Equipment utilized in the drilling program will include a truck-mounted rotary drill, a water truck, a pipe truck, a doghouse truck, an electrical logging van-type truck, an unspecified number of personnel vehicles and possibly a truck or trailer-mounted auxiliary air compressor.

Drilling will be done with air whenever possible. At some locations, water and/or foam may be injected to insure proper return of cuttings. In the event of lost circulation, conventional materials such as

bentonite, cellulose fibers, cottonseed hulls, etc. will be used to regain circulation.

The proposed program will require the reopening and upgrading of approximately 21,000 feet of existing, previously closed out roads. An additional 12,000 feet of new roads will be constructed. Drill pads at each site will result in additional surface disturbance. The estimated total area to be disturbed by these operations is approximately 10.25 acres. (See Table 1).

Operations in this project should commence by late June or early July, 1979. All of the drilling and reclamation work is expected to be completed during the 1979 field season.

III. Existing Environment and Possible Environmental Impacts Posed by the Proposed Project.

A. Topography and Geology

The area of interest is on the northern portion of the Wasatch Plateau, a western salient of the broad Colorado Plateau. The Wasatch Plateau is part of the transitional zone between the Colorado Plateau and Basin and Range physiographic provinces and, consequently, exhibits geologic characteristics of both provinces. It possesses surficial features typical of plateaus in general; that is relatively flat to gently sloping or rolling highlands with surrounding steep slopes and cliffs. Deep, steep-walled drainages are commonly deeply incised into the margins and central parts of the plateau. In addition, the Wasatch Plateau is structurally similar to the Basin and Range province to the west. It is cut by north-south trending normal faulting that is similar in occurrence to that of the Basin and Range province but is less extensive and severe.

Elevations of the drill sites range from approximately 8,600 feet to nearly 9,500 feet above sea level. The sites are located on the plateau highland surfaces, at or near the bottom of steep drainages and at various locations in between. The specific locations will be discussed in a subsequent section of this report.

Like most of the Wasatch Plateau, the area of exploration is underlain by marine, deltaic, and continental fluvial sedimentary rocks of upper Cretaceous age. Overall, the stratigraphic succession is an upward transition from marine to continental fluvial sediments that apparently reflects the late Cretaceous marine regression in this area. The formations exposed in the lease area and immediate vicinity are the Starpoint Sandstone, the Blackhawk Formation and the Castlegate Sandstone. Minor exposures of the underlying Mancos

Shale may occur in the vicinity. The overlying Price River Formation, which may be present within the lease area, becomes extensively exposed to the north. These formations are briefly described here in ascending order:

(1) The Mancos Shale is a widespread unit consisting of thinly-bedded grey shales with minor interbedded sandstone. The formation probably represents deposition in a prodelta marine environment.

(2) The Starpoint Sandstone is gradational with the underlying Mancos Shale. It consists largely of thick sandstone units with lesser amounts of interfingering grey sandy shale and appears to indicate deposition in a delta-front distributary bar environment subject to minor, intermittent marine incursions.

(3) The Blackhawk Formation overlies the Starpoint Sandstone after an abrupt transition. It consists of lenticular, vertically and laterally variable, interbedded sandstone, grey shale, carbonaceous shale and coal, and is presumably of delta-plain origin.

(4) The overlying Castlegate Sandstone is a prominent cliff-forming unit consisting of irregularly bedded, poorly sorted, conglomeratic sandstone with minor shale that probably reflects deposition in a deltaic fluvial channel environment. The Castlegate Sandstone grades imperceptibly upward into the Price River Formation and is often considered a member of it rather than a separate formation.

(5) The Price River Formation is a variable sequence of interbedded sandstone and shales with minor amounts of conglomerate, clay, and coal that is probably the result of continental fluvial and floodplain deposition.

The leased area is not greatly structurally deformed; it lies on the western flank of the Pleasant Valley or Clear Creek Anticline and, consequently, the strata, except in the vicinity of faults, dip

uniformly and gently to the west. North-south trending normal faults affect most of the lease area to some extent; several of these show major displacement. The Connelsville and Valentine faults, in fact, limit the extent of mineable coal and delineate a portion of the lease boundary. Numerous small faults with minor displacement may occur in the area and may have some effect on mining conditions and methods.

The Blackhawk Formation is the source of all the coal commercially produced from the Wasatch Plateau Coal Field. Two or three major coal seams, which may or may not be correlative throughout the Plateau, are responsible for most, if not all, of the commercial production. Coal produced from the Wasatch Plateau Coal Field is generally a good bituminous coal with a low sulfur content; both of these attributes are desirable in a commercial coal.

B. Air Quality And Climate

The ambient air quality of most of the Wasatch Plateau and of the area under consideration, is generally good to excellent. Except under unusual circumstances such as rare air mass inversions, the air is generally free of chemical pollutants. Particulate matter, i.e., windblown dust, is essentially the only significant type of air pollution occurring in the leased area.

Short-term, localized hydrocarbon pollution can be expected to occur during this project from machinery used in construction and drilling operations. Particulate pollution can be expected to increase significantly during the drilling project if an extended dry period should occur. If dust becomes a problem, the operator will be required to water the drill pads and access roads.

The climate is generally cold and damp with hot, dry periods during the summer months. The average annual temperature at Clear Creek, Utah (elev. 8300 ft.) which is three to five miles south and east

of the leased area is 38° F. Extreme temperatures in the area are approximately -40° and 80° F. The frost-free season averages 20 to 40 days. Annual precipitation averages range from 24 to 30 inches with most precipitation occurring as snowfall during the winter months. Snow accumulation averages about 4½ feet. Most of the non-snow precipitation results from frequent, brief, high-intensity summer thunderstorms.

C. Soils

The area is within the Canyons and Ridgelands Landtype Association with soils formed from sandstone and shale parent materials. On the sideslopes, the soils are deep and commonly have good, dark-colored topsoils with loam to sandy loam textures. The subsoils usually have 40 to 60 percent coarse fragments, mostly cobbles. The soils along the narrow bottomlands also have good topsoil development although gravelly materials may occur locally. Soils on the ridgetops are relatively variable and may range from shallow to deep. The soil quality is reflected in the vegetation that is present. Sites with very little vegetation typically have shallow soils with minimal topsoil.

The general soil qualities indicate favorable conditions for revegetation of disturbed sites provided the soil is handled properly and there is adequate seedbed preparation. During the period of soil exposure for road construction and drilling operations, there is a moderate potential for accelerated erosion. Impacts from erosion should be slight, considering the relatively small size of the sites to be disturbed, the fact that drainage will be controlled, and the sites will be revegetated immediately after the drilling operation has ceased. Soil productivity may be reduced slightly on sites

where some topsoil is not recovered, especially where roads must be constructed. In general, productivity should remain about the same as prior to disturbance since topsoil will be conserved, compacted soil will be loosened and fertilizer will be applied.

Damage to the soil resource can be minimized by adherence to the following recommendations:

Topsoil shall be removed, stockpiled, and protected for redistribution during site reclamation.

Drainage shall be controlled to prevent concentrated runoff across exposed soils.

At the close of the drilling operations, each site shall be reshaped to approximately the original land contours leaving a roughened surface. The sites must be scarified where compaction has occurred. The final shaping and scarification activities shall be conducted operating on the contour.

The sites being reclaimed shall be fertilized and seeded at the earliest suitable time. Mulch will be applied on sites needing immediate protection as determined by the Forest Service.

D. HYDROLOGY

The area of exploration is characterized by drainage systems typical of those throughout the Wasatch Plateau. Although drainages are common and often deeply incised, major perennial streams are rare. Intermittent drainages of various sizes and various degrees of development are abundant in the exploration area.

Eccles Creek, Upper Huntington Creek, Winter Quarters Creek, Burn-out Creek, Kitchen Creek and several small unnamed streams are the only perennial streams in the vicinity of the proposed drilling operations. Although the potential for direct contamination of

surface waters by drilling materials is limited, adequate precautionary measures to prevent the escape of drilling materials into stream drainages must be incorporated into individual site designs.

The potential for contamination of surface waters can be minimized by adherence to the following recommendations:

Waste pits of sufficient size to contain all effluent drilling materials will be constructed at each site. If necessary to prevent overflow, the waste pits will be periodically pumped out. Any waste fluids removed from the sites in this manner will be hauled off of the Forest and properly disposed of.

Waste pits will be lined if percolation of fluids through the walls into stream drainages appears possible.

Site drainage will be directed internally to the waste pit to prevent overland flow from the drill sites to the natural drainages and surrounding terrain.

Until they are fully reclaimed, drill sites and access roads are barren areas and are subject to accelerated erosion by wind and water runoff. Increased erosion creates potential for stream siltation and results in obvious losses of soil resources. In order to minimize erosion and stream siltation, runoff diversionary structures such as contour furrows and water bars will be incorporated into site and road design and reclamation procedures.

Numerous small seeps and springs throughout the area attest to the presence of multiple groundwater aquifers. Most of these are probably perched aquifers, limited in extent, and are not major groundwater systems. Tests on groundwater in other parts of the northern

Wasatch Plateau indicate that it is good quality water. It is probable that groundwaters in the leased area are of comparable quality.

Coastal States has hired a private contractor, Vaughn Hansen Associates, to conduct hydrologic investigations for the hydrologic monitoring program involved in their mine planning and operations. A number of tests and studies have been performed by Vaughn Hansen Associates but the results are not yet available. Several of the drill holes will be designed to accommodate the hydrologic monitoring program. These drill holes and the measures to accommodate hydrologic monitoring will be specified in a later section of this report.

During a drilling project such as this, it must be assumed that one or more aquifers will be penetrated by drilling; this poses possible impacts to the groundwater systems. Intermixing of groundwaters and the raising or lowering of certain aquifers could result. To mitigate these effects, the U.S. Geological Survey's drill hole plugging requirements will be strictly adhered to.

E. Vegetation

The lease area supports a variety of vegetation. Englemann spruce, blue spruce, subalpine fir, douglas fir, white fir and quaking aspen comprise the forest cover. Currant, snowberry and serviceberry bushes are major constituents of the underbrush. Mountain sagebrush and rabbitbrush are present on ridges and in open areas. Grasses and forbs include slender wheatgrass, mountain brome, oniongrass, letterman needlegrass, western yarrow, melica and yellowbrush.

A Forest Service Threatened and Endangered Plant Specialist has reviewed the proposed project. He states that THERE ARE NO

KNOWN LISTED THREATENED OR ENDANGERED FLORAL SPECIES OR THEIR KNOWN HABITATS OCCURRING WITHIN THE PROPOSED PROJECT AREA. District and Forest reports are on file.

Development of the drill sites and construction of access roads will destroy the existing vegetation in those locations. To mitigate the effects of the destruction of vegetation, the lessee or his designated operators will be required to obtain a satisfactory re-establishment of vegetation on all disturbed areas. Satisfactory revegetation will require establishment of vegetation of a density at least comparable to adjacent undisturbed areas.

It is required that all disturbed areas will be reseeded with the following mix at a rate of 20 lbs/acre:

3 lbs	Smooth brome
3 lbs	Timothy
2 lbs	Orchard grass
2 lbs	Intermediate wheatgrass or slender wheatgrass
1 lb	Ranger alfalfa
1 lb	Meadow foxtail
1 lb	Perennial rye

The seed mixture can be broadcast seeded and raked into the soil or applied with a seed drill.

Fertilization of disturbed areas will be required with a 16-20-0 fertilizer mix at a rate of 200 lbs/acre.

F. Wildlife and Fish

Mammals probably occurring in the area include elk, deer, black bear, cougar, bobcat, coyote, badger, porcupine, snowshoe hare, golden mantled squirrel, Uinta ground squirrel, red fox, grey fox, marmot, flying squirrel and other species of small rodents. Beaver and muskrat inhabit several of the streams below the lease area.

The area of exploration is used by deer and elk as summer range. The proposed sites are within Utah Division of Wildlife Resources elk herd Unit No. 12 and deer herd Unit No. 32.

Birds that inhabit or frequent the area include the golden eagle, redtailed hawk, rough-legged hawk, goshawk, screech owl, common raven, red-shafted flicker, yellow-bellied sapsucker, robin, mountain bluebird, phaino popla, gray-headed junco, stellar's jay, mountain chickadee, vesper sparrow, Audubon's warbler, Clark's nutcracker, mourning dove, nuthatches, sparrows and probably various other species.

Reptiles and amphibians of the area probably include: boreal toad, leopard frog, northern sagebrush lizard, Rocky Mountain rubber boa, Great Basin gopher snake and Great Basin rattlesnake.

The lease area itself does not support a sport fishery. Upper Huntington Creek on the west edge of the lease area is a spawning ground for cutthroat trout from Electric Lake and is closed to fishing.

Short-term impacts to wildlife such as annoying and alien sights, sounds, and smells will occur during drilling operations. Temporary loss of habitat will occur until disturbed areas are fully revegetated. Neither of these impacts are expected to have significant effects on wildlife resources.

Roadkill of wildlife is a possibility due to increased road travel during the drilling. Cautious driving practices can minimize or eliminate wildlife loss due to roadkill.

The likelihood of wildlife falling into waste pits or drinking contaminated water is very remote during drilling operations

because of the presence of men and equipment and obnoxious noises. During site reclamation, however, waste pits will be left open and unattended while being allowed to dry. To prevent damage to wildlife, waste pits will be fenced and flagged while drying. Measures to mitigate possible impacts to the streams as discussed earlier will be required of the operators.

A Forest Service wildlife biologist has reviewed the proposed project and has consulted Utah Division of Wildlife Resources records pertaining to the area. It has been determined that THERE ARE NO KNOWN THREATENED OR ENDANGERED ANIMAL SPECIES OR THEIR HABITATS OCCURRING WITHIN THE PROJECT AREA AND NONE ARE EXPECTED TO BE IMPACTED BY THE PROPOSED PROJECT.

G. Fire

The past history of fire occurrence in this area is very low. Most of the fires that do occur are caused by lightning strikes. The presence of men and equipment during the drilling project will increase the probability for man-caused fires. In order to limit the potential for man-caused fires, proper fire prevention precautions will be required of the personnel involved in the project.

The drill rigs, trucks and other equipment are powered by gasoline or diesel engines that are capable of starting fires if not equipped with proper safety devices. All equipment will have approved mufflers and spark arrestors in good working order.

H. Recreation and Aesthetics

The area is easily accessible to outdoor recreationists and is conducive to this type of activity. Major recreational uses of the area are hunting, sight-seeing, picnicking, and camping with a moderate amount of snowmobile activity during the snow covered season. Most of the recreational use of this area occurs during the elk and deer hunting seasons. A low level of recreation use occurs during the remainder of the year.

There are no developed campgrounds in the area of exploration and none are planned for the near future.

In the Forest Travel Plan for road and off-road vehicle travel, the area is open to legitimate public use, but temporary limitations may be invoked on roads and trails during periods when vehicle use would cause damage. Off-road vehicle travel is undesirable off of established trails. No off-road vehicle travel by drilling personnel will be permitted.

The natural beauty of the area is characteristic of the high plateau country in east-central Utah. Narrow ridges spotted with small stands of timber in open sage and grasslands descend from higher elevations into deep drainages covered with thick conifer stands on north and east slopes and aspen, sage and grasslands on the south and west slopes. The area contains a diversity of colorful vegetative cover that is aesthetically pleasing to most Forest visitors. Occasional sightings of deer, elk, hawks and other wildlife can add to the overall attractiveness of the area.

The aesthetics of the areas in the immediate vicinity of the drill sites will be altered by the site developments and equipment. These impacts will be short-lived until reclamation work is completed.

I. Historical, Archeological and Paleontological

The affected areas of the drilling project are not expected to contain artifacts of archeological or historical significance. Archeological sites are not abundant on the Wasatch Plateau and are generally confined to the valleys when they do exist. Data are not yet available concerning the existence of archeological or historical sites at some of the drill sites which have recently been moved from their originally proposed locations.

Before any surface disturbance will be approved, a site-specific examination and clearance by an accepted archeologist will be required.

Coastal States has contracted with Archeological-Environmental Research Corp. of Salt Lake City, Utah to conduct the necessary archeological and historical investigations in their behalf. A survey was conducted of the thirteen drill sites in their originally proposed locations; archeological clearance for all sites and access roads was given at that time. Those sites and access roads that have been moved to locations requiring surface disturbance in areas that were not surveyed originally will require additional archeological surveys prior to approval. These sites will be discussed in addenda or supplements to this document that will be prepared concerning the sites that require further study. A copy of the report from A.E.R.C. is on file at the Price District Office of the Manti-LaSal National Forest, 10 North Carbon Avenue, Price, Utah.

If any archeological artifacts are unearthed during construction or operations, all activity must cease until the Forest Officer in charge has been notified and has taken the appropriate action.

Fossils occur in most of the geologic formations of the Wasatch Plateau, but none of significant paleontologic value are known to exist in the lease area.

J. Wilderness

The proposed project will not impact any RARE II study areas that have been recommended for wilderness or further planning classification.

K. Socio-Economic

This drilling project will have only minimal impacts on the existing local social and economic environment. A certain amount of supplies

will be locally obtained and some labor may be hired locally, however, these impacts will be minor and short-lived.

L. Timber Management

The proposed project will have no impacts on timber management plans. A road used for a recent timber sale in Kitchen Canyon will be used for access to sites UM-79-22-1, UM-79-22-2, and possibly site UM-79-27-1. As will be discussed later in detail, this will require upgrading of the road and installation of a culvert.

The timber sale has been replanted with tree seedlings, but the planted areas should not be impacted by the developments required for this project. In order to avoid any possible impact to the planted areas, site development will be restricted to previously disturbed road areas in the timber sale.

M. Range Management

The project area is within four separate sheep and goat grazing allotments. The Burnout, Eccles, Swen's Canyon and Winter Quarters Allotments graze approximately 3,610 sheep during a July 1 through September 30 season. The grazeable vegetation on the allotments is fair, and the trend is improving. Some of the ridgetops have received heavy use through grazing and as sheep bedgrounds.

Several developed watering troughs exist throughout the four grazing allotments, but these should not be affected by the proposed project. There are no gates, fences, or cattleguards in the area that will be impacted.

The springs and ponds on the Forest developed for livestock use will not be used for water for drilling operations.

N. Minerals Other Than Coal

The lease area is overlapped by Federal oil and gas leases Nos. U-17112, U-18314, U-18315, U-34151, U-15334, U-17990, and U-15334.

Some exploratory drilling has been done on these leases but no wells have been brought into production. Drilling from this project will not have any effect on the previously drilled gas wells as these are not near any of the proposed sites.

An existing gas pipeline that transects the area of the proposed project is currently in use; however, drilling operations will not affect the pipeline or related facilities.

Coal and gas production in this area and exploration for these commodities should be coordinated to obtain maximum production of each in a safe orderly manner.

O. Administrative Improvement, Research and Special Uses

There are no Administrative Improvements or Research Areas within the proposed project area; however, two special use areas exist on or near to the leased property. The natural gas pipeline mentioned in the preceding section crosses the leasehold from southeast to northwest. No impacts to the pipeline will result from the proposed project. Sanders Exploration Ltd. has a special use electronic site on Boardinghouse Ridge a short distance east of the lease boundary. This site will not be impacted by the proposed project.

Coastal States has contracted Radian Corp. to install an air quality monitoring station on Boardinghouse Ridge using the existing facilities. A special use permit has been issued to Radian Corp. with the approval of Sanders Exploration Ltd. and the facilities have been installed.

P. Transportation

General access to the proposed project area can be gained via Utah Highway 96, the Eccles Canyon Road (F.R. 50227 and county

road), the Winter Quarters-Trough Springs Ridge Road (F.R. 50221) and the Upper Huntington Canyon Road (F.R. 50225).

It has been proposed that some sections of low-standard roads must be constructed to gain access to some of the proposed locations. The construction and reclamation requirements for these sections of road will be discussed in detail in the following "Site Specific Descriptions and Environmental Concerns" section of this report. The listed requirements pertaining to access roads will be strictly adhered to.

General access road construction and reclamation requirements are as follows:

No road construction will be allowed other than that given approval in a later section of this report or in addenda or supplements to this report.

Road maintenance work will be required to alleviate any damages incurred during operations. This will include blading the road surface to eliminate ruts, maintenance and installation of water bars, as required, and watering the road surface if dust becomes a problem.

Upon completion of the drilling operations, the indicated roads will be closed out and reseeded as instructed by the Forest Officer in charge.

To prevent undue road damage, travel on Forest roads will not be permitted during extended periods of inclement weather or at other times when the road bed is soft and easily damaged.

For public safety, traffic warning signs will be placed conspicuously alongside the road above and below the drill sites while operations are ongoing.

Site Specific Data Summary

Hole #	Location (all are in T13S, R6E)	Access: Required Construction	Access: Approximate Length	Estimated Disturbed Area*	Current Status of Hole
78-10-1	NE¼ SW¼ sec 10	New Road	300 ft	0.16 acres	Approved
78-11-1	SE¼ SW¼ sec. 11	New Road	2500 ft.	0.77 acres	Not Approve
79-13-1	NE¼ SW¼ sec 13	Reopen Old Road	600 ft.	0.25 acres	Approved
78-14-1	NW¼ NE¼ sec. 14	New Road	3800 ft.	1.13 acres	Not Approve
78-14-2	SW¼ SE¼ sec. 14	Reopen Old Road	1200 ft.	0.41 acres	Approved
78-15-1	SW¼ NW¼ sec. 15	New Road	2600 ft.	0.80 acres	Not Approve
78-15-2	NW¼ SE¼ sec. 15	Reopen Old Road	4500 ft.	1.32 acres	Not Approve
78-22-1	NE¼ SE¼ sec. 22	Reopen Old Road	2300 ft.	0.71 acres	Approved
78-22-2	NW¼ SE¼ sec. 22	Reopen Old Road	3300 ft.	0.99 acres	Approved
78-26-1	NW¼ SE¼ sec. 26	Reopen Old Road	4600 ft.	1.35 acres	Not Approve
78-27-1	NW¼ NE¼ sec. 27	New Road	2800 ft	0.85 acres	Not Approve
78-27-2	SE¼ SW¼ sec 27	None	—	0.08 acres	Approved
78-35-1	NW¼ NW¼ sec. 35	Reopen Old Road	3600 ft.	1.07 acres	Approved
78-35-2	SE¼ NE¼ sec. 35	Reopen Old Road	1000 ft	0.36 acres	Approved
		Totals	33100 ft.	10.25 acres	

* These were calculated using a 12 ft average road width and an average 70x50 ft. drill site.

Table 1.

IV. Site-Specific Descriptions and Environmental Concerns

Coastal States has proposed to drill the following holes in 1979:

79-10-1	79-22-1
79-11-1	79-22-2
79-13-1	79-26-1
79-14-1	79-27-1
79-14-2	79-27-2
79-15-1	79-35-1
79-15-2	79-35-2

(See Table 1 for specific locations))

The following is a description of the individual holes along with the site-specific environmental concerns and recommendations:

79-10-1 - This hole is located a short distance off Forest Route 50221. To get to the proposed site will require construction of a short spur road approximately 300 feet long. The road will traverse a gently sloping sidehill. Small cut and fill sections will be required for construction of the road. The drill site is located in a relatively flat, open area. Construction of a level drill pad will require very little earthwork. No trees will be disturbed to drill the hole. Grass and brush at the site and along portions of the road will be destroyed.

The hole will be left open for hydrologic monitoring. At the completion of drilling, the site will be reclaimed and the road permanently closed. Recommend this hole be approved.

79-15-1 - This site is located in the bottom of Huntington Canyon adjacent to the main drainage. This is in an environmentally sensitive area. Approximately 2,600 feet of new road would have to be constructed to gain access to the proposed location. Access and drill site development will require close coordination. The site will not be approved at this time; it will require additional on-the-ground study this spring.

79-11-1 - The site is located on a moderately steep, narrow ridge at the head of Winter Quarters Canyon. Access to the site would require construction of approximately 2,500 feet of road. The road would traverse a steep timbered sidehill. Construction would require at least one switchback and sizable cut and fill sections. Several trees of various sizes would have to be removed. The drill site is on the ridge top in a gently sloping area. Some earthwork would be required to level a drill pad. It is proposed that this hole be left open for hydrologic monitoring. This location will not be approved at this time. Additional consideration will be given this spring.

79-14-1 - The site is located in the bottom of Winter Quarters Canyon approximately 300 feet from the stream channel. The site is gently sloping and open. Very little earthwork will be needed to level the site. Access to the site will require the construction of approximately 3,800 feet of road. The road will cross side slopes of 30-35 percent. One or more switchbacks will be required. All of the vegetation including many trees will be destroyed along the road right-of-way. The road will cross a couple of wet seep areas. This site will not be approved at this time. More data will have to be collected this spring.

79-14-2 - This hole is located next to hole EC-11 drilled by earlier lease holders. It is in the Eccles Canyon drainage approximately 100 feet from Eccles Creek. All precautions will be taken to isolate the drill site from the live stream. The site is located at the end of an existing road that was constructed for the previous drill hole. The road has revegetated and stabilized. A few water bars will have to be leveled to get into the site, but the upgrading required is minor in extent. Approximately 1,200 feet of road will be reopened for access to this site. The hole is to be left open for hydrologic monitoring.

The drill site will be reclaimed and the road closed at the completion of drilling. The road is to be closed prior to the opening of elk hunting on October 3, 1979. Recommend this hole be approved.

79-13-1 - This hole is located in a side drainage of Eccles Canyon. A hole also called 13-1 was drilled in the same location in 1976 by Sanders Associates. A skid mounted rig was required to drill the first hole. A skid rig will also be required for the proposed hole. Approximately 600 feet of skid road will have to be reopened to get to the site. After drilling, the drill site and road will be obliterated and barred from traffic. This may require the construction of a short section of pole fence or the installation of barrier posts across the mouth of the drainage.

Access into the area is to be closed before the opening of elk hunting season October 3, 1979.

The hole is to be left open for hydrologic monitoring.

Recommend this hole be approved.

79-15-2 - The hole is adjacent to an existing jeep trail in an unnamed canyon near the head of the Huntington Canyon drainage. Construction of a level drill pad will require a sizable cut and fill section.

The jeep trail is narrow and steep and portions of it will require widening and upgrading along a length of approximately 4,500 feet.

The drill site will not be approved at this time. Additional studies will have to be conducted this spring.

79-22-1 and 79-22-2 - These holes are located on roads of the recently completed Kitchen Timber Sale. The sites will be constructed in areas of the road disturbance. To gain access into the area, approximately 4,300 feet of road will have to be reopened and the erosion control structures modified. A culvert will be installed where the road crosses Kitchen Creek. The size required for the culvert will be determined by the Forest hydrologist when it is known how long access will have to be maintained into the area.

Hole 22-1 will be left open for hydrologic monitoring. Access will be maintained into the site for the life of the mine for data collection. A gate will be constructed and maintained by Coastal States on the Kitchen T.S. road near its junction with F.R. 50227. The gate will remain in place during the data collection period. It will be kept locked to keep other Forest user vehicles off of the road. Upon completion of the project, the road will again be stabilized with erosion control structures and vegetaion, the culvert removed, and the road closed.

Recommend these holes be approved subject to constraints outlined.

79-27-1 - This hole will also be accessed by the Kitchen Timber Sale road. Approximately 2,800 feet of new road beyond site 22-2 will have to be constructed along 10-17 percent side slopes. The drill site and new road have not been examined on the ground by the Forest Service; therefore, evaluation of the proposed location cannot be made until data are collected this spring.

This hole is not approved at this time.

79-27-2 - The proposed hole is located adjacent to F.R. 50225 in a gently sloping area. Very little earthwork will be required to level a drill pad. Neither the drill pad nor any of the drilling equipment will occupy any portion of the road or interfere with

the normal flow of traffic. Regular rehabilitation procedures will be used.

Recommend this hole be approved.

79-35-1 and 79-26-1 - Access into both sites will require opening approximately 8,300 feet of the Burnout Canyon road. An attempt was made to close the road by large earth barriers. The past few years, motor vehicles including motorcycles and four-wheel drive enthusiasts have reopened the road. Drill holes were drilled close to the proposed holes in 1975 by Sanders Associates for Routt County Development Co.

With a minor amount of roadwork, access can easily be gained to site 35-1. The drill site will be along the existing road. Drill site 26-1 will have to have additional study this spring. Access to this hole will be more difficult. Drill hole 26-1 will be left open for hydrologic monitoring.

The Burnout Canyon road is to be closed before the beginning of elk hunting season October 3, 1979.

Recommend approval of hole 79-35-1. Recommend no approval for hole 79-26-1 at this time.

79-35-2 - This drill site is located close to hole 36-1 drilled in 1975 by Sanders Associates. The drill site is on top of the ridge between James and Burnout Canyons. Access and drill site development on the ridge top is easy and will only require removal of two or three water bar barriers and reopening of approximately 1,000 feet of road at the head of the James Canyon road. The impacts are light and it can be reclaimed.

Recommend approval of this hole.

Six of the fourteen proposed drill holes will require additional study this coming spring before approval to drill can be granted. Additional study is required on holes:

79-11-1	79-15-2
79-14-1	79-26-1
79-15-1	79-27-1

V. Summary of Probable Adverse Environmental Impacts That Cannot Be Avoided.

The proposed project will result in the following unavoidable impacts:

(1) Some temporary hydrocarbon and particulate air pollution;

(2) Some loss of topsoil;

(3) Some loss of vegetative productivity;

(4) Some loss of wildlife due to road kill, loss of habitat and the continuous presence of man;

(5) A higher probability of man-caused fires;

(6) Temporary discordant visual features caused by constructed sites and facilities.

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

The operations involved in the proposed project will create essentially only short-term impacts during the drilling period and possibly a year or two afterward. A small amount of soil and vegetation may be lost over a long term, but no major long-term effects on productivity should result from the project itself.

VII. Irreversible and Irretrievable Loss or Commitment of Resources

(1) A small amount of soil will be irretrievably lost.

(2) The land denuded for this operation is temporarily out of vegetative production; therefore, potential production during this time will be irretrievably lost.

VIII. Alternatives to the Proposed Action

There are only two plausible alternatives to the proposed action:

(1) Allow no drilling, and

(2) Allow drilling at other locations.

Alternative 1

This is not a legitimate course of action for the Forest Service. The area is under Federal coal lease and is, therefore, legally committed to the exploration and possible development of the underlying coal resources. Furthermore, it is recognized that coal mining and exploration is necessary for future energy development in the United States. With proper planning, coal exploration (i.e. drilling) can be compatible with current Forest Service Multiple Use-Sustained Yield policies.

Alternative 2

Alternative sites will not provide the necessary geologic data to fully evaluate the existing conditions and provide the necessary data for development of the best possible and most environmentally compatible mine design.

Proposed Project:

The drilling locations under consideration have been selected through cooperative efforts between the Forest Service, U.S.G.S., and Coastal States. The sites evaluated here are the most desirable to coordinate both the resource considerations and to obtain viable geological data.

IX. Consultation With Others

Allen L. Vance	Geologist	U.S. Geological Survey
Roger Holland	Geologist	Coastal States Energy Co.
Vernal Mortensen	Vice President & General Manager	Southern Utah Fuel Co.
Vaughn Hansen	Consultant	Vaughn Hansen Associates

The soils section of this assessment report was prepared by Dan Larsen, Manti-LaSal National Forest Soils Scientist.

X. Management Requirements and Recommendations

(1) This project should be approved with the stipulation that holes UM-79-11-1, 79-14-1, 79-15-1, 79-15-2, 79-26-1 and 79-27-1 cannot be approved until further on-site studies are completed.

(2) A stipulation should be added requiring the lessee to provide stratigraphic and/or lithologic drill logs from selected holes for use in the subsidence monitoring program. This information will be kept in strict confidence and out of the public files.

(3) All underlined sections of this report are considered Forest Service recommendations and should be carried over into the approval document. These stipulations are summarized here; but the lessee should be aware of all of the stipulations and recommendations as detailed in the body of this report.

Soils and Hydrology

During site and road construction, the existing topsoil must be removed, stockpiled and protected for use during reclamation procedures.

Waste pits of sufficient size to contain all anticipated effluent drilling materials must be constructed at each site. If overflow appears likely, the pits must be periodically pumped out.

Waste pits must be lined if percolation of drilling fluids into the soil appears likely.

Drainage from the drill sites must be directed into the waste pits to prevent possible transport of soil or drilling fluids overland and/or into the existing drainages.

Runoff control structures, such as contour furrows or water bars must be incorporated into the road and site designs and reclamation procedures.

At the close of drilling operations, all of the drill sites and the indicated access roads must be reshaped to the approximate original contours leaving a roughened surface. The sites must be scarified where compaction has occurred. The final reshaping and scarification operations must be completed operating on the contours.

The site and road closures must be completed by the time limits specified in this report or by the Forest Officer in charge.

Roads

No road construction other than that specified in this document or supplements or addenda to this document will be allowed.

Road maintenance work will be required to mitigate any resource damage incurred as a result of operations incidental to this project. This maintenance may include blading, installation and maintenance of water bars, watering the road surface and other activities as instructed.

Travel will not be permitted on Forest roads during extended periods of inclement weather or at other times when the road bed is soft and easily damaged.

Traffic warning signs must be placed alongside the road above and below the drill sites serviced by through-going roads while construction or operations are underway.

The road to sites 79-22-1, 79-22-2 and 79-27-1 will be reconstructed and have a culvert installed according to Forest Service specification. This road will be kept open to site 79-22-1, for the life of the mine, to maintain access to a

to a hydrologic monitoring station. A gate must be installed at the junction of this road with F.R. 50227 to prevent public access.

Vegetation

All disturbed areas must be reseeded with the following seed mix at a rate of 20 lbs/acre:

- 3 lbs. Smooth brome
- 3 lbs. Timothy
- 2 lbs. Orchard grass
- 2 lbs. Intermediate or slender wheatgrass
- 1 lb. Ranger alfalfa
- 1 lb. Meadow foxtail
- 1 lb. Perennial rye

The seed mixture can be planted with a seed drill or broadcast seeded and raked into the soil.

All disturbed areas must be fertilized with a 16-20-0 fertilizer mix at a rate of 200 lbs/acre.

The lessee or his designated operator must establish revegetation of all disturbed areas to a density at least comparable to that of adjacent undisturbed areas.

Archeological

No surface disturbance will be permitted until a site-specific examination has been conducted by an approved archeologist and clearance has been given by the Forest Service.

If any archeological artifacts are unearthed during construction or operations, all activity must cease until the Forest Officer in charge has been notified and has taken the appropriate action.

Miscellaneous

If dust becomes a problem during dry periods, the operator must water the access roads and drill pads as instructed.

To prevent possible damage to wildlife, the waste pits must be fenced and flagged while being allowed to dry.

All mechanized equipment must have approved mufflers and spark arrestors in good working condition.

Springs and ponds on the Forest that have been developed for livestock use must not be used for water for drilling purposes.

No off-road vehicle travel by drilling personnel will be permitted.

– ORIGINALS TO USW SKYLINE

–XC: L(; FOS, HdR, TLG, DHM, EOR, BRIAN McGEE

Law.

3500
U-073120
(U-942)

MAY 16 1979

DECISION

Getty Mineral Resources Company	:	Coal Lease
3810 Wilshire Blvd.	:	U-073120
Los Angeles, CA 90010	:	

Assignment of Sublease Approved

An assignment of an undivided fifty percent interest in the Kanawha and Hocking Sublease, entered into on March 7, 1979, between Getty Mineral Resources Company, as assignee, and Coastal States Energy Company, as assignor, was filed in this office on April 5, 1979.

This sublease covers all coal lying north and west of the Conneville Fault in the upper Mesaverde coal-bearing strata (Blackhawk Formation) with such strata being identified as any and all coal-bearing strata extending from the surface down to a depth 170 feet below the base of the lowest coal occurrence in the Lower O'Connor interval or equivalent strata in the following-described lands:

T. 13 S., R. 6 E., SLM, Utah
Sec. 13, lots 1-6, 8;
Sec. 14, NE¼, N½SE¼;
Sec. 24, NE¼NW¼.

Satisfactory evidence of the qualifications and holdings of Getty Mineral Resources Company is on file; and the lease account is in good standing. The assignment is, therefore, approved effective June 1, 1979. As to the undivided fifty percent interest assigned, the $25,000 statewide coal bond of Getty Mineral Resources Company, will cover all operations under this sublease from the effective date of the assignment.

/s/ Nancy [illegible]

Acting Chief, Minerals Section

cc: Area Mining Supervisor, Geological Survey, Room 8426, Federal Building, Salt Lake City, Utah 84138

Coastal States Energy Company, Nine Greenway Plaza, Houston, TX 77046

Brian McGee, Yegge, Hall and Evans, 2900 Energy Center One, 717 Seventeenth Street, Denver, CO 80202

3500
U-020305
U-044076
(U-942)

MAY 16 1979

DECISION

Getty Mineral Resources Company 3810 Wilshire Blvd. Los Angeles, CA 90010	: : :	Coal Leases Utah 020305 and Utah 044076

Assignment of Sublease Approved

An assignment of an undivided fifty percent interest in the Coastal Assignment of the Routt County Sublease as to the reversionary interest entered into on March 7, 1979 between Getty Mineral Resources Company, as assignee, and Coastal States Energy Company, as assignor, was filed in this office on April 5, 1979.

This assignment covers an undivided fifty percent interest in the reversionary interest in the Routt County Sublease in the event of a default by Valley Camp of Utah, Inc. The sublease covers all coal lying south and east of the Conneville Fault in the upper Mesaverde coal-bearing strata (Blackhawk Formation) with such strata being identified as any and all coal-bearing strata extending from the surface down to a depth 170 feet below the base of the lowest coal occurrence in the Lower O'Connor interval or equivalent strata in the following-described lands:

Utah 020305	T. 13 S., R. 6 E., SLM, Utah Sec. 24, S½; Sec. 25, all.
Utah 044076	T. 13 S., R. 6 E., SLM, Utah Sec. 35, lots 6, 7, N½SE¼, NE¼.

/s/ Nancy McCarty

Acting Chief, Minerals Section

cc: Area Mining Supervisor, Geological Survey, Room 8426, Federal Building, Salt Lake City, Utah 84138

Coastal States Energy Company, Nine Greenway Plaza, Houston, Texas 77046

Brian E. McGee, Yegge, Hall and Evans, 2900 Energy Center One, 717 Seventeenth Street, Denver, CO 80202

3500
U-020305 et al.
(U-942)

MAY 16 1979

DECISION

Getty Mineral Resources Company	:	Coal Leases
3810 Wilshire Blvd.	:	Utah 020305, Utah 044076,
Los Angeles, CA 90010	:	Utah 0142235 and Utah 0147570

Assignment of Sublease Approved

An assignment of an undivided fifty percent interest in the Coastal Assignment of the McKinnon Sublease, entered into on March 7, 1979, between Getty Mineral Resources Company, as assignee, and Coastal States Energy Company, as assignor, was filed in this office on April 5, 1979.

This sublease covers all the lands included in coal leases Utah 020305, Utah 044076, Utah 0142235, and Utah 0147570 exclusive of the Routt County Sublease.

Satisfactory evidence of the qualifications and holdings of Getty Mineral Resources Company is on file; and the lease accounts are in good standing. The assignment of the sublease is, therefore, approved effective June 1, 1979. As to the undivided fifty percent interest assigned, the $25,000 statewide coal bond of Getty Mineral Resources Company will cover operations under the sublease from the effective date of the assignment.

/s/ Nancy McCarty

Acting Chief, Minerals Section

cc: Area Mining Supervisor, Geological Survey, Room 8426, Federal Building, Salt Lake City, Utah 84138

Coastal States Energy Company, Nine Greenway Plaza, Houston, TX 77046

Brian E. McGee, Yegge, Hall and Evans, 2900 Energy Center One, 717 Seventeenth Street, Denver, CO 80202

To Mike T. Ra

United States Department of the Interior

U-020305 et. al.

GEOLOGICAL SURVEY

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

March 23, 1979

Mr. Cleon Feight, Director
Division of Oil, Gas and Mining
Department of Natural Resources
State of Utah
1588 West North Temple
Salt Lake City, Utah 84116

Dear Mr. Feight:

Coastal States Energy Company submitted an amendment to its 1978-1979 drilling program to include one additional drill hole. It also submitted an amendment to its seismic program approved October 10, 1978, to improve data gathering technique. The drilling and seismic programs are not part of an approved mine plan permit area where OSM would be the point of contact with the company, therefore, one copy each of the amendments are enclosed to keep you informed of the program.

If you wish to become involved in the program please inform us. We consider these amendments to have only minor effects on the environment and will handle them accordingly with respect to NEPA requirements.

If you have any questions please advise.

Sincerely yours,

Allen L. Vance

Allen L. Vance
Mining Engineer

Enclosure

RECEIVED
MAR 26 1979

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

Loren A. Williams
Vice President
Resource Acquisition

Coastal States Energy Company

Nine Greenway Plaza
Houston, Texas 77046
(713)877-6408

Allen: Brief me on this: Where are we? JM

Subsidiary of
Coastal States
Gas Corporation

March 12, 1979

Mr. Jackson W. Moffitt
Area Mining Supervisor
Branch of Mining Operations
U.S. Geological Survey
Room 8426, Federal Building
Salt Lake City, Utah 84111

Dear Mr. Moffitt:

Submitted with this letter are seven copies of a proposed amendment to the 1978-1979 proposed drilling program submitted to your office September 1, 1978, by Energy Fuels Corporation concerning a proposed drilling program on federal coal leases U-0142235, U-0147570, U-044076 and U-073120.

Upon approval, the amendment exploration plan will be conducted in connection with the above mentioned proposed drilling program.

This amendment is submitted by Coastal States Energy Company as successor in interest to Routt County, Ltd./Energy Fuels Corporation. The drilling will be completed under the supervision of Coastal States personnel.

Should you have questions about the program, please contact us.

Sincerely,

Loren A. Williams

Loren A. Williams

GEOLOGICAL SURVEY
MAR 19 1979
SALT LAKE CITY, UTAH
MINING BRANCH

1978 - 1979

Amendment to the

Proposed Drilling Program

for

Coastal States Energy Co.

Carbon and Emery Counties, Utah

Amendment of the

Application for Approval

of Exploration Plan

This application of amendment to the Exploration Plan dated August 31, 1978 - 1979 to Mr. Jackson W. Moffitt, Area Mining Supervisor, Branch of Mining Operation, U.S. Geological Survey, Room 8426, Federal Building, Salt Lake City, Utah 84111, from W.T. Davis, Vice President - Exploration, Energy Fuels Corporation, is submitted pursuant to 30 C.F.R. 211.10.

The purpose of this amendment to the above stated application is primarily to obtain hydrologic data. Geological data such as coal quantity and quality will also be obtained as the hole is drilled.

All stipulations as stated under the sections Drill Site Locations, Type of Equipment to be used, Drilling Operations, Reclamation and Protection of the Environment as discussed in the original drilling permit application will be closely adhered to.

1978 - 1979 Exploration

Program Amendment

Test Hole No.	Location	Estimated Depth	Lease Number	Purpose
UM-79-13-1	SWNESW Sec. 13 T. 13 S., R. 6 E.	500 feet	U-073120	Hydrologic data and coal quality and quantity

Note: UM-79-13-1 is located on same drill site as 76-13-1 drilled by Sanders Assoc.

Loren A. Williams
Vice President
Resource Acquisition

Coastal States Energy Company

Nine Greenway Plaza
Houston, Texas 77046
(713)877-6408

Subsidiary of
Coastal States
Gas Corporation

March 12, 1979

Mr. Jackson W. Moffitt
Area Mining Supervisor
Branch of Mining Operations
U.S. Geological Survey
Room 8426, Federal Building
Salt Lake City, Utah 84111

Dear Mr. Moffitt:

Submitted with this letter are seven copies of a proposed amendment to the seismic program, proposed on September 11, 1978, and approved on October 10, 1978, to be completed on Federal Coal Leases Nos. U-0142235, U-0147570, U-044076, U-020305, and U-073120. We request your approval of this amendment.

The amendment is requested because:

(1) The energy source originally approved, an earth tamper (Wacker GV5-200Y), generated a "near-surface" seismic wave constituting a serious "noise" on the recorded data in that zone capped by the Castlegate Member of the Price Canyon formation. This geological horizon (Castlegate) is more extensively present along Trough Spring Ridge than previously mapped by the geologists.

(2) The frequency spectrum of the earth tampers, under the geological conditions extant in these leases, does not contain sufficient high frequency energy to delineate the individual seams as desired.

Sincerely,

Loren A. Williams

Loren A. Williams

GEOLOGICAL SURVEY
MAR 15 1979
SALT LAKE CITY, UTAH
MINING BRANCH

APPLICATION FOR AMENDMENT
OF SEISMIC EXPLORATION PLAN

This application for Amendment of Seismic Exploration Plan is submitted pursuant to 30 C.F.R. Ø 211.10. The purpose of the amendment is to obtain more adequate and reliable geophysical, hydrologic and geologic data. It is submitted as an amendment to the application dated September 11, 1978, and approved October 10, 1978; submitted by Routt County Development, Ltd. and Coastal States Energy Company jointly.

Amendment:

Type of Equipment and Crew to be Used

The data acquisition will be accomplished by Geoterrex, Ltd., with offices at Three Park Central, Suite 350, 1515 Arapahoe Street, Denver, Colorado 80202, telephone number 303-571-1146, represented by Mr. C. J. Wiles using the "Mini-Sosie" technique. This technique is extensively described and detailed in the accompanying documentation. The crew is equipped with three (3) Ford F-250 trucks which will be limited to those roads and trails designated by the United States Forest Service and/or the United States Geological Survey. Shallow 3-foot deep holes will be bored with a man-portable, gasoline powered, post hole auger using a 2-inch diameter auger bit. A small explosive charge using the "Detaprime UA" primers, described in the accompanying brochure, detonated by an electric detonator cap will be used. The largest charges to be used will be eighteen grams (18) or 0.64 ounces. The holes will be firmly tamped with moist dirt from the augered hole. If a depth of three feet cannot be obtained, the charge size will be reduced one-third or two-thirds and a weighted metal plate placed over the buried charge. Cables and sensors will be laid out on the surface of the ground. The total reflection seismic program planned is 20.33 miles; data will be recorded at a nominal 66-foot interval; a total of approximately 1,600 recordings will be made. The number of persons on the crew and number of vehicles will be unchanged.

GEOLOGICAL SURVEY
MAR 15 1979
SALT LAKE CITY, UTAH
MINING BRANCH