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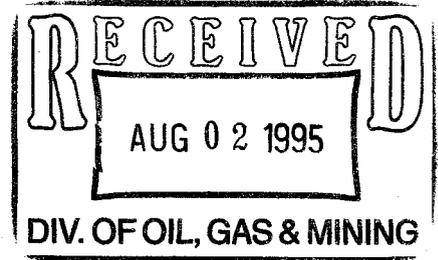
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ENVIRONMENTAL ASSESSMENT

COAL LEASE APPLICATION UTU-67939  
WINTER QUARTERS TRACT



USDA, FOREST SERVICE, MANTI-LA SAL NATIONAL FOREST  
USDI, BUREAU OF LAND MANAGEMENT, MOAB DISTRICT  
CARBON COUNTY, UTAH

July, 1995

Responsible Officials:

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Manti-La Sal National Forest  
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Cooperating Agency:

USDI, Office of Surface Mining Reclamation  
and Enforcement  
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Denver, Colorado 80202

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## I. PURPOSE AND NEED

### A. Proposed Action

On January 10, 1991, Coastal States Energy Company filed Coal Lease Application UTU-67939 with the Bureau of Land Management (BLM), Utah State Office, to lease Federal coal lands in the Winter Quarters Canyon area. This application is for securing additional coal reserves adjacent to Coastal's Skyline Mine, located approximately 23 miles northwest of Price, Utah, on the Price Ranger District of the Manti-La Sal National Forest (see Maps 1 and 2). Coastal has indicated a need for additional coal reserves to provide a long-term supply of coal and to prevent the loss of mineable reserves in the area.

The proposed lease tract lies within the Pleasant Valley - Fish Creek Coal Multiple-Use Evaluation Area. The Manti-La Sal National Forest Land and Resource Management Plan (LRMP) has determined that this area is available for further consideration for coal leasing. The tract will be evaluated under the Lease-by-Application (LBA) process adopted by the Uinta-Southwestern Utah Coal Region (43 CFR 3425). The first step in the process was to complete tract delineation. Delineation was completed on May 7, 1993. The Tract Delineation Report is attached as Appendix A. The next step in the LBA process was to determine whether or not there were data available to meet Data Adequacy Standards established by the coal region. Standards were determined to be met for the majority of the tract on August 10, 1993. The next step was to apply Unsuitability Criteria for Coal Mining that are contained in Federal Regulations at 43 CFR 3461 and conduct an environmental analysis of the proposed action. Eleven of the 20 unsuitability criteria were found by the LRMP to not be applicable. The other 9 criteria were evaluated (see Appendix B) and also found to not be applicable. This document has been prepared to satisfy analysis requirements and tiers to the Land and Resources Management Plan Final Environmental Impact Statement (FEIS), Manti-La Sal National Forest, 1986, the Manti-La Sal National Forest Land and Resource Management Plan, 1986, and the Final Environmental Impact Statement for the BLM's San Rafael Proposed Resource Management Plan, 1991.

### B. Purpose and Need

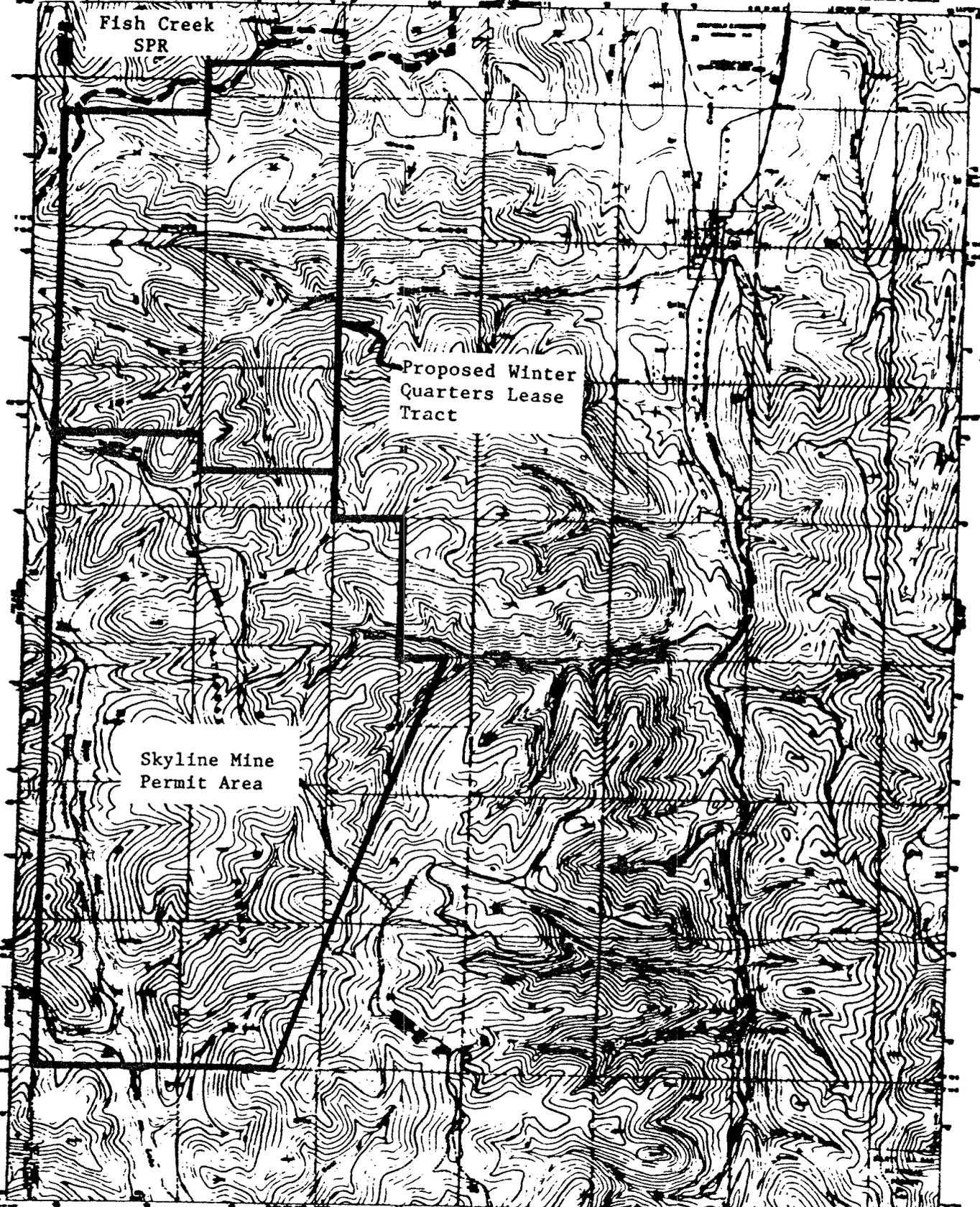
The Utah State Director of the BLM is responsible to decide whether or not to offer the tract for leasing under the Mineral Leasing Act of 1920, as amended, and Federal Regulations 43 CFR 3400. The State Director may also decide to deny the application or conditionally approve one of the alternatives described in Chapter II. The Forest Supervisor, Manti-La Sal National Forest, must consent to the leasing of National Forest System Lands before BLM can offer the tract for leasing, in accordance with the Federal Coal Leasing Amendments Act of 1976. The Office of Surface Mining Reclamation and Enforcement, a cooperating agency, is the permitting agency for mining on a lease under the terms of the Surface Mining Control and Reclamation Act of 1977 and Federal Regulations 30 CFR 700.

The purposes of the proposal are to maintain Coastal's production by securing additional reserves, and to recover coal deposits that would otherwise not be recovered at this time. These coal reserves could be leased in the future and

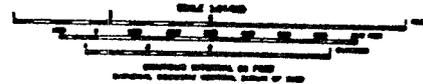
Fish Creek  
SPR

Proposed Winter  
Quarters Lease  
Tract

Skyline Mine  
Permit Area



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for 2025. First printed 1978. One sheet 1000  
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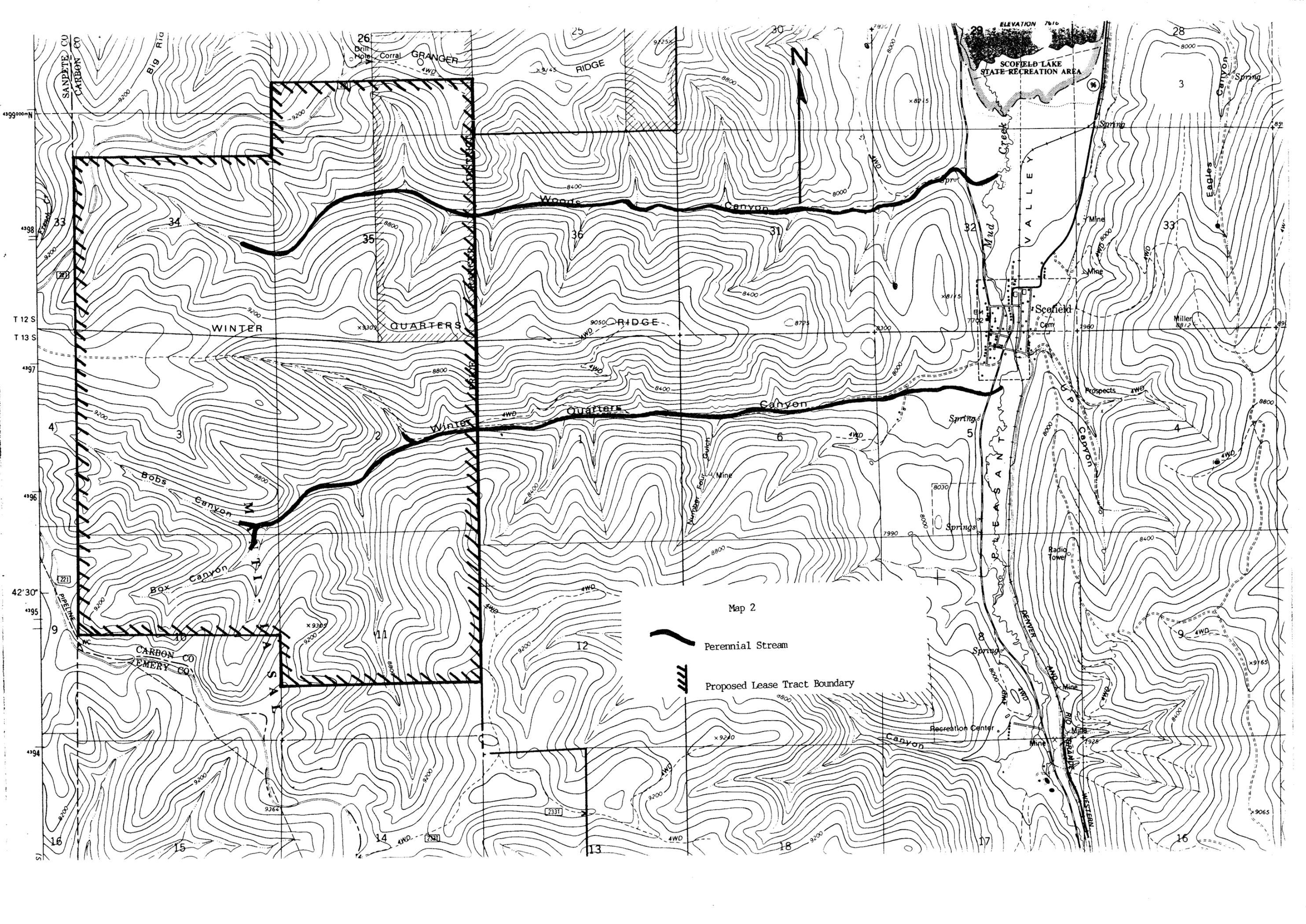


Map Symbols  
Contour lines: 10-foot interval, 100-foot interval  
Spot heights: 10-foot interval, 100-foot interval

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SCOPFIELD QUADRANGLE  
UTAH  
1:50,000 SCALE SERIES (TOPOGRAPHIC)  
SHEET NUMBER 7 (WEST)

Map 1

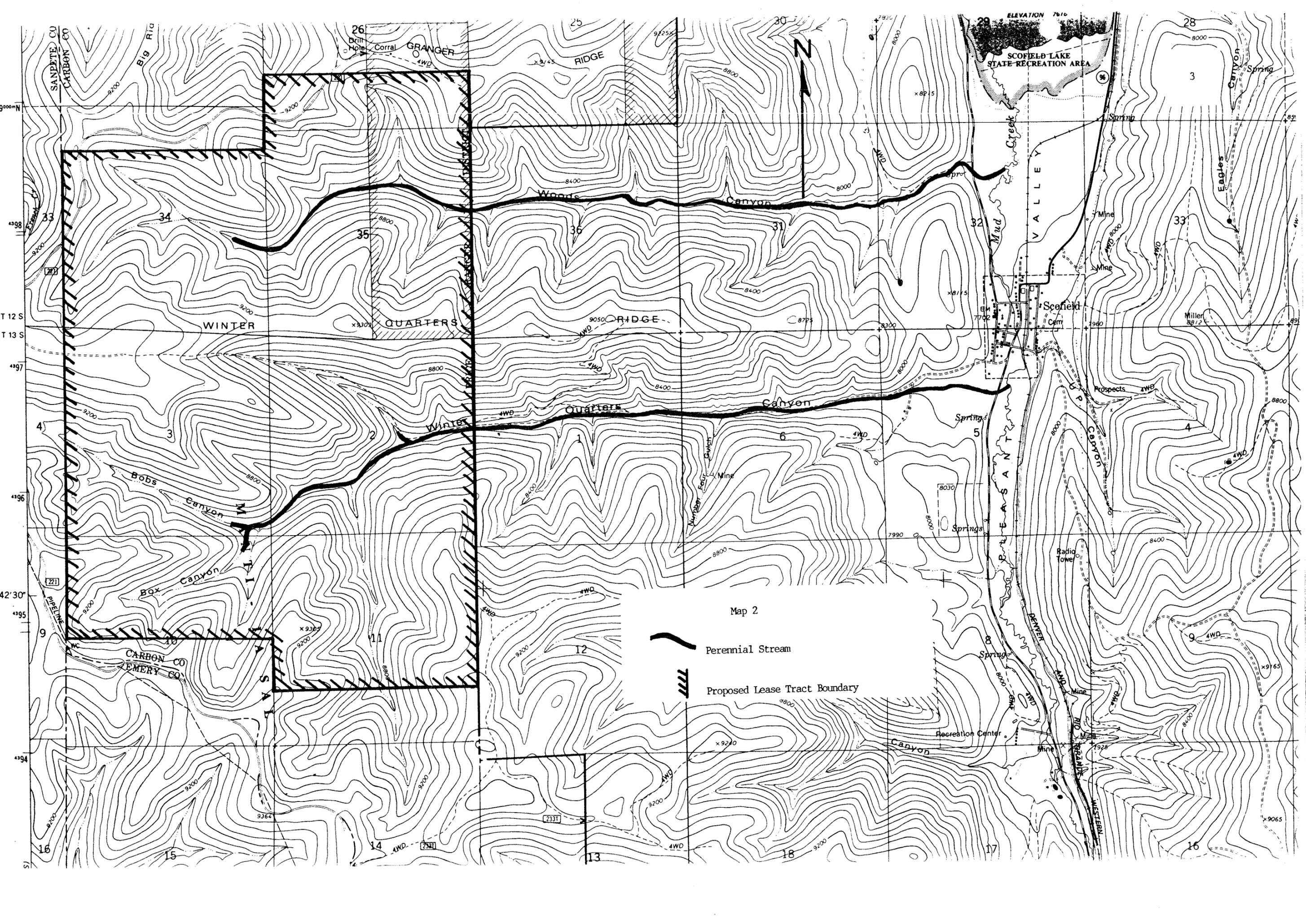
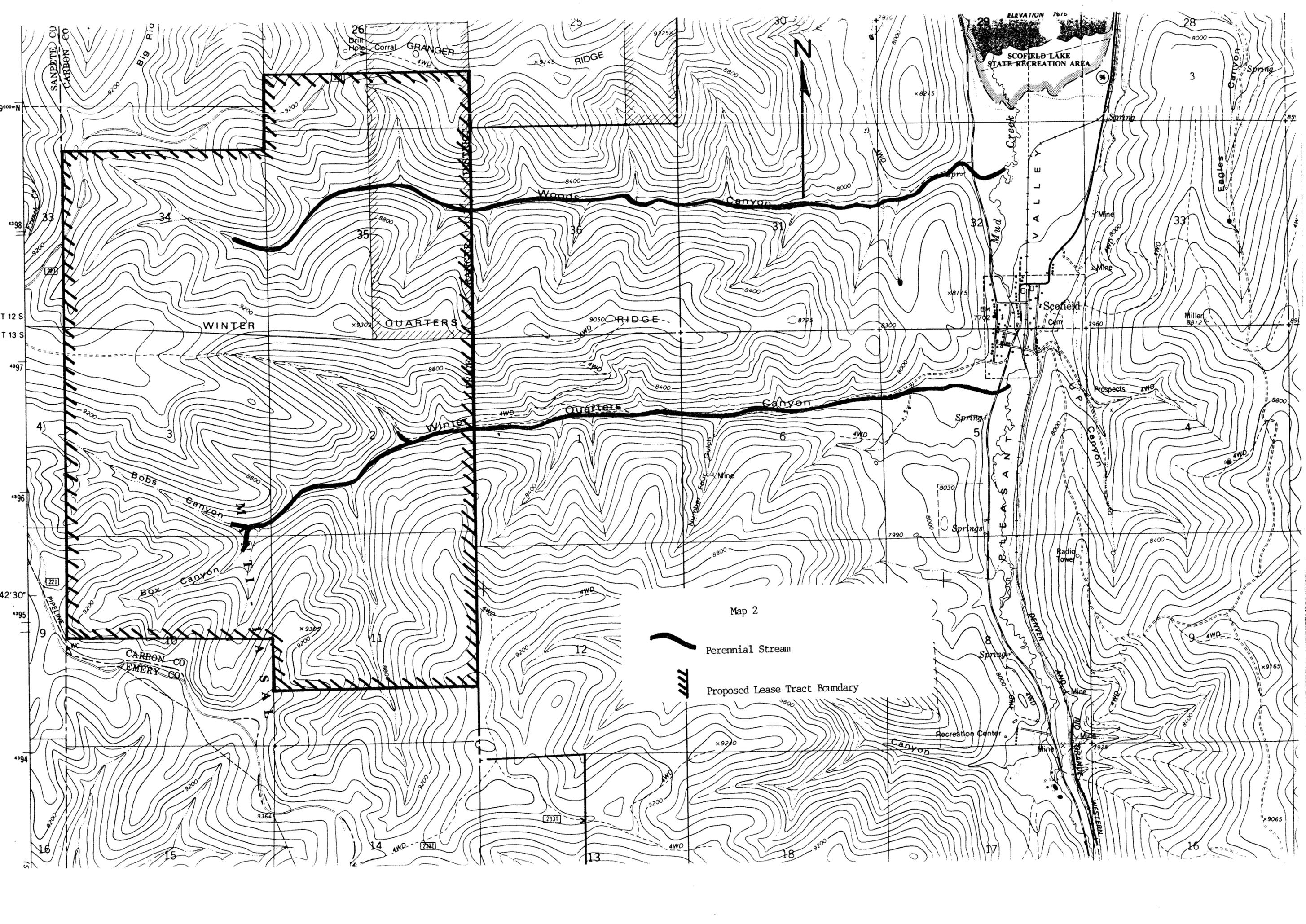


ELEVATION 7616  
SCOFIELD LAKE STATE RECREATION AREA

Map 2

Perennial Stream

Proposed Lease Tract Boundary



mined through a portal which could be developed on the private land to the east.

The proposed action will conform to the overall guidance of the Manti-La Sal National Forest FEIS and LRMP and the Final Environmental Impact Statement for the BLM's San Rafael Proposed Resource Management Plan. This Environmental Assessment tiers to the decisions of both EISs, which are available for review at the Price Ranger District and the Manti-La Sal National Forest offices and the BLM San Rafael Resource Area and the Moab District offices, respectively.

### C. Project Scoping

Project scoping is an integral part of the environmental analysis process which involves the solicitation of comments from federal, state, and local agencies and interested organizations and individuals. The goal is to assure that the most accurate and current environmental information and public issues are incorporated into planning and decision-making.

Project scoping was initiated on February 14, 1994, and concluded on March 18, 1994, and included notices in local newspapers and letters to individuals who earlier had expressed interest in such proposals. Letters and records of verbal comments are contained in the project file. The following list summarizes the 17 responses received:

The Utah Wilderness Association response included several issues:

1. The proposed lease tract includes lands within the Fish Creek Semiprimitive Recreation Area (SPR). Subsidence, impacts to spring flows, or any other surface disturbance would damage the values of the SPR.
2. Because the SPR is a roadless area, an Environmental Impact Statement (EIS) should be prepared.
3. There should be a "no surface occupancy" stipulation for the SPR area.
4. There should be no further leasing until the Fish Creek-Pleasant Valley watershed water quality problems are corrected.
5. The impacts of development should be evaluated at the leasing stage.
6. They feel there is not an established need for additional coal beyond what is currently under lease, so the SPR areas should not be leased.

The Huntington-Cleveland Irrigation Company responded that mining activity is intercepting water which would have surfaced in springs, and is diverting the water out of the mine portal. This could discharge water into the Price River drainage that would have originally flowed down Huntington Creek, decreasing the water rights of the irrigation company. They do not want the area leased until an agreement on water rights can be

reached between Coastal States Energy Company and Huntington-Cleveland Irrigation Company.

Utah Fuel Company responded with the following comments:

1. They are in favor of offering the tract for lease, because if they are the successful bidder it would allow them to maintain adequate reserves for coal contracts and provide an opportunity for increased production levels.
2. Mining of the Winter Quarters Tract could be done with no adverse effects on surface resources.
3. During the NEPA process the extent of perennial streams should be identified, along with potential limitations to mining relative to the streams. These limitations should be included in the calculation of recoverable reserves.

Responses from the Southeastern Utah Association of Local Governments and the Carbon County Commission are both in favor of leasing, due to the associated economic benefits, but both want to insure that water resources in the area are preserved.

The Carbon County Recorder, Price Municipal Corporation, and the College of Eastern Utah all responded favorably to leasing, because of the economic benefits of employment and royalties to the state and county governments.

The Carbon County Roads Special Service District favors leasing for the economic benefits to the area through employment and royalties to be used for constructing and maintaining roads.

The following individuals responded favorably to the lease because of the economic benefits and because it is a part of multiple-use management:

Wendell A. Koontz, Springville, Utah  
Tonya Bruno, Price, Utah  
Arthur D. Bruno, Price, Utah  
Art G. and Marge Richardson, Price, Utah  
Robert J. Wise, Springville, Utah  
George Kenzy, Spring City, Utah

Carl W. Winters of Fairview, Utah wrote in support of the leasing for the following reasons:

1. Mining is a part of multiple-use.
2. Mining access roads will open more of the area and encourage use, compensating for some of the no-access areas on other parts of the forest.
3. Job opportunities will benefit the area and encourage people to stay in the area.

George and Helen Liidakis of Price, Utah, own land east of and adjacent to the proposed lease tract. They are not opposed to leasing the tract, but do want to ensure the water resources are protected. Winter Quarters Canyon Creek crosses their land and is necessary for sheep grazing.

#### D. Issues

The issues identified by the interested parties, along with other issues identified by the ID Team, which will be evaluated in this analysis, are:

##### Socioeconomics

1. Additional coal reserves are necessary to provide a long-term supply of coal for the Skyline Mine. Remaining reserves are estimated at 60,000,000 tons at the end of 1993, or a 12 to 13 year supply at the current mining rate of approximately 5,000,000 tons per year.
2. Mining in a manner that would prevent subsidence of perennial streams, as required by Forest Service Special Stipulation #9, could prevent the mining of approximately 6,000,000 tons of coal, which could have produced approximately \$12,000,000 in royalties. However, this coal could be leased in the future and accessed through the private land to the east.
3. Under the terms of the forest LRMP, areas under perennial streams can not be subsided without prior approval. If mining is not allowed under the perennial sections of Woods Canyon and Winter Quarters Canyon Creeks, the delineated tract may not be economically mineable.
4. Areas with subsidence restrictions to protect perennial streams should be identified in the EA so they are excluded from recoverable reserve estimates.
5. Mining of the tract would provide long-term employment and economic benefits from royalty payments to federal, state, and county governments.
6. Forest LRMP guidelines allow for denying new coal leases where a need for additional coal can not be demonstrated. Enough coal may currently be under lease to meet the demand for several decades.
7. Coal leasing and mining could conflict with future oil and gas leasing, exploration, and development.

##### Ground and Surface Water

1. Mining and subsidence could cause changes to the ground and surface water quality and quantity. The impacts to the flow and quality of water in Woods Canyon and Winter Quarters Canyon Creeks are of specific concern.

2. Water quality and quantity in the Fish Creek-Pleasant Valley watershed and Scofield Reservoir may be affected. Elevated phosphate levels have been found in Scofield Reservoir.

3. Mining could intercept water which would have emerged in springs in the Huntington Creek drainage, but which would then be discharged into the Price River drainage.

4. Mining-induced changes to ground and surface water could cause impacts to riparian vegetation, wildlife habitat, recreation, range improvements, and visual qualities.

#### Land Stability

Mining-induced subsidence could cause impacts to the Granger Ridge roads, the Winter Quarters Trail, fences, range improvements, and survey monuments.

#### Recreation

The proposed lease tract includes approximately 40 acres of the southern portion of the Fish Creek SPR. Mining may impact the values for which the SPR was established.

#### Transportation

Future coal exploration drilling, with associated access roads, would probably be needed. These should be evaluated for cumulative impacts to the transportation system as well as recreation and wildlife.

#### Wildlife

1. Alteration of the flow or morphology of the perennial drainages could decrease habitat quality for macroinvertebrate species and trout.

2. Alteration of the flow in springs could alter watering opportunities for terrestrial wildlife species.

#### Surface Disturbance

1. There could be a need for future surface facilities, such as fan portals or breakouts, on the proposed lease tract.

2. If a company other than Coastal States Energy Company were the successful bidder, a new mine with surface facilities could be constructed on private lands to the east. This would involve additional surface disturbance of approximately 27 acres.

3. There would probably be a need for additional exploration drilling to obtain more detailed information on coal quality and quantity.

### E. Authorizing Actions

This coal lease application was submitted and will be processed and evaluated under the following actions: Minerals Leasing Act of 1920, as amended; National Environmental Policy Act (NEPA) of 1969; Multiple-Use Sustained Yield Act of 1960; Federal Land Policy and Management Act (FLPMA) of 1976; National Forest Management Act (NFMA) of 1976; Federal Coal Leasing Amendments Act of 1976, as amended; Surface Mining Control and Reclamation Act (SMCRA) of 1977; Federal Regulations at 43 CFR 3400 and 30 CFR 700; the Manti-La Sal National Forest Land and Resource Management Plan (LRMP) and Final Environmental Impact Statement (FEIS); and the BLM's San Rafael Proposed Resource Management Plan, 1989, and Final Environmental Impact Statement, 1991.

This lease application will be processed under the procedures set forth under Federal Regulations at 43 CFR 3425, Leasing on Application.

The Surface Mining Control and Reclamation Act of 1977 gives the Office of Surface Mining Reclamation and Enforcement (OSM) primary responsibility to administer programs that regulate surface coal mining operations and the surface effects of underground coal mining operations. In January, 1981, pursuant to Section 503 of SMCRA, the Utah Division of Oil, Gas and Mining (DOGGM) developed, and the Secretary of the Interior approved, a permanent program authorizing Utah DOGGM to regulate surface coal mining operations and surface effects of underground mining on non-Federal lands within the State of Utah. In March, 1987, pursuant to Section 523(c) of SMCRA, Utah DOGGM entered into a cooperative agreement with the Secretary of the Interior authorizing Utah DOGGM to regulate surface coal mining operations and surface effects of underground mining on Federal lands within the State.

Pursuant to the cooperative agreement, Federal coal lease holders in Utah must submit permit application packages (PAP's) to OSM and Utah DOGGM for proposed mining and reclamation operations on Federal lands in the State. Utah DOGGM reviews the PAP to ensure that the permit application complies with the permitting requirements and that the coal mining operation will meet the performance standards of the approved permanent program. If it does comply, Utah DOGGM issues the applicant a permit to conduct coal mining operations. OSM, the Bureau of Land Management, the Forest Service, and other Federal agencies, review the PAP to ensure that it complies with the terms of the coal lease, the Mineral Leasing Act of 1920, the National Environmental Policy Act of 1969, and other Federal laws and their attendant regulations. OSM recommends approval, approval with conditions, or disapproval of the mining plan to the Assistant Secretary, Land and Minerals Management. Before the mining plan can be approved, BLM and the surface-managing agency (in this case the Forest Service) must concur with this recommendation.

Utah DOGGM enforces the performance standards and permit requirements during the mine's operation and has primary authority in environmental emergencies. OSM retains oversight responsibility for this enforcement. BLM and the Forest Service have authority in those emergency situations where Utah DOGGM or OSM inspectors can not act before significant environmental harm or damage occurs.

#### F. History, Background, and Potential Mining Scenarios

Coastal States Energy Company has been operating the Skyline Mine through their wholly-owned subsidiary, Utah Fuel Company, since 1981. On January 1, 1991, they applied to lease 2,020.02 acres of unleased Federal coal lands adjacent to the Skyline Mine.

Current production from the Skyline Mine is approximately 5,000,000 tons per year, using two longwall systems and three continuous miner sections. They believe the demand for their coal will increase in the future. If Coastal acquires the proposed lease tract, they may add a third longwall system and other continuous miner sections.

There are two potential mining scenarios. If Coastal acquired the lease, they would mine the tract through their Skyline Mine facilities. If another company were the successful bidder, the mining would probably be from a new mine facility constructed on private lands to the east, probably in the approximate location of the old Winter Quarters Mine. The surface facilities would probably be about like other mines in the Wasatch Plateau, and occupy approximately 15 acres. This is assuming a room-and-pillar mining operation producing approximately 1,000,000 to 1,500,000 tons per year. Approximately 2 miles of access road would also be required, requiring approximately 12 acres. The total surface disturbance would be approximately 27 acres, and would probably be all on private land. Surface facilities would include at least two portals, bathhouse and office facilities, a conveyor system, coal storage area, and a truck loadout. The development of a new mine is not considered likely at this time due to current market conditions, relatively small total reserves for the lease tract and the fee land, and costs for mine development.

#### G. Other Activities Affecting Cumulative Impacts

If the Winter Quarters tract is leased, some surface impacts are expected to be associated with underground mining. If Coastal States Energy Company were the successful bidder, they predict the following surface disturbing activities would be necessary for mining the tract:

1. Eight coal exploration holes would be needed to evaluate coal quality and quantity. This would involve 8 drill pads of approximately 1/2 acre each and approximately 1/4 mile of access road for each hole.
2. If Coastal does not obtain the rights to the coal in the fee lands to the east, they would require one ventilation shaft. There would be no fan or mechanical/electrical facilities required on the surface.

If another company were to acquire the tract, the most logical access would be through the fee lands to the east. This would require accessing the private coal and constructing a new mine with surface facilities on private lands. Exploration drilling impacts would be expected to be approximately equal to those predicted by Coastal States Energy Company.

Forest Service activities planned in the foreseeable future for the area are:

1. A timber sale is planned for 1998 in the head of Bobs Canyon, which would involve cutting 200 to 300 thousand board feet of aspen and fir. The fir would be harvested by selective cutting, but the aspen might be harvested by patch cutting (clear cuts of less than 10 acres).
2. The foot/horse trail up Anderson Canyon between Fish Creek and Granger Ridge is scheduled for reconstruction during 1996.
3. Central Utah Telephone, Inc., applied for a right-of-way to install a fiber optic line up Winter Quarters Canyon and Winter Quarters Ridge during the summer of 1995. Due to the potential for damage of the line by mining-induced subsidence, they have dropped their application and now plan to route the line from Highway 6 down the Starvation Creek drainage to Scofield.
4. During the past year, there has been renewed interest in oil and gas exploration on the Wasatch Plateau. It could reasonably be expected that the proposed coal lease tract could also be leased for oil and gas and a well drilled. The average drill site in the area occupies approximately 2.25 acres, and the average 4.22 miles of new or upgraded access road requires approximately 25.3 acres, for a total of approximately 28 acres. If the well were dry, the drill site and new access road would be reclaimed immediately. Sections of previously existing access road that were upgraded would not be reclaimed. (The Granger Ridge road has already been upgraded for previous exploration drilling. If it were used again, the total disturbed area would probably be less than predicted). A producing well could remain in place for 30 to 40 years, until the reservoir were exhausted, and would then be reclaimed. If a discovery was made, additional wells would probably be drilled. The oil and gas reservoirs in the area are below the coal seams, so oil and gas drilling and coal mining in the same area could conflict. Such a conflict would be resolved by the BLM.

#### H. Negative Declaration

There are no prime farmlands, rangelands, or alluvial valley floors within the proposed lease area. Leasing of the tract should not result in significant impacts to cultural or paleontological resources; threatened, endangered, or sensitive plant or animal species; or floodplains. Protection of these resources is provided under the lease stipulations and Federal and State laws and regulations.

## II. DESCRIPTION OF ALTERNATIVES

### A. Alternative 1 - No Action

Under this alternative the coal lease application would be denied and the tract would not be offered for leasing.

### B. Alternative 2 - Offer for Lease with Standard Stipulations

#### 1. Description

Under this alternative the tract would be offered for competitive leasing as recommended by the Coal Tract Delineation Team and the Regional Coal Team. The proposed lease tract lies entirely within the Pleasant Valley - Fish Creek Coal Multiple-Use Evaluation Area defined in the LRMP. As the tract would be offered for competitive leasing, it could be leased to Coastal States Energy for mining through their Skyline Mine or to another company which would have to develop a new mine, probably on fee land to the east.

#### 2. Management Requirements, Constraints, and Mitigations

The Forest Plan Standard Special Stipulations, which are attached as Appendix C, would be included in the lease in addition to standard BLM lease stipulations. They are consistent with the planning documents for the BLM and the Forest Service and are necessary special measures for protection and mitigation of the affected resources.

Forest Service Special Coal Lease Stipulation #9 precludes mining induced subsidence that could damage or alter the flow of perennial streams, without specific analysis of the potential affects and consent by the Forest Service. The analysis presented in this EA is based on a conceptual mine plan that would prevent subsidence of perennial portions of Winter Quarters and Woods Canyon Creeks. Recoverable coal reserves would be less under this conceptual plan than under a plan which would allow subsidence of the perennial streams (Sections IV.B.1. and IV.B.7).

If the lease is issued, approval of surface facilities or subsidence of perennial streams would require additional analysis under the National Environmental Policy Act of 1969. The effects of subsidence on perennial drainages induced by longwall mining is currently being studied at the Skyline Mine in Burnout Canyon as a cooperative effort between the Manti-La Sal National Forest, Intermountain Research Station, and Utah Fuel Company. Any future analysis of the impacts of subsiding perennial portions of Winter Quarters and Woods Canyon Creeks would be based on conclusive results of the Burnout Canyon Study and other available information.

C. Alternative 3 - Offer for Lease Excluding Areas Within the Semiprimitive Recreation Area

1. Description

Under this alternative the tract would be made available for leasing as delineated, except for the area within the Fish Creek SPR (approximately 40 acres). There are no other changes from Alternative 2.

2. Management Requirements, Constraints, and Mitigations

The Standard Special Stipulations which are attached as Appendix C would be included in the lease in addition to standard BLM lease stipulations. They are consistent with the planning documents for the BLM and the Forest Service and are necessary special measures for protection and mitigation of the affected resources.

D. Comparison of Alternatives

The following chart has been generated to display a comparison of alternatives relative to the identified issues and concerns. The issues and concerns are listed as resource elements. Refer to Section IV for a discussion of impacts for each alternative.

<u>Resource Element</u>	<u>Alternatives</u>		
	1	2	3
Topography, Geology, and Mining	No coal would be mined.	22 million tons of coal could be mined. 6 million tons left in-place to prevent subsidence of perennial streams.	Same as Alt. 2.
Surface Hydrology			
Woods/Winterquarters Canyons	No effect.	Potential change in quantity/quality.	Same as Alt. 2.
Scofield Reservoir	No effect.	No effect.	No effect.
Ground Water Hydrology			
General	No effect.	Increased water output to Eccles Creek, but with lower TDS levels.	Same as Alt. 2.
Diversion of water to different drainage.	No effect.	No effect.	No effect.

Terrestrial Wildlife	No effect.	No effect.	No effect.
Aquatic Wildlife	No effect.	No effect.	No effect.
Vegetation and Range	No effect.	No effect.	No effect.
Socioeconomics			
Coal reserves for Skyline Mine	End in 12-13 years.	End in 16-17 years.	Same as Alt. 2.
Protect perennial streams	No coal would be mined.	Leave 6 million tons coal in place.	Same as Alt. 2.
Employment	Loose 290 jobs in year 2007.	Continue employment until year 2011.	Same as Alt. 2.
Royalties	No royalty income.	\$41.6 million in royalties to federal, state, and local governments.	Same as Alt. 2.
Economic viability of lease tract	No effect.	Stream protection may make tract uneconomic.	Same as Alt. 2.
Recreation - Fish Creek SPR	No effect.	No effect.	No effect.
Surface Facilities and Transportation			
General	No effect.	Minor impacts from exploration drill- ing and vent shaft. Possibly heavier truck traffic to coal load-out.	Same as Alt. 2
Exploration drilling	No effect.	No effect.	No effect.

### III. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The following is a description of the affected environment, which has been divided into individual resource elements for clarity. The management prescription for the area, as designated in the Manti-La Sal National Forest LRMP, is for Semiprimitive Recreation (SPR), Forage Production (RNG), Wood-Fiber Production and Harvest (TBR), and Riparian Area Management (RPN). The management requirements for these areas are found on pages III-55 through III-57 and III-64 through III-73 of the LRMP.

The lease application area is located in central Utah in the northern portion of the Wasatch Plateau within the Wasatch Plateau Coal Field. The tract is adjacent to Coastal States Energy Company's Skyline Mine. The Wasatch Plateau is a north-south trending high plateau bounded by the Castle Valley to the east and the Sanpete Valley to the west. The tract is located approximately 23 miles northwest of Price, Utah. The area is accessed by Utah State Highways 96 and 264, which connect the Scofield area with U.S. Highway 6. Highway 6 runs northwest-southeast between Price and Spanish Fork.

#### A. Topography, Geology, and Mining

Winter Quarters Ridge crosses the central portion of the tract in an east-west direction. This ridge gradually slopes towards the east with an elevation ranging from about 9,300 feet to about 9,500. The section of the tract north of Winter Quarters Ridge comprises the upper reaches of the Woods Canyon drainage and its tributaries. The section of the tract south of Winter Quarters Ridge comprises the upper reaches of the Winter Quarters Canyon drainage and its tributaries. Both of the drainages flow in an easterly direction into Mud Creek (also called Pleasant Valley Creek) which flows north into Scofield Reservoir. On the eastern edge of the tract, the lower segments of the major drainages have an elevation of approximately 8,300 feet.

Stratigraphic units exposed on the tract consist of the following, in descending order: North Horn Formation (shales with subordinate sandstone, conglomerate, and limestone), Price River Formation (sandstone interbedded with shale and conglomerate), Castlegate Sandstone, and Blackhawk Formation (siltstone and sandstone interbedded with shale). The North Horn and Price River Formations occur on the western portion of the tract and form the slopes of the ridges at higher elevations. The Castlegate Sandstone is not a predominant rock unit and is either very thin or absent. The Blackhawk Formation occurs exclusively in all the drainages and forms the landscape of almost the entire eastern portion of the tract.

Coal beds of economic interest in this area occur at the base of the Blackhawk Formation. Three coal beds have been identified on the tract which reach minable thickness. In descending order these coal beds include the Upper O'Conner, Lower O'Conner A, and the Flat Canyon. At this time, only the Lower O'Conner A bed is considered economically recoverable. Both the Upper O'Conner and the Flat Canyon beds have isolated pockets of minable coal but it has not been resolved whether recovery of these reserves is feasible.

The Upper O'Conner bed occurs from about 30 feet to 210 feet above the Lower O'Conner A bed. The Flat Canyon Bed occurs from 10 to 100 feet below the Lower

O'Conner A bed. Overburden on the Lower O'Conner A bed is over 2000 feet under the ridges towards the western portion of the tract and is about 800 feet under the lower segments of the canyon bottoms towards the eastern portion of the tract.

The structure of the area is characterized by northwest-southeast and north-south trending fault systems with strata dipping gently west-northwest between the faults. The western boundary of the tract is delineated along the trace of an inferred major north-south trending fault. An east-west fault essentially splits the tract and is believed to terminate towards the western boundary of the tract.

The northern portion of the Wasatch Plateau has been determined to have a high potential for oil and gas occurrence (FEIS for Oil and Gas Leasing, 1992). The FEIS predicted 30 wells would be drilled during the period 1992 to 2007, so it is reasonable that one could be drilled within the proposed coal lease tract. Three wells, all dry, have previously been drilled near the tract in recent years at the following locations:

T 12 S, R 6 E, Section 26,  
T 11 S, R 5 E, Section 27,  
T 13 S, R 5 E, Section 11.

The Clear Creek gas field is located 4 miles southeast of the tract. Only one well remains in production. Production is from the Ferron Sandstone member of the Mancos Shale.

#### B. Surface Hydrology

The proposed lease tract contains two east-trending drainages, Woods Canyon and Winter Quarters Canyon. The entire tract is within the Scofield Reservoir drainage, which then drains into the Price River, and ultimately into the Colorado River. The Scofield drainage includes numerous east-trending drainages, some of which extend from the crest of the Wasatch Plateau, which is also the drainage divide between the Colorado River Basin and the Great Basin.

Woods Canyon and Winter Quarters Canyon creeks have been defined as perennial to near their upper reaches (see Map 2). For this environmental analysis, the definition of "perennial" is having a measurable flow 2 out of 3 years on or about October 1. Flows where the streams cross off the proposed lease along the eastern boundary were 0.75 cfs for Winter Quarters Canyon creek and 0.18 cfs for Woods Canyon creek on September 23, 1993. There was flow at both locations on October 1, 1994, but it was not measured. These data seem to correlate well with perennial reaches defined by macroinvertebrate species (the presence of 2- to 3-year old stonefly larvae which require perennial water for survival, Stewart and Stark, 1988). The Forest Service considers this to be a reasonable and conservative method of defining perennial stream reaches.

Snowmelt-fed springs are the primary source of water for the perennial streams, with summer rains usually producing little runoff (USGS, 1979). The ephemeral side drainages flow during snowmelt and in response to rainstorms, but are usually dry by October 1. Spring flow, which is probably recharged primarily

by snowmelt, contributes to stream flows but is not enough to sustain the ephemeral drainages.

Water quality is good for both Winter Quarters Canyon and Woods Canyon creeks, and meets State water standards for all parameters measured. The State of Utah has assigned water quality standards 1C, 2B, 3A, and 4 (1994) to Price River and tributaries from Castle Gate below Price City Water Treatment Plant intake to the headwaters, which includes this lease tract. Phosphate levels have been high in Scofield Reservoir for a number of years, but the State has determined that it is naturally occurring due to sediment erosion, and that human activities are largely mitigated and do not affect the phosphate levels as long as erosion is controlled. Scofield Reservoir still is a priority water body for water quality improvement.

In order to prepare for the evaluation of this proposed lease tract, available water quality data have been assembled. This includes samples from Winter Quarters Canyon and Woods Canyon creeks, usually near the confluence with Pleasant Valley Creek, but also from a one year study of water quality just below the National Forest and a recent two year water quality data collection effort within this lease tract. The water quality is similar in Winter Quarters, Woods, and Eccles Canyons. Water quality data have been collected in Eccles Canyon by Skyline mine since 1979 to monitor the effects of mining. The stations above the mine are similar in quality to the streams on the proposed lease.

In Winter Quarters Canyon just below the National Forest, samples high in sulfur have been found which appear to be influenced by a tributary that is not on the National Forest and therefore not in the proposed lease area.

Price and Plantz (1987) have reported the following flow data for Eccles Canyon Creek:

"The annual mean flow in Eccles Canyon Creek, where it is gaged at station 09310600, ranged from 1.64 cfs in water year 1981 to 6.78 cfs in water year 1984 (table 3). Most of the annual flow in Eccles Canyon Creek is from late April to early July, as shown in figure 3. The maximum recorded peak flow at station 09310600 was 71.0 cfs 5/23/84 (table 3).

"The chemical quality of stream flow in Eccles Canyon is generally good, that is, the water is chemically suitable for most common uses. Dissolved-solids concentrations in 46 samples collected at station 09310600 during the 1980-1984 water years ranged from 160 to 490 mg/l with a mean of 293 mg/l (table 4). Calcium, magnesium, and bicarbonate were the dominant ions found in the samples. With the exception of manganese, concentration of trace elements that were analyzed were smaller than the criteria of the US EPA (1976) for drinking water supplies. The mean concentration of Manganese for 28 samples was 67 ug/l, compared to a criterion of 50 ug/l.

"Suspended sediment concentrations in 90 streamflow samples collected at station 09310600 ranged from 10 mg/l 1/13/81 to 45,100 mg/l 5/30/93. Instantaneous suspended sediment loads determined from the suspended sediment samples concentrations and flow data are as follows:

Water Year	Suspended Sediment Loads t/day	
	Min	Max
1980	0.16	228
1981	0.03	6.9
1982	0.12	206
1983	0.21	419
1984	0.11	551

Sediment yield from the upper portions of the basin is probably negligible (Mundorff, 1972). According to the U.S. Soil Conservation Service (1975), erosion rates in the Price River Basin vary from 185 to 5625 tons per square mile per year. The bulk of the sediment comes from areas covered with the highly-erodable Mancos shale (Mundorff, 1972), not the upper elevations where the proposed lease tract is located. However, Denton, et al (1983) report some of the greatest sediment loadings are from Eccles and Woods canyons which are both similar to Winter Quarters Canyon:

"Nutrient concentrations in Scofield watershed seem to be somewhat correlated with the sediment carried by the streams. ... The heaviest sediment and nutrient loadings come from subbasins where either natural conditions (steep canyon walls, unstable soils/slides, and gradients as in Woods Canyon [67 T/sq mi/yr] or Fish Creek [50 T/sq mi/yr]) or in areas heavily used by man (Pleasant Creek near Scofield [70 T/mi sq/yr] or Eccles Creek [100 t/mi sq/yr])."

Iaquinta (1985) estimated the following sediment yields at the National Forest boundary:

Eccles Canyon (Undisturbed)	63 t/mi sq/yr
Woods Canyon	58
Winter Quarters Canyon	55

The gradient of the perennial sections of both Winter Quarters Canyon and Woods Canyon creeks, within the proposed lease tract, ranges from about 4 to 6%. The unnamed perennial tributary which comes from the northeast corner of section 3 and intersects Winter Quarters Canyon creek in the east-central part of section 2 has a gradient of approximately 13%. The north-facing slopes of Woods and Winter Quarters Canyons are 35-50%, while the south-facing slopes are 45-55%.

Denton, et al (1983), approximated the annual discharge from Woods Canyon Creek using an area-flow rate correlation with Fish Creek:

	Eccles	Woods
J	43 ac ft	21 ac ft
F	41 ac ft	19 ac ft
M	51 ac ft	28 ac ft
A	76 ac ft	65 ac ft
M	679 ac ft	480 ac ft
J	108 ac ft	270 ac ft
J	64 ac ft	33 ac ft
A	53 ac ft	29 ac ft
S	45 ac ft	27 ac ft
O	45 ac ft	26 ac ft
N	44 ac ft	23 ac ft
D	44 ac ft	22 ac ft
total	1293 ac ft	1043 ac ft

Jeppsen et.al. (1968) reports the mean annual precipitation at 30-35 inches per year, with 8-10 inches falling as rain. The average annual precipitation reported at Scofield Dam (1951-60) is 16 inches and 23 inches at the Skyline Mine.

For many years the Forest Service has been concerned that mining-induced subsidence could impact the flow of streams, which would affect riparian zones, macroinvertebrate populations, and fish spawning. Mining on private lands approximately 15 miles southeast of the proposed lease caused surface fracturing on fee land which diverted the Right Fork of Miller Creek into the Cyprus Plateau's Star Point Mine. Utah Fuel Company is funding a study in Burnout Canyon, approximately 4 miles south of the proposed lease tract, to evaluate longwall mining subsidence impacts on a perennial stream. As of June, 1995, mining had progressed to the fourth longwall panel, all of which have been under intermittent parts of the stream. There have been some changes noticed in the stream, but impacts appear to be minor (Sidle, 1995). Not enough data are available yet to reach any definite conclusions.

### C. Ground Water Hydrology

The principle factors controlling ground water in an area are the precipitation and the geology. Most of the water comes from spring snowmelt which percolates into the ground. The geology controls water movement through the subsurface and the locations of springs.

The rock units exposed in the proposed lease tract are from the Cretaceous Mesaverde Group. The lowest unit is the Star Point Sandstone, a massive, medium-grained sandstone which is approximately 1,000 feet thick with almost no shale. The Blackhawk Formation, which overlies the Star Point, contains interbedded sandstones, shales, siltstones, and mineable coal seams. The sands of the Blackhawk are fine- to medium-grained, usually with a high clay content. The shales are generally high in montmorillonite (smectite) clays, which swell when wet and should form an effective barrier to ground water movement. The youngest unit in the area is the Castlegate Sandstone, a massive

medium- to coarse-grained sandstone with some interbedded conglomerates near the base.

Danielson, et al (1981), and Danielson and Sylla (1983), describe the Star Point/Blackhawk regional aquifer of the Wasatch Plateau as saturated except near the plateau escarpment and in deeply incised canyons where ground water can drain naturally. In the area of the proposed lease tract, the Star Point Sandstone is less well developed, actually consisting of several sandstone tongues. The Lower O'Connor Seam lies immediately over the Storrs Tongue (upper-most tongue) in the eastern part of the tract, and approximately 40 to 50 feet above the Panther Tongue to the west where the Storrs Tongue has pinched out. Numerous coal exploration drill holes have penetrated the upper tongue, showing the zone to be dry except near faults (Mark Bunnell, 1994, personal communication). Ground water in the Blackhawk Formation above the regional aquifer occurs predominantly in fractured and faulted rock and to a lesser degree in sandstone lenses. The structural dip of the area is to the west, and the regional aquifer does not crop out within the Huntington Creek drainage to the west of the Skyline Mine, so it probably does not supply springs in the area.

A number of faults occur within the proposed lease tract, but of the 44 faults encountered in the Skyline Mine (as of 1992), only 5 contained water. Four of the 5 faults appeared to intersect water-saturated paleochannels in the roof. Two faults were intersected in the Star Point Sandstone which produced water from the floor but not from the roof. The low permeability along faults in the Blackhawk Formation is probably due to the high clay content.

The majority of the springs in the area issue from west-facing slopes, usually at a sandstone-shale interface. Water probably percolates down through the section until it encounters a shale lens. Then it flows down-dip (generally to the west) along the top of the shale until it reaches a point it can again move downward or emerges at the surface.

Most of the springs have higher flows during the spring snowmelt season, with much lower flows in the fall. Flow rates also vary considerably from year to year, depending on the amount of snow received during the previous winter. These data substantiate the theory that the water supplying the springs is generally from a very localized source.

The ground water in the area is a strong calcium bicarbonate type. Sulfate, magnesium, and phosphate increase downslope toward Pleasant Valley Creek. Two distinct qualities of spring water exist in the area. Springs near the Castlegate Sandstone outcrop have very low dissolved solids content (generally less than 100 mg/l), probably due to the lack of shale in the Castlegate. Springs in the remainder of the area have dissolved solids concentrations of 180 to 260 mg/l.

#### D. Wildlife - Terrestrial

The proposed Winter Quarters LBA area is inhabited by a variety of wildlife species. Bear, cougar, deer, elk, birds, reptiles, and amphibians are supported by habitats within the project area. The area is used as spring and summer forage by deer and elk. Big game species may also use this area for

calving, fawning, and cover. Common raptors known to occur within the area include red-tail hawks, golden eagles, sharp-shinned hawks, and a number of owl species. Additional raptor species certainly exist at the site during migration periods. Raptor aerial and ground surveys of the area indicate active and inactive nest sites in 1992 and 1993 (surveys conducted by Coastal States Energy Development Corporation and Manti-LaSal National Forest Biologist). Other terrestrial organisms present include rodents, lagomorphs, upland ground birds, songbirds, coyotes, bobcats, and woodpeckers.

Listed threatened, endangered, and sensitive species that may occur in the area are Bald eagles, Northern Goshawk, and Northern Three-toed Woodpecker. Bald eagles may occasionally pass through the area during their winter migration. The Northern Goshawk is a listed sensitive species that occurs in the project area. The goshawk has been observed during ground surveys, and two nests have been identified within the proposed lease tract. No Northern Three-toed Woodpeckers have been seen during surveys. No other threatened, endangered, or sensitive species have been observed in the project area.

No known threatened, endangered, or sensitive plant species are known to occur on the proposed lease tract (documented in the Biological Evaluation).

Riparian zones have been identified within the project tract. These provide important habitat for water dependant terrestrial species.

#### E. Wildlife - Aquatic

Winter Quarters Canyon Creek has a moderate population of macroinvertebrates. Stonefly larvae were found as far up as the intersection of Box and Bob's Canyons, indicating perennial flow. Mayfly nymphs were also present, but they may not require perennial water. On June 7, 1994, breeding cutthroat trout were found from the forest boundary down onto the private land to the east. No fish barriers exist through this stretch, so it is likely that fish do occupy the stream above the forest boundary.

The upper portion of Woods Canyon Creek has a higher population of mayfly nymphs than Winter Quarters Canyon. Stonefly larvae were found as high as the fork in the stream near the center of Section 34 (T 12 S, R 6 E), indicating perennial flow. The stream may be perennial below this point due to a major spring located at this fork of the stream. The riparian habitat appears to be in excellent condition on the forest, but below the forest boundary to the east it has been heavily impacted by livestock grazing. No fish were seen, although some may have been present, in the stream from its headwaters to the point where it crosses the paved road running along the west side of Scofield Reservoir (Sec. 32, T 12 S, R 7 E) on June 28, 1994.

The riparian zones identified within the tract provide important habitat for aquatic wildlife.

#### F. Vegetation and Range

The north-facing slopes are dominated by the spruce-fir communities, along with a few areas on south-facing slopes. Dominant species are Engelmann spruce

(Picea engelmannii) and subalpine fir (Abies lasiocarpa). The understory varies from almost nonexistent to moderate coverage, often dominated by gooseberry currant (Ribes montigenum).

The aspen community is the most common vegetation type on the south-facing slopes, and also occurs on some north-facing slopes. Aspen (Populus tremuloides) is the dominant overstory species. Snowberry (Symphoricarpos oreophilis) and Oregon grape (Mahonia repens) are the dominant understory species, depending on location.

Much of the ridge top areas, and some of the canyon bottoms, are covered by the mountain grassland community. Mountain brome (Bromus carinatus) and slender wheatgrass (Elymus trachycaulus) are the dominant species. Other grasses, forbs, and browse species are common. Some of the slopes above riparian areas are covered by the upland sedge-grass community with Carex geyeri. The ridge tops also contain the sagebrush-grass community in some areas. The dominant species are Vasey sagebrush (Artemisia tridentata var. vaseyana), slender wheatgrass, and subalpine needlegrass (Stipa columbiana). Other common species in the sagebrush-grass community are low rabbitbrush (Chrysothamnus viscidiflorus), Louisiana sagewort (Artemisia ludoviciana), aster (Aster spp.), yarrow (Achillea millefolium), and Indian paintbrush (Castilleja spp.).

A few small meadows occur in the canyon. They are generally dominated by species of Poa with some sedges and and carex intermixed. They are generally productive.

Riparian areas exist along streams and at seeps and springs. The vegetation along the water edge consists of species of Carex, Poa, and to a lesser extent sedges. Some willow is present along the streams.

The proposed lease tract contains parts of 5 sheep grazing allotments. A total of 4,700 sheep graze the area between July 1 and September 30.

#### G. Socioeconomics

This coal lease application filled by Coastal States Energy is adjacent to their Skyline Mine located in Carbon County Utah. Present holdings of this company are approximately 70 percent in Emery County and 30 percent in Carbon. The proposed lease area is entirely in Carbon County.

The work force for this operation includes 392 workers which come from several counties including:

Sanpete County	50 percent or (196 workers)
Utah County	25 percent or (98 workers)
Carbon County	18 percent or (71 workers)
Other	7 percent or (27 workers)

The majority of coal from this operation is transported by conveyor belt to a Unit Train Loading facility in the D&RG spur south of Scofield, Utah. Rail workers are primarily located in Carbon County.

The Skyline Mine is currently the highest producing underground mine in the United States west of the Mississippi River. Existing capacity is 5.5 million tons (MT) per year and 1993 production was 5.1 MT. The mine uses 2 longwall sections and several continuous miner sections. As seen in Figure 1, the mine has experienced significant growth in the last 10 years to its current production level.

Coastal is the major noncaptive coal producer in Utah with 3 mines and about 43 percent of Utah production in 1993 (9 million tons). The Skyline operation produces about 60 percent of Coastal's total production. Utah's coal production, which grew significantly through the mid and late 1980's, has leveled off in the 1990's in the 21 to 22 million ton per year range (Figure 2). Net production in 1993 was 21.7 million tons which is about 300,000 less than record 1990 production. The major portion of Utah's production comes from federal lands (85 to 88 percent).

The area of influence for the Skyline Mine and the Winter Quarters Tract is difficult to tie down since the coal is in two counties (Carbon and Emery) and workers primarily come from three counties (Carbon, Sanpete, and Utah). Looking at available statistics from the Bureau of Economic and Business Research, it is clear that disaggregation methods used do not properly identify statistics by county. An example is mining employment and mining wages in Sanpete County where statistics show little contribution from mining. This is in spite of the fact 196 workers from Sanpete are employed at the mine. It is assumed that economic statistics for the Skyline operation are credited to Carbon County.

For analysis purposes, Carbon County will be analyzed as the area of influence and statements about Sanpete County will be made to the extent possible. Statistics concerning the Skyline mining operation will be provided where possible. Utah County, being a relatively large urbanized area, would show only minor significance from this operation although an estimated 98 workers come from this area.

Carbon County had an estimated 1992 population of 20,600 which is level with 1991. The county's population peaked in 1982 at 24,700 and declined steadily until 1990 when it bottomed at 20,200 which is a 4,500 (-18%) decline. The county population has made a modest recovery since 1990 and shows signs of maintaining existing levels. The Utah Office of Planning and Budget projects Carbon County's population to be level through year 2000. The nearest town to the mine, Scofield, had a population of 43 in 1990, indicating the general remoteness of this area.

Civilian labor force over 16 years of age (1990 data) in Carbon County totaled 8,288, which is down 777 workers, or about 9%, from the 1980 level of 9,065, indicating the significant decline of the mid and late 1980's. The major employment categories in 1991 were as follows:

Government .....	2,023	(26.5%)
Trade .....	1,923	(25.2%)
Services/Misc .....	1,340	(17.6%)
Mining .....	1,307	(17.1%)
Trans./Public Utils.....	436	( 5.7%)

Figure 1  
COAL PRODUCTION  
SKYLINE MINE

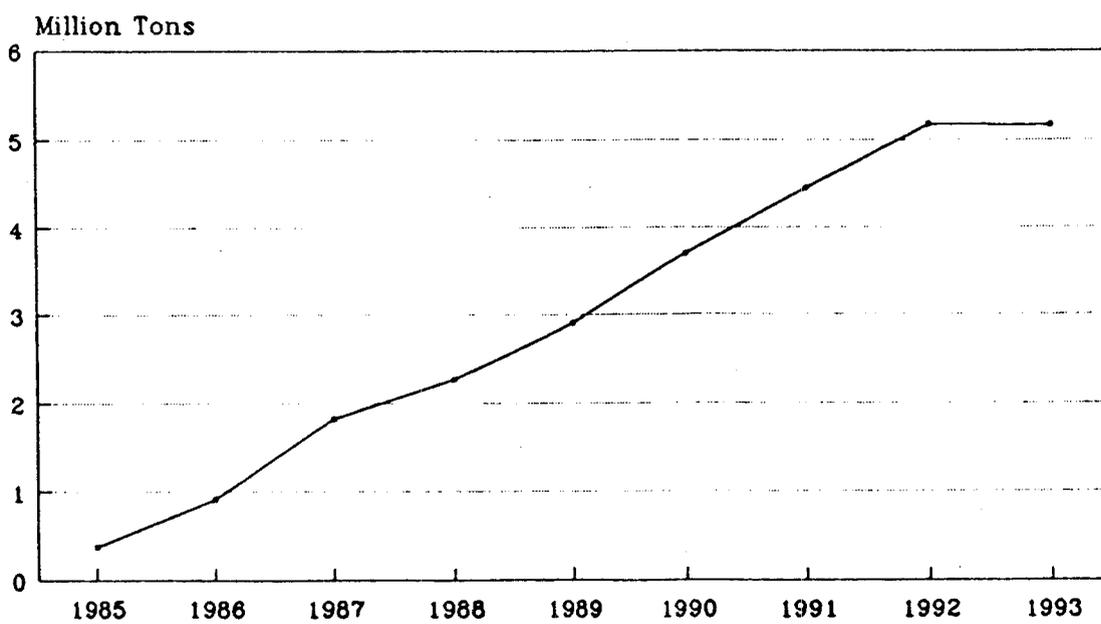
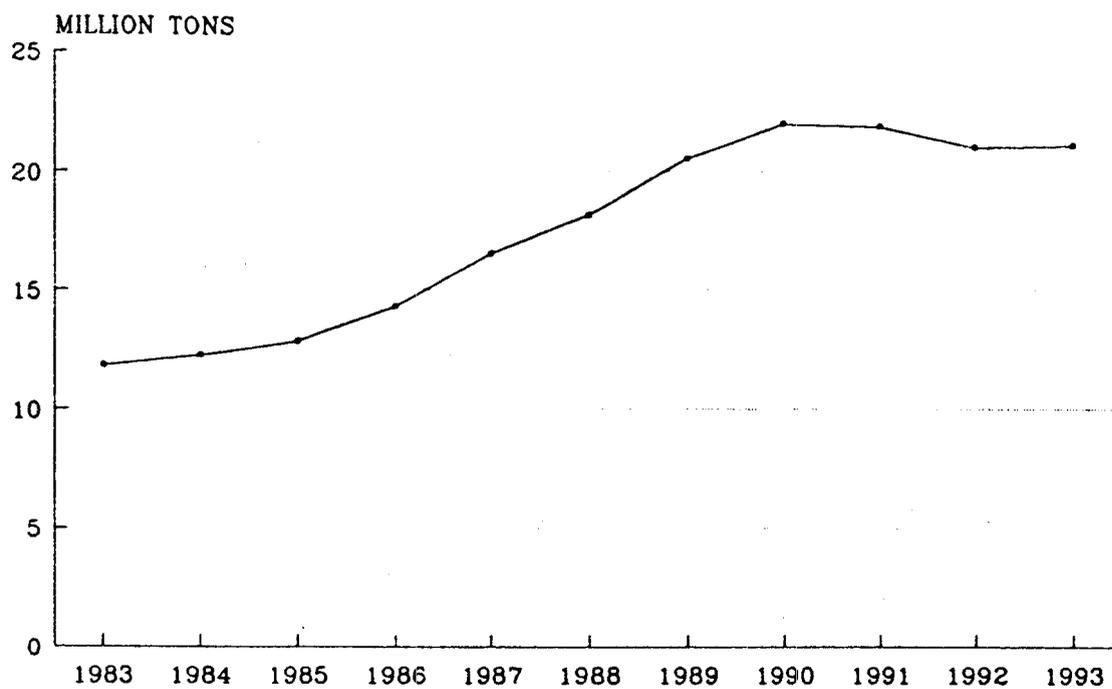


Figure 2  
UTAH COAL PRODUCTION



These data indicate a relatively well balanced economy for rural Utah. The relative significance of the Mining Industry is not as evident in employment as in Personal Income and Earning where this category dominates as indicated below:

Mining .....	\$72,080,000	(34.1%)
Service/Misc.....	35,072,000	(16.6%)
St. & Local Gov't .....	30,970,000	(14.6%)
Retail Trade .....	19,747,000	( 9.3%)
Trans/Public Utils.....	19,683,000	( 9.3%)
Wholesale Trade .....	9,954,000	( 4.7%)

Mining, which is primarily coal mining in Carbon County, is the dominant industry in income generation, providing more than 1/3 of the county economy. Considering the fact the majority of Transportation and Public Utilities is related to coal through hauling and electrical generation, these categories provide about 92 million dollars and 43 percent of income in the county.

Sanpete County provided about 50 percent of the workers to the Skyline Mine or 196 jobs. It is estimated wages generated are about 9.75 million dollars which is about 17 percent of wages and salaries in Sanpete indicating this employment is very significant to this county. The Skyline Mine generates an estimated 20 million dollars of income to workers in Sanpete, Carbon, and Utah Counties.

Trends in the coal mining industry have had a major affect on Carbon County. Statewide coal mine employment peaked in 1982 at 4,296. By 1983 this number had fallen to 2,707 (a 37% reduction) and continued to decline throughout the 80's and early 90's. In 1993 Utah coal mining employment had declined to 2,055 (48% reduction) where it has shown signs of stabilization. An estimated 50 percent of Utah's coal miners are believed to reside in Carbon County.

During the period of significant employment decline, Utah's coal production increased form 11.8 million tons to the 21 to 22 million ton area. This significant increase of almost 100 percent was made possible through productivity increases through mechanization. More use of longwall and other efficient mining equipment has enabled manpower reductions with increased productivity. This has enabled Utah coal to remain competitive in the market place. Figure 3 provides an idea of the significant advance in productivity on a tons production/miner hour basis.

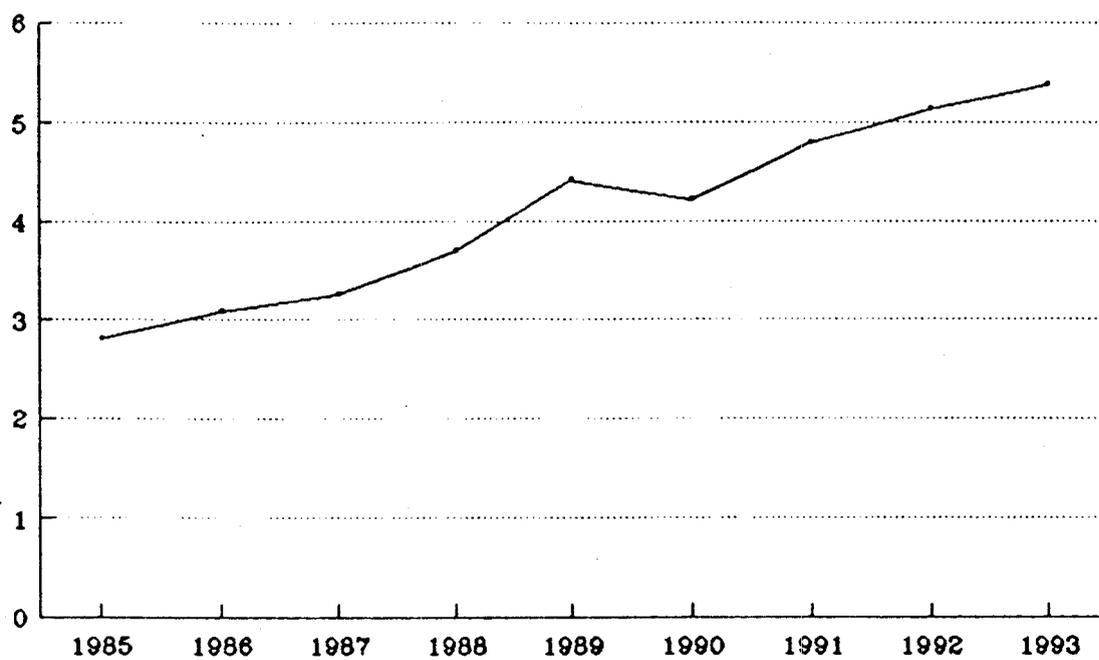
#### H. Recreation and Visual Quality

The proposed lease tract is used by recreationists for hunting, dispersed camping, sightseeing, and fuelwood harvesting. The most intense periods of use are during the general elk and deer seasons in October.

The northwestern corner of the tract includes approximately 40 acres of the Fish Creek Semiprimitive Recreation (SPR) Area. The management emphasis is on providing a semi-primitive, non-motorized recreation experience. Nearly all of the use in the SPR is along the Fish Creek National Recreation Trail and the trail along Gooseberry Creek, which are located in the bottoms of the drainages. There is almost no recreational usage of the SPR in the area of the proposed lease tract.

Figure 3

# UTAH COAL PRODUCTIVITY TONS/MINER HOUR



The Visual Quality Objective (VQO) for the proposed lease area is "Partial Retention", which means that man's activities may be evident but remain visually subordinate to the characteristic landscape. The area is generally wooded, naturally appearing. It is viewed in middleground from Forest Development Road 50221, and in background from the town of Scofield.

#### I. Surface Facilities and Transportation System

There are very few surface improvements on the proposed lease tract. They are limited to the road on Granger Ridge, a pack trail in Winter Quarters Canyon, and a few survey monuments. Woods Canyon has 3 livestock watering troughs and 1 pond, and Winter Quarters Canyon has 4 troughs. There are some sections of allotment boundary fence on the tract.

The coal is transported by conveyor down Eccles Canyon approximately 2.5 miles to a train load-out facility along Pleasant Valley Creek. Access to the mine from surrounding communities is provided by U.S. Highway 6 and Utah State Highways 31, 96, and 264. Coastal States Energy currently has a Forest Service road use permit for surface access to the forest.

#### IV. DIRECT AND INDIRECT EFFECTS OF IMPLEMENTATION

##### A. Alternative 1 - No Action

Under this alternative the tract would not be offered for lease, therefore, the tract would not be mined.

There would be no mining related environmental consequences to the tract area and surrounding vicinity, and there would be no economic benefit to the federal, state, and local governments from coal lease fees and coal royalties. There would also be no input to the local economies from employees salaries or from payments to local businesses for support of the mine. The existing mine would close after the coal in the existing leases is mined-out unless additional reserves in other areas adjacent to the tract are leased. Without additional reserves the mine would probably close in approximately the year 2007, resulting in the loss of 315 jobs.

##### B. Alternative 2 - Offer for Lease with Standard Stipulations

Under this alternative the tract would be offered for competitive leasing as recommended by the Coal Tract Delineation Team. The Forest Service Standard Special Stipulations (attached as Appendix C) would be included in the lease in addition to standard BLM lease stipulations.

###### 1. Topography, Geology, and Mining

If Coastal States Energy Company acquires the lease, underground coal extraction from the tract would likely involve extending underground workings of the Skyline Mine to the north using standard industry longwall mining practices. Mining in the Lower O'Conner coal bed would probably consist of 3 sets of longwall panels, oriented east-west, separated by the Winter Quarters and Wood Canyon drainages. Full-support mining would be employed under the perennial drainages to provide access to adjacent panels and prevent subsidence. Approximately 22 million tons of coal could be mined under this alternative, which would not allow mining under perennial streams. This would extend the life of the Skyline Mine by approximately 4.4 years.

Under this alternative, mining that would cause subsidence of the perennial portions of Winter Quarters and Woods Canyon drainages would not be allowed unless specifically approved by the regulatory agencies with consent of the Forest Service. Forest Service consent to subsidence of the perennial drainages could be issued only if current studies of the effects to perennial drainages (currently scheduled for completion about the year 1998) show that impacts would be consistent with existing laws, regulations, and Forest Plan direction. The results of a study in Burnout Canyon at the Skyline Mine initiated in 1992 would form the basis for such decisions. Under the Organic Administration Act of 1897 and the Multiple-Use Sustained-Yield Act of 1960, other water laws, and the Forest Plan, National Forest System lands must be managed to maintain favorable conditions of water flow

and sustained-yield of renewable resources. Measures that could be used to effectively mitigate impacts would be considered.

If subsidence of the perennial drainages were to be permitted under an approved Mining and Reclamation Plan, the underground mining configuration would be different than that described above. The following full-extraction scenario was developed to determine the amount of recoverable coal that would remain unmined under the scenario that prohibits subsidence of perennial drainages. Mining in the Lower O'Connor coal bed would consist of two blocks of longwall panels separated by the suspected east-west fault which crosses the tract. A southern block of panels would lie under the Winter Quarters Canyon drainage. A northeastern block of panels would lie under the lower stretch of the Woods Canyon drainage. Longwall panels in the southern block would be oriented in a northwest direction from mains oriented in a northeast-southwest direction. Longwall panels in the northeastern block would be oriented in a southwest direction from mains oriented in a north-south direction. Approximately 28 million tons of coal could be mined.

Thin coal in the northwestern portion of the tract would preclude longwall mining in this area. Some extraction using the room-and-pillar method could occur if economical.

Access to the reserves in the Upper O'Connor and the Flat Canyon beds, if they are determined to be mineable, could be provided by rock slopes from the Lower O'Connor A bed. Extraction of both beds would entail blocks of 3 to 4 longwall panels, located in the northwestern portion of the tract for the Upper O'Connor bed and the southwestern portion of the tract for the Flat Canyon Bed. In general, the sequence of mining coal beds would be from top to bottom with longwall panels superimposed.

Subsidence is usually coincident with longwall mining and is transmitted rapidly from the workings to the surface. At Skyline Mine #1 "virtually all subsidence... occurred about 4 weeks after the longwall face passed beneath the subsidence stations" (Bunnell, 1989). Once subsidence has begun it will progress with the direction of mining and continue until after the last longwall panel in the block is complete. The total subsided area will include the surface area above the extracted longwall block plus an additional area determined by the angle-of-draw. Final subsidence contours for a large block of longwall panels extracted from a single coal seam would resemble a broad irregularly shaped trough with maximum subsidence occurring towards the center of the longwall block. Maximum subsidence is usually less than the mining height, due to bulking of the overburden strata.

The extent and magnitude of subsidence is dependent on the physical properties of the overburden, coal bed depth, extracted coal bed height and width, seam dip, geologic discontinuities, mining rate, and number of seams mined. For a single coal bed, subsidence information available from the Skyline Mine indicates an angle of draw of about 21 to 22 degrees and maximum subsidence of about 60% of the thickness of

coal mined. This coincides with similar studies by PacifiCorp on East Mountain which found that mining in one seam caused surface subsidence equal to 68% of the extracted thickness (Dyni, 1991). Surface disruption and associated impacts due to subsidence at the Skyline Mine, as well as the other underground coal mines in the region, usually decrease as the overburden thickness increases. The major effect of multiple seam longwall mining is to increase the maximum subsidence but the angle-of-draw is not changed appreciably where longwall blocks in each seam, or coal bed, are superimposed. Where a longwall block in an underlying seam extends beyond a longwall block in an overlying seam, the subsidence area will expand in accordance with the extended mining area. Maximum subsidence should occur toward the center of the largest amount of longwall block overlap.

A broad subsidence trough with a smooth profile minimizes disruption to the surface. It is produced by mining a large block of longwall panels at an even rate which results in uniform gradual subsidence. One potential impact to streams crossing the final subsidence trough is a change in the original surface slope. Depending on the original topography, an increase or decrease in the surface slope could have an affect on the flow of the stream.

Longwall mining on the tract, precluding subsidence of the perennial drainages, would cause three subsidence troughs; one over each set of longwall panels. Maximum subsidence should be approximately 10 feet. Surface cracks have resulted from longwall mining at the Skyline Mine in shallow overburden between 200 feet and 400 feet. They formed parallel to the slopes of the drainage in the colluvium above the longwall panels. Several of these surface cracks were reported as 200 feet long, 1 foot wide, and with a 1 foot scarp. Numerous other surface cracks opened about 1 to 3 inches and were 30 to 50 feet in length. One of the minor cracks appeared across a flowing drainage in Burnout Canyon above the Skyline Mine in June of 1990. The overburden was approximately 350 feet. The crack (4 inches wide and 8-10 feet deep) filled with mud and did not interrupt flow. By August 1990 the crack was no longer visible (Bunnell, 1990). Field investigation revealed that most minor cracks had disappeared within a few months and the major cracks were rapidly healing.

There were also surface fractures above the mine along Trough Springs Ridge, where the overburden is approximately 1,100 feet thick. The fractures were in the upper Blackhawk Formation, and were 1 to 4 inches wide and 10 to 60 feet long in the spring, but were not noticable in the fall (Mark Bunnell, 1995).

Forest Service Special Stipulation #9, which precludes subsidence of perennial streams without prior approval, would prevent surface fractures that could divert water underground. One case of this type of diversion has been documented on fee lands within the Wasatch Plateau, where the Right Fork of Miller Creek has been diverted into the Star Point Mine. Subsidence theory and the observations displayed in Appendix E indicate that surface tension cracks in overburden greater than 400-600 feet probably do not extend down into the caved zone directly above the underground workings. It is therefore

unlikely that there would be direct hydrologic connection between surface flow and underground workings. Guidance from the SME Mining Engineering Handbook, 2nd Edition states that suggested vertical distance between mining and water bodies should exceed 60 times the mining height (SME, p. 962). The potential for a surface crack to divert water underground prior to healing is further limited by the characteristics of the Blackhawk Formation which consists of interbedded claystone, siltstone, and sandstone. Although material may fracture at the surface, the fractures are prone to heal rapidly because of the expanding nature of the montmorillonite clays. The CHEMPET Research Corp. analyzed drill core material from the Blackhawk Formation through X-ray diffraction and found it to contain 58% montmorillonite clay (Hurst, 1989). Bentonite, which is essentially composed of montmorillonite, is able to absorb water and increase in volume several times (Hurlbut, 1971). The Blackhawk Formation does not readily receive an influx of surface water because the claystone and siltstone have a low permeability and the higher permeability sandstones are lenticular and pinch out in a short distance. During coring for tritium analysis, the siltstone from a layer 65 feet in the mine roof showed a permeability of  $2.5 \times 10^{-9}$  cm/sec which is very low. The silty sandstone 100 feet above the top of the Lower O'Connor "A" seam tested with a permeability of  $1.4 \times 10^{-6}$  cm/sec which is also low (Hydrometrics, 1987).

If a company other than Coastal States Energy Co. acquires the lease, it would probably be mined from fee lands to the east with the room-and-pillar method. While it is necessary to evaluate this potential scenario, it is unlikely that another company would bid on the tract due to current market conditions, relatively small total reserves for the lease tract and the fee land, and costs for new mine development. New portals and surface facilities would be required. Development of main entries could still be driven north and south with submains coming off the main development areas. Room-and-pillar panels could be set up in about 400-600 feet of width depending on the extraction scenario. Extraction using the room-and-pillar method would be less than using the longwall method. Subsidence would be less predictable because of fenders and stumps being left from the coal extraction sequencing. The majority of the tract has less than 2,000 feet of overburden and therefore could be extracted with few major difficulties. Because bleeder systems and barrier pillars would be utilized between panels, subsidence would take place slowly over many years and not be a broad trough. The subsidence in this scenario would be trough, barrier, trough, barrier, etc. Forest Service Special Stipulation #9 would still be in effect, so the same general blocks of coal would be mined as if it were mined by the longwall method.

If another company were successful in obtaining this lease tract, the entry would be from the eastern part of the tract. Development of the main entries could be driven north and south with submains coming off the main development areas. Room and pillar panels could be set up with widths of 400 to 600 feet, depending upon the extraction scenario. Panels in the northern part of the tract would be extracted first with panels south of the fault being extracted last. Full

pillar extraction could take place but less extraction might be accomplished due to the extensive horizontal stresses seen in the Skyline Mine #3. Subsidence would be less predictable because of fenders and stumps left from the coal extraction sequence. Because bleeder systems and barrier pillars would be utilized between panels, subsidence would not be a broad trough. The subsidence in this scenario would be trough, barrier, trough, barrier, etc.

Surface facilities for a new mine on fee lands to the east of the tract would involve approximately 27 acres of disturbance, and would include at least two portals, bathhouse and office facilities, a conveyor system, coal storage area, a truck loadout, and approximately 2 miles of access road. It is most likely that the mine would use existing train loadout facilities in the area. A 1.5 million ton annual operation is possible in either Winter Quarters or Woods Canyon. A 20-30 year mine life is likely.

A new mine facility would have some effect on visual quality, but would not be significant due to the other mines in the immediate vicinity, coal loadout facilities and railroads, the town of Scofield, and the historic Winter Quarters mine. Air emissions (particularly particulates and fugitive dust) would increase in the area if a new mine were operating in addition to the existing mines. A Utah Air Quality Approval Order would be required, and the mine would be required to operate within the standards of the approval order. Dispersion would be expected to be good due to the prevailing westerly winds in the area. Overall effects would be localized and insignificant. Development of facilities would be consistent with requirements of the Surface Mining Control and Reclamation Act of 1977, Federal Regulations 30 CFR 700, and the Utah Coal Rules.

If the area is leased for oil and gas, there could be a conflict between coal mining and petroleum exploration and development. The oil and gas targets in the area are all below the coal seams, requiring drilling through the coal. If this conflict were to arise, it would be resolved by the BLM.

## 2. Surface Hydrology

Forest Service Stipulation #9 (see Appendix C) states that, except at specifically approved locations, mining operations shall be conducted in a manner to prevent surface subsidence that would damage or alter the flow of perennial streams. Mining which could subside a perennial stream would not be allowed unless it could be demonstrated that the effects to the streams would be consistent with existing laws, regulations, and Forest Plan direction.

Subsidence could affect flow of overlying springs in the tract but this is unlikely because the overburden generally exceeds 800 feet and fractures in the overburden would heal rapidly due to the high clay content of the Blackhawk Formation (see Section IV.B.1). An analysis of 13 springs not related to faults on East Mountain (Kadnuck, 1994) with similar mining and geologic conditions indicates that there

appears to be little to no impact to springs from both longwall and room-and-pillar mining. Twelve of the 13 springs studied had mining take place directly under them. One of the springs had full extraction under it in late 1994 and there was not data available to evaluate. Spring 10-1 is located under the Skyline Mine #3 in the 5th Right setup room. It was undermined in September of 1993. The annual subsidence and hydrologic monitoring report submitted in 1995 showed no impact to the spring. It was included in the angle-of-draw for a longwall panel and showed 1 foot of subsidence (Skyline Mine Annual Report, 1995). Dr. Roy Sidle reports from a study of longwall mining from 1992 to 1994 under Burnout Creek "There was no significant difference between pre-mining and post-mining baseflows based on t-test comparisons (Sidle, 1995).

If the lease is mined through existing workings at the Skyline Mine, ground water intercepted in mining would be discharged out the main portals into Eccles Creek, which is still within the Price River drainage. This water is from the lower portions of the Blackhawk Formation, which is below the springs that supply much of the flow in Winter Quarters and Woods Canyons, so the interception of water during mining should not impact stream flows. Discharge at this point would increase flow in Eccles Creek and would provide dilution of existing discharges with high Total Dissolved Solids concentrations (See IV.B.3).

If the lease is mined from new surface facilities in Winter Quarters Canyon to the east of the tract on fee lands, ground water intercepted in the mine would probably be discharged into Winter Quarters Creek. Flow would increase and quality would be affected depending on the amount of water intercepted and discharged. Total Dissolved Solids levels would be increased but would remain within State Water Quality Standards. A discharge permit would be required from the State of Utah. Discharge quality is strictly regulated. Treatment may be required to meet water quality standards.

If a new mine facility were constructed, there would also be an increase in sediment discharged to the drainage and Scofield Reservoir during construction. Sediment control required during mining would minimize this impact. Overall sediment production would not be significant, because the area where the mine would probably be located is already disturbed (site of the abandoned Winter Quarters Mine) and some erosion is occurring.

### 3. Ground Water Hydrology

The only ground water which would be encountered in mining would probably be associated with fracturing and faulting or occasional sandstone lenses directly above the coal seam. The regional Star Point/Blackhawk aquifer does not exist within the lease area. The westerly dip of the strata is such that the water-bearing strata above the coal seam are below the surface in the Huntington Creek drainage, so these strata probably do not supply springs in the area. Therefore, interception of ground water should not alter surface water

flows or the hydrologic balance. In the event that springs or seeps are impacted, Forest Service Stipulation #17 requires the operator to replace the water in quality and quantity.

In the past gypsum rock dust was used in the Skyline Mine, which increased the total dissolved solids (TDS) levels in the water discharged to Eccles Creek. They have changed to limestone rockdust, which is less soluble, and TDS levels have decreased. The mixing of water from areas treated with limestone rockdust with water from areas treated with gypsum rockdust should produce an overall decrease in the TDS of discharge waters.

#### 4. Wildlife - Terrestrial

Alteration of stream flow could alter riparian zones, which in turn could alter watering, foraging, cover, and calving/fawning opportunities for wildlife. This reduction in quality of wildlife habitat might have a long-term effect on many wildlife species. Forest Service Stipulations #2, 3, 4, 7, 9, 14, and 17 provide for the protection of wildlife and wildlife habitat and require mitigation of damage that may be done. Therefore, under this alternative there should be no unmitigated impacts to terrestrial wildlife.

#### 5. Wildlife - Aquatic

Alteration of stream flow could alter the habitat for both vertebrate and invertebrate aquatic species and the spawning areas for trout. These potential impacts could have long-term effects on aquatic species. Forest Service Stipulations #3, 7, 9, 14, and 17 provide protection for aquatic species and their habitat and require mitigation of damage that may be done. Therefore, under this alternative there should be no unmitigated impacts to aquatic wildlife.

#### 6. Vegetation and Range

Potential mining impacts to surface springs could negatively impact vegetation, especially in riparian areas. Forest Service Stipulations #3 and 7 provide protection for vegetation. Stipulations #9 and 17 provide protection for the water resources necessary for both vegetation and grazing. Stipulation #13 provides protection for surface facilities necessary for grazing. Therefore, under this alternative there should be no unmitigated impacts to vegetation and range.

#### 7. Socioeconomics

The proposed lease tract as delineated contains an estimated 28 million tons of recoverable coal. Under this alternative Forest Service Special Stipulation #9 would be applied, which prevents any

subsidence under perennial streams without approval, reducing the amount of recoverable coal to 22 million tons. The Skyline Mine had reserves of 60 million tons of recoverable coal as of June, 1995. As seen in Figure 1, Skyline Mine production grew at a significant rate in the late 1980's and early 1990's, leveling off at just over 5 million tons per year. Assuming continuation at this rate, the existing holdings on a mathematic basis would continue for 12 years. Adding 22 millions tons of reserves at this same rate would result in approximately 4.4 years of additional life to the Skyline Mine. At existing coal prices, production under this alternative would generate approximately 41.6 million dollars of revenue which is shared equally between federal and state/county governments.

It is estimated that with full protection of the perennial streams in Winter Quarters and Woods Canyons, about 6 million tons of recoverable coal would be left in place and not mined. This is 23 percent of the tract total and more than one year of production. Socioeconomic impacts would be the same except the mine life would be reduced by more than one year and 6 million tons of coal would be lost from economic recovery. An estimated \$11.3 million in royalties would be lost. The total economic value of the 6 million tons of unmined coal would be approximately \$75 million.

The leasing and subsequent development of the Winter Quarters Tract would not be expected to have a significant increased socioeconomic impact on Carbon or surrounding counties. Facilities are in place for the mining and transportation of the coal to markets in Utah, the west, the midwest, and export markets in the Pacific Rim Countries. Without the tract, the mine would be closed by the year 2007. With the tract, production would continue to the year 2011. The life of nearly 400 direct employment jobs would be extended as well as numerous jobs in transportation and secondary industries in Carbon and surrounding counties.

If another company acquired the lease, it is assumed it would be developed in conjunction with adjoining fee land. A 1.5 million ton annual operation is possible in either Winter Quarters or Woods Canyons using continuous mining equipment. A 20- to 30-year operation is likely. This scenario could lead to development over the next 5 years with up to 25 construction workers, and 120 coal mine and coal transportation employees under full development. Employees could be expected to reside primarily in Carbon and Emery Counties. Carbon and Emery Counties have a declining or flat population and relatively high unemployment and could easily absorb their portion with minimal economic impact and a stabilization influence. In Utah County, these jobs would contribute to a very minor degree to the continued growth of the county which has one of the highest expansion rates in the U.S. Current economic considerations indicate it is highly unlikely that a new mine would be opened.

## 8. Recreation and Visual Quality

The underground coal mining itself should not impact recreational use of the proposed lease tract. However, coal exploration drilling and construction of a ventilation shaft could have minor, short-term impacts to recreation and visual qualities by disturbing the land surface, creating dust and noise, and increasing traffic. They should not be seen or heard from the Fish Creek SPR due to the topographic isolation of the two areas. Surface subsidence and cracking would have minimal impacts on recreation and visual qualities, and they are not likely to occur in areas of significant recreational use. These minor disturbances would be consistent with the "partial retention" visual quality objective. Any surface disturbing activities on the lease would be subject to a NEPA analysis.

## 9. Surface Facilities and Transportation System

Coal exploration drilling and construction of a ventilation shaft could also have minor, short-term impacts to recreation and visual qualities as described in the preceding paragraph. These activities would be subject to future environmental documentation. Use of the Forest transportation system would require a road use permit.

If a company other than Coastal States Energy Company acquires the lease, the surface disturbance for a mine facility and access roads on private land would be approximately 28 acres (see description in section IV.B.1). The other impacts described in the preceding paragraph would remain unchanged.

As of May, 1995, Central Utah Telephone, Inc., has decided to not to apply for a special use permit to install a fiber optics line up Winter Quarters Canyon and Winter Quarters Ridge. They are planning to run the line from Highway 6 south along Starvation Creek to the town of Scofield.

If Coastal States Energy Company acquires the lease, no impacts are expected on the transportation system. The existing coal loadout facilities and railroad could handle the additional production. If another company acquires the lease and constructs surface facilities on fee lands to the east, coal would probably be hauled by truck to a railroad loading facility at either the White Oak Mine south of Scofield or the Skyline Mine at the mouth of Eccles Canyon. Traffic is estimated at 140 truckloads per day, 5 days per week. This would increase traffic on the existing roads.

Existing Forest Service owned or permitted structures, such as fences and troughs, are protected by Forest Service Special Stipulation #13, which would require their repair or replacement if damaged by subsidence.

C. Alternative 3 - Offer for Lease Excluding Areas within the Semiprimitive Recreation Area

Under this alternative the tract would be made available for leasing as delineated, except for approximately 40 acres which is located within the Fish Creek SPR. The Standard Special Stipulations which are attached as Appendix C would be included in the lease in addition to standard BLM lease stipulations.

1. Topography, Geology, and Mining

The coal beds identified on the tract are not of minable thickness within the vicinity of the areas designated as SPR, so there would be no mining impacts within the SPR. Therefore, there would be no change in impacts from Alternative 2.

2. Surface Hydrology

No change from Alternative 2.

3. Ground Water Hydrology

No change from Alternative 2.

4. Wildlife - Terrestrial

No change from Alternative 2.

5. Wildlife - Aquatic

No change from Alternative 2.

6. Vegetation and Range

No change from Alternative 2.

7. Socioeconomics

No change from Alternative 2.

8. Recreation

No change from Alternative 2.

9. Surface Facilities and Transportation System

No change from Alternative 2.

D. Short-term Use of Man's Environment vs. Long-term Productivity

1. Alternative 1

There would be an economic loss of approximately \$41.6 million in royalties and \$92.4 million in salaries for the 22 million tons of coal not produced. There would also be no benefit in heat or electricity generation from the coal. However, the coal would be available for production in the future.

There would be no mining-related changes to short-term or long-term productivity of other resources.

2. Alternative 2

Mining of coal as proposed could extend the life of the Skyline Mine by approximately 4.4 years and provide 22 million tons of coal. This would be a one-time short-term benefit since coal is a nonrenewable resource. If it were mined by another company from the private land to the east, it could provide approximately 15 years of room-and-pillar mining.

The long-term productivity of resources could be affected, but not to a significant degree. Vegetation, wildlife habitat, and visual quality related to exploration drilling and temporary road construction would be restored once reclamation is accomplished and determined to be successful. There could be some decrease in the flow of Winter Quarters Canyon and Woods Canyon creeks if water is intercepted in the mine which would have flowed from surface springs and into the streams. This could decrease the productivity of riparian vegetation and macroinvertebrate populations.

3. Alternative 3

There would be no change from Alternative 2. The coal in the SPR area is too thin to be mined economically, so the amount of coal available in the lease area would not change.

E. Irreversible and Irretrievable Commitments of Resources

1. Alternative 1

The short-term economic loss if the Skyline Mine were closed would be irretrievable. The minable coal reserves not mined under this alternative would still be available for future leasing and mining, but probably at a higher cost. They could be accessed through private lands to the east, in the vicinity of the old Winter Quarters Mine, if they are not accessed through the Skyline Mine.

2. Alternative 2

The loss of vegetation and associated wildlife habitat and decrease in visual quality due to exploration drilling would be irretrievable but

not irreversible. The drilling operations can usually be completed, including reclamation, in one season. It normally takes 3 to 5 years to reestablish vegetation on the sites, and a total of 5 to 10 years for trees to become established and vegetation to blend in with the surrounding areas.

Any loss of flow in the springs or streams due to mining would be irretrievable and potentially irreversible. Various methods could be used to replace some flow, and expanding clays may seal cracks and replace some flow paths. Changes to the ground water system would probably be permanent.

Coal is not a renewable resource. Mining would be an irreversible commitment of the coal itself and other energy resources used in the mining process. Approximately 6,000,000 tons of coal would be irreversibly and irretrievably lost if mining were never allowed under the perennial streams. If the decision is made in the future that allowing mining under the perennial streams is an acceptable risk, it must be made before extraction mining is completed to preclude this loss of coal.

### 3. Alternative 3

Because the coal is too thin to be mined economically under the SPR area, there would be no change from Alternative 2.

## F. Cumulative Impacts

### 1. Alternative 1

Under this alternative, there would be no changes to the current situation. No coal would be mined from the proposed lease tract, and no royalty payments would be received by the federal, state, and local governments. Coal mining would continue in the Skyline Mine adjacent to the proposed lease tract.

The area and ecosystem have been continuously altered by erosion, glacial activity, fires, insect infestations, and other natural processes prior to the appearance of man. The area has been used by man, probably on a seasonal basis, for about the last 9,000 years. European settlement in the 1870's resulted in hunting and trapping of game, timber harvest, livestock grazing, and eventually coal mining.

Livestock grazing on the Wasatch Plateau was extensive in the late 1800's, resulting in extensive watershed damage and erosion. Management of grazing by the Forest Service since 1906 has resulted in significant improvement of resource conditions. Today the range conditions are generally fair. The proposed lease tract includes parts of 5 sheep grazing allotments. Approximately 4,700 sheep graze the area at some time during the summer. Sheep grazing has resulted in a decrease in the number of forbs and an increase in the amount of grass. The present level of grazing will continue unchanged for the foreseeable future.

Coal has been mined in the Winter Quarters area since the 1890's. The Winter Quarters Mine, located on private land just east of the proposed lease tract, operated between 1878 and the 1940's. Remnants of the mine and the town of Winter Quarters are still visible. Most of the area impacted by mining has recovered naturally through time, but environmental impacts at the time of mining were probably more evident. Production is estimated to have been 10.8 million tons. An explosion on May 1, 1900, in the mine killed 199 miners.

The activities planned for the foreseeable future (a timber sale, trail reconstruction, and possibly oil and gas drilling) described in Section I.G., would occur. The timber sale and oil and gas drilling could cause increased vehicle traffic, increased sedimentation in streams, increased dust and noise, and temporary loss or alteration of wildlife habitat. The trail reconstruction would have minimal impact. These activities are consistent with direction in the LRMP.

## 2. Alternative 2

The anticipated impacts to the existing environment were described, by resource category, in the preceding portion of Section IV. The cumulative impacts would be:

- a. 22 million tons of coal would be mined.
- b. Increased water output to Eccles Creek, but with lower TDS levels if mining is done as a part of the Skyline Mine. If a new mine were opened, there would be increased flow in Winter Quarters Creek with slightly decreased quality, but within State standards.
- c. \$46.6 million in royalty payments to federal, state, and local governments.
- d. The planned timber sale, trail reconstruction, and possible oil and gas drilling, would occur (see Section I.G.).

If Coastal States Energy Co. is the successful bidder, they would need to drill approximately 8 coal exploration holes to evaluate coal quality and quantity. If they did not obtain the rights to the coal in the fee lands to the east, they would require one ventilation shaft. If a company other than Coastal obtained the lease, the exploration drilling needs and impacts are expected to be similar.

It is unlikely that the cumulative impacts would cause significant impacts to ground or surface water resources (including associated riparian areas), terrestrial or aquatic wildlife (including threatened, endangered, or sensitive species), vegetation and range, or recreation, although some minor changes could occur. These resources are protected by the stipulations which would be incorporated in the lease under this alternative.

Water intercepted during mining could enter the mine workings and be discharged into Eccles Creek or Winter Quarters Creek, or it could continue to flow down-dip to the west. It is not likely to change the flow in the Price River or Huntington Canyon watersheds or the Colorado River. The water quality of the discharged water could increase, as the water with lower TDS levels from areas mined using limestone rockdust dilute the water with higher TDS levels coming from areas mined using gypsum rockdust in the past.

There would be no change to the transportation system, visual quality, or air quality if Coastal States Energy acquired the lease. They would use existing facilities. If another company acquired the lease and constructed new mine facilities, the access road to the mine and existing roads would be used to transport coal to a currently existing loadout facility. Truck traffic should not impact the town of Scofield, but miners would probably go through Scofield to reach the mine. There would be no significant impact to the transportation system. There would be effects on visual quality if a new mine were constructed, but they would not be significant due to the extensive coal mining facilities already in the area. Effects on air quality would be limited by the terms of a Utah Air Quality Approval Order, and would be localized and insignificant.

Surface disturbance from coal exploration drilling, and possibly oil and gas drilling, are expected to result in removal of a small amount of vegetation, which could affect use by wildlife and livestock. The loss of vegetation would be minor and last only a few years. There would still be sufficient vegetation to maintain current populations and use.

No change in recreational use of the area is expected. Surface impacts are expected to be minimal, and not noticeable to the average forest user.

### 3. Alternative 3

The impacts would be the same as those described under Alternative 2. The SPR areas within the proposed lease tract would not be leased, but they would not be mined even if leased, due to the coal seam thinning to the north. Therefore, the area mined and the resulting impacts would be the same under either Alternative 2 or 3.

## V. PERSONNEL AND PUBLIC INVOLVEMENT

### A. Interdisciplinary Team and Consultants

The following are the Interdisciplinary (ID) Team members and consultants who participated in the environmental analysis:

<u>Specialty</u>	<u>Specialist</u>	<u>Role</u>
Minerals/Geology	Dale Harber	ID Team Leader
Socioeconomics/ BLM Representative	Max Nielson (BLM)	Team Member
Mining	Brent Northrup (BLM)	Team Member
Geology	Tom Rasmussen (BLM)	Team Member
OSM Representative	Floyd McMullen (OSM)	Team Member
Hydrology	Dennis Kelly	Team Member
Wildlife Biology	Steve Romero	Team Member
Vegetation/Range	Leland Matheson	Consultant
Civil Engineering	Brent Barney	Team Member
Fisheries	Paul Burns	Team Member
Visuals/Recreation	Kevin Draper	Consultant
Cultural Resources	Stan McDonald	Consultant

In addition to the ID Team, the following agencies were contacted in regard to application of the Unsuitability Criteria and in compiling resource data:

U.S. Fish and Wildlife Service  
 Utah Division of Wildlife Resources  
 Utah State Historic Preservation Office  
 Utah Fuel Company

### B. Public Contacts

News releases which notified the general public that the Forest Service and Bureau of Land Management would be evaluating the coal lease application and requesting public comment were published in the Sun Advocate and Emery County Progress newspapers.

Letters were sent to identified interested individuals and organizations requesting comments. Appendix D contains a copy of the letter and a list of individuals and organizations contacted. A summation of the responses is in section I.C. of this report.

## VI. REFERENCES

- Bunnell, Mark, 1994, geologist, Skyline Mine.
- Danielson, T.W., and Sylla, D.A., 1983, Hydrology of Coal-Resource Areas in the Southern Wasatch Plateau, Central Utah; U.S. Geological Survey, Water-Resources Investigations Report 82-4009.
- Danielson, Terence W., ReMillard, Michael D., and Fuller, Richard H., 1981, Hydrology of the Coal-Resource Areas in the Upper Drainages of Huntington and Cottonwood Creeks, Central Utah; U.S. Geological Survey, Water-Resources Investigations, Open-File Report 81-539.
- Denton, Richard L., Cox, Myron I., and Merritt, LaVere B., 1983, Scofield Reservoir, Phase I, 314 Clean Lakes Study, 1980-1982; Bureau of Water Pollution Control, Division of Environmental Health, Department of Health, State of Utah, Salt Lake City, Utah.
- Hurlbut, Cornelius S., 1971, Dana's Manual of Mineralogy, 18th Edition; John Wiley & Sons, Inc., New York.
- Hurst, 1989, CHEMPET Research Corporation, Analysis File No. 890028, Moorpark, California.
- Iaquinta, James L., 1985, Watershed Inventory and Analysis for the Price River Watershed, Price Ranger District, Manti-La Sal National Forest.
- Jeppsen, R.W., Ashcroft, Al. L., Huber, G.V. Skogerboe, and Bagley, J.M., 1968, Hydrologic Atlas of Utah; Report wg 35-1, Utah Water Research Laboratory, Utah Agricultural Experiment Station, Utah State University, Logan, Utah.
- Kadnuck, Liane L. M., 1994, Response of Springs to Longwall Coal Mining at the Deer Creek and Cottonwood Mines, Wasatch Plateau, Utah; USDI-Bureau of Mines Information Circular 9405.
- Mundorff, J.C., 1972, Reconnaissance of Chemical Quality of Surface Water and Fluvial Sediment in the Price River Basin, Utah; Technical Publication No. 39, Department of Natural Resources, State of Utah, Salt Lake City, Utah.
- Price, Don, and Plantz, Gerald G., 1987, Hydrologic Monitoring of Selected Streams in Coal Fields of Central and Southern Utah - Summary of Data Collected, August 1978-September 1984; Water Resources Investigations Report 86-4017, U.S. Geological Survey, Salt Lake City, Utah.
- Sidle, Roy C., Skyline Mine Subsidence Study: Changes in Stream Channel Characteristics and Hydraulic Parameters Related to Surface Subsidence, Interim Report No. 2; Intermountain Research Station, Logan, Utah.
- Stewart, Kenneth W. and Stark, Bill, 1988, Nymphs of the North American Stonefly Genera "Plecoptera"; Thomas Say Foundation.
- USDA - Forest Service, 1986, Manti-La Sal National Forest Land and Resource Management Plan.

USDA - Forest Service, 1992, Final Environmental Impact Statement for Oil and Gas Leasing on Lands Administered by the Manti-La Sal National Forest.

U.S. Geological Survey, 1979, Development of Coal Resources in Central Utah - Final Environmental Impact Statement; Salt Lake City, Utah.

Utah Department of Environmental Quality, 1994, Standards of Quality for Waters of the State; R317-2, Utah Administrative Code.

APPENDIX A

Tract Delineation Report

**BLM**

**TRACT DELINEATION REPORT**

**WINTER QUARTERS TRACT**

**WASATCH PLATEAU COAL FIELD**

**CARBON COUNTY, UTAH**

UINTA-SOUTHWESTERN UTAH COAL REGION  
BUREAU OF LAND MANAGEMENT

TRACT DELINEATION REVIEW REPORT

Lease by Application UTU-68082, Utah Fuel Company

Introduction

Utah Fuel Co. has applied for a coal lease on unleased Federal coal lands adjacent to their existing Skyline Mine property in Carbon County, Utah (Figure 1).

The application area is contained within the Wasatch Plateau Known Recoverable Coal Resource Area. The surface of the area is administered by the Manti-La Sal National Forest and the mineral estate is administered by the Bureau of Land Management. The lands within the application area were not included in any of the tracts that were delineated for the second round tract delineation effort for the Uinta-Southwestern Utah Coal Region.

The purpose of this report is to review the geologic and coal resource information from the application area and recommend a tract configuration that meets the Federal coal leasing data adequacy standards and provides for logical and timely development of the coal reserves on the tract.

Tract Configuration

The coal resources applied for by Utah Fuel Company could be accessed from the present Skyline Mine. The coal resources encompassed in their application could also be accessed from private coal lands to the east of the tract in Winter Quarters and Woods Canyon. While there are no other pending applications for this area, a number of companies have indicated an interest in developing a mine from the private holdings. The tract, as applied for by Utah Fuel Company, would render the unleased coal resources to the north and west of the tract captive to the company that acquired the lease. To minimize future noncompetitive coal leases and to accommodate the competitive interest that may exist in the area, the tract delineation team recommends that the lease tract be enlarged to include as much of the available coal reserve to the north as possible.

It is recommended that the revised tract be described as follows:

- T. 12 S., R. 6 E., SLM,
  - Section 26, S1/2 S1/2;
  - Section 34, lots 1-4, S1/2 N1/2, N1/2 S1/2;
  - Section 35, all.
  
- T. 13 S., R. 6 E., SLM,
  - Section 2, all;
  - Section 3, all;
  - Section 10, lots 1-2, NE1/4, E1/2 NW1/4;

Section 11, N1/2, N1/2 S1/2.

Containing 3,351 acres more or less.

This would enlarge the tract to include all the potential coal reserves south of Granger Ridge. The Forest Service has expressed some environmental concerns with leasing north of Granger Ridge. Because of the apparent thinning of the principal minable coal beds to the north, the tract delineation team recommends that leasing to the north be addressed at a later date.

### Geologic Setting

A stratigraphic section representative of the application area is shown on Figure 2. In this area, coal beds of economic interest occur in the lower one-third of the Upper Cretaceous Blackhawk Formation which, in this area, intertongues with the Starpoint Sandstone. A cross section through the tract (Figure 3) shows the relationship between the marine Starpoint Sandstone member and the Blackhawk Formation coal beds. On the basis of an analysis of drill hole information from the area, three coal beds appear to be of potential economic interest in the area. The stratigraphic relationship among these three beds (Flat Canyon, Lower O'Conner A and Upper O'Conner) is relatively complex and additional drilling is needed to refine the correlations in the area. The discussion of the coal geology that follows is based on coal bed correlations that represent our best estimate based on the currently available data. A more detailed look at the data and these correlations will be made in the tract geologic and engineering report that will be prepared before the tract is offered for lease.

The lowermost potentially minable coal bed is the Flat Canyon bed. As is shown on an isopach map (Figure 4), the Flat Canyon bed is greater than 5 feet thick primarily in the southwest corner of the tract. The Flat Canyon and Lower O'Conner A beds appear to merge south of the tract where they are being mined in the Skyline Mine. Most of the area where the Flat Canyon bed is potentially minable is too close (less than 35 feet) to the Lower O'Conner bed to be considered for mining. For the purpose of this report, the Flat Canyon bed will not be considered minable at present.

The Lower O'Conner A bed, which is also referred to as the Lower O'Conner bed, occurs from about 10 to over 100 feet above the Flat Canyon bed (Figure 5). This coal bed contains most of the potentially minable reserves within the tract. As is shown on Figure 6, the Lower O'Conner A bed is greater than 5 feet thick over most of the tract. Based on present correlations, the Lower O'Conner bed thins to less than 5 feet thick in the northwestern corner of the tract.

As is shown on Figure 7, the Lower O'Conner B bed occurs from 50 to 100 feet above the Lower O'Conner A bed within the tract. This bed is greater than 5 feet thick only at the northern edge of the tract (Figure 8). Because of the small reserve base assigned to this bed

within the tract, it will not be considered for mining. The Upper O'Conner bed is the uppermost potentially minable coal bed in the Winter Quarters tract. This bed appears to be greater than 5 feet thick in the northwest portion of the tract (Figure 9). This bed can only be accessed by a rock slope up from the Lower O'Conner A coal bed.

The structure of the area is characterized by northwest-southwest and north-south trending fault systems with the strata dipping gently west-northwest between the faults. The western boundary of the tract is delineated along the trace of an inferred major north-south trending fault. A structure map of the area, with faults as projected by Coastal States Energy, is shown in Figure 10. Overburden on the Lower O'Conner A coal bed within the tract area ranges from about 800 feet in the canyons along the eastern edge of the tract to over 2000 feet under the ridge in the west-central portion of the tract (Figure 11).

#### Coal Data Adequacy

The coal resources of the tract are defined by drilling on or adjacent to the tract. The drilling provides data of sufficient quality and quantity to meet the Uinta-Southwestern Utah Coal Region data standard that 80 per cent of the tract's resources be demonstrated. Although additional drilling is needed in the south-central portion of the tract to better define the stratigraphic relationships in the area, existing correlations should be adequate to arrive at a fair market value for the tract.

#### Coal Resources/Reserves

The tract as delineated contains 3,351 acres more or less. Four coal beds have been identified that are 5 feet or greater in thickness within the tract. The in-place reserve base estimates for these beds are summarized as follows:

Seam Name	Coal Area (acres)	Average Thickness (feet)	Reserve Base (million tons)
Flat Canyon	1,363.57	6.8	16.6
Lower O'Conner A	2,766.87	9.1	45.5
Lower O'Conner B	339.38	5.0	3.0
Upper O'Conner	1,025.56	6.3	11.6
		total	76.7

As was discussed earlier, most of the area Flat Canyon bed reserve base is too close to the Lower O'Conner bed to be considered minable. In addition, the Lower O'Conner B bed appears to lack sufficient reserves to justify mining. Eliminating these two beds yields a minable reserve base of about 57 million tons. Assuming a recovery factor of 50 per cent, the tract contains about 28 million tons of recoverable coal. These resource/reserve estimates are preliminary

and could be changed as the more detailed geologic and engineering report is prepared for the economic evaluation of the tract.

### Coal Quality

The coal on this tract appears to be good quality steam coal. As-received analyses of 5 Lower O'Conner and 2 Upper O'Conner coal samples from the vicinity of the tract are summarized as follows:

Seam	Moist. <u>  </u>	Ash <u>  </u>	V.M. <u>  </u>	F.C. <u>  </u>	Sulfur <u>  </u>	Heating Value <u>Btu/lb.</u>
Lower O'Conner	5.95	4.63	44.73	44.69	0.44	12,756
Upper O'Conner	7.50	4.02	42.68	45.81	0.53	12,627

Based on these analyses, the apparent rank of both coal beds is High-Volatile C Bituminous Coal.

### Tract Delineation Team

### Date

James F. Kohler  
James F. Kohler, Geologist  
BLM, Utah State Office

April 19, 1993

Thomas E. Rasmussen  
Tom Rasmussen, Geologist  
BLM, Price Coal Office

April 23, 1993

Walt Nowak  
Walt Nowak, Geologist  
Manti-LaSal National Forest

April 26, 1993

Roger L. Bon  
Roger Bon, Geologist  
Utah Geological Survey

May 7, 1993

David Tabet  
David Tabet, Geologist  
Utah Geological Survey

May 7, 1993



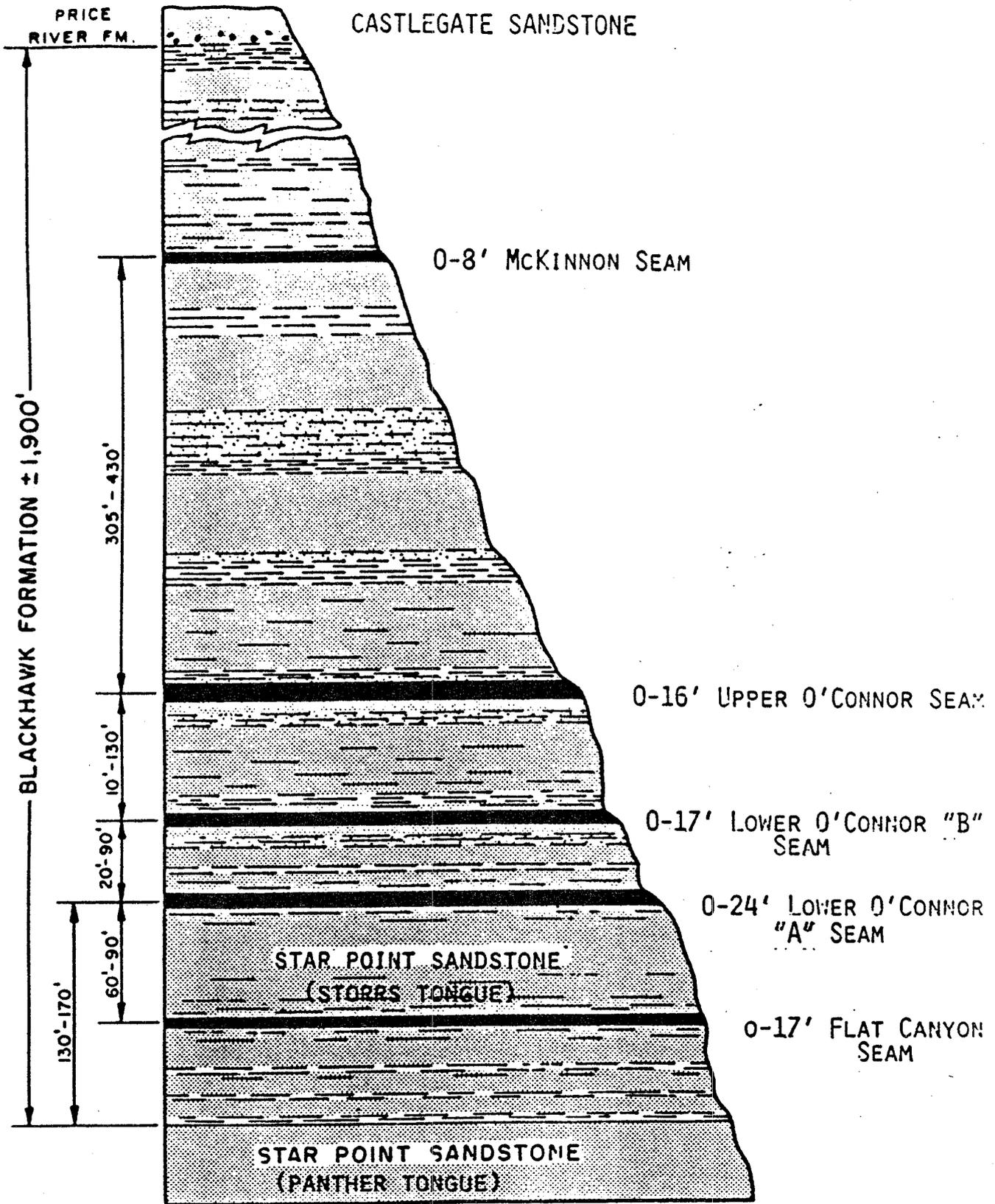


FIGURE 2. GENERALIZED COLUMNAR SECTION -  
ECCLES CANYON AREA

## APPENDIX B

### Unsuitability Criteria

As the surface management agency, the Forest Service is responsible for applying the 20 unsuitability criteria to determine suitability of lands for coal mining (43 CFR 3461). The Manti-La Sal National Forest Land and Resource Management Plan (pages C-1 through C-6) defined 7 of the criteria (numbers 4, 8, 14, and 17-20) as being not applicable because the criteria do not exist within these coal lands. Four more criteria (numbers 1 and 11-13) were found to not be applicable after exceptions and exemptions were applied. The remaining 9 criteria have been applied during this analysis, with the following results:

Criterion Number 2. Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial, or other public purposes, on federally owned surface shall be considered unsuitable.

Finding. There are no rights-of-way, easements, or leases within the proposed lease tract.

Criterion Number 3. The terms used in this criterion have the meaning set out in the Office of Surface Mining Reclamation and Enforcement regulations at Chapter VII of Title 30 of the Code of Federal Regulations. Federal lands affected by section 522(e) (4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public road or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community or institutional building or within 300 feet of an occupied dwelling.

Finding. There are no public roads, cemeteries, public buildings, or occupied dwellings within the proposed lease tract.

Criterion Number 5. Scenic Federal lands designated by visual resource management analysis as Class I (an area of outstanding scenic quality or high vessel sensitivity) but not currently on the National Register of Natural Landmarks shall be considered unsuitable.

Finding. The visual quality of the area is Class III, Partial Retention. There are no Class I areas within the proposed lease tract.

Criterion Number 6. Federal lands under permit by the surface management agency, and being used for scientific studies involving food or fiber production, natural resources, or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration, or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

Finding. There are no study areas within the proposed lease tract.

Criterion Number 7. All publicly or privately owned places which are included in the National Register of Historic Places shall be considered unsuitable. This shall include any areas that the surface management agency determines, after consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer, are necessary to protect the inherent values of the property that made it eligible for listing in the National Register.

Finding. There are no properties included in the National Register of Historic Places on or near the proposed lease tract.

Criterion Number 9. Federally designated critical habitat for listed threatened or endangered plant and animal species, and habitat proposed to be designated as critical for listed threatened or endangered plant and animal species or species proposed for listing, and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

Finding. There is no federally designated or proposed critical or essential habitat for threatened or endangered plant or animal species found within the proposed lease area.

Criterion Number 10. Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a state pursuant to state law as endangered or threatened shall be considered unsuitable.

Finding. There is no state designated critical or essential habitat for threatened or endangered plant or animal species found within the proposed lease area.

Criterion Number 15. Federal lands which the surface management agency and the state jointly agree are habitat for resident species of fish, wildlife and plants of high interest to the state and which are essential for maintaining these priority wildlife and plant species shall be considered unsuitable. Examples of such lands which serve as critical function for the species involved include:

- (i) Active dancing and strutting grounds for sage grouse, sharp-tailed grouse, and prairie chicken;
- (ii) Winter ranges crucial for deer, antelope, and elk;
- (iii) Migration corridor for elk; and
- (iv) Extremes of range for plant species; and

A lease may be issued if, after consultation with the state, the surface management agency determines that all or certain stipulated methods of coal mining will not have a significant long-term impact on the species being protected.

Finding. There are lands within the proposed lease tract which are fish and wildlife habitat for resident species of high interest to the state. However, the stipulated methods of coal mining would not have a significant long-term impact to the species being protected.

Criterion Number 16. Federal lands in riverine, coastal and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat of loss of life or property shall be considered unsuitable for all or certain stipulated methods of coal mining.

Finding. There are no riverine, coastal or special floodplains within the proposed lease tract.

APPENDIX C

SPECIAL STIPULATIONS

Federal Regulations 43 CFR 3400 pertaining to Coal Management make provisions for the Surface Management Agency, the surface of which is under the jurisdiction of any Federal agency other than the Department of Interior, to consent to leasing and to prescribe conditions to insure the use and protection of the lands. All or part of this lease contain lands the surface of which are managed by the United States Department of Agriculture, Forest Service - Manti-La Sal National Forest.

The following stipulations pertain to the Lessee responsibility for mining operations on the lease area and on adjacent areas as may be specifically designated on National Forest System lands.

Forest Service Stipulation #1

Before undertaking activities that may disturb the surface of previously undisturbed leased lands, the Lessee may be required to conduct a cultural resource inventory and a paleontological appraisal of the areas to be disturbed. These studies shall be conducted by qualified professional cultural resource specialists or qualified paleontologists, as appropriate, and a report prepared itemizing the findings. A plan will then be submitted making recommendations for the protection of, or measures to be taken to mitigate impacts for identified cultural or paleontological resources.

If cultural resources or paleontological remains (fossils) of significant scientific interest are discovered during operations under this lease, the Lessee prior to disturbance shall immediately bring them to the attention of the appropriate authority. Paleontological remains of significant scientific interest do not include leaves, ferns or dinosaur tracks commonly encountered during underground mining operations.

The cost of conducting the inventory, preparing reports, and carrying out mitigating measures shall be borne by the Lessee.

Forest Service Stipulation #2

If there is reason to believe that threatened or endangered (T&E) species of plants or animals, or migratory bird species of high Federal interest occur in the area, the Lessee shall be required to conduct an intensive field inventory of the area to be disturbed and/or impacted. The inventory shall be conducted by a qualified specialist and a report of findings will be prepared. A plan will be prepared making recommendations for the protection of these species or action necessary to mitigate the disturbance.

The cost of conducting the inventory, preparing reports and carrying out mitigating measures shall be borne by the Lessee.

Forest Service Stipulation #3

The Lessee shall be required to perform a study to secure adequate baseline data to quantify the existing surface resources on and adjacent to the lease area. Existing data may be used if such data is adequate for the intended purposes. The study shall be adequate to locate, quantify, and demonstrate the inter-relationship of the geology, topography, surface hydrology, vegetation and wildlife. Baseline data will be established so that future programs of observation can be incorporated at regular intervals for comparison.

Forest Service Stipulation #4

Powerlines used in conjunction with the mining of coal from this lease shall be constructed so as to provide adequate protection for raptors and other large birds. When feasible, powerlines will be located at least 100 yards from public roads.

Forest Service Stipulation #5

The limited area available for mine facilities at the coal outcrop, steep topography, adverse winter weather, and physical limitations on the size and design of the access road, are factors which will determine the ultimate size of the surface area utilized for the mine. A site specific environmental analysis will be prepared for each new mine site development and for major improvements to existing developments to examine alternatives and mitigate conflicts.

Forest Service Stipulation #6

Consideration will be given to site selection to reduce adverse visual impacts. Where alternative sites are available, and each alternative is technically feasible, the alternative involving the least damage to the scenery and other resources shall be selected. Permanent structures and facilities will be designed, and screening techniques employed to reduce visual impacts and, where possible, achieve a final landscape compatible with the natural surroundings. The creation of unusual, objectionable, or unnatural landforms and vegetative landscape features will be avoided.

Forest Service Stipulation #7

The Lessee shall be required to establish a monitoring system to locate, measure and quantify the progressive and final effects of underground mining activities on the topographic surface, underground and surface hydrology and vegetation. The monitoring system shall utilize techniques which will provide a continuing record of change over time and an analytical method for location and measurement of a number of points over the lease area. The monitoring shall incorporate and be an extension of the baseline data.

Forest Service Stipulation #8

The Lessee shall provide for the suppression and control of fugitive dust on haul roads and at coal handling and storage facilities. On Forest Development Roads (FDR), Lessees may perform their share of road maintenance by a commensurate share agreement if a significant degree of traffic is generated that is not related to their activities.

Forest Service Stipulation #9

Except at specifically approved locations, underground mining operations shall be conducted in such a manner so as to prevent surface subsidence that would: (1) cause the creation of hazardous conditions such as potential escarpment failure and landslides, (2) cause damage to existing surface structures, and (3) damage or alter the flow of perennial streams. The Lessee shall provide specific measures for the protection of escarpments, and determine corrective measures to assure that hazardous conditions are not created.

Forest Service Stipulation #10

In order to avoid surface disturbance on steep canyon slopes and to preclude the need for surface access, all surface breakouts for ventilation tunnels shall be constructed from inside the mine, except at specific approved locations.

Forest Service Stipulation #11

If removal of timber is required for clearing of construction sites, etc., such timber shall be removed in accordance with the regulations of the surface management agency.

Forest Service Stipulation #12

The coal contained within, and authorized for mining under this lease shall be extracted only by underground mining methods.

Forest Service Stipulation #13

Existing Forest Service owned or permitted surface improvements will need to be protected, restored, or replaced to provide for the continuance of current land uses.

Forest Service Stipulation #14

In order to protect big game wintering areas, elk calving and deer fawning areas, sagegrouse strutting areas, and other critical wildlife habitat and/or activities, specific surface uses outside the mine development area may be curtailed during specified periods of the year.

Forest Service Stipulation #15

Support facilities, structures, equipment, and similar developments will be removed from the lease area within two years after the final termination of use of such facilities. This provision shall apply unless the requirements of Section 10 of the lease form are applicable. Disturbed areas and those areas previously occupied by such facilities will be stabilized and rehabilitated, drainages re-established, and the areas returned to a premining land use.

Forest Service Stipulation #16

The Lessee, at the conclusion of the mining operation, or at other times as surface disturbance related to mining may occur, will replace all damaged, disturbed or displaced corner monuments (section corners, 1/4 corners, etc.) their accessories and appendages (witness trees, bearing trees, etc.) or restore them to their original condition and location, or at other locations that meet the requirements of the rectangular surveying system. This work shall be conducted at the expense of the Lessee, by a professional land surveyor registered in the State of Utah, and to the standards and guidelines found in the Manual of Surveying Instructions, United States Department of the Interior.

Forest Service Stipulation #17

The Lessees, at their expense, will be responsible to replace any surface water identified for protection, that may be lost or adversely affected by mining operations, with water from an alternate source in sufficient quantity and quality to maintain existing riparian habitat, fishery habitat, livestock and wildlife use, or other land uses.

**STIPULATION FOR LANDS OF THE NATIONAL FOREST SYSTEM  
UNDER JURISDICTION OF  
THE DEPARTMENT OF AGRICULTURE**

The licensee/permittee/lessee must comply with all the rules and regulations of the Secretary of Agriculture set forth at Title 36, Chapter II, of the Code of Federal Regulations governing the use and management of the National Forest System (NFS) when not inconsistent with the rights granted by the Secretary of the Interior of the license/prospecting permit/lease. The Secretary of Agriculture's rules and regulations must be complied with for (1) all use and occupancy of the NFS prior to approval of a permit/operating plan by the Secretary of Interior, (2) uses of all existing improvements, such as Forest development roads, within and outside the area licensed, permitted or leased by the Secretary of Interior, and (3) use and occupancy of the NFS not authorized by a permit/operating plan approved by the Secretary of the Interior.

All matters related to this stipulation are to be addressed to:

Forest Supervisor  
Manti-La Sal National Forest  
599 West Price River Drive  
Price Utah 84501

Telephone No. 801-637-2817

who is the authorized representative of the Secretary of Agriculture.

---

Signature of Licensee/Permittee/Lessee

APPENDIX D

PUBLIC CONTACTS

United States  
Department of  
Agriculture

Forest  
Service

Manti-La Sal  
National Forest

Price Ranger District  
599 West Price River Dr.  
Price, Utah 84501  
(801) 637-2817

---

Reply to: 2820-4

Date: February 11, 1994

m01n

The Bureau of Land Management and the Forest Service will be evaluating an application by Coastal States Energy Company to lease federal lands in Carbon County for coal development. The proposed Winter Quarters Lease Tract (UTU-67939) lies adjacent to the northern boundary of Coastal States Energy Company's Skyline Mine Permit Area, as shown on the attached map. Coastal States Energy Company's application states that they intend to mine the proposed lease using existing portal facilities associated with their Skyline Mine.

This application will be processed under the Lease on Application procedure adopted by the Uinta-Southwestern Utah Coal Region. The proposed tract encompasses 3,351 acres of federal coal lands. The surface of the proposed lease tract includes approximately 400 acres of private lands and 2,951 acres of National Forest System lands managed by the Manti-La Sal National Forest. The Bureau of Land Management administers the subsurface mineral estate.

The subject lands have been determined to be suitable for further consideration for coal leasing under existing Bureau of Land Management and Forest Service land use plans. The Bureau of Land Management and Forest Service will jointly evaluate the tract on a site-specific basis for leasing in accordance with the requirements of Federal Regulations 43 CFR 3400 and the National Environmental Policy Act of 1969 (NEPA). If offered for lease, the tract will be leased on a competitive basis.

Further information can be obtained by calling Dale Harber at (801) 637-2817. Public comments will be accepted at the Manti-La Sal National Forest, 599 West Price River Drive, Price, Utah 84501, until March 18, 1994.

CHARLES J. JANKIEWICZ  
District Ranger

m01nMark Page  
Utah Division of Water Rights  
P.O. Box 718  
Price, Utah 84501

m01nEmery County Commissioners  
Emery County Courthouse  
Castle Dale, Utah 84513

m01nSanpete County Commissioners  
160 N. Main Street  
Manti, Utah 84642

m01nSoutheastern Utah Association  
Of Local Governments  
P.O. Drawer 1106  
Price, Utah 84501

m01nDick Carter  
Utah Wilderness Association  
455 East 400 South, #306  
Salt Lake City, Utah 84111

m01nRoger Zortman  
Moab District Manager  
Bureau of Land Management  
82 Dogwood  
Moab, Utah 84532

m01nDavid R. Ariotti  
Southeastern Utah District Engineer  
Utah Department of Health  
P.O. Box 800  
Price, Utah 84501

m01nKen Phippen  
Utah Division of Wildlife Resources  
455 West Railroad Avenue  
Price, Utah 84501

m01nVarden Willson  
Huntington-Cleveland Irrigation Co.  
P.O.Box 327  
Huntington, Utah 84528

m01nKim Blair  
Questar Pipeline Company  
P.O. Box 11450  
Salt Lake City, Utah 84147

m01nKen Payne  
Vice President/General Manager  
Utah Fuel Company  
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Helper, Utah 84526

m01nEuray Allred  
N. Winter Quarters S&G Allotment  
P.O. Box 246  
Fountain Green, Utah 84362

m01nLowell Braxton  
Utah Division of Oil, Gas & Mining  
3 Triad Center, Suite 350  
355 West North Temple  
Salt Lake City, Utah 84180-1203

m01nPhillip E. Allred  
East Gooseberry S&G Allotment  
S. Winter Quarters S&G Allotment  
P.O. Box 296  
Fountain Green, Utah 84632

m01nNeil Breinholt  
Carbon County Commission  
Carbon County Courthouse  
Price, Utah 84501

m01nVernal Mortensen  
Senior Vice President  
Coastal States Energy Company  
175 East 400 South, Suite 800  
Salt Lake City, Utah 84111

m01nBrian Allred  
Bean Ridge S&G Allotment  
P.O. Box 117  
Fountain Green, Utah 84632

m01nMayor Mike Erkkila  
Town of Scofield  
Scofield Route, Box 700  
Helper, Utah 84526

m01nPrice River Water Improvement District  
P.O. Box 903  
Price, Utah 84501

m01nClifford Duncan  
Ute Indian Tribal Museum  
P.O. Box 190  
Ft. Duchesne, Utah 84026

m01nGeorge and Helen Liodakis  
150 East 100 South  
Price, Utah 84501

AFFIDAVIT OF PUBLICATION

STATE OF UTAH)

ss.

County of Carbon,)

I, Kevin Ashby, on oath, say that I am the Publisher of the Sun Advocate, a twice-weekly newspaper of general circulation, published at Price, State and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for .....One (1).....consecutive issues, and that the

first publication was on the

.....15th...day of...February....., 19.94.

and that the last publication of such notice was in the issue

of such newspaper dated the

.....day of....., 19.....

*Kevin Ashby*

Subscribed and sworn to before me this  
.....15th...day of...February....., 19.94

*Linda Thayne*  
Notary Public

My Commission expires January 10, 1995

Residing at Price, Utah

Publication fee, \$.....36.40.....

**LEGAL NOTICE**  
**Manti-La Sal National Forest**  
**Price Ranger District**  
**Carbon County, Utah**

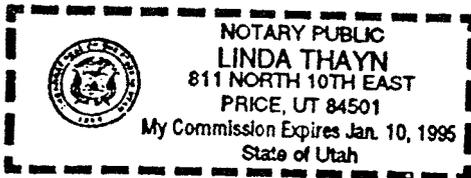
The Bureau of Land Management (BLM) and the Forest Service will be evaluating an application by Coastal States Energy Company to lease federal lands in Carbon County for coal development. The proposed Winterquarters Coal Lease Tract (UTU-67939) lies just north of and adjacent to the approved permit area for Coastal States Energy Company's Sky-line Mine.

The application will be processed under the lease-on-application procedure adopted by the Uinta-Southwestern Utah Coal Region. The proposed tract encompasses 3,351 acres of federal coal lands. The proposed lease tract includes approximately 360 acres of private lands and 2,991 acres of National Forest System lands managed by the Manti-La Sal National Forest. The Bureau of Land Management administers the subsurface mineral estate.

These lands have been determined to be suitable for further consideration for coal leasing under existing Bureau of Land Management and Forest Service Land Use Plans. The Bureau of Land Management and the Forest Service will jointly evaluate the tract for leasing.

Further information can be obtained by calling Dale Harber at (801) 637-2817. Public comments will be accepted at the Manti-La Sal National Forest, 599 West Price River Drive, Price, Utah 84501, until March 18, 1994.

Published in the Sun Advocate, February 15, 1994.



**AFFIDAVIT OF PUBLICATION**

STATE OF UTAH)  
ss.  
County of Emery,)

I, Kevin Ashby, on oath, say that I am the Publisher of the Emery County Progress, a weekly newspaper of general circulation, published at Castle Dale, State and County aforesaid, and that a certain notice, a true copy of which is hereto attached, was published in the full issue of such newspaper for ..... One (1) ..... consecutive issues, and that the first publication was on the

..... 15th ..... day of ..... February ..... 19..... 94

and that the last publication of such notice was in the issue of such newspaper dated the

..... day of ..... 19.....

*Kevin Ashby*

Subscribed and sworn to before me this  
..... 15th ..... day of ..... February ..... 19..... 94

*Linda Thayn*  
Notary Public

My Commission expires January 10, 1995

Residing at Price, Utah

Publication fee, \$ 26.25

**LEGAL NOTICE**  
**Manti-La Sal National Forest**  
**Price Ranger District**  
**Carbon County, Utah**

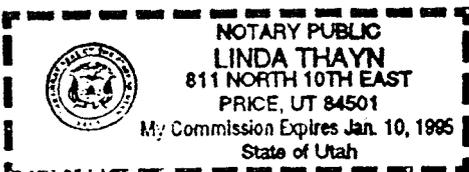
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Published in the Emery County Progress February 15, 1994.



Appendix E

Table showing locations and results of mining under perennial drainages.

Mine	Stream or Drainage	Overburden	% Coal Removal	Results
Gordon Creek #2	Beaver Creek	670 feet	85%	This was a room and pillar operation with pillar extraction. No loss of stream.
King Mines	Cedar Creek	500 to 1,500 feet	85%	This was a room and pillar operation with pillar extraction in 2 places. No loss of stream.
Sunny Side Coal Mine	Grassy Trail Creek	500 to 1,500 feet	100%	Lonwall mining at 3 locations. Room and pillar at 500' overburden. No loss of stream. Maximum longwall subsidence occurred.
Star Point Mine	Miller Creek	300 feet	100%	Longwall mining. Maximum subsidence diverted stream into mine. Stream may be starting to appear down stream bed.
Skyline Mine	Eccles Creek	25 feet	Approx. 38%	Full support room and pillar development. Leaky highway culvert caused collapse of overburden and interception of stream flow. Stream flow restored.
Emery Deep Mine	Quitcupah Creek	600 feet	47%	Room and pillar development. No subsidence.
Soldier Creek Coal	Soldier Creek	250 to 1,250 feet	47%	Room and pillar development. No subsidence.
Skyline Mine	Burnout Canyon Creek	600 feet	100%	Non-perennial portions subsided with no loss of flow. Stream morphology altered but effects not yet known. First panel under perennial portion underway with no results yet available.