

FEDERAL COAL
EXPLORATION LICENSE APPLICATION
&
EXPLORATION PLAN FOR CONSTRUCTION OF
WATER MONITORING WELLS
COTTONWOOD CANYON AREA
EMERY COUNTY, UTAH

APPLICANT:

PACIFICORP

ONE UTAH CENTER

201 SOUTH MAIN, SUITE 2100

SALT LAKE CITY, UTAH 84140-0021

(801) 220-2000



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter
Governor

Dee C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

August 5, 1992

Mr. Gary Johnson, Supervisor
Bureau of Land Management
900 North 700 East
Price, Utah 84501

Dear Mr. Johnson:

Re: Cottonwood Creek Drilling Plan for 1992, Holes CCCW1 through CCCW4, PacifiCorp, Deer Creek Mine, CEP/015/018-92B, Folder #2 and Exploration Folder, Emery County, Utah

Enclosed please find the review comments for the above-noted exploration plan received July 28, 1992. This exploration is being conducted outside the Deer Creek Mine permit boundary, and therefore, the Division is forwarding these comments for your consideration of the review of this proposal because the Bureau of Land Management is the lead agency.

Please forward responses to these comments to the Division so that they may be reviewed.

If you have any questions or comments, please let me know. Thank you.

Sincerely,



~~Pamela Grubbs Luttig~~
Permit Supervisor

jbe
Enclosure
cc/enc: Val Payne, PacifiCorp
015018.92B



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

August 4, 1992

TO: Pamela Grubaugh-Littig, Permit Supervisor

FROM: Ken Wyatt, Reclamation Hydrologist *KW*

RE: 1992 Cottonwood Creek Drilling Plan, holes CCCW1 - CCCW4;
Pacificorp Electric Operations, Deer Creek Mine, ACT/015/018, Emery
County, Utah

SYNOPSIS

On July 28, 1992, Pacificorp Electric Operations (PEO) submitted a proposal to drill two groundwater monitoring wells at three sites in the Cottonwood Canyon Creek area. These wells are designed to aid in hydrologic investigations to better understand the hydrologic system of this area associated with the Deer Creek Mine. One site is located south of the Roans Canyon fault near the Cottonwood Spring and the two other sites are located north of this fault.

On June 4, 1992, representatives from PEO, the Ferron District of the Manti La Sal Forest Service, and myself met to discuss the proposed drill locations, access to the sites and reclamation procedures to be followed at each site. See memo dated June 12, 1992.

This memo will serve as review of the proposed drilling activities. The sites are located in the bottom of Cottonwood Canyon adjacent to the stream channel. These sites are located outside of the Deer Creek Mine permit area but will intersect the Hiawatha coal seam. Approval from the Bureau of Land Management is required.

ANALYSIS

The proposal is to install ground water monitoring wells at each site to assess the hydrologic system and any impacts associated with the Deer Creek Mine operation. At each site two wells will be completed. One will penetrate the Hiawatha coal seam and be completed into the Spring Canyon member of the Star Point Sandstone. The second well will be completed in the colluvial deposits in the canyon bottom. All drill locations are west of Cottonwood Creek and no stream crossings will be required.

CCCW1: This site is on a flat area north of the confluence with Trail Canyon. The pad will be located north of an area currently used for camping, parking trailers and turning vehicles around. Construction will consist of driving over existing vegetation and then removing topsoil in the immediate area of the drilling equipment. Vegetation is primarily sagebrush and grasses. Following drilling activities, a berm or row of boulders will be placed to prevent vehicles from entering the reclaimed site. This site is located south of the Roans Canyon fault and will assess the ground water in the stream channel colluvium adjacent to the Cottonwood Spring as well as the regional aquifer associated with the Blackhawk/Star Point sandstone.

CCCW2: This site is also a flat area vegetated with grasses and sagebrush. Construction of the mud pit should be located away from the stream and in a place where the pad's surface drainage will flow into the pit. The area is about 50 feet square. A berm will be constructed to prevent vehicular access to the reclaimed area following well completion.

CCCW4: This hole is the northern most well to be completed. It is located across from Dairy Canyon. The site is vegetated with grass and has been used for camping. Aspen surround this site. This is a narrow site and the pad and pit will need to be designed to prevent impact to the stream channel.

RECOMMENDATION

The USFS wanted Pacificorp to minimize the removal of topsoil material on the drill pads to those areas where equipment and machinery would be parked on the surface. In other areas the soil could remain in place and be driven over since the access will be ripped during reclamation. The USFS informed PEO that they will need to control noxious weeds that invade these reclaimed sites. This has not been much of a problem at other PEO drill locations. PEO should commit to following all U.S. Forest Service requirements.

The operator has committed to minimizing impacts to the stream channel. The location of mud pits should be such that drill pad runoff and drilling fluids do not flow from the site into Cottonwood Creek.

PEO proposes to complete one hole at each location into the Spring Canyon member of the Star Point sandstone and one into the alluvial deposits. The specific depth of completion was given as 50 feet into the Spring Canyon member.

Cottonwood Creek Exploration Memo
ACT/015/018
August 4, 1992
Page 3

Rule R645-301-724.100 governing baseline Ground Water Information is quite specific concerning the assessment of ground water above and below the coal seam. Specifically, this rule states: The location and ownership for the permit and adjacent areas of existing wells, springs and other ground-water resources, seasonal quality and quantity of ground water, and usage. Water quality descriptions will include, at a minimum, total dissolved solids or specific conductance corrected to 25 degrees C, pH, total iron and total manganese. **Ground-water quantity descriptions will include, at a minimum, approximate rates of discharge or usage and depth to the water in the coal seam, and each water-bearing stratum above and potentially impacted stratum below the coal seam.** To satisfy this requirement, the operator should consider drilling through the first saturated tongue of the Star Point or the bottom of the Star Point whichever occurs first. What hydrogeological testing will be performed (ie., slug and bail tests) to gather information about the formations and gradients between the different members of the Star Point sandstone?

I recommend that the operator submit justification as to the completion depth of the wells in the Spring Canyon member of the Star Point sandstone and describe any hydrogeological tests that will be performed on the aquifer during drilling.

PERMIT TRACKING FORM

Type of Proposal:

MRP AMENDMENT _____
 MRP REVISION _____
 EXPLORATION _____
 I.B.C. _____
 PERMIT RENEWAL _____
 NEW PAP _____

Enforcement Action Involved:

NOV #N _____ of _____
 CO #C _____ of _____
 TDN #X _____ of _____
 TDL #X _____ of _____
 DIVISION ORDER: date _____

Title of Proposal:

Coltonwood Canyon Exploration

Company/Mine Name:

Traciflop, Salt Creek

File # (INA / PRO / ACT / CEP)

*015 / 018 - X B
92*

PROJECT LEADER:

	<u>Reviewers</u>	<u>Tech Memo Drafted</u>		<u>Date Completed</u>
		Yes	No	
HYDROLOGY	<i>Ken / Tom</i>	()	()	_____
BIOLOGY	<i>Susan</i>	()	()	_____
ENGINEER	<i>Debbie</i>	()	()	_____
SOILS	<i>Henry</i>	()	()	_____
GEOLOGY	<i>Henry</i>	()	()	_____
LEGAL/FIN	<i>Susan</i>	()	()	_____

Dates: *Please route the plan...*

- | | |
|--|--------------------------------|
| (1) Initial Plan Received <i>7/28/92</i> | (3) Publication Approval _____ |
| Tech Review Due <i>8/2/92</i> | (4) Conditional Approval _____ |
| Tech Review Complete _____ | Stipulations Due _____ |
| Deficiencies Sent _____ | Stipulations Recieved _____ |
| Operator Response Due _____ | (5) Final Approval _____ |
| <i>Forwarded Comments to BLM 8/4/92</i> | Filed in MRP _____ |
| (2) Operator Response Rc'd _____ | Author _____ |
| Tech Review Due _____ | (6) Proposal Denied _____ |
| Tech Review Complete _____ | |

OTHER AGENCY INVOLVEMENT:

✓

<u>Agency</u>	<u>Transmittal Date</u>	<u>Sign-off</u>	<u>COMMENTS:</u>
() OSMRE	_____	_____	_____
() USFS	_____	_____	_____
() BLM	_____	_____	_____
() USFWS	_____	_____	_____
() NPS	_____	_____	_____
() HEALTH	_____	_____	_____
() UDWR	_____	_____	_____
() H2O RTS.	_____	_____	_____
() HISTORY	_____	_____	_____



July 24, 1992

Ms. Dolly Willis
United States Department of the Interior
Bureau of Land Management
Utah State Office
P.O. Box 45155
Salt Lake City, Utah 84145-0155

ACT/015/018 #2 +
Exploration
RECEIVED
JUL 28 1992
DIVISION OF
OIL GAS & MINING
[CEP/015/018-92B]

**RE: FEDERAL COAL EXPLORATION LICENSE APPLICATION AND PLAN
SUBMITTAL FOR THE COTTONWOOD CANYON AREA, EMERY COUNTY
UTAH**

Dear Ms. Willis:

Please find enclosed three (3) copies of the Federal Coal Exploration License Application and Exploration Plan submitted by PacifiCorp for the Cottonwood Canyon area in Emery County Utah. A check for the amount of \$250.00 covering the filing fee is attached.

Upon your approval, PacifiCorp will publish a "Notice of invitation" in the local newspapers, as per the Federal regulations. our proposed notice is found on page 7 within the enclosed Exploration license Application documents.

If you have any questions or comments, please contact Mr. Chuck Semborski or myself at (801) 653-2312.

Sincerely,

A handwritten signature in cursive script that reads "Val Payne".

Val Payne
Sr. Environmental Engineer

KH/dw
Enclosure

cc: Bureau of Land Management (Price - Attn. Gary Johnson)
United States Forest Service (Price - Attn. Walt Nowak)
United States Forest Service (Ferron - Attn. Dale Harbor)
Utah Division of Oil, Gas and Mining (SLC - Attn. Pamela Grubaugh-Littig)
Utah Division of Wildlife Resources (Price - Attn. Ken Phippen)
State Engineer (Price - Attn. Mark Page)
Blake Webster
Roger Fry
Scott Child
Dale Wilson
Morgan Moon
File

FEDERAL COAL
EXPLORATION LICENSE APPLICATION
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WATER MONITORING WELLS
COTTONWOOD CANYON AREA
EMERY COUNTY, UTAH

APPLICANT:
PACIFICORP
ONE UTAH CENTER
201 SOUTH MAIN, SUITE 2100
SALT LAKE CITY, UTAH 84140-0021
(801) 220-2000

RECEIVED

JUL 28 1992

DIVISION OF
OIL GAS & MINING

**FEDERAL COAL EXPLORATION LICENSE APPLICATION
COTTONWOOD CANYON AREA
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**FEDERAL COAL
EXPLORATION LICENSE APPLICATION
EXPLORATION PLAN
COTTONWOOD CANYON AREA
EMERY COUNTY, UTAH**

APPLICANT:

PACIFICORP

ONE UTAH CENTER

201 SOUTH MAIN, SUITE 2100

SALT LAKE CITY, UTAH 84140-0021

(801) 220-2000

INTRODUCTION

This Exploration License Application has been prepared by PacifiCorp, in accordance with the requirements of the code of Federal Regulations, Title 43, Chapter II, Subpart 3410. The proposed exploration area covers lands in Emery County, Utah, within which PacifiCorp, plans to conduct a drilling program, as part of the Deer Creek Mine - Rilda Canyon lease extension requirements, to determine potential effects of the mine on the groundwater regime.

The format used in 43 CFR 3410 is used as the format for this Exploration License Application. The exploration plan outline with this Exploration License Application complies with the requirements of 43 CFR, Chapter II, Subpart 3482, as required by Section 3410.2-1(a)(3). The exploration plan format designated for Bureau of Land Management has been followed in this Exploration License Application.

The information contained in this Exploration License Application demonstrates that environmental protection and reclamation are integral parts of the proposed exploration and well construction program. Sufficient information is provided in the Exploration Plan to demonstrate the effectiveness of PacifiCorp's proposed reclamation method.

FEDERAL COAL EXPLORATION LICENSE APPLICATION
(AS OUTLINED IN 43 CFR, CHAPTER II, SUBPART 3410)

- 3410.2** "PRELICENSING PROCEDURES."
- 3410.2-1** "APPLICATION FOR AN EXPLORATION LICENSE."
- 3410.2-1(a)** "EXPLORATION LICENSE APPLICATIONS SHALL BE SUBMITTED AT THE BUREAU OF LAND MANAGEMENT STATE OFFICE HAVING JURISDICTION OVER THE LANDS COVERED IN THE APPLICATION (43 CFR SUBPART 1821)."

This Exploration License Application is submitted to the Bureau of Land Management District Office in Salt Lake City, Utah, which has jurisdiction over the lands covered in this Application.

"THE APPLICATIONS SHALL BE SUBJECT TO THE FOLLOWING REQUIREMENTS:"

- 3410.2-1(A)(1)** "NO SPECIFIED FORM OF APPLICATION IS REQUIRED."
- 3410.2-1(A)(2)** "AN AREA IN A PUBLIC LAND SURVEY STATE FOR WHICH AN APPLICATION IS FILED SHALL BE DESCRIBED BY LEGAL DESCRIPTION OR, IF ON UNSURVEYED LANDS, BY METES AND BOUNDS, IN ACCORDANCE WITH 3471.1-1(D)(1) OF THIS TITLE. AN APPLICATION FOR AN EXPLORATION LICENSE ON ACQUIRED LANDS SHALL DESCRIBE THE AREA ACCORDING TO THE DESCRIPTION IN THE DEED OR DOCUMENT BY WHICH THE UNITED STATES ACQUIRED THE TITLE IN ACCORDANCE WITH 3471.1-1(D)(2) OF THIS TITLE."

The following table lists the legal description of the lands outlined in this Application, according to coal plat records maintained by the Bureau of Land Management.

**LEGAL DESCRIPTION
COTTONWOOD CANYON 1992
EXPLORATION LICENSE APPLICATION AREAS**

<u>#</u>	<u>LOCATION</u>	<u>DEPTH</u>	<u>ELEVATION</u>	<u>SURFACE OWNER</u>	<u>SUB SURFACE OWNER</u>	<u>OBJECTIVE</u>
CCCW1A	1300'N 1000'E OF SE CORNER SEC 14 T17S R6E	100'	7840'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL TO ACCESS POTENTIAL IMPACTS ON THE HYDROLOGIC REGIME.
CCCW1S	1300'N 1000'E OF SE CORNER SEC 14 T17S R6E	625'	7840'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL FOR COMPARISON OF COTTONWOOD CANYON CREEK TO THE ALLUVIUM.
CCCW2A	1400'S 2200'W OF NE CORNER SEC 14 T17S R6E	100'	7920'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL TO ASSESS POTENTIAL IMPACTS ON THE HYDROLOGIC REGIME.
CCCW2S	1400'S 2200'W OF NE CORNER SEC 14 T17S R6E	650'	7920'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL FOR COMPARISON OF COTTONWOOD CANYON CREEK TO THE ALLUVIUM.
CCCW3A	2000'N 200'E OF SW CORNER SEC 2 T17S R6E	100'	8400'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL TO ASSESS POTENTIAL IMPACTS ON THE HYDROLOGIC REGIME.
CCCW3S	2000'N 200'E OF SW CORNER SEC 2 T17S R6E	675'	8400'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL FOR COMPARISON OF COTTONWOOD CANYON CREEK TO THE ALLUVIUM.
ALTERNATE A	1600'N 900'E OF SW CORNER SEC 11 T17S R6E	100'	8120'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL TO ASSESS POTENTIAL IMPACTS ON THE HYDROLOGIC REGIME.
ALTERNATE S	1600'N 900'E OF SW CORNER SEC 11 T17S R6E	675'	8120'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL FOR COMPARISON OF COTTONWOOD CANYON CREEK TO THE ALLUVIUM.

Containing 3 acres, more or less.

3410.2-1(a)(3) "EACH APPLICATION SHALL CONTAIN THREE COPIES OF AN EXPLORATION PLAN WHICH COMPLIES WITH THE REQUIREMENTS OF 3482.1(a) OF THIS TITLE."

Three copies of the entire Exploration Permit Application are enclosed. The Exploration Plan makes up the second section of the Application. As required in 3482.1(a)(2), three copies of the Exploration Plan have been submitted to the authorized officer.

3410.2-1(a)(4) "EACH APPLICATION AND ITS SUPPORTING DOCUMENTS SHALL BE FILED WITH A NON-REFUNDABLE FILING FEE (43 CFR 3472.1)."

Enclosed is the non-refundable filing fee of \$250.00.

3410.2-1(a)(5) "EXPLORATION LICENSE APPLICATIONS SHALL NORMALLY COVER NO MORE THAN 25,000 ACRES IN A REASONABLY COMPACT AREA AND ENTIRELY WITHIN ONE STATE. AN APPLICATION FOR AN EXPLORATION LICENSE COVERING MORE THAN 25,000 ACRES MUST INCLUDE A JUSTIFICATION FOR AN EXCEPTION TO THE NORMAL ACREAGE LIMITATION."

The total number of acres in the proposed exploration area is 3. The Exploration License Application area is within the 25,000 acre size limitation.

3410.2-1(b) "NOTHING IN THIS SUBPART SHALL PRECLUDE THE AUTHORIZED OFFICER FROM ISSUING A CALL FOR EXPRESSIONS OF LEASING INTEREST IN AN AREA CONTAINING EXPLORATION LICENSES OR APPLICATIONS FOR EXPLORATION LICENSES."

3410.2-1(c) "APPLICANTS FOR EXPLORATION LICENSES SHALL BE REQUIRED TO PROVIDE AN OPPORTUNITY FOR OTHER PARTIES TO PARTICIPATE IN EXPLORATION UNDER THE LICENSE ON A PRO RATA COST SHARING BASIS."

3410.2-1(c)(1) "IMMEDIATELY UPON THE FILING OF AN APPLICATION FOR AN EXPLORATION LICENSE THE APPLICANT SHALL PUBLISH A "NOTICE OF INVITATION," APPROVED BY THE AUTHORIZED OFFICER, ONCE EVERY WEEK FOR TWO CONSECUTIVE WEEKS IN AT LEAST ONE NEWSPAPER OF GENERAL CIRCULATION IN THE AREA WHERE THE LANDS COVERED BY THE LICENSE APPLICATION ARE SITUATED. THIS NOTICE SHALL CONTAIN AN INVITATION TO THE PUBLIC TO PARTICIPATE IN THE EXPLORATION UNDER THE LICENSE AND

SHALL CONTAIN THE LOCATION OF THE BUREAU OF LAND MANAGEMENT OFFICE IN WHICH THE APPLICATION SHALL BE AVAILABLE FOR INSPECTION. COPIES OF THE NOTICE OF INVITATION SHALL BE FILED WITH THE AUTHORIZED OFFICER AT THE TIME OF PUBLICATION BY THE APPLICANT, FOR POSTING IN THE PROPER BUREAU OF LAND MANAGEMENT OFFICE AND FOR BUREAU OF LAND MANAGEMENT'S PUBLICATION OF THE NOTICE OF INVITATION IN THE FEDERAL REGISTER."

A copy of the "Notice of Invitation" to be published in the local newspaper and the Federal Register is included at the end of this section.

3410.2-1(c)(2)

"ANY PERSON WHO SEEKS TO PARTICIPATE IN THE EXPLORATION PROGRAM CONTAINED IN THE APPLICATION SHALL NOTIFY THE AUTHORIZED OFFICERS AND THE APPLICANT IN WRITING WITHIN 30 DAYS AFTER THE PUBLICATION IN THE FEDERAL REGISTER. THE AUTHORIZED OFFICER MAY REQUIRE MODIFICATION OF THE ORIGINAL EXPLORATION PLAN TO ACCOMMODATE THE LEGITIMATE EXPLORATION NEEDS OF PERSONS SEEKING TO PARTICIPATE, AND TO AVOID THE DUPLICATION OF EXPLORATION ACTIVITIES IN THE SAME AREA, OR MAY NOTIFY THE PERSON SEEKING TO PARTICIPATE THAT THE PERSON SHOULD FILE A SEPARATE APPLICATION FOR AN EXPLORATION LICENSE."

3410.2-1(d)

"AN APPLICATION TO CONDUCT EXPLORATION WHICH COULD HAVE BEEN CONDUCTED AS A PART OF EXPLORATION UNDER AN EXISTING OR RECENT COAL EXPLORATION LICENSE MAY BE REJECTED."

**NOTICE OF INVITATION TO PARTICIPATE
IN COAL EXPLORATION PROGRAM
PACIFICORP**

PacifiCorp is inviting all qualified parties to participate in its proposed exploration of certain Federal coal deposits in the following described lands in Emery County, Utah:

LOCATION

**1300'N 1000' E OF SE
CORNER SEC 14 T17S
R6E**

**1400'S 2200'W OF NE
CORNER SEC 14 T17S
R6E**

**2000'N 200'E OF SW
CORNER SEC 2 T17S
R6E**

**1600'N 900'E OF SW
CORNER SEC 11 T17S
R6E**

Containing 3 acres total, more or less.

Any party electing to participate in this exploration program must send written notice of such election to the Bureau of Land Management, Utah State Office, 324 S. State Street, Suite 301, Salt Lake City, Utah 84111-2303, and to PacifiCorp, PO Box 1005, Huntington, Utah 84528. Such written notice must be received within thirty days after publication of this notice in the Federal Register.

**FEDERAL COAL
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EXPLORATION PLAN
COTTONWOOD CANYON AREA
EMERY COUNTY, UTAH**

**APPLICANT:
PACIFICORP
ONE UTAH CENTER
201 SOUTH MAIN, SUITE 2100
SALT LAKE CITY, UTAH 84140-0021
(801) 220-2000**

EXPLORATION PLAN INTRODUCTION

This Exploration Plan has been prepared by PacifiCorp in accordance with the requirements of the Code of Federal Regulations, Title 43, Chapter II, Subparts 3482 (Exploration Plans) and 3484 (Performance Standards) as well as CFR Title 30, Chapter VII, Part 815 (Permanent Program Performance Standards - Coal Exploration) and the Utah Mining Code Rules for Coal Exploration UMC R645-200-203 (General Requirements: Exploration of Less than 250 Tons).

The format used in the Exploration Plan follows the format of 43 CFR, Chapter II, Subpart 3482.1 (exploration and resource recovery and protection plans).

**EXPLORATION PLAN
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- 2. Road Use Permit:**
- 3. Seed Mix:**
- 4. Water Rights Application & Approval:**
- 5. Threatened or Endangered Species:**

EXPLORATION PLAN

3482.1(a)(3)ii Names and Addresses of Applicant, Operator, and Lessee of Record:

APPLICANT:

PacifiCorp
One Utah Center
201 South Main, Suite 2100
Salt Lake City, Utah 84140-0021
(801) 220-2000

OPERATOR:

Energy West
Deer Creek Mine
PO Box 310
Huntington, Utah 84528
(801) 381-2317

LESSEE OF RECORD:

Unleased Federal Coal (No Lessee)

ADJACENT LEASES:

PacifiCorp Lease U-084924

Adjacent to Exploration License UTU-66524 (PacifiCorp)

REPRESENTATIVE OF APPLICANT:

Chuck A. Semborski
Senior Geologist/Hydrologist
PO Box 1005
Huntington, Utah 84528
(801) 653-2312
FAX (801) 653-2479

ALTERNATE:

Val Payne
Sr. Environmental Engineer
PO Box 1005
Huntington, Utah 84528
(801) 653-2312
FAX (801) 653-2479

EXPLORATION PLAN

3482.1(a)(3)iii Narrative Description of Exploration Area:

The proposed exploration area is located approximately 11 miles northwest of Orangeville, Utah (See Figure 1). More specifically, the exploration area lies approximately 4 to 7 miles up Cottonwood Canyon.

The proposed exploration area lies within T17S, R6E, Section 2, 11 and 14, to the south and west of the existing Deer Creek Mine. The proposed exploration area is given in Table 1 and shown in Figure 1. A legal description of the proposed exploration area is presented within the license application.

SURFACE TOPOGRAPHY:

Drilling activities will take place in Cottonwood Canyon, at an approximate elevation shown on the Legal Description. Cottonwood Canyon is bounded by gradual slopes leading to steep escarpments of the Castlegate Sandstone. Drilling will take place in the bottom of Cottonwood Canyon in mostly level areas adjacent to the USFS 040 access road.

GEOLOGY:

The proposed Cottonwood exploration application area lies near the center of the Wasatch Plateau Coal Field within the Mahogany Point U.S.G.S. 7 1/2 minute quadrangle map (see map portion, Figure 1).

The general stratigraphy of the area consists of members of the Mancos Shale (buried at depth), the Mesaverde Group of the Cretaceous System, and the overlying Wasatch Group of Tertiary age (see Figure 2a). The Mesaverde Group beds outcrop lowest in the area and consist of, in ascending order, the Star Point Sandstone, the Blackhawk Formation (coal bearing), and the Price River Formation, itself consisting of the lower massive Castlegate Sandstone member and the Upper Price River member. Mesaverde Group outcrops form the steep canyon walls in the area. The North Horn Formation and overlying remnants of the Flagstaff Limestone of Tertiary age cap the top of East Mountain.

The Blackhawk Formation of the Mesaverde Group is the major coal-bearing formation of the area. The only known minable coal within the exploration area is the Hiawatha Seam, which is found immediately on top of the Star Point Sandstone, at the contact of the Star Point Sandstone and the overlying Blackhawk Formation. At the proposed drill sites, the Blind Canyon seam is thin and split, and is approximately 100 feet above the Hiawatha seam.

Previous geological work has been done in this area by Spieker (1931), Ellis and Frank (1981), and Kitzmiller (1982). PacifiCorp and the Utah Geological and Mineral Survey have conducted previous exploration drilling programs within and adjacent to the proposed exploration

area. A description of the stratigraphy at the proposed drill site (from UGMS-3) is shown in Figure 2b.

The strata in the Cottonwood Canyon area dip generally at 2-5 degrees to the south and west. The Roans Canyon fault zone is believed to lie between the proposed monitoring wells CCCW1 and CCCW2.

WATER RESOURCES:

The climate in the Cottonwood Canyon area is considered semi-arid, receiving 8-14 inches of precipitation annually, depending on elevation (precipitation increases as elevation increases).

The major stream in the area is Cottonwood Canyon Creek, which is ephemeral in the vicinity of the proposed well sites. The following text will address the protection of the surface and ground water resources.

Perched ground water aquifers are known to exist locally in the sandstones of the Blackhawk Formation; however, the Star Point Sandstone which has been identified as a potential regional aquifer is the target for this hydrologic investigation.

VEGETATION:

Vegetation in the exploration area consists of sagebrush-grass and mountain brushland plant associations. No threatened or endangered plant species have been identified in the proposed exploration areas.

SOILS:

Soils in the exploration areas are derived from the Blackhawk formations and have a high clay content. By limiting the size of drill site and retaining any existing topsoil for reclamation purposes, revegetation should not be a problem in this area.

WILDLIFE:

Cottonwood Canyon is classified as high priority deer and elk summer range. Other animals in the area include cougar, bobcat, rabbit, squirrel, mice and other rodents, reptiles and amphibians. Sites CCCW1 and CCCW2 are within one-half mile of golden eagle nests. The nests were surveyed by PacifiCorp, Utah Division of Wildlife Resources (UDWR) and US Forest Service personnel in May of 1992 and found to be inactive. Additionally, drilling activities will occur after critical nesting time periods. The proposed exploration program will be scheduled to avoid conflicts with wildlife.

THREATENED OR ENDANGERED SPECIES:

No threatened or endangered plant or animal species have been identified within the proposed exploration areas. (See Attachment 5.) However, as discussed above, two (2) golden eagle nests are located near two (2) of the proposed well sites.

LAND USE:

The present land use of the proposed exploration area consists of wildlife habitat, watershed and recreational lands. PacifiCorp's Deer Creek Mine is presently mining coal underground on an adjacent lease near the proposed exploration area. Several gas wells have been developed along the bottom of Cottonwood Canyon. The proposed holes will be positioned at least 500' from the existing natural gas holes.

CULTURAL RESOURCES:

As specified in 43 CFR II Subpart 3482 (a)(3)(viii), various cultural resource investigations have been conducted in the vicinity of the proposed well sites. Two (2) of these studies encompass sites CCCW1, CCCW (Alternate site) and CCCW3 (see Attachment 1). However, site CCCW2 has not been addressed in existing investigations; therefore, a cultural resource investigation will be conducted at this site prior to surface disturbing activities. Additionally, the investigation associated with the area surrounding site CCCW1 did not address a historic trail and wagon road that has been identified in the area. Therefore, the investigation that will be conducted at site CCCW2 will include an assessment of site CCCW1 for the presence of the historic trail and wagon road.

PROPOSED ACCESS ROUTES:

USFS 040 will be the main access route to the proposed exploration area. The proposed drill sites are adjacent to this roadway. No temporary or other roads are to be constructed for access to these drill sites. Special Road-Use permit has been obtained from the Forest Service (see Attachment 2). Safety precautions will be taken along USFS 040 to protect motorists and construction personnel during drilling operations.

3482.1(a)(3)iv Narrative Description of Coal Exploration Methods:

PRE-DRILLING ACTIVITIES:

The proposed locations were originally submitted to DOGM on March 23, 1992. An onsite location review was held with the Forest Service and DOGM on June 4, 1992 to finalize the site locations. It was agreed that a total of three sites would be completed, one south and two north of the Roans Canyon Fault system. Additionally a site visit was conducted by UDWR personnel on July 15, 1992.

Forest Service, Bureau of Land Management and Division of Oil, Gas and Mining regulatory personnel will be notified at least 48 hours before any construction or drilling equipment is moved into the project area. All construction and drilling activities will be supervised by an authorized representative of the applicant. A copy of the exploration permit and all pertinent permit documents will be available for inspection on-site at all times.

Any proposed changes in the Exploration Plan after permit approval will be reviewed with the appropriate regulatory agencies before the changes take effect.

ROAD CONSTRUCTION:

No new road construction or upgrading will be required to access the proposed drill site. The site will be accessed using the existing USFS Road 040. Since no new access roads are to be constructed, top soil storage, erosion control structures, and reclamation of access roads will not be necessary.

DRILL SITE CONSTRUCTION:

The drill sites are located immediately off the existing USFS Road 040 (see Figure 1). The drill sites will be approximately one acre in size, or the minimum size necessary for efficient drilling operations. Topsoil determination will be made by color, texture and root penetration. Any topsoil that is present will be stripped from the drill site and stockpiled to prevent contamination. A mud pit may be dug at the site to contain drill cuttings. If required, water for drilling operations will be obtained from Straight Canyon.

Site preparation will be minimal, with one D8H sized bulldozer and one backhoe. Brush and/or trees clearing will not be required at the site. If topsoil occurs it will be stockpiled before pad construction is begun. The drill site and adjacent area will be sized to allow sufficient space for all necessary drilling equipment, while ensuring that the streambed is not impacted. Material will be made available for protection of topsoil as needed.

METHODS AND EQUIPMENT FOR DRILLING:

Rotary Drilling and/or coring will be done by a rubber-tired truck-mounted drilling rig. Support equipment will consist of one water truck, one rig-up or support truck, and 4x4 pickups for the crews and company representatives. Stationary equipment will consist of a pipe truck or trailer, one truck-mounted air compressor or booster. A truck mounted geophysical logging unit will be used on the hole location after drilling but prior to monitoring well completion.

The hole will be drilled with air if possible. If water is encountered, and cutting return is lost, water may also be used for drilling. It is not anticipated that other drilling fluids will be required, however, only a non-petroleum based fluid would be used in any event. Any recirculation will be within a closed system, using a tank or pit for total containment. Care will be taken to ensure that the prevailing hydrologic balance will not be adversely affected by the drilling methods

used in this program. Drilling operations will be conducted such to protect the water resources of Cottonwood Canyon.

ESTIMATED SIZE AND DEPTH OF HOLE:

The holes will be drilled using a standard air rotary rig as described in the Exploration License Application. Casing will be installed in the hole as necessary to keep the hole open and to prevent drilling and circulation problems. Cuttings will be sampled and logged every 10 feet. The Hiawatha Seam and its immediate roof and floor strata may be cored after which reaming and rotary drilling will resume to the bottom of the hole. After the total depth is reached, the holes will be logged with a standard suite of geophysical coal logs. The holes will then be completed with installation of materials to construct a ground water monitoring well.

MODIFICATION OF DRILL HOLE TO SURVEILLANCE OR WATER WELL:

As shown on Figures 2 & 3, the upper 18' of the hole will be drilled to a 12 inch diameter to allow placement of a 9 5/8 inch diameter steel surface casing and cap. The steel surface casing will be fitted with a locking well cap for security. The remainder of the hole will be 8 3/4 inch diameter or of sufficient size to allow for a submersible 3 1/2 to 4 inch pump to facilitate sampling for quality and quantity. A PVC well screen will be installed in the water bearing portion of the aquifer, and a 4 to 4 1/2 inch PVC well casing/riser pipe will be installed in the remaining upper portion of the hole. The screen will be surrounded with a coarse silica sand gravel pack. The Star Point Aquifer will be isolated by the use of a bentonite seal, which will be placed in pellet form. The upper non-aquifer portion of the hole will be filled with a standard gravel pack consisting of drill cuttings or a bentonite grout. Any overlying aquifers will be sealed off above and below with the bentonite seal to prevent contamination of the main Star Point Aquifer.

PROPOSED DRILL HOLE PLUGGING METHODS:

Because the holes are to be made into groundwater monitoring wells, the drill holes will not be plugged. The regulatory authorities will be notified in the event that no aquifers are encountered in the Blackhawk/Star Point units. When monitoring is no longer required, the wells will be permanently abandoned as required by Section 12 of the State of Utah Administrative Rules for Well Drillers, adopted July 15, 1987.

RECLAMATION PLAN:

Reclamation activities will immediately follow the completion of the well.

1. Upon completion of drilling activities at a given site, all debris, trash, and drilling related equipment will be removed from the site.
2. If needed, the mud pit will be reclaimed when the mud pit is sufficiently dry, it will be filled with stored soil material and compacted to minimize any

ground w cement
as shown on Fig 3.

what about
drilling with
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Pantler
S/A.

used in this program. Drilling operations will be conducted such to protect the water resources of Cottonwood Canyon.

ESTIMATED SIZE AND DEPTH OF HOLE:

The holes will be drilled using a standard air rotary rig as described in the Exploration License Application. Casing will be installed in the hole as necessary to keep the hole open and to prevent drilling and circulation problems. Cuttings will be sampled and logged every 10 feet. The Hiawatha Seam and its immediate roof and floor strata may be cored after which reaming and rotary drilling will resume to the bottom of the hole. After the total depth is reached, the holes will be logged with a standard suite of geophysical coal logs. The holes will then be completed with installation of materials to construct a ground water monitoring well.

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As shown on Figures 2 & 3, the upper 18' of the hole will be drilled to a 12 inch diameter to allow placement of a 9 5/8 inch diameter steel surface casing and cap. The steel surface casing will be fitted with a locking well cap for security. The remainder of the hole will be 8 3/4 inch diameter or of sufficient size to allow for a submersible 3 1/2 to 4 inch pump to facilitate sampling for quality and quantity. A PVC well screen will be installed in the water bearing portion of the aquifer, and a 4 to 4 1/2 inch PVC well casing/riser pipe will be installed in the remaining upper portion of the hole. The screen will be surrounded with a coarse silica sand gravel pack. The Star Point Aquifer will be isolated by the use of a bentonite seal, which will be placed in pellet form. The upper non-aquifer portion of the hole will be filled with a standard gravel pack consisting of drill cuttings or a bentonite grout. Any overlying aquifers will be sealed off above and below with the bentonite seal to prevent contamination of the main Star Point Aquifer.

PROPOSED DRILL HOLE PLUGGING METHODS:

Because the holes are to be made into groundwater monitoring wells, the drill holes will not be plugged. The regulatory authorities will be notified in the event that no aquifers are encountered in the Blackhawk/Star Point units. When monitoring is no longer required, the wells will be permanently abandoned as required by Section 12 of the State of Utah Administrative Rules for Well Drillers, adopted July 15, 1987.

RECLAMATION PLAN:

Reclamation activities will immediately follow the completion of the well.

1. Upon completion of drilling activities at a given site, all debris, trash, and drilling related equipment will be removed from the site.
2. If needed, the mud pit will be reclaimed when the mud pit is sufficiently dry, it will be filled with stored soil material and compacted to minimize any

settling.

3. A backhoe and a bulldozer will redistribute material on and around the drill pad to achieve as closely as is practicable the original contour of the site.
4. Stored topsoil will be distributed as evenly as possible over the disturbed pad area. The topsoil will be roughened to aid in the retention of seed and moisture.
5. The entire drill pad area will be re-seeded using a USFS approved seed mix at the rate specified (see Attachment 3).
6. The drill pad reclamation procedure outlined above will apply only to those areas newly disturbed for this proposed exploration. The drill pad will be left in a condition equal to or better than that observed on PacifiCorp's entry into the area.

3482.1(a)(3)v Estimated Timetable for Construction, Drilling, and Reclamation Activities:

Other drilling activities on East Mountain are scheduled to begin on August 3, 1992 and is expected to be completed on August 24, 1992. The estimated start-up for construction and drilling activities of the water wells will be on or around August 24, 1992, utilizing the same equipment from East Mountain.

3482.1(a)(3)vi Amount of Coal to be Removed:

Coal to be removed during this exploration will either be in the form of approximate 3 inch diameter core or as 8 3/4 inch diameter rotary cuttings. Assuming a total coal thickness of 12 feet in the hole, the total weight of coal to be removed will be less than 150 pounds. If cored, this coal will be tested for a wide range of quality parameters by a qualified laboratory. If rotary drilled, the cuttings would largely be lost.

3482.1(a)(3)vii Measures to be Used to Comply with Performance Standards for Exploration (43 CFR II 3484.1(a), 30 CFR 815.15, and Utah State Permanent Program Rules):

- 3484.1(a)(1) (Operator shall comply with applicable requirements of surface management agency, 30 CFR 815.15, or approved State program)

All applicable parts of the Federal and State Performance Standards for Coal Exploration have been covered in the preceding exploration and reclamation plans. PacifiCorp has reviewed, and will comply with, all applicable requirements of 30 CFR 815.15 and the Utah Mining Code as stated in UMC R645-200-203.

3484.1(a)(2) (Installation of casing and blowout preventers in drill hole in known oil, gas and geothermal areas)

Cottonwood Canyon area is a known natural gas field. Gas occurs in the Ferron Sandstone, approximately 3,000 feet below the Star Point Sandstone. Since the proposed drilling will not penetrate the entire Star Point Sandstone and will not drill into the underlying Mancos Shale, blowout preventers will not be used. Casing will be set in the hole as necessary to maintain circulation of cuttings to the surface.

3484.1(a)(3) (Drill hole plugging requirements)

The drill holes will not be plugged and will remain open for periodic groundwater monitoring. A diagram of the completion plans are shown in Figures 2 & 3.

3484.1(a)(4) (Retention of drill and geophysical logs by applicant)

PacifiCorp will retain in its files all drill and geophysical logs for at least 1 year, and will make them available for inspection by any authorized officer. All un-analyzed drill cores will be kept in PacifiCorp's possession for at least 1 year if requested, and will be available for inspection by any authorized officer.

3484.1(a)(5) (Utilizing drill hole as a water monitoring well)

The holes will be utilized as ground water monitoring wells. PacifiCorp is drilling these wells for the express purpose to evaluate the hydrology of the Blackhawk/Star Point aquifer and evaluate the affect, if any caused by PacifiCorp's Deer Creek Mine operation.

3482.1(a)(3)viii Map of Exploration Area:

A map of the proposed exploration area at a scale of 1:24,000 (1" = 2,000'), showing the drill hole location and existing access road to be used is included as Figure 1 of this plan.

3482.1(a)(3)ix Surface Owners and Subsurface Owners of Record:

SURFACE OWNER:

US Department of Agriculture
US Forest Service
Manti-LaSal National Forest
Ferron District Office
Ferron, Utah 84532

SUBSURFACE OWNER:

**US Department of Interior
Bureau of Land Management
Utah State Office
324 South State Street
Suite 301
Salt Lake City, Utah 84111-2303**

TABLE 1

LOCATION AND DEPTH OF PROPOSED DRILL HOLES:

<u>#</u>	<u>LOCATION</u>	<u>DEPTH</u>	<u>ELEVATION</u>	<u>SURFACE OWNER</u>	<u>SUB SURFACE OWNER</u>	<u>OBJECTIVE</u>
CCCW1A	1300'N 1000'E OF SE CORNER SEC 14 T17S R6E	100'	7840'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL TO ACCESS POTENTIAL IMPACTS ON THE HYDROLOGIC REGIME.
CCCW1S	1300'N 1000'E OF SE CORNER SEC 14 T17S R6E	625'	7840'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL FOR COMPARISON OF COTTONWOOD CANYON CREEK TO THE ALLUVIUM.
CCCW2A	1400'S 2200'W OF NE CORNER SEC 14 T17S R6E	100'	7920'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL TO ASSESS POTENTIAL IMPACTS ON THE HYDROLOGIC REGIME.
CCCW2S	1400'S 2200'W OF NE CORNER SEC 14 T17S R6E	650'	7920'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL FOR COMPARISON OF COTTONWOOD CANYON CREEK TO THE ALLUVIUM.
CCCW3A	2000'N 200'E OF SW CORNER SEC 2 T17S R6E	100'	8400'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL TO ASSESS POTENTIAL IMPACTS ON THE HYDROLOGIC REGIME.
CCCW3S	2000'N 200'E OF SW CORNER SEC 2 T17S R6E	675'	8400'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL FOR COMPARISON OF COTTONWOOD CANYON CREEK TO THE ALLUVIUM.
ALTERNATE A	1600'N 900'E OF SW CORNER SEC 11 T17S R6E	100'	8120'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL TO ASSESS POTENTIAL IMPACTS ON THE HYDROLOGIC REGIME.
ALTERNATE S	1600'N 900'E OF SW CORNER SEC 11 T17S R6E	675'	8120'	F O R E S T SERVICE	UNLEASED FEDERAL BLM	WATER MONITORING WELL FOR COMPARISON OF COTTONWOOD CANYON CREEK TO THE ALLUVIUM.

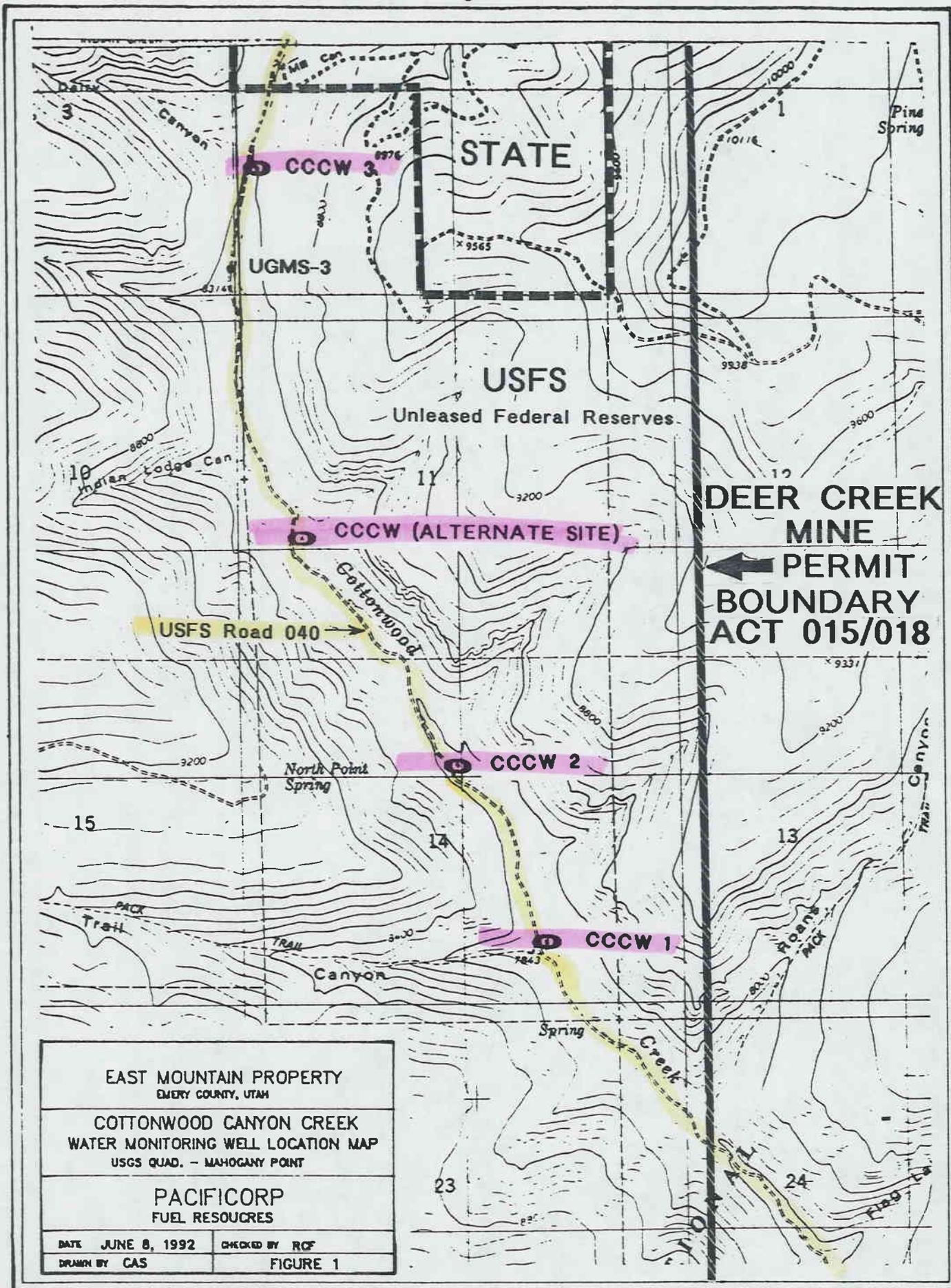
TABLE 2

**AREAS OF DISTURBANCE ASSOCIATED WITH ACCESS ROAD
AND DRILL SITE CONSTRUCTION:**

<u>HOLE NO.</u>	<u>CONSTRUCTED ROAD LENGTH</u>	<u>ACRES OF ROAD DISTURBANCE</u>	<u>TOTAL PAD DISTURBANCE</u>
CCCW1A CCCW1S	0'	.00	1 ACRE
CCCW2A CCCW2S	0'	.00	1 ACRE
CCCW3A CCCW3S	0'	.00	1 ACRE
*ALTERNATE A ALTERNATE S	0'	.00	1 ACRE

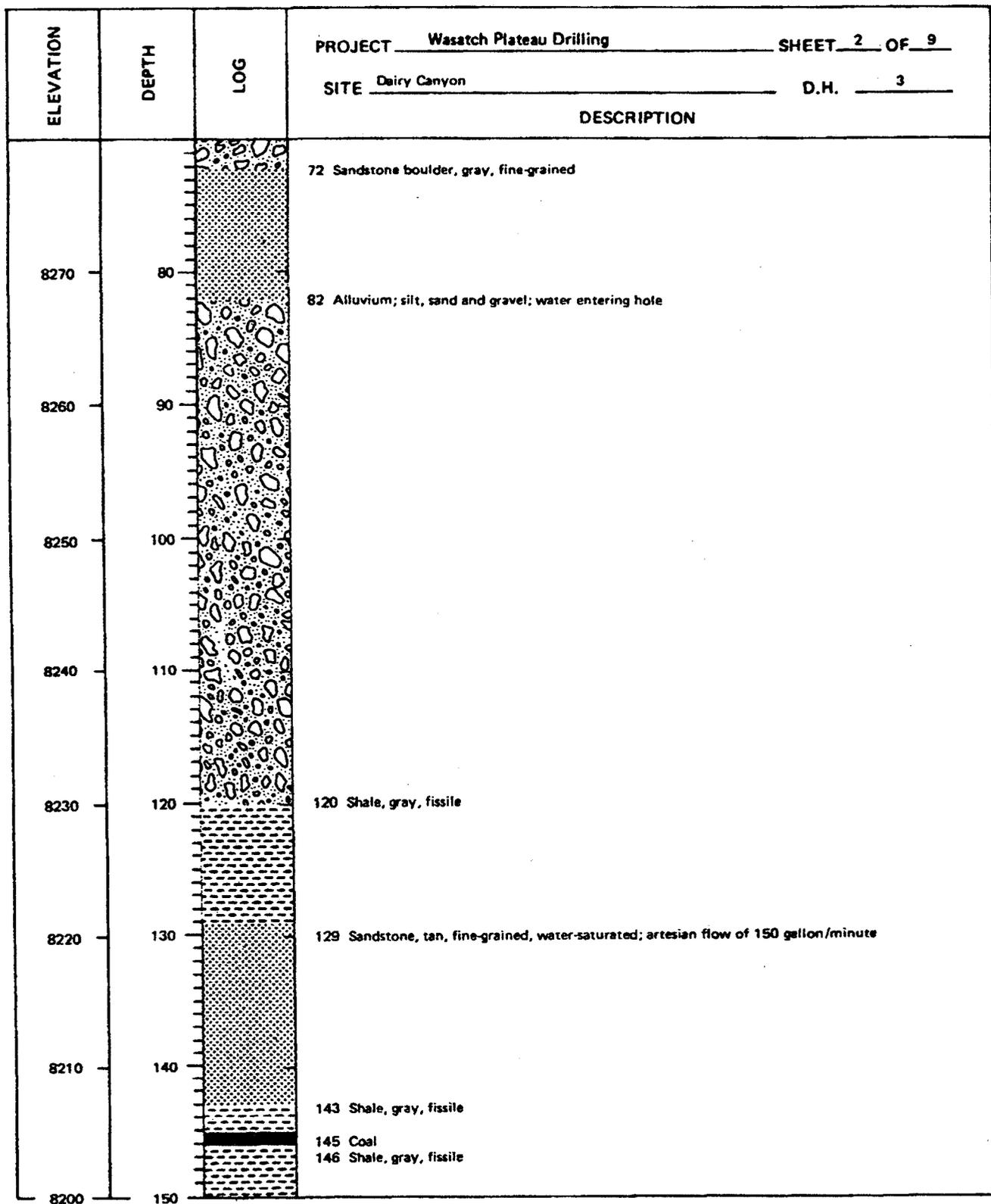
* AREA TO BE USED ONLY IF PROBLEMS EXIST WITH ANY OF THE OTHER DRILL SITES.

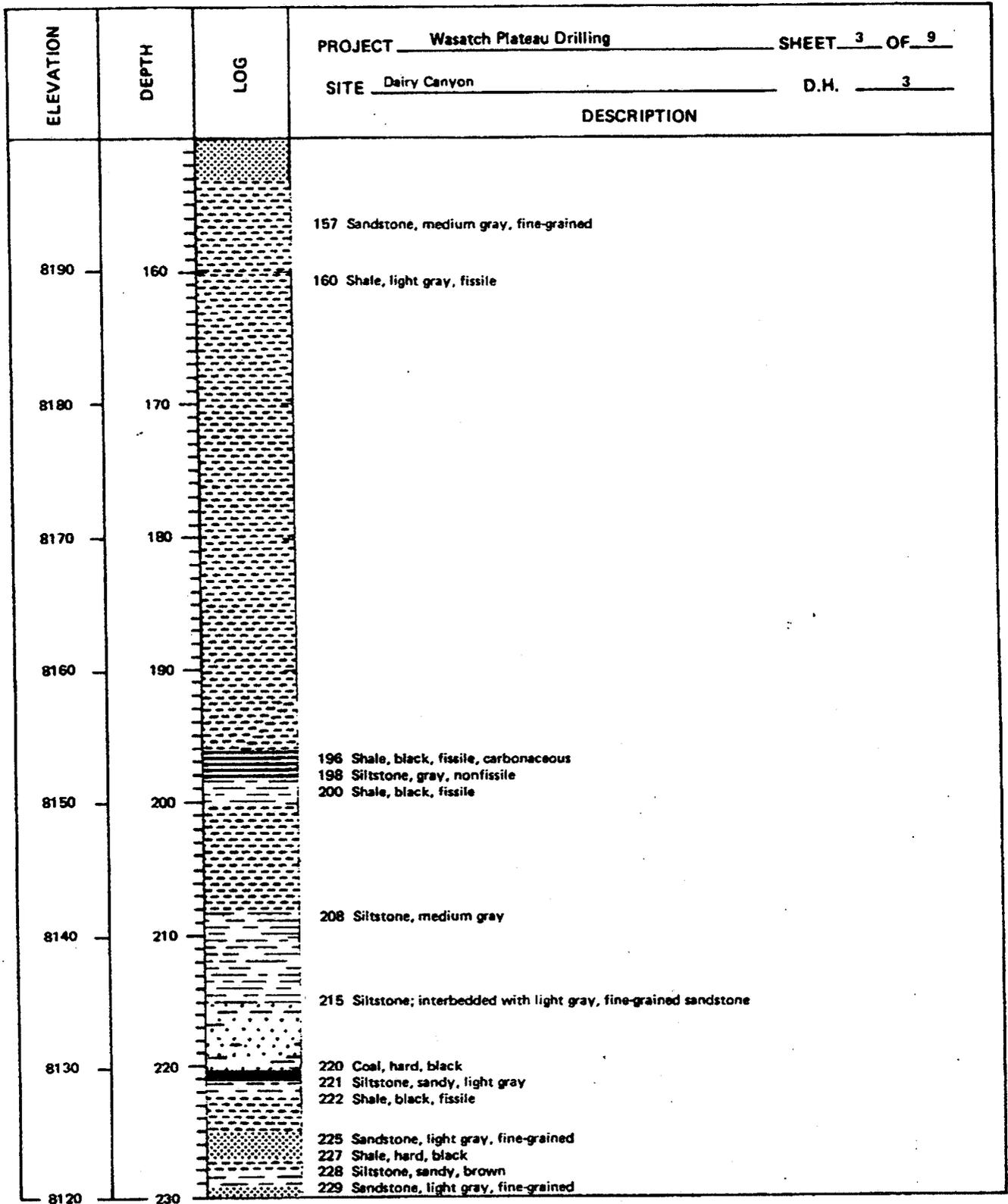
Figure 1

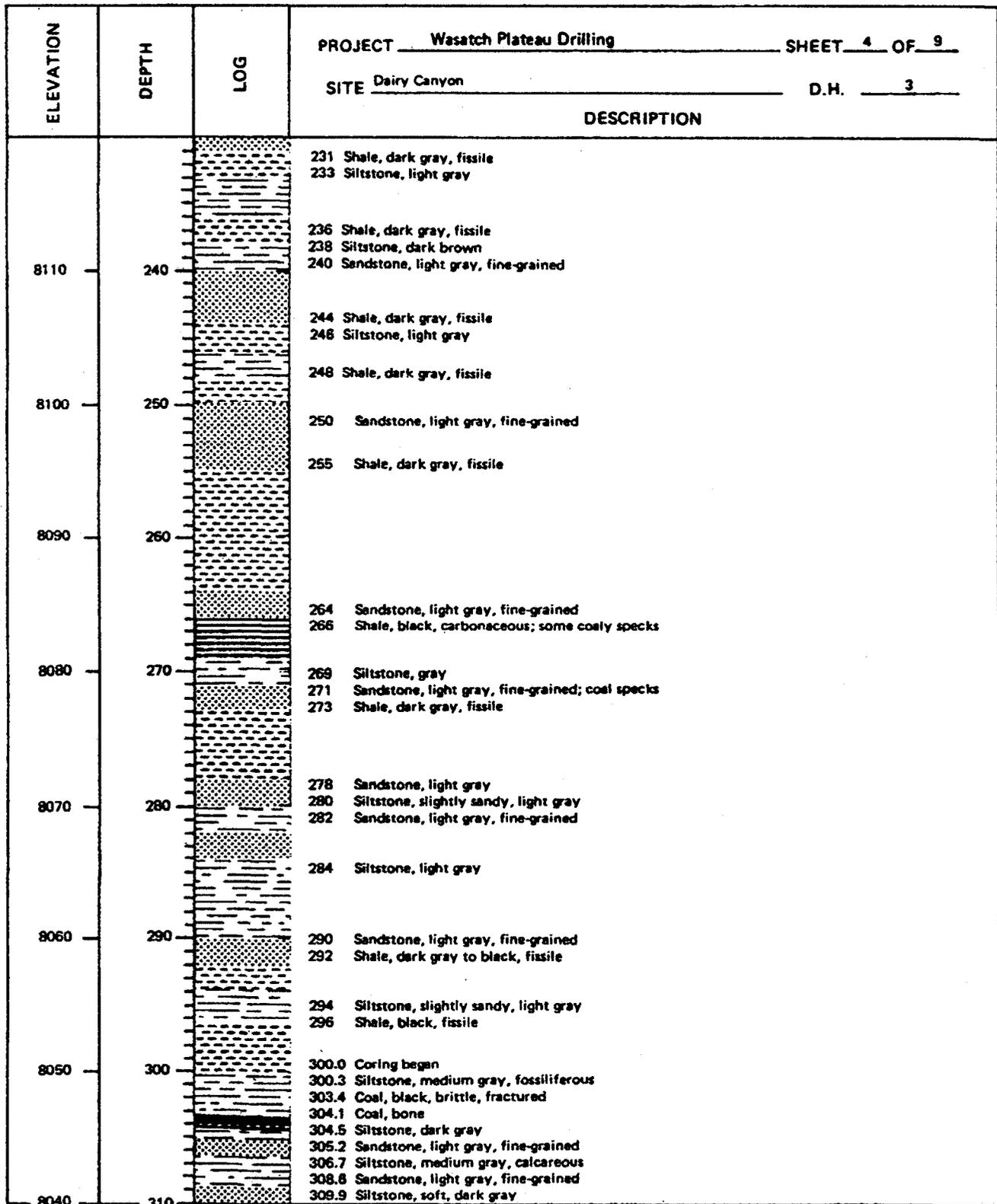


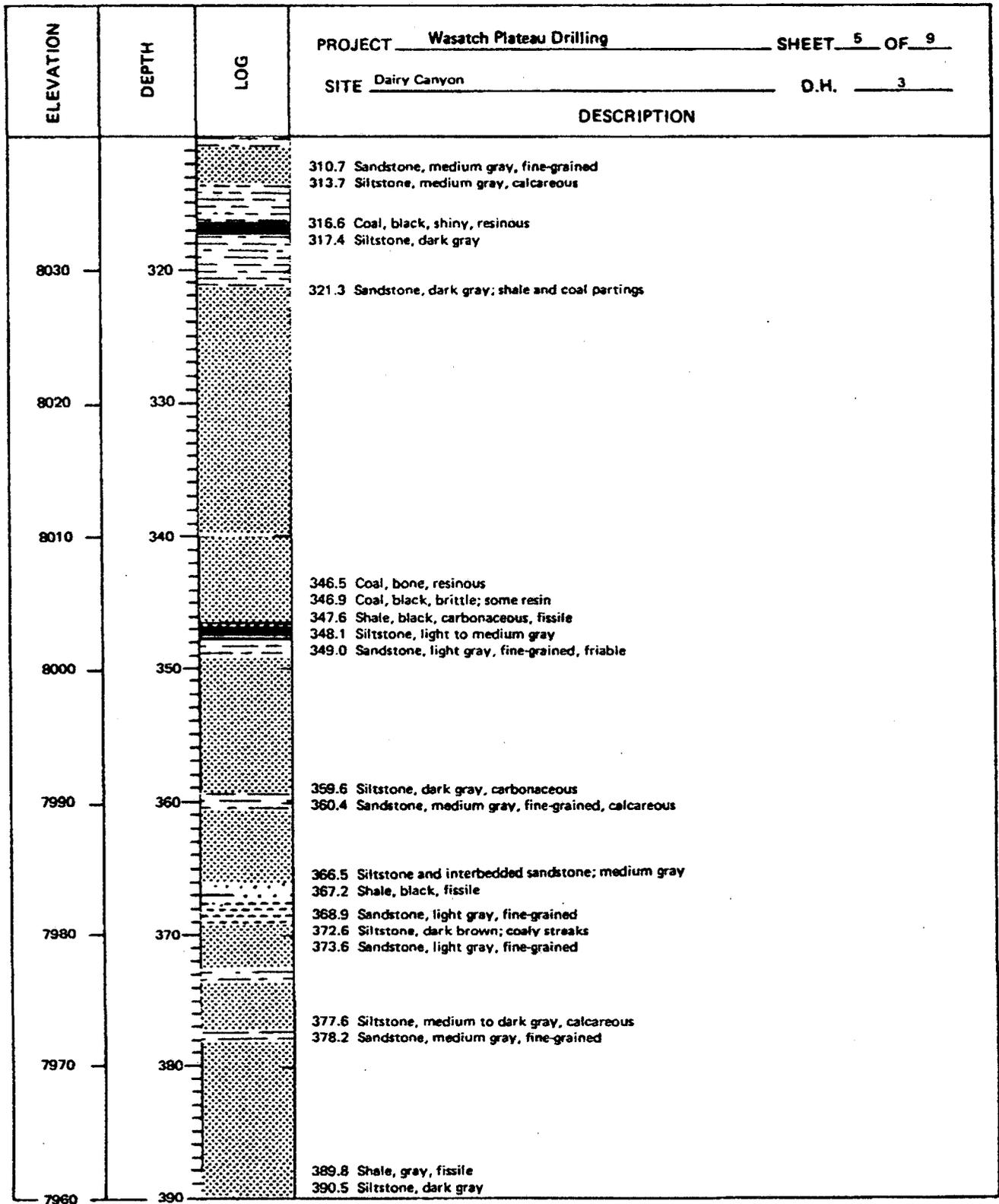
System	Group	Formation		Thickness (feet)	Description
Tertiary	Wasatch	Flagstaff Limestone		100-1,000	Light gray to cream limestone; thin and even bedded; dense; fossiliferous; ledge- and cliff-forming.
		North Horn Formation		900-2,000	Mostly red-, brown-, and salmon-colored shales; varying thicknesses of sandstone, freshwater limestone and conglomerate; slope-forming.
Cretaceous	Mesaverde	Price River Fm.	Upper Price River Member	400-800	Mostly tan and gray, medium- to coarse-grained sandstone; some gray shale and conglomeratic sandstone; ledge- and slope-forming.
			Castlegate Sandstone Member	150-500	Light gray, yellowish brown, and white, medium- to coarse-grained sandstone and conglomeratic sandstone; cliff-forming.
		Disconformity			
		Blackhawk Formation		400-1,100	Light to medium gray sandstones; gray to black shales; gray siltstones; important coal beds in lower half; sandstones weather tan, brown, yellowish brown; ledge- and slope-forming.
	Star Point Sandstone		200-1,000	Tan, light gray, and white massive sandstones separated by one or more shale tongues; cliff-forming.	
	Mancos Shale	Masuk Shale		300-1,300	Light gray to blue gray sandy marine shale; thins to west and south; slope-forming.

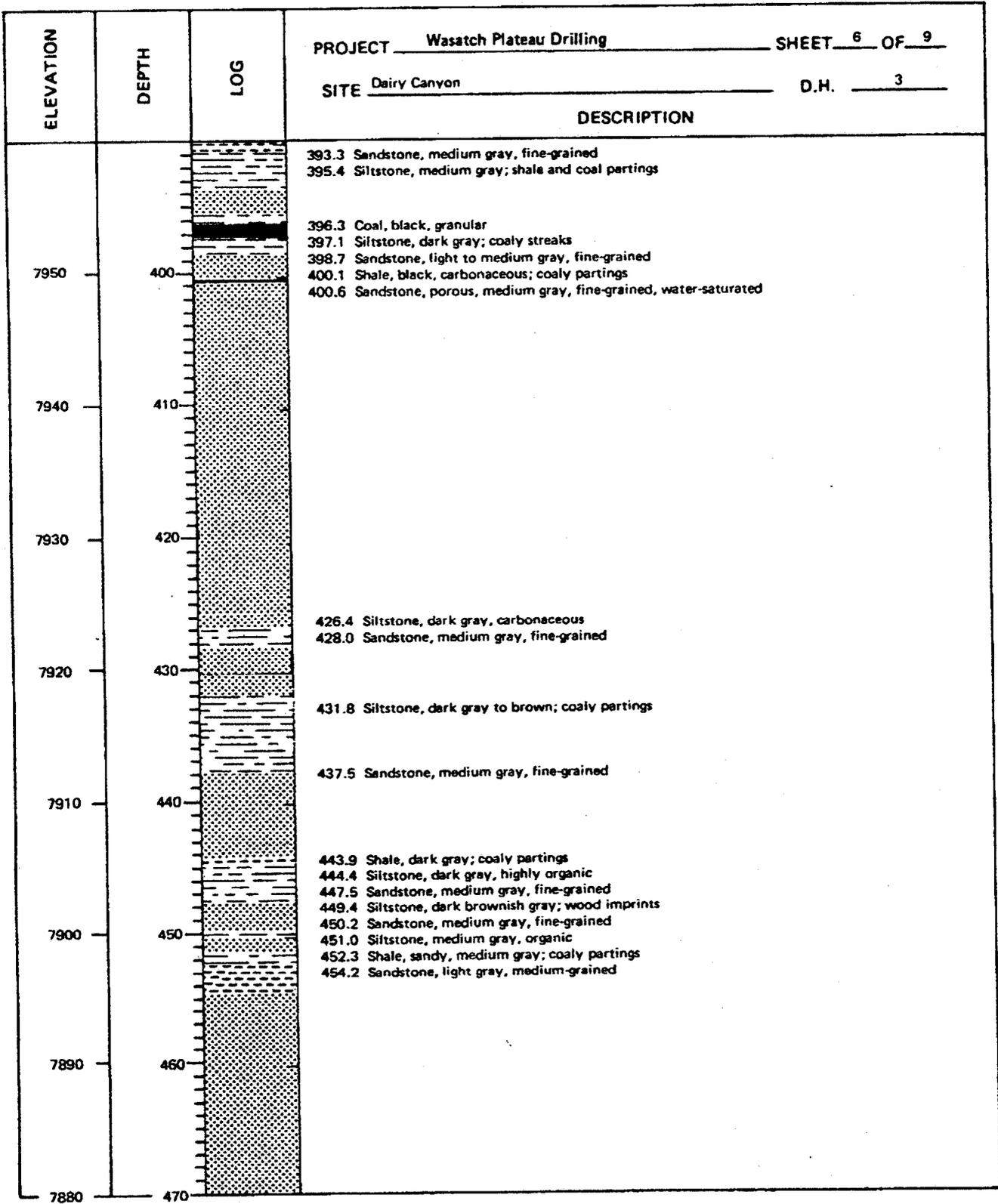
Figure 2A. Generalized stratigraphic column of rock units exposed in the Wasatch Plateau Coal Field (Davis and Doelling, 1977).

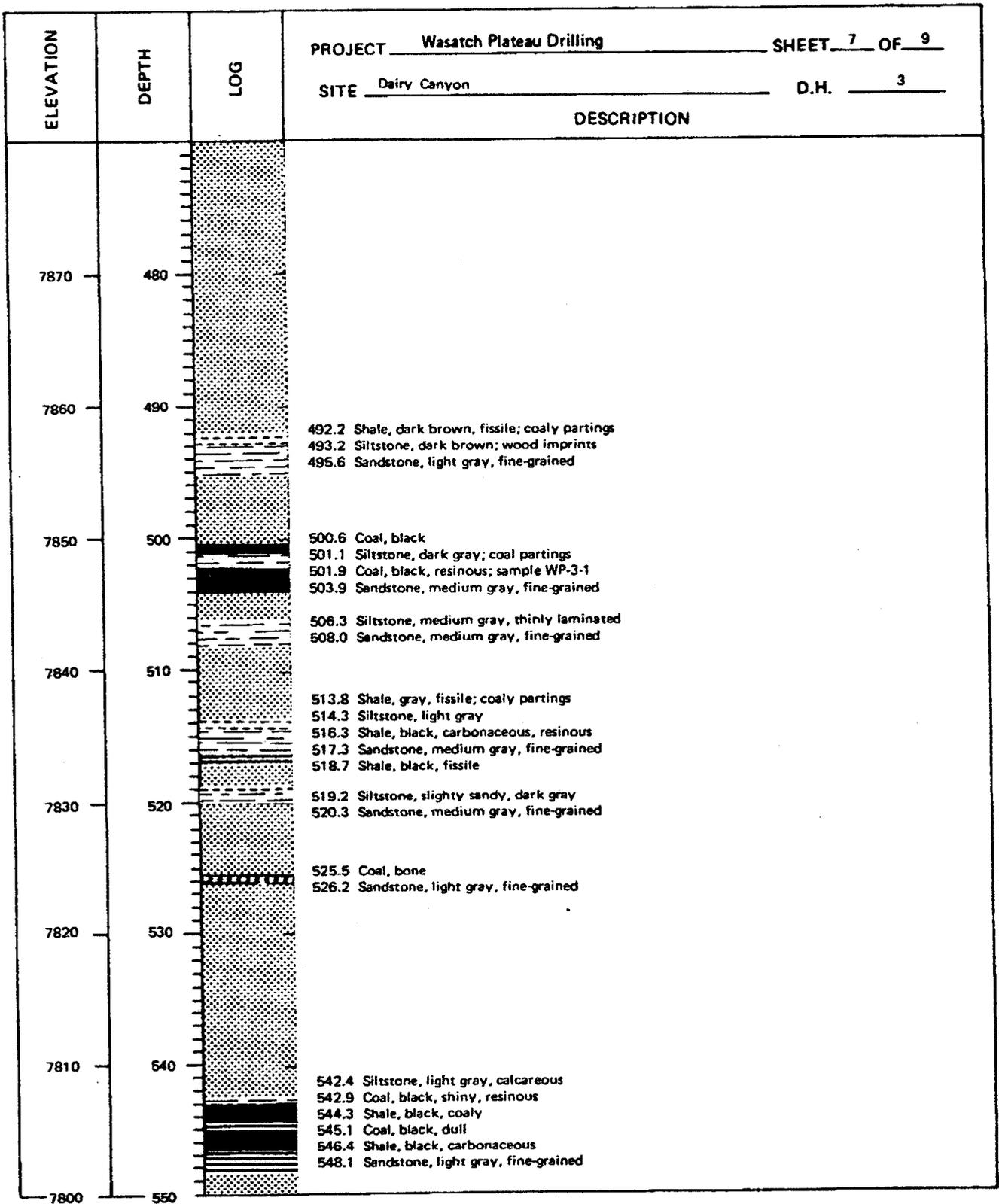


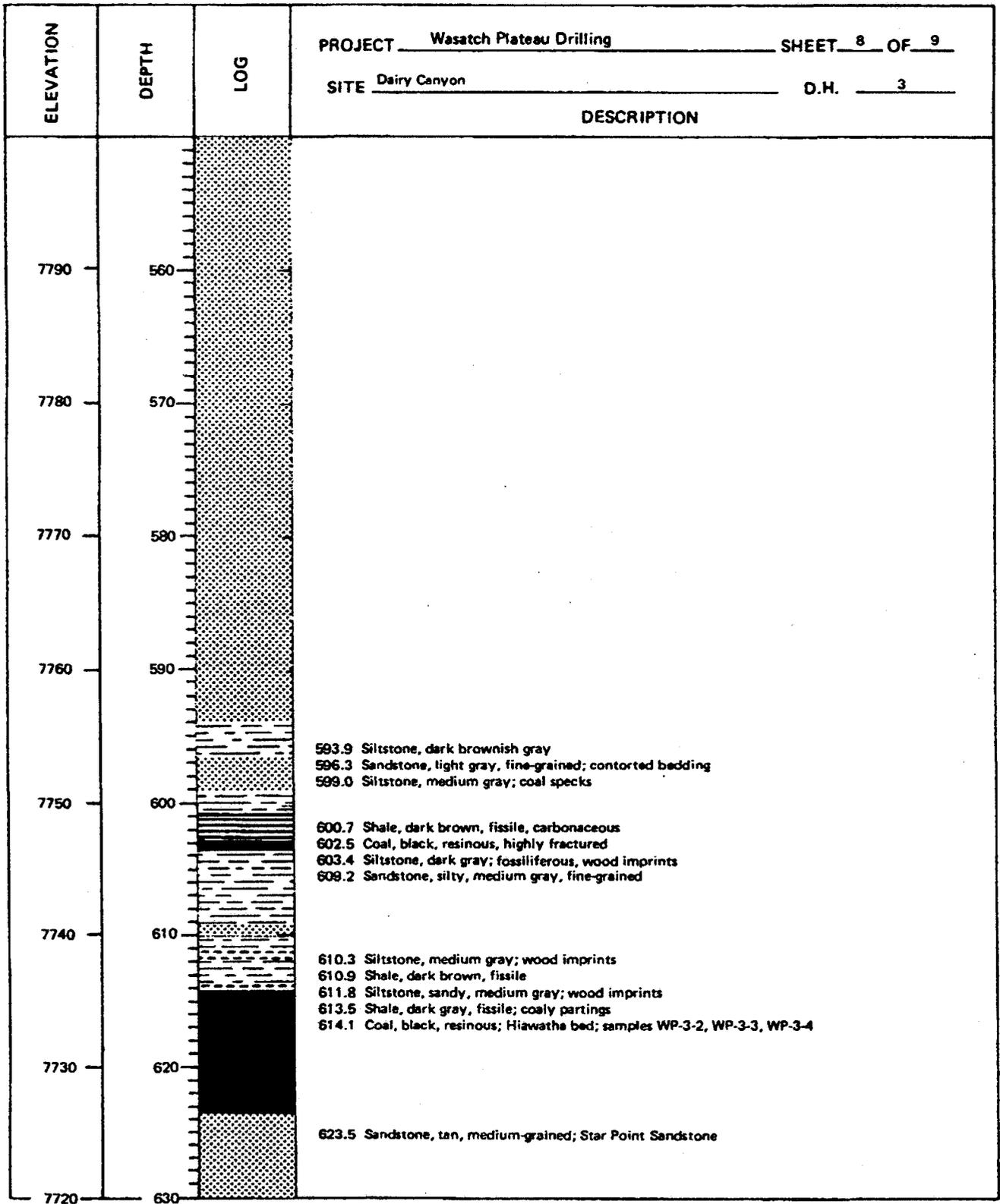


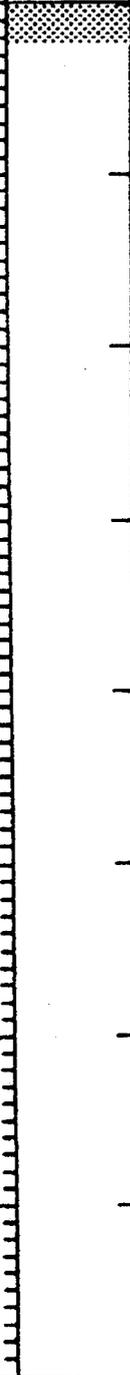




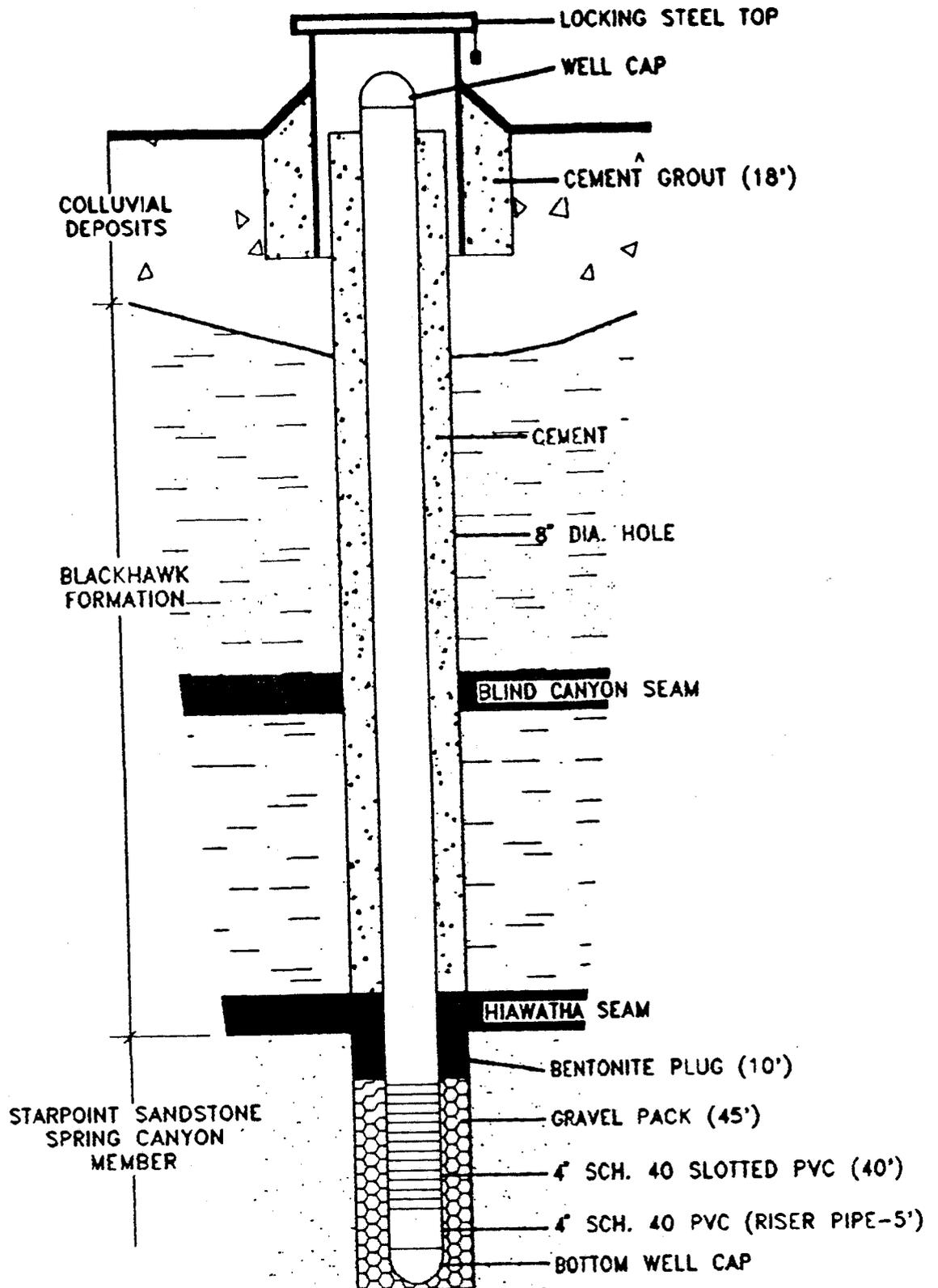






ELEVATION	DEPTH	LOG	PROJECT <u>Wasatch Plateau Drilling</u> SHEET <u>9</u> OF <u>9</u> SITE <u>Dairy Canyon</u> D.H. <u>3</u> DESCRIPTION
7710	640		632.5 Total depth, August 24, 1975

COTTONWOOD CANYON
WELL DESIGN - STARPOINT/BLACKHAWK CONTACT
FIGURE 3



**FEDERAL COAL
EXPLORATION LICENSE APPLICATION
AND
EXPLORATION PLAN FOR CONSTRUCTION OF
WATER MONITORING WELLS**

**COTTONWOOD CANYON AREA
EMERY COUNTY, UTAH**

**ATTACHMENT 1
CULTURAL RESOURCES INFORMATION**

The following reports regarding Cultural Resource Information referenced in this document are on file at:

**State of Utah
Division of State History
Utah State Historic Preservation Office
300 Rio Grande
Salt Lake City, Utah 84101-1182**

and

**US Department of Agriculture
US Forest Service
Manti-LaSal National Forest
Price District Office
599 West Price River Drive
Price, Utah 84501**

Hauck, F.R.

1991 "Prehistoric Occupations in the Trail Mountain Locality of Emery County, Utah (UPL-91-2)." Report prepared for PacifiCorp - Utah Power & Light Company by Archeological-Environmental Research Corporation, Bountiful, Utah.

Hauck, F.R.

1977 "The Central Coal Project of Utah." Volumes I, II, and III; Report prepared under contract 14-08-0001-16479 for the US Geological Survey by the Archeological-Environmental Research Corporation of Salt Lake City.

ATTACHMENT 1

Reply to: 2820/7730

Date: May 15, 1992

Mr. Scott M. Child
PacifiCorp
201 South Main
Suite 2100
Salt Lake City, Utah 84140-0021

Dear Mr. Child:

Your Road Use Application of May 1, 1992 for completion of your 1991 drilling program and your proposed 1992 drilling program on East Mountain will require the continued use of FDR (Forest Development Roads) #50040 and FDR 50060. In addition, use will be made of FDR #53019 and FDR #53187 not presently in your extended Road Use Permit. The additional use can be authorized by extending the existing Road Use Permit to October 31, 1992 and amending the permit to include FDR #53019 and FDR #53187. The additional surface replacement fee for all portions of FDR #50040, #50060, #53019, and #53019 currently under jurisdiction of the Forest Service is \$440. You must make separate arrangements with private land owners for other sections of these roads.

Your payment of the Maintenance and Resurfacing Required fee and continuation of the \$9,900 bond will verify your continued acceptance of the terms and condition of the amended permit. Please indicate that the payment is for 1992 East Mountain Coal Exploration Program when making payment. The Road Use Permit will now have an expiration date of October 31, 1992. Please notify us of the completion of your drilling program so that a final inspection of the roads can be made and your bonds released. A final inspection of all roads needs to be scheduled prior to the permit termination date to allow timely closeout of this permit.

Sincerely,


For
GEORGE A. MORRIS
Forest Supervisor

BBB:bbb

cc: D-3
D-2

**1992 EAST MOUNTAIN DRILLING
REVEGETATION SEED MIX**

<u>SPECIES</u>	<u>PLS POUNDS/ACRE</u>
Timothy - <i>Phleum pratense</i>	2
Orchard grass - <i>Dactylis glomerata</i>	5
Pubescent Wheatgrass - <i>Agropyron trichophorum</i>	3
Smooth Brome - <i>Bromus inermus</i>	3
Beardless Wheatgrass - <i>Agropyron spicatum inerme</i>	2
Ladak Alfalfa - <i>Medicago sativa ladak</i>	2
Vetch - <i>Vicia americana</i>	2

Charles A. Semborski
Senior Geologist/Hydrologist
P. O. Box 1005
Huntington, UT 84528
(801) 653-2312
FAX (801) 653-2479

June 8, 1992

Mr. Mark Page
UTAH DIVISION OF WATER RIGHTS
453 South Carbon Avenue
Price, UT 84501

Re: PacifiCorp's proposed water monitoring wells in Cottonwood Canyon Creek,
Emery County, Utah

Dear Mr. Page:

As part of the Deer Creek Mine-Rilda Canyon Lease Extension, PacifiCorp is required to construct a series of groundwater wells in a downgradient direction from the projected workings of the Deer Creek Mine to monitor the potential effects of the mine on the groundwater regime. The wells are scheduled to be drilled during the 1992 drilling season if the necessary approvals are received.

The following items are included for your review:

- 1) Completed Request for Monitor Well Construction form
- 2) Location Map
- 3) Structural Contour Map with Well Locations and Projected Mine Workings
- 4) Site Justification
- 5) Drilling Procedure and Well Design
- 6) Monitoring Plan

An onsite location review was conducted with the Forest Service and DOGM on June 4, 1992. The wells will intersect the coal bearing strata of the Blackhawk Formation and will require filing an exploration application with the Forest Service. The application will be filed as soon as the necessary field work is completed.

Mr. Mark Page
June 8, 1992
Page Two

If you have any questions concerning this submittal, please contact me at 653-2312.

Sincerely,

Charles A. Semborski

CAS/sh/1697
Attachments

cc: R. Fry, with attachment
V. Payne " "
B. Webster, without attachment

COTTONWOOD CANYON CREEK MONITORING WELLS

PacifiCorp proposes to install a series of groundwater monitoring wells in Cottonwood Canyon Creek downgradient of existing and proposed Deer Creek mine development. Studies conducted by PacifiCorp (Roans Canyon Study) and routine exploration drilling on the East Mountain Property have shown that the individual members of the Starpoint Sandstone are not hydrologically connected. At each of the three proposed sites (one alternate site was chosen should difficulties arise during the permitting process), two single completion wells will be installed, one in the colluvial/alluvial deposits and one in the Spring Canyon Member. Holes completed in the colluvial/alluvial deposits will be utilized to compare the well hydrographs to those of Cottonwood Canyon Creek and the Spring Canyon Member.

1) Location

The proposed wells will be located in Cottonwood Canyon in Sections 2, 11, and 14, Range 6 East, Township 17 South, (see Figure 1 and Map HM-1).

2) Site Justification

The proposed locations were originally submitted to DOGM on March 23, 1992. An onsite location review was held with the Forest Service and DOGM on June 4, 1992 to finalize the site locations. It was agreed that a total of three sites would be completed, one south and two north of the Roans Canyon fault system. The locations were selected for the following reasons:

- a) Location of the drill sites shown on Figure 1 and Map HM-1 is based on the regional dip of the top of the Spring Canyon Member of the Starpoint Sandstone Formation and positioned downgradient of the projected mine workings of the Deer Creek Mine.
- b) Site selection was also based on the confinements of drilling in Cottonwood Canyon as well as to minimize environmental impacts. The sites will not require extensive site preparation (crossing the stream will not be necessary) and are positioned at least 500 feet from existing natural gas holes.
- c) The sites are as close to the permit boundary as will allow year-round access. Positioning the holes in the canyon also minimizes the depth necessary to intersect the Starpoint Sandstone.

3) Drilling Procedure and Well Design

The monitoring wells will be drilled utilizing a standard air rotary type drill rig and drilling procedures. At each site a twelve inch (12") diameter hole will be drilled to a depth of eighteen feet (18') where ten inch (10") steel surface casing will be set and grouted. The remainder of the hole will be drilled to diameter of eight inches (8") to a total depth of approximately one hundred feet (100') for the alluvial wells and eight hundred feet (800') for the Starpoint Sandstone wells (see figures 2 and 3). It is anticipated that the holes will be drilled with air-air/mist, and approved non-petroleum additives will be added only when necessary. All recirculation materials will be retained in a closed system using a mud pit.

Material and equipment utilized for the project are listed below:

- (1) Air Rotary Type Drill Rig
- (2) Air Compressor
- (3) Recirculation Pit
- (4) 20' feet of 12" steel casing
- (5) Shallow Wells:
 - 40' - 60' of PVC Riser
 - 20' - 50' of PVC ScreenDeep Wells:
 - 700' - 750' of PVC Riser
 - 20' - 50' of PVC Screen
- (6) Bentonite Pellets
- (7) Gravel Pack
- (8) Cement Grout

Four inch (4") well screen will be installed in the water bearing portion of colluvial/alluvial deposits for the shallow wells and in the upper fifty feet (50') of the Starpoint Sandstone (Spring Canyon Member). The remainder of the hole will consist of four inch (4") PVC riser pipe. The screen portion of each hole will be surrounded with coarse sand/gravel pack. A bentonite plug will be installed to isolate the screen from the riser pipe. The remaining annulus will be cemented with Neat Cement. No more water will be diverted from the wells than is necessary to make them operational and for quality testing.

4) Monitoring

As explained above, the holes will be cased with four inch (4") PVC which be of sufficient diameter to allow for a submersible to conduct groundwater testing and quality sampling. The well will be sampled for baseline, operational, and post-mining parameters and frequency as approved by DOGM. Depth to water will be monitored on a monthly basis and quality samples will be collected and analyzed quarterly.

5) Site Preparation/Reclamation

Site preparation will consist of removing and storing the topsoil to prevent any possible contamination of an area large enough to accommodate the associated drilling equipment. Upon completion the area will be regraded to established preexisting drainage patterns and seeded with an approved seed mixture.

When monitoring is no longer required, the wells will be permanently abandoned as required by Section 12 of the State of Utah Administrative Rules For Well Drillers, adopted July 15, 1987.

DIVISION OF WATER RIGHTS
REQUEST FOR MONITOR WELL CONSTRUCTION

APPLICANTS NAME PacifiCorp - Fuel Resources

APPLICANTS ADDRESS P. O. Box 1005, Huntington, UT 84528

INDIVIDUAL CONTACT Mr. Charles Semborski 653-2312
Name Phone

CURRENT PROPERTY OWNER United States Government (USFS & BLM Administrators)

PROPOSED NUMBER OF WELLS 6 DIAMETERS 4" to T.D. APPROX. DEPTHS 100' and 800'

TYPE OF COMPLETIONS 12" hole w/10" cemented surface casing, 8" hole w/4" PVC well (Casing, intake, riser/screen to T.D.; Lower 20-50' will consist of PVC screen gravel pack, grout, surrounded by gravel/sand; remainder of hole will be grouted etc.) with neat cement.

PROJECT ENGINEER/MANAGER Charles A. Semborski, Senior Geologist/Hydrologist
Name
P. O. Box 1005, Huntington, UT 84528 (801) 653-2312
Address Phone

GENERAL LOCATION DESCRIPTION Approximately 1 mile north of the Trail Mountain Mine in Cottonwood Canyon COUNTY Emery

WELLS IN CONJUNCTION WITH (LEAKING) UNDERGROUND STORAGE TANKS Yes X
Yet to be selected, will submit Yes No

NAME OF LICENSED DRILLER a Notice of Intent to Drill within 30 days of completion LICENSE # ---

PROPOSED CONSTRUCTION DATE 8/92-11/92 ANTICIPATED COMPLETION DATE 11/92

LOCATION OF WELLS:

1. (N/S) 1300 FT. & (E/W) 1000 FT. FRM SECOR. or 1/4 1/4 of SEC. 14 T17 N(S) R6 (E/W) SLEM/USM
2. N(S) 1400 FT. & E(W) 2200 FT. FRM NECOR. or 1/4 1/4 of SEC. 14 T17 N(S) R6 (E/W) SLEM/USM
3. (N/S) 1600 FT. & (E/W) 900 FT. FRM SWCOR. or 1/4 1/4 of SEC. 11 T17 N(S) R6 (E/W) SLEM/USM
4. (N/S) 2000 FT. & (E/W) 200 FT. FRM SWCOR. or 1/4 1/4 of SEC. 2 T17 N(S) R6 (E/W) SLEM/USM
5. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or 1/4 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
6. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or 1/4 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
7. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or 1/4 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
8. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or 1/4 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
9. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or 1/4 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM
10. N/S _____ FT. & E/W _____ FT. FRM _____ COR. or 1/4 1/4 of SEC. _____ T _____ N/S R _____ E/W SLEM/USM

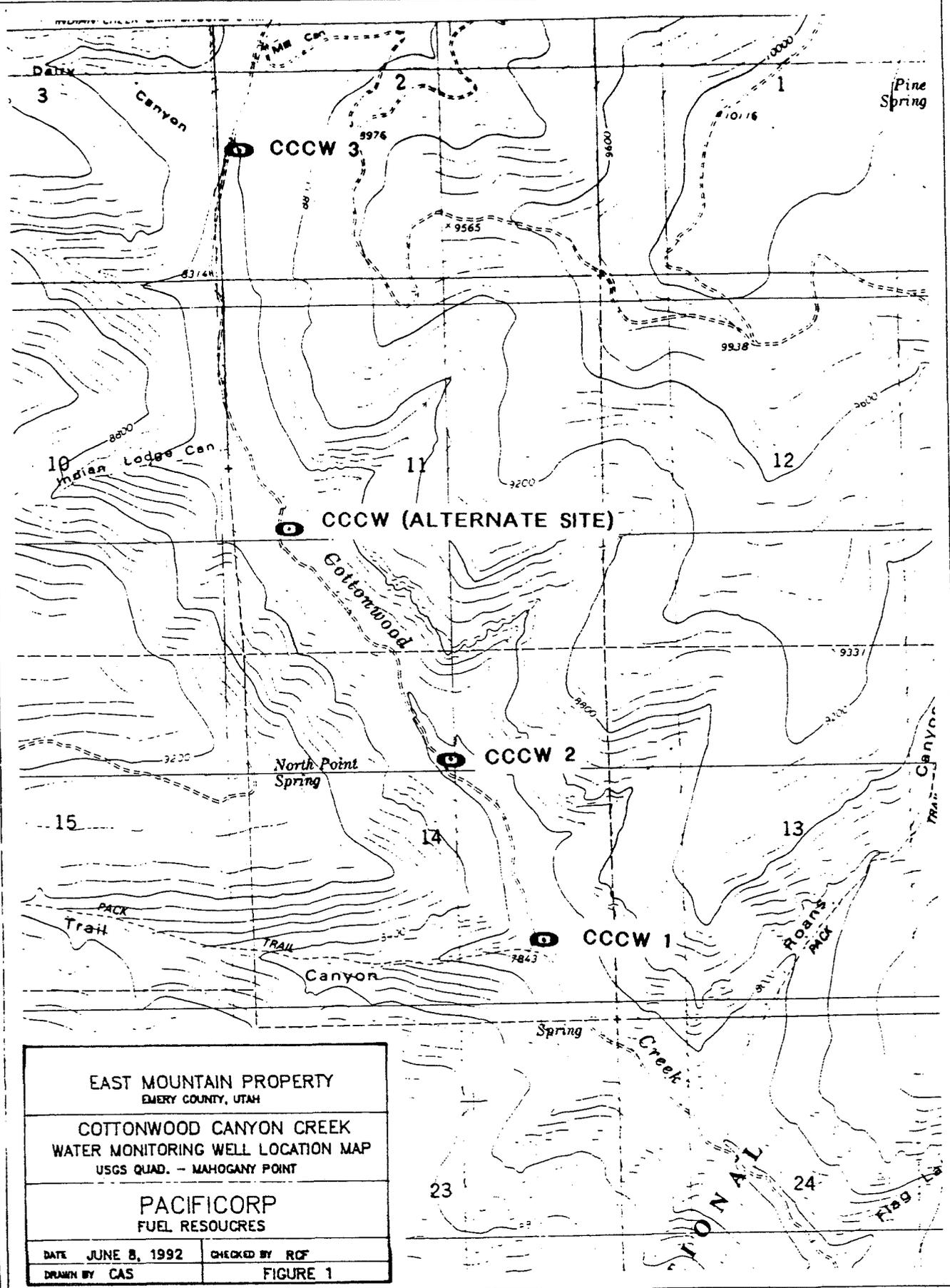
(continued on reverse side)

Comments or explanation Two (2) single development wells will be drilled at three (3) sites (one alternate was also selected), one completed in the colluvium/alluvium deposits and the other hole will be completed in the Starpoint Sandstone.

For office use only

DATE OF REQUEST _____
AREA OFFICE _____

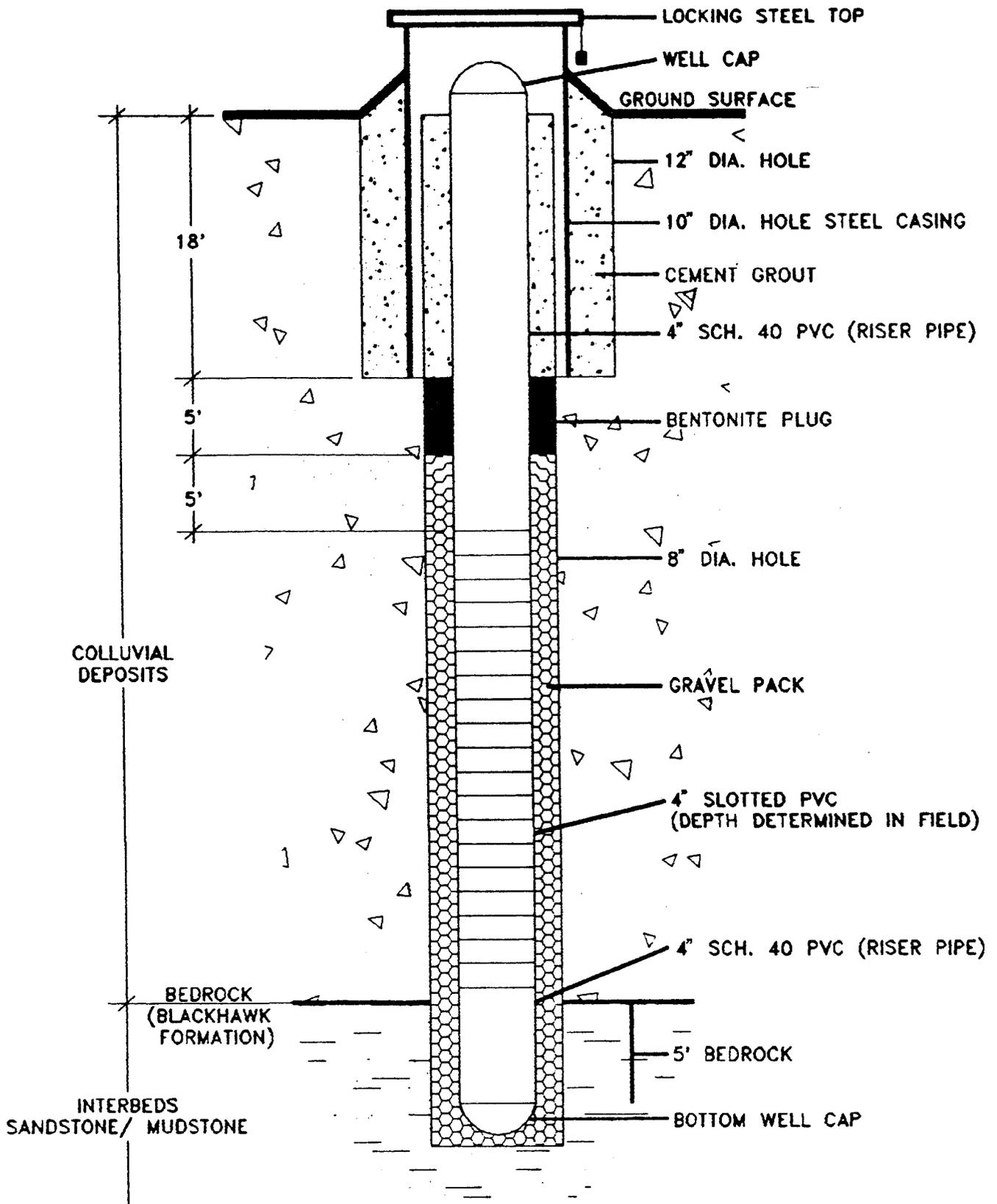
APP/REJ DATE BY _____
AUTHORIZATION # _____



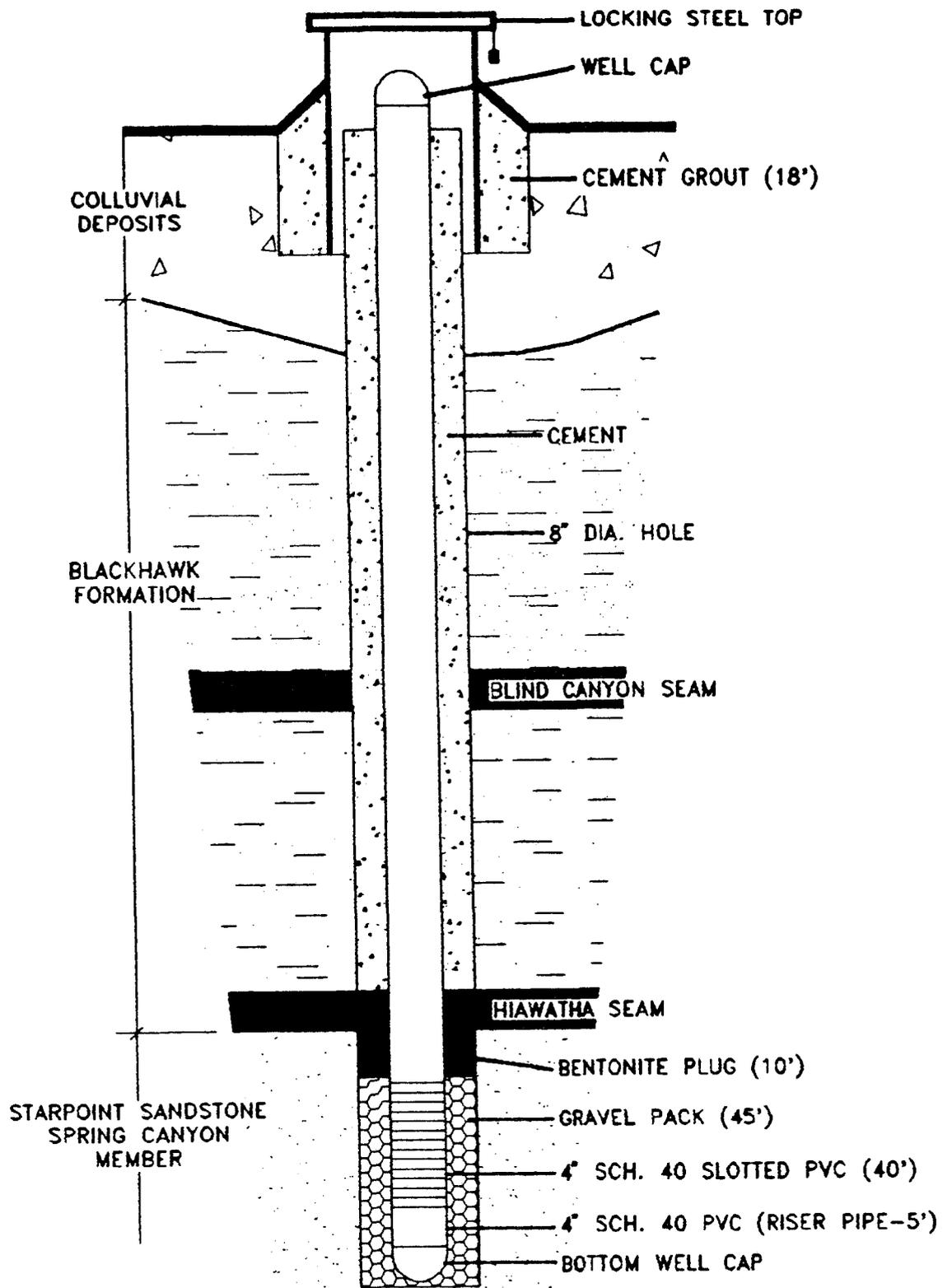
EAST MOUNTAIN PROPERTY EMERY COUNTY, UTAH	
COTTONWOOD CANYON CREEK WATER MONITORING WELL LOCATION MAP USGS QUAD. - MAHOGANY POINT	
PACIFICORP FUEL RESOURCES	
DATE JUNE 8, 1992	CHECKED BY RCF
DRAWN BY CAS	FIGURE 1

○ PROPOSED WELL

COTTONWOOD CANYON WELL DESIGN - COLLUVIAL DEPOSITS FIGURE 2



COTTONWOOD CANYON
WELL DESIGN - STARPOINT/BLACKHAWK CONTACT
FIGURE 3





June 25, 1992

PacifiCorp - Fuel Resources
Attn: Charles Semborski
P.O. Box 1005
Huntington, Utah 84528

Re: Monitor Well Application 92-93-02MW
Expiration Date: June 30, 1993

Dear Mr. Semborski:

Reference is made to your request to drill three monitor wells in Cottonwood Canyon. The wells will be located within the NW4SW4 Section 2, SW4NE4, SE4SE4 Section 14, all T17S, R6E, SLB&M. An alternate site has also been identified in the NW4SW4 Section 11, T17S, R6E, SLB&M.

The information provided in your correspondence dated June 23, 1992 meets the State's requirements for the completion of monitor wells. Permission is hereby granted to complete the wells according to your request, with the following conditions:

- 1) This letter grants permission to proceed with the construction of a 10-inch diameter surface casing, and with the understanding that each bore hole will be completed with 8-inch diameter schedule 40 PVC casing. Screening will be with slotted PVC pipe. The screened sections will be packed with selected gravel/sand material. The annulus of the bore hole will be sealed using a Neat cement grout. No more water is to be diverted from the wells than is necessary to make them operational.
- 2) Following the completion of drilling and testing, the wells must be either permanently or temporarily abandoned, as required by Section 12 of the State of Utah Administrative Rules for Well Drillers, adopted July 15, 1987.
- 3) The drilling contractor must be licensed in the State of Utah, and have a current license as required by the Utah State Engineer. Before starting, he must file with this Division a Notice of Intent to Drill Card. Within thirty days of completion or abandonment of the wells, the licensed driller must submit a Driller's Report, as specified under Section 4.3 of the Administrative Rules. Such report is to become part of the files in this Division pertaining to this project.

ATTACHMENT 4

Monitor Well Application #92-93-02MW
June 25, 1992
Page 2

This is your authorization to have the licensed driller proceed with your monitor well project. Note that the expiration date of this permit is June 30, 1993.

Sincerely,



Mark P. Page, Price Regional Engineer
for Robert L. Morgan, P.E., State Engineer

cc: Jerry Bronicel - Division of Water Rights

RLM/MPP/mjk

TABLE 1

THREATENED, ENDANGERED AND SENSITIVE SPECIES
OCCURRING IN THE PRICE AND FERRON DISTRICTS
OF THE MANTI-LA SAL NATIONAL FOREST¹

	<u>COMMON NAME</u>	<u>SPECIES</u>	<u>STATUS²</u>		<u>LOCATION AND HABITAT</u>
			<u>USFWS³</u>	<u>USFS⁴</u>	
MAMMALS	Spotted bat	<i>Euderma maculatum</i>	C2	S	Ponderosa pine, desert scrub, pinyon-juniper, open pasture state-wide. Roost in crevices on cliff faces.
	Western big-eared bat	<i>Plecotus townsendii</i>	None	S	Pinyon-juniper forests, shrub/steeps grasslands, deciduous and mixed-conifer forests from sealevel to 10,000 ft. elevation. Winter roosting in caves, mine shafts, rocky outcrops and buildings.
BIRDS	Bald Eagle	<i>Haliaeetus leucocephalus</i>	E	E	Winter visitor, open water and upland areas.
	Flammulated owl	<i>Otus flammeolus</i>	None	S	Mature ponderosa pine-Douglas fir forests with open canopies and large diameter dead trees.
	Three-toed woodpecker	<i>Picoides tridactylus</i>	None	S	Coniferous and mixed forests to 9,000 ft. elevation.
REPTILES/ AMPHIBIANS	Spotted frog	<i>Rana pretiosa</i>	None	S	Marshy edges of permanent ponds and lakes, algae-grown overflow pools of streams, near springs with emergent vegetation.
PLANTS	Heliotrope milkvetch	<i>Astragalus montii</i>	T	T	Flagstaff limestone formation in the subalpine mixed grass-forb community above 10,500 feet elevation. Presently known to occur only on 3 sites on South end of the Wasatch Plateau in Sevier and Sanpete counties.
	Canyonlands sedge	<i>Carex curatorum</i>	C3	S	Scad Valley and South side of Ferron Mtn. in Current Creek area.
	Creutzfeldt flower	<i>Cryptantha creutzfeldtii</i>	C2	S	Open, dry Mancos shale; open pinyon-juniper and salt desert shrub plant communities between 5,500 to 6,500 feet elevation.
	Carrington daisy	<i>Erigeron carringtonae</i>	C2	S	Meadows and escarpment margins on Flagstaff limestone between 10,000 and 11,000 feet elevation.

Sedge fescue	<i>Festuca dasyclada</i>	3c	S	Open slopes and ridges in sagebrush, mountain brush, and juniper communities on Green River Shale formation and limestone gravels between 6,990 and 10,000 feet elevation.
Canyon Sweetvetch	<i>Hedysarum occidentale</i> var. <i>canone</i>	C2	S	Alluvium or outwash deposited material; pinyon-juniper, sagebrush communities between 5,000 and 8,000 feet elevation.
Low hymenoxys	<i>Hymenoxys depressa</i>	C2	S	Ephedra, sagebrush, shadscale and pinyon-juniper communities on very rocky, shallow fine silty clay to clay loam soils between 4,400 and 8,000 feet elevation.
Helenium hyemoxys	<i>Hymenoxys helenioides</i>	3b	S	Mountain brush, sagebrush, aspen, and dry meadow communities on clay loam soils between 8,000 to 10,700 feet elevation.
Maguire campion	<i>Silene petersonii</i>	C2	S	Ponderosa pine, Rocky Mountain juniper, bristlecone pine, spruce-fir and aspen-sagebrush communities on open calcareous and igneous gravels between 6,955 to 11,200 feet elevation.
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	C1	T	Low, wet or mesic riparian meadows or in understory meadows of riparian woodlands in the Colorado River drainage of Eastern Utah. "No known population or habitat has been found on the forest to date, 3/92". (Mr. Bob Thompson, USFS Price)

¹ Spahr, et al. 1991
Atwood, et al. 1991

² S=Sensitive, T=Threatened, E=Endangered, see page 21

³ Endangered Species Act Listing

⁴ Forest Service Region 4 Status