

0063



1407 West North Temple
P.O. Box 899
Salt Lake City, Utah 84110

ACT/015/018-88B
FOLDER #7

RECEIVED
APR 26 1988

DIVISION OF
OIL, GAS & MINING

April 26, 1988

HAND DELIVERED

Mr. Lowell Braxton, Administrator
State of Utah
Natural Resources Department
Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

RE: Response to Review of PAP Amendment, Elk Canyon
Storage Upgrade - Utah Power & Light Company (UP&L),
Deer Creek Mine, ACT/015/018-88B, Folder #2,
Emery County, Utah

Attached is information requested by your technical staff
in regards to the Elk Canyon Storage Facility. This should provide
clarification as requested in John Whitehead's letter of April 15,
1988. As we discussed five (5) copies are provided for your
review.

Please call if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "David R. Smaldone".

David R. Smaldone, P.E.
Director Permitting, Compliance
and Services
Mining Division

DRS:bb:5956
Enclosure



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

April 15, 1988

Mr. Ray Christensen, Manager
Permitting & Compliance
Utah Power and Light Company
Mining Division
P. O. Box 310
Huntington, Utah 84528

Dear Mr. Christensen:

Re: Review of PAP Amendment, Elk Canyon Storage Upgrade Utah Power and Light Company (UP&L), Deer Creek Mine, ACT/015/018-88B, Folder #2, Emery County, Utah

Division technical review staff members Pamela Grubaugh-Littig and Tom Munson have reviewed the above noted amendment request. There are several items which need clarification or additional information prior to Division approval. Please refer to the attached Technical Memorandums for the specifics of what is required.

You have requested that the Division grant approval for UP&L to construct the concrete headwall extensions for the two undisturbed inlet points in the Elk Canyon storage pad area. By copy of this letter, the Division approves installation of these headwall extensions, but reserves final approval on the remainder of the amendment request until the information requested on the attached memorandums is provided. In the event that the amendment is denied, the additional headwall extensions for the undisturbed inlets would only enhance function of those structures.

Please feel free to contact me or the review staff members should you have specific questions in preparing your response. Please have the complete and adequate response for this amendment request to the Division offices no later than May 13, 1988.

Sincerely,

John J. Whitehead
Permit Supervisor/
Reclamation Hydrologist

djh

Attachments

cc: R. Hagen

T. Munson

J. Helfrich

P. G.-Littig

0800R/69



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

March 21, 1988

TO: John Whitehead, Permit Supervisor
FROM: Pamela Grubaugh-Littig, Reclamation Engineer *pgl*
RE: Elk Canyon Storage Upgrade, Received March 10, 1988, Deer Creek Mine, Utah Power and Light Company, ACT/015/018-88B, Folder #2, Emery County, Utah

The Utah Power and Light Company (UP&L) submittal for the Elk Canyon storage site has several deficiencies:

UMC 817.71 (i) The applicant must commit to have the fill inspected for stability by a registered engineer or other qualified professional specialist experienced in the construction of earth and rockfill embankments, at least quarterly throughout construction, and during the following critical construction periods: (1) placement of underdrainage system, (2) installation of surface drainage systems, (3) placement and compaction of fill materials, and (4) revegetation. A certified report must be provided to the Division within two weeks after each inspection that the fill has been constructed as specified in the design approved by the Division.

UMC 817.72 (a) The applicant must submit a stability analysis demonstrating that the fill is designed to attain a long-term static safety factor of 1.5. The application mentioned that this analysis is forthcoming.

(b) A subdrain system for the fill should be constructed unless it can be demonstrated through approved "experimental practices" that a subdrain system is not needed.

UMC 784.13 (b)(2) Determination of bond amount - The reclamation cost estimate must reflect the cost for a third party to perform the reclamation. The total hours for the equipment and operator would total 16 hours, not 8 hours. The hourly costs should be based upon Rental Rate Bluebook rates or Means Costs.

djh
9075R/46



March 30, 1988

TO: John Whitehead, Permit Supervisor
FROM: Tom Munson, Reclamation Hydrologist *TM*
RE: Elk Canyon Storage Pad and Upgrade, Utah Power and Light Company, Deer Creek Mine, ACT/015/018-88B, Folder #2, Emery County, Utah

History of Proposal

The operator's submittal dated March 10, 1988 proposes to construct a storage pad in the mouth of Elk Canyon. Several drainage concerns will need to be addressed.

Analysis

The operator does not address drainage along the road leading to the Tipple area. It is appropriate that the operator describe what kind of flows that may be expected from the 10-year, 24-hour storm event, and size a ditch that would convey drainage along the road to the Tipple area. The operator will also need to provide riprap protection for this ditch if erosive velocities are expected.

The second area of concern is the placement of the silt fence. The silt fence should be placed away from the toe of the fill in order to gain storage capacity behind the silt fence. In areas where the silt fence does not run parallel to the contour of the fill it may be necessary to use small check dams to check the velocity of the water running parallel to the silt fence to prevent undercutting of the toe of the fence. The operator has used silt fences successfully in other areas of the mine site. Therefore, it will not be necessary to request any other specifics on materials or design.

Page 2

Memo to J. Whitehead

ACT/015/018-88B

March 30, 1988

The reclamation plan for this area does not differ from what was approved in the original Deer Creek PAP and the pad, when reclaimed, will not encroach upon the reclaimed channel. Therefore, it is not necessary to comment on the reclamation plan.

Recommendations

1. The operator shall determine if the drainage travelling down the road will be erosive in nature and will consequently require erosion protection. A ditch will have to be designed and implemented along the access road to prevent erosion of the road surface. Designs and supporting calculations must be supplied for this ditch.
2. Installation of the silt fence should be coordinated at the time of installation with a Division Hydrologist to ensure adequate treatment of disturbed drainage.

djh

9486R/41-42

United States
Department of
Agriculture

Forest
Service

Manti-LaSal
National Forest

599 West Price River Dr.
Price, Utah 84501

RECEIVED
APR 14 1988

Reply to: 2820

Date: April 11, 1988

DIVISION OF
OIL, GAS & MINING

Lowell Braxton
State of Utah Natural Resources
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Lowell:

We have reviewed PAP Amendment, Elk Canyon Storage Pad Upgrade, Utah Power and Light Company, Deer Creek Mine, ACT/015/018-88B, Folder #2, Emery County, Utah. Our comments were requested by April 8, 1988.

The proposed facility ~~lies on~~ private surface outside of the Forest boundary, therefore, the following comment is a recommendation:

Drawing CM-10774DR 1 of 2 lacks sufficient detail to confirm that disturbed area drainage will be properly handled. A curb or berm should be shown along the south end of the storage area (pad) and the road should be insloped with an inside ditch (west) to prevent disturbed area drainage from flowing down fill slopes into the undisturbed inlets.

If you have any questions, please let us know.

Sincerely,



for
GEORGE A. MORRIS
Forest Supervisor

ENGINEERING REPORT (DEFICIENCIES)

DEER CREEK MINE

ELK CANYON STORAGE PAD UPGRADE

I. INTRODUCTION

This report is prepared in response to several concerns or deficiencies from the DOGM Technical Staff.

II. CONSTRUCTION PLAN

A. UMC 817.71

The upgrading of the fill structure using waste rock will be inspected for stability by a registered Professional Engineer at least quarterly and during the following specific activities: (1) installation of the surface drainage ditch, (2) modifications to the side canyon drainage inlet and construction of the silt fence at the main Elk Canyon drainage, (3) and during the revegetation of the slope above the main inlet. The placement and compaction of the fill material is a continual activity and will be inspected during construction and certified in writing as part of the quarterly report. A certified report for each of these activities will be submitted to the Division in writing within two weeks following the inspection.

B. Slope Stability

The finalized analysis has been completed and is presented as an attachment to this report. As stated in the analysis the fill slope will meet or exceed the 1.5 static safety factor.

The area where the fill is to be built is dry and the need for an under-drainage system is not required. There is any existing culvert system which by passes the canyon drainage past the disturbed area.

C. Surface Run Off

A hydrologic drainage analysis and ditch design is attached. As stated in the analysis the road will be sloped a 1% into the hillside and will serve as a surface ditch. The velocity of the run off doesn't require rip-rap protection.

The division will be notified prior to the installation of the silt fence. The concern for sediment volume behind the silt fence is noted and will be included as part of the installation.

E. Final Reclamation

The bond determinations have been based on Rental Rate Bluebook rates and are presented below:

EQUIPMENT

D 8 DOZER

\$162.65/HR X 8 HRS. X 2 DOZERS = \$2602.40

LABOR

EQUIPMENT OPERATORS

\$31.50/HR X 8 HRS X 2 OPERATORS = 504.00

TOTAL \$3106.40

SLOPE STABILITY ANALYSIS

ELK CANYON STORAGE PAD

The size of the storage pad in Elk Canyon will be increased by building up the slope on the west side of the canyon. The material that will be used to construct the slope consists of underground development waste and trommel reject. This material was sampled and tested to determine its suitability as fill for the proposed slope (see attached soils report by Rollins, Brown, and Gunnell).

The method used to determine the stability is Bishop's Simplified Method of Slices, T. William Lambe and Robert V. Whitman, Soil Mechanics, 1969, John Wiley and Sons, New York. The slope will be 1.5 horizontal to 1 vertical during the operating period. The maximum height of the slope is 50 feet. The soil density is 98.2 pounds per cubic feet, the angle of internal friction is 40.5 degrees and the cohesion value is 0. The slope is well drained with no ground water anticipated during the life of the project. The resulting safety factor is determined to be 1.5, which is adequate.

March 15, 1988



Tom Faucheux
Utah Power and Light Company
Mining Division
P.O. Box 310
Huntington, Utah 84528

Dear Mr. Faucheux:

We have completed the requested laboratory testing for the soil sample submitted to our office as per P.O. JS-301606. The results are enclosed herein on the appropriate figures. The soil moisture density relationship resulted in a maximum density of 98.2 pcf at an optimum moisture content of 10.7 percent. The results of the grain-size analysis indicate the following:

<u>Sieve Size</u>	<u>% Passing</u>
3"	100
2"	89.9
1"	78.9
3/4"	71.6
1/2"	66.0
3/8"	61.9
No. 4	53.3
No. 10	39.4
No. 20	32.1
No. 50	23.6
No. 100	19.8
No. 200	16.4

The triaxial shear test envelope indicates a friction angle of 40.5 degrees and a cohesion of 0 psi.

If you have any further questions, please notify us.

Yours truly,

ROLLINS, BROWN AND GUNNELL, INC.

Ralph L. Rollins
Ralph L. Rollins

SLS/sly
1435 WEST 820 NORTH
POST OFFICE BOX 711
PROVO, UTAH 84603

PROVO 374-5771
SALT LAKE CITY 521-5771
AREA CODE 801

**ROLLINS,
BROWN and
GUNNELL,
INC.** professional
engineers

1435 WEST 820 NORTH
POST OFFICE BOX 711
PROVO, UTAH 84603
(801) 374-5771 Provo
(801) 521-5771 SLC

SOIL MOISTURE DENSITY RELATIONSHIP

Project Utah Power and Light Project no. _____

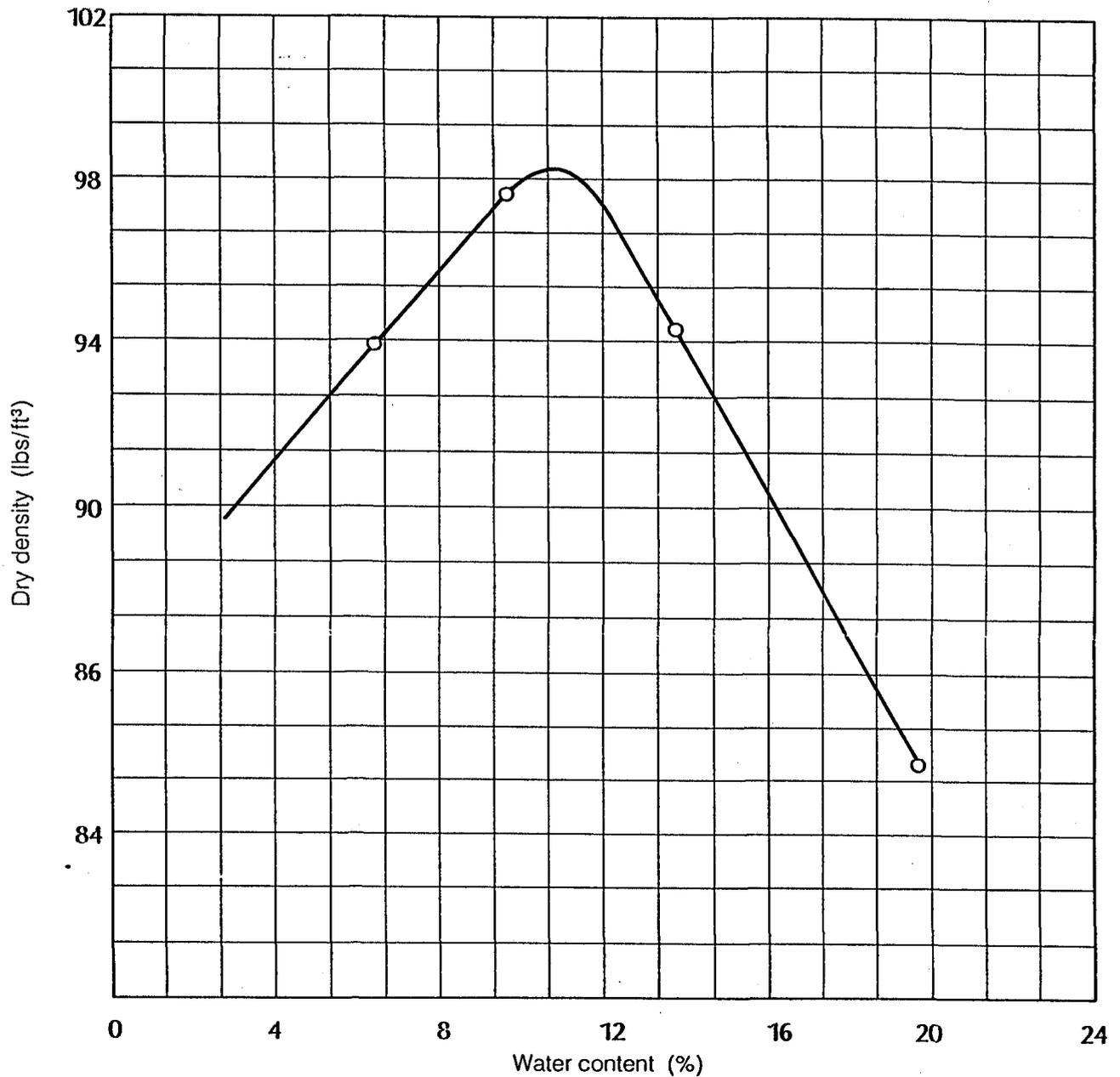
Feature _____ Test date March 4, 1988

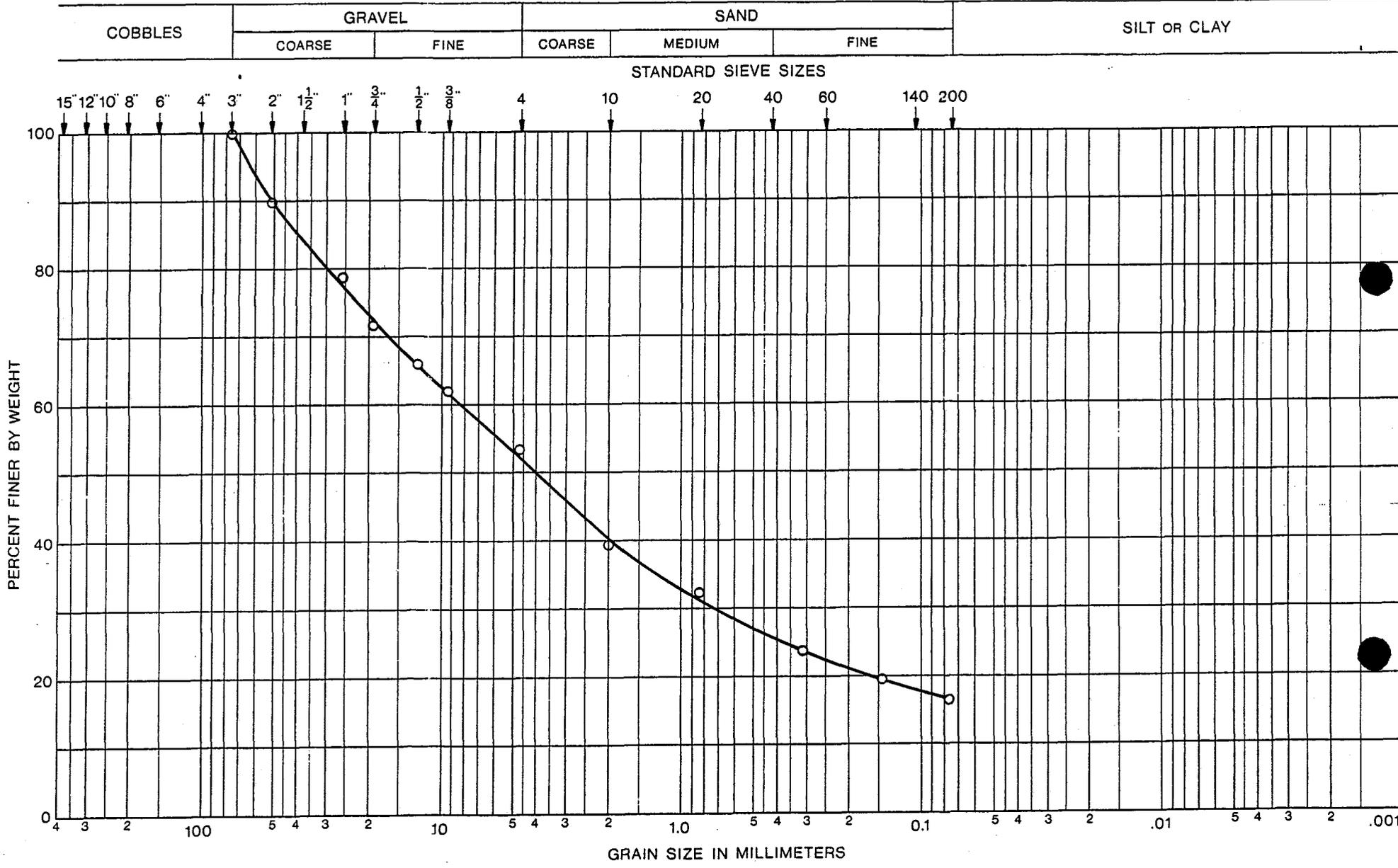
Job technician S. Ahmad Mailing date March 11, 1988

ASTM D 1557-78

Maximum dry density = 98.2 lbs/ft³

Optimum moisture = 10.7 %





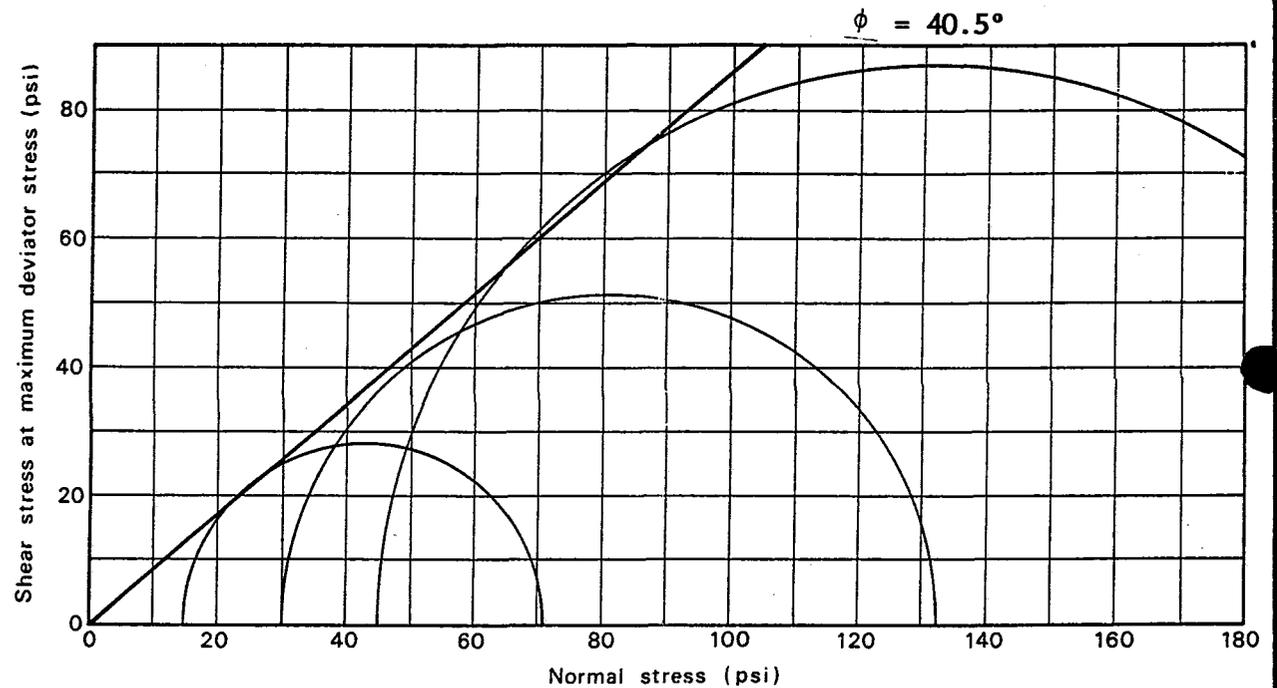
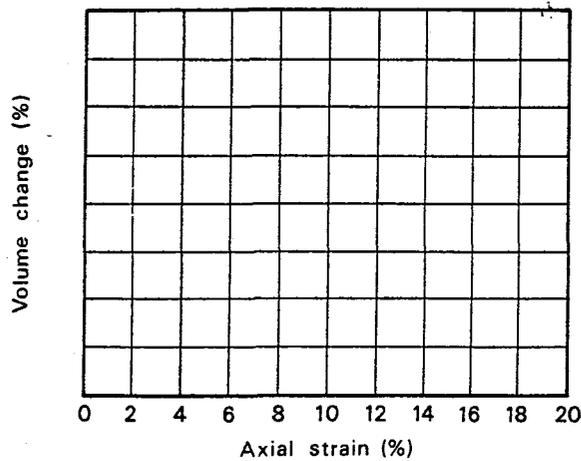
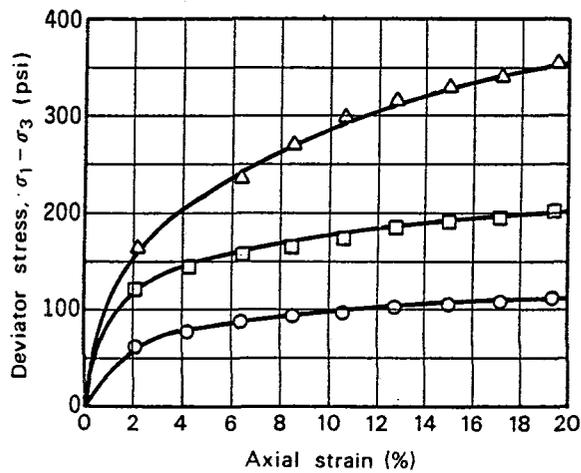
ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

GRAIN SIZE DISTRIBUTION CURVE

Project: **Utah Power & Light**
Location:

Sample No. 1

FIGURE NO.



Test no. or symbol	Boring no. or depth	Sample data		Degree of saturation (%)	Confining pressure (psi)	Maximum deviator stress (psi)	Strength values at failure		Sample size, L/D (inches)	Strain rate (inches/minute)
		Dry density (pcf)	Moisture content (%)				Friction angle ϕ (degrees)	Cohesion (c/psi)		
○		98	10.7		30	111				
□		97.7	10.7		60	205	40.5	0	2.8/1.32	.0024
△		98.1	10.7		90					



ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

TRIAXIAL SHEAR TEST
Project: Utah Power and Light

HOLE NO.
DEPTH:

FIGURE NO.

ELK CANYON STORAGE PAD DRAINAGE DITCH
HYDROLOGICAL ANALYSIS AND DITCH DESIGN

SCOPE:

The construction of the storage pad at Elk Canyon will change the drainage characteristics of the area and an analysis and design of the drainage structures is required. This report will detail the procedures used to design the ditch which will convey the disturbed area runoff into the surface collection system.

PROCEDURES:

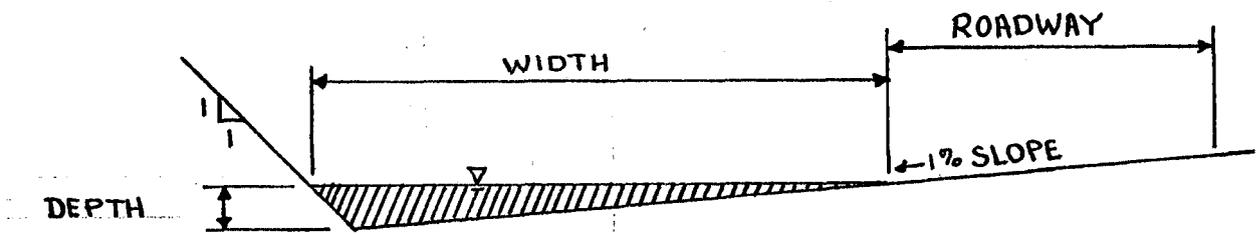
The areas which will contribute runoff to the disturbed area where marked on drawing number CM-10774-DR, Elk Canyon Site Plan. These areas have not increased in size because of the construction of the storage pad but were necessary to determine the flow rate for the ditch design. The peak flow for a 10 year, 24 hour storm event was determined using a computer program, "Storm Hydrograph Program", by Richard H. Hawkins and Kim A. Marshall, Utah State University Foundation, Logan, Utah. The data used for input are tabulated below:

<u>DRAINAGE AREA #</u>	<u>AREA ACRES</u>	<u>CURVE NUMBER</u>	<u>TIME OF CONCENTRATION</u>
I	2.481	83	3 MIN.
II	.597	77	1
III	.398	83	1
IV	.723	83	1

TOTAL AREA 4.199 ACRES = 0.007 SQUARE MILES
 WEIGHTED AVERAGE CURVE NUMBER = 82
 TIME OF CONCENTRATION = 4 MINUTES = 0.007 HOURS
 RAINFALL DEPTH - 10 YEAR, 24 HOUR STORM EVENT = 2.2 INCHES

The peak flow rate from the program is 0.516 cubic feet per second for the entire 4.2 acres (see Exhibit A). The ditch is sized for the entire amount, although the total amount is not collected until it reaches the end of the new road at Station 0+78.8.

The ditch that will convey this runoff will be incorporated into the road itself as shown in the following diagram.



FLOW RATE = 0.516 CFS

<u>DITCH SLOPE</u>	<u>DEPTH</u>	<u>WIDTH</u>	<u>VELOCITY</u>
3%	.086'	8.71'	1.38
10%	.069'	6.95'	2.15

Because of the low velocity of the runoff in the ditch, no special lining material is necessary to prevent erosion of the base material.

ELK CANYON DISTURBED DRAINAGE

INPUT SUMMARY:

```
=====
DISTRIBUTION = FARMER-FLETCHER      RUNOFF AREA = .007 SQ. MILES
RAINFALL DEPTH = 2.2 INCHES         RUNOFF CURVE NO. = 82
STORM DURATION = 24 HOURS           TIME OF CONCENTRATION = .07 HRS.
=====
```

OUTPUT SUMMARY:

```
=====
TOTAL RUNOFF DEPTH = .784 IN.       TIME TO PEAK = 4.794 HOURS
INITIAL ABSTRACTION = .439 IN.     RUNOFF VOLUME CHECK = .785 IN.
PEAK FLOW = .516 CFS
=====
```

24.14 2.20 0.7839 0.0000 0.0000 0.00