Project 86-060-29
April 1992

Canonie Environmental

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CORPORATION
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As-Built Report Addendum

Central Cell Interim Stabilization

Church Rock Site
Gallup, New Mexico

Prepared For:

UNC Mining and Milling
A Division of United Nuclear Corporation
Gallup, New Mexico

As-Built Report Addendum

Central Cell Interim Stabilization

Canonie Environmental

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ADDENDUM TO AS-BUILT CONSTRUCTION REPORT
INTERIM STABILIZATION
CENTRAL CELL TAILINGS DISPOSAL AREA
UNITED NUCLEAR CORPORATION
CHURCH ROCK FACILITY

1.0 INTRODUCTION

Interim stabilization of the majority of the central cell of the tailings disposal area (central cell) was completed in 1990. The 1990 central cell construction and quality control measures are documented in the As-Built Report, Central Cell Interim Stabilization prepared by Western Technologies, Inc. (WT) in January 1991 (WT, 1991). This document is an addendum to the 1991 report and describes the additional interim stabilization construction performed in the central cell during 1991 as documented by WT inspection reports.

Interim stabilization activities in 1991 included:

1. Placement of an interim soil cover over a 1.1-acre area located immediately north of the evaporation ponds, and

2. Placement of additional soil cover in the northeast portion of the central cell over a 4.2-acre area that had experienced settlement.

Sheet 1 shows the location of these interim stabilization activities.

Nielsons General Contractors provided construction services to United Nuclear. WT provided geotechnical sampling and testing services. The construction activities were conducted from September 16, 1991 to October 7, 1991 in conjunction with similar activities being conducted on the south cell. Descriptions of the daily construction activities for both the central and south cells for this time period are presented in Appendix A, Daily Review of Earthwork Construction.

The additional interim stabilization measures conducted in the central cell, as documented by WT, were constructed in accordance with the Technical Specifications and Construction Drawings presented in the "Tailings and Reclamation Plan As Approved by NRC March 1, 1991, License No. SUA-1475" (Canonie, 1991). The following sections of this addendum describe the interim stabilization construction activities, provide quality control procedures and documentation, and present post-construction monitoring results.

2.0 CONSTRUCTION METHODS AND EQUIPMENT

The interim soil cover placed in 1991 in both areas of the central cell was completed with conventional earthmoving equipment. The soil was transported with scrapers and placed with dozers and graders. Water was added and incorporated into the soil with water trucks and a rome plow. A sheepsfoot compactor was used to knead the soil and a pneumatic roller was used to further compact and seal the soil cover surface. Table 1 presents a complete listing of the types of construction equipment for the earthmoving operation.

The Technical Specifications in Appendix B of the Reclamation Plan (Canonie, 1991) specified that the interim soil cover be placed in lifts up to 12-inch maximum thickness, measured loose. This method was modified in the field to placing one lift that measured a minimum of 12 inches after water processing and compaction. This field modification was made to minimize contamination of the soil cover by the tailings material, which could occur when working a thinner lift of soil with a rome plow and sheepsfoot compactor. Adequate density and moisture content were achieved by increasing the compaction effort and the amount of water added.

Unfavorable weather conditions did not allow for seeding these two portions of the central cell after completing interim stabilization. However, mulch was crimped into the soil to minimize the erosion potential. This mulch and volunteer vegetation by native species is anticipated to be adequate to protection against the potential for exposing tailings material until the rock armor is placed during final reclamation.

3.0 COMPACTION CRITERIA AND TESTING

Compaction criteria and testing for soil cover as specified in the Reclamation Plan (Canonie, 1991) are shown below. These specifications require more testing than the 1990 specifications that applied during the previous central cell interim stabilization activities. All criteria and testing rates were met or exceeded during the 1991 activities, as is discussed in Sections 3.1 and 3.2

Reclamation Plan Specifications

1. Soil cover is to be compacted to a minimum of 95 percent of the maximum standard proctor dry density at a moisture content between optimum and optimum plus two percent, as determined by ASTM D-698.

2. In-place field moisture density testing of the soil cover is to be conducted at the rate of one test for each 500 cubic yards (cy) of cover soil and a minimum of two tests for each day of cover soil in excess of 150 cy.

3. A full standard proctor test (ASTM D-698) is to be conducted per every 15 field density tests. A one point proctor test is to be conducted per every 5 field density tests.*

4. Gradation and classification testing of soil cover is to be conducted at a minimum rate of one test each day of cover soil placement in excess of 150 cy and one test per 1000 cy.

* **Note:** One-point proctor tests were not conducted during 1991 central cell activities. Full proctor tests were taken at twice the minimum rate to sufficiently monitor soil compaction characteristics.

3.1 North of Evaporation Ponds

The 1.1-acre area shown on Sheet 1 and located immediately north of the evaporation ponds was previously graded and compacted in 1990. A 1-foot-thick interim soil cover consisting of 1,926 bank cubic yards (bcy) of clay was placed over this area on September 16, 1991. The haul road embankment located on the west side of the tailings area served as the borrow source for constructing the soil cover.

The soil cover consisted of sandy, silty, clays and sandy, lean, clays. Four gradation and atterberg tests were conducted on this soil (i.e., one test every 482 bcy) with all tests meeting the required gradation specifications. The standard proctor test performed on the soil yielded a density of 111.1 pounds per cubic foot (pcf) and a moisture content of 15.8 percent. In-place field moisture-density testing was performed by sand cone method (ASTM D-1556) on September 25, 1991. A total of seven locations spread uniformly over the soil cover were tested (i.e., one test every 275 bcy) with all the results of tests meeting density and moisture specifications. Test results for this area of interim soil cover are presented in Appendix B.

3.2 Northeast Portion of Central Cell

The 4.2-acre area shown on Sheet 1 and located in the northeast portion of the central cell experienced higher than average settlement rates after interim stabilization measures were completed in 1991. This area is located over the Borrow Pit No. 1 area, and the settlement is attributable to the large thickness of tailings deposited in the borrow pit. A 1-foot-thick interim soil cover consisting of 6,645 bcy was added to this low area to reestablish the original design grade. The soil cover material was obtained from the Borrow Pit No. 2 stockpile and was placed over a four-day period. The original surface area was grubbed of vegetation before soil placement.

The soil cover consisted of sandy, silty, clays and sandy, lean, clays. Ten gradation and atterberg tests were conducted on this soil (i.e., one test every 664 bcy) with all tests meeting the required gradation specifications. Three standard proctor tests were conducted, and these tests yielded an average density of 112.8 pcf and average moisture content of 13.2 percent. In-place field moisture-density testing was conducted using the sand cone method (ASTM D-1556) at 23 locations spread uniformly over the soil cover (i.e., one test every 289 bcy). Initial testing on October 1, 1991 indicated that the majority of the locations exceeded the moisture content specification. All failing areas were reworked until they met specifications. Test results for this area of interim soil cover are presented in Appendix C.

4.0 SETTLEMENT MONITORING

Nine settlement monuments are located throughout the reclaimed tailings disposal area, placed in the areas of greatest fill and softest soil foundation conditions. One of these settlement monuments, Settlement Monument No. 7 (SM-7) is located in the northeast portion of the central cell.

SM-7 was surveyed before construction activities on July 8, 1991, and after completing the interim soil cover on October 9, 1991. As shown on Table 2, the monument settled approximately 0.23 feet during construction. Continued monitoring after October 9, 1991 showed:

1. Settlement of 0.17 feet from October 9, 1991 to November 11, 1991,

2. Settlement of only 0.07 feet from November 11, 1991 to January 20, 1992,

3. Settlement of 0.18 feet from December 16, 1991 to March 9, 1992, and

4. Essentially no further settlement (i.e., less than 0.05 feet) from March 9, 1992, until April 13, 1992.

The data suggests that 90 percent of primary consolidation has essentially occurred.

5.0 CLOSING REMARKS

Additional areas in the central cell of the tailings disposal facility have been regraded, stabilized, and repaired with an interim soil cover in accordance with the specifications and construction drawings contained in the Reclamation Plan. Settlement monitoring indicates that settlement is decreasing and is not expected to impact the interim soil cover/radon barrier.

Canonie appreciates this opportunity to provide engineering services in summarizing information regarding work conducted during 1991 in the Central Cell Tailing Disposal Area at the Church Rock Facility. If you have any questions, please contact me at (303) 790-1747.

Respectfully submitted,

David W. Kurz

David W. Kurz, P.E.
Project Manager

DWK/ajw

REFERENCES

REFERENCES

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Canonie Environmental Services Corp., 1991 "Tailings Reclamation Plan as Approved by NRC March 1, 1991, License No. SUA-1475," prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

Western Technologies, Inc., 1991, "As-Built Construction Report, Interim Stabilization, Central Cell Tailings Disposal Area," prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

TABLES

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Canonie Environmental Services Corp., 1991 "Tailings Reclamation Plan as Approved by NRC March 1, 1991, License No. SUA-1475," prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

Western Technologies, Inc., 1991, "As-Built Construction Report, Interim Stabilization, Central Cell Tailings Disposal Area," prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

TABLES

TABLES

TABLE 1

EARTH-MOVING EQUIPMENT

Type of Equipment	Amount
Caterpillar 633 Scrapers	4
Caterpillar D-8H Dozer	1
Caterpillar D-6 Dozers	2
Caterpillar 14 G grader	1
Caterpillar 12 G grader	1
Caterpillar 631 Water Wagon	1
Tampo Pneumatic Roller	1
Caterpillar 825 Sheepsfoot Compactor	1
Water Truck	1
Rome Plow	1

TABLE 2

SM-7 SETTLEMENT MONITORING
JULY 8, 1991 TO APRIL 13, 1992

Date	Elevation (ft)	Total Change (ft)	Incremental Change (ft)
7-8-91	6965.77	---	---
10-9-91	6965.54	-0.23	-0.23
10-10-91	6965.49	-0.28	-0.05
10-11-91	6965.51	-0.26	+0.02
10-14-91	6965.50	-0.27	-0.01
10-15-91	6965.48	-0.29	-0.02
10-16-91	6965.47	-0.30	-0.01
10-17-91	6965.48	-0.29	+0.01
10-24-91	6965.50	-0.27	+0.02
11-4-91	6965.37	-0.40	-0.13
11-11-91	6965.37	-0.40	0.00
11-19-91	6965.42	-0.35	+0.05
11-27-91	6965.43	-0.34	+0.01
12-4-91	6965.36	-0.41	-0.07
12-9-91	6965.32	-0.45	-0.04
12-16-91	6965.38	-0.39	+0.06
12-26-91	6965.32	-0.45	-0.06
12-30-91	6965.34	-0.43	+0.02
1-6-92	6965.29	-0.48	-0.05
1-13-92	6965.28	-0.49	-0.01
1-20-92	6965.30	-0.47	+0.02
1-27-92	6965.21	-0.56	-0.09
2-3-92	6965.23	-0.54	+0.02
2-10-92	6965.28	-0.49	+0.05
2-20-92	6965.21	-0.56	-0.07

TABLE 2

SM-7 SETTLEMENT MONITORING
JULY 8, 1991 TO APRIL 13, 1992
(Continued)

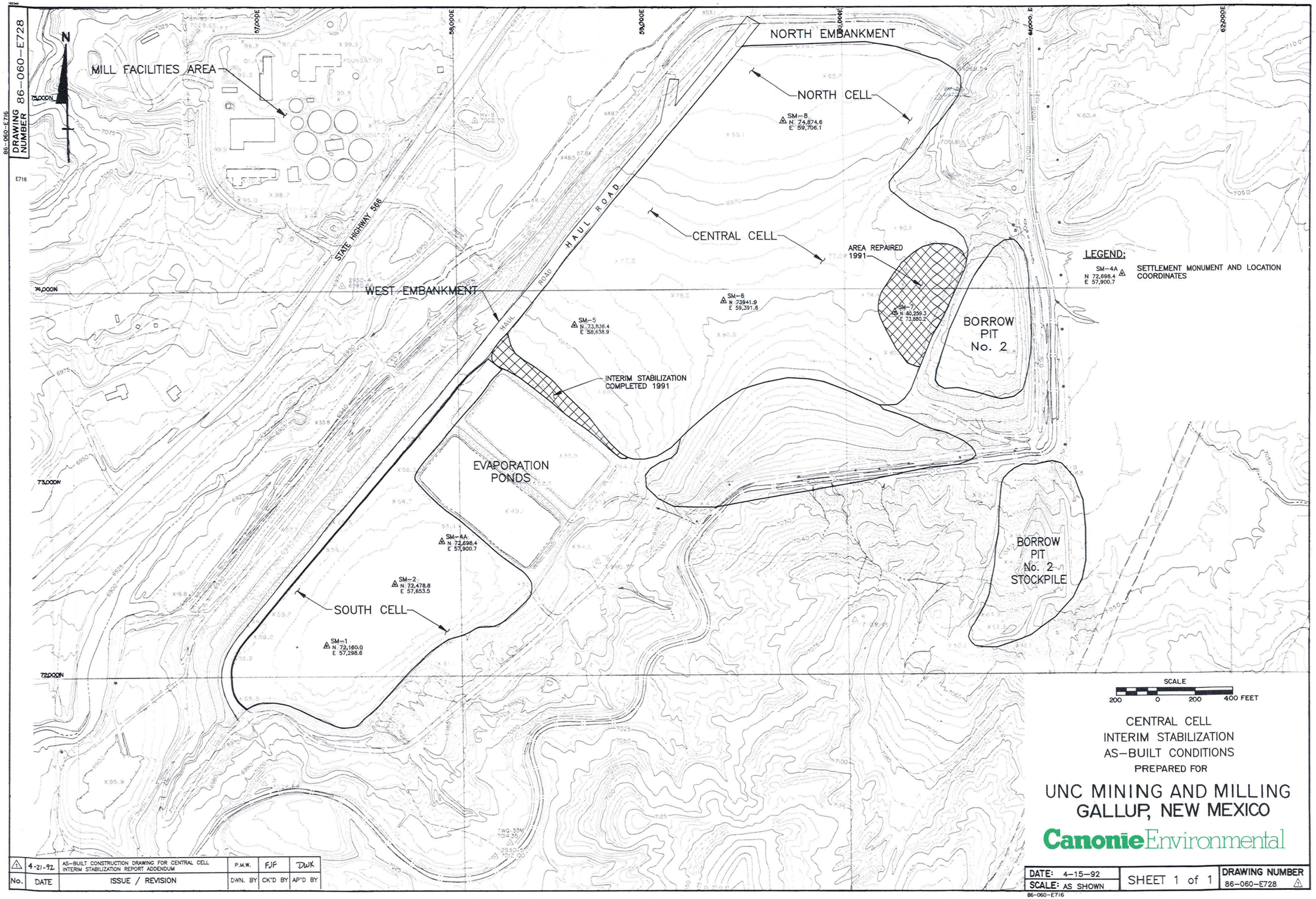
Date	Elevation (ft)	Total Change (ft)	Incremental Change (ft)
2-24-92	6965.17	-0.60	-0.04
3-2-92	6965.16	-0.61	-0.05
3-9-92	6965.12	-0.65	-0.04
3-16-92	6965.16	-0.61	+0.04
3-25-92	6965.07	-0.70	-0.09
3-30-92	6965.10	-0.67	+0.03
4-6-92	6965.09	-0.68	-0.01
4-13-92	6965.07	-0.70	-0.02

FIGURES

FIGURES

DRAWING NUMBER 86-060-E728

86-060-E716



No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	4-21-92	AS-BUILT CONSTRUCTION DRAWING FOR CENTRAL CELL INTERIM STABILIZATION REPORT ADDENDUM	P.M.W.	FJF	DWK

DATE: 4-15-92
SCALE: AS SHOWN
SHEET 1 of 1
DRAWING NUMBER 86-060-E728 1

86-060-E716

APPENDIX A

APPENDIX A

DAILY REVIEW OF EARTHWORK CONSTRUCTION

WESTERN TECHNOLOGIES INC.

400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410844

Project 1991 Reclamation Testing — Report No. — Date 09/24/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT — Date 09/16/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor - — Superintendent -

Earthwork in progress and/or completed since last report: Nielsons Inc. was placing soil cover material between C and E lines and placing soil cover between grid lines 19 and 20 in the north evaporation ponds.

Unexpected site conditions: none

Sampling and/or testing performed: One ASTM D698 proctor and one gradation/Atterberg test (G-30) and one sandcone calibration were performed. Also two gradation/Atterberg tests sampled 09/13/91 were completed.

Conformance of earthwork materials, operations and/or test results to project requirements: No compaction tests were performed.

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: n/a

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: 09/17/91

Copies: Client (3) Field Copy (1) Billing (1) /sr

Joseph G Phillips
Reviewed By

WESTERN TECHNOLOGIES INC.

400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410844

Project 1991 Reclamation Testing — Report No. — Date 09/24/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT — Date 09/17/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor - — Superintendent -

Earthwork in progress and/or completed since last report: Nielsons Inc. was placing soil cover material between D and E line, however no processing occurred. Nielsons Inc. was fine grading regraded tailings surface on G line.

Unexpected site conditions: none

Sampling and/or testing performed: Sample preparation for soil cover material on D line was performed.

Conformance of earthwork materials, operations and/or test results to project requirements: No compaction tests were performed.

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: none

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: 09/18/91

Copies: Client (3) Field Copy (1) Billing (1) /sr

Joseph A Phillips
Reviewed By

WESTERN TECHNOLOGIES INC.

400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410844

Project 1991 Reclamation Testing — Report No. — Date 09/24/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT — Date 09/18/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor - — Superintendent -

Earthwork in progress and/or completed since last report: Nielsons Inc. was placing soil cover material between E and F, however, material was not being processed.

Unexpected site conditions: none

Sampling and/or testing performed: Five compaction tests and one gradation/Atterberg tests was performed.

Conformance of earthwork materials, operations and/or test results to project requirements: Compaction tests on regraded tailings surface on G met job specifications.

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: Ed Morales requested compaction testing on soil cover material that will be placed in two locations of central cell. Testing shall be done in accordance to Western Technologies contract for soil cover material.

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: 09/19/91

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Joseph A. Phillips
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WESTERN TECHNOLOGIES INC.

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(505) 327-4966

FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410844

Project 1991 Reclamation Testing — Report No. ____ Date 09/24/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT Date 09/19/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor - — Superintendent -

Earthwork in progress and/or completed since last report: Nielsons Inc. grubbed vegetation in northeast section of central cell and began soil placement. Nielsons Inc. continued to place soil cover material, however, no processing occured.

Unexpected site conditions: none

Sampling and/or testing performed: Two compaction tests on regraded tailings surface and one proctor point and one gradation/Atterbert test were performed.

Conformance of earthwork materials, operations and/or test results to project requirements: Compaction tests on regraded tailings surface met project requirements.

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: none

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: 09/20/91

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Reviewed By

WESTERN TECHNOLOGIES INC.

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(505) 327-4966

FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation

Invoice No. 31410844

Project 1991 Reclamation Testing

Report No. Date 09/24/91

Location Church Rock, New Mexico

Report By H. Kuebler/WT Date 09/20/91

Prime Contractor Nielsons Inc.

Superintendent Bruce Berry

Earthwork Subcontractor -

Superintendent -

Earthwork in progress and/or completed since last report: Nielsons Inc. was placing soil cover material in northeast section of central cell. No processing of soil has occurred.

Unexpected site conditions: none

Sampling and/or testing performed: One proctor, one gradation/Atterberg test was performed.

Conformance of earthwork materials, operations and/or test results to project requirements: No compaction tests were performed.

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: none

Tech./Eng'r time on project today: 8 hours

No. of visits today: 1

Time and date for next visit: 09/23/91

Copies: Client (3) Field Copy (1) Billing (1) /sr

Joseph A. Phillips
Reviewed By

United Nuclear Corpo .tion
INTERIM RECLAMATION - 1991

Test Summary for Week of 09/23 - 09/27

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
09/23	Gradation/ Atterberg	E-33	72440	57670	6951.0	TSC/SC	-	-	-	CL	Yes
	Proctor ASTM D698A	E-33	72440	57670	6951.0	TSC/SC	111.3	15.1	-	CL	n/a
09/24	Gradation/ Atterberg	Mill site fill for Borrow Pit #2					-	-	-	CL	n/a
	Gradation Atterberg	Old Church Rock site for Borrow Pit #2					-	-	-	CL	n/a
	Unit Weight									CL	n/a
09/25	Sandcone	I-34.5	72090	57900	6960.0	RTS/SC	103.6	11.7	91	CL	Yes
	Sandcone	I-34	72110	57910	6960.0	RTS/SC	113.2	12.6	100	CL	Yes
	Sandcone	B-20+65	73620	58250	6964.2	TSC/CC	111.3	16.4	100	CL	Yes
	Sandcone	C-20+65	73550	58250	6963.9	TSC/CC	107.2	16.8	97	CL	Yes
	Sandcone	D-20+65	73500	58410	6963.7	TSC/CC	106.9	16.7	96	CL	Yes
	Sandcone	E-20+65	73410	58500	6963.4	TSC/CC	106.8	16.1	96	CL	Yes
	Sandcone	F-20+65	73350	58550	6963.1	TSC/CC	110.7	16.7	100	CL	Yes
	Sandcone	G-20+30	73340	58650	6962.9	TSC/CC	116.4	15.9	100	CL	Yes
	Sandcone	H-20+30	73280	58720	6962.6	TSC/CC	111.6	15.9	100	CL	Yes
	Sandcone	D-34	72580	57670	6951.0	TSC/SC	112.7	16.3	100	CL	Yes
	Sandcone	D-35	72350	57470	6951.0	TSC/SC	111.5	16.0	100	CL	Yes
	Sandcone	D-36	72280	57400	6951.0	TSC/SC	108.0	16.3	98	CL	Yes
	Sandcone	D-37	72220	57350	6951.0	TSC/SC	113.2	15.7	100	CL	Yes
	Sandcone	D-31	72660	57740	6951.4	TSC/SC	114.5	16.2	100	CL	Yes

CC=Central Cell
SC=South Cell
TSC=Top of soil cover
RTS=Top of regraded tailings surface
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

United Nuclear Corp tion
INTERIM RECLAMATION 1991

Test Summary for Week of 09/23 - 09/27*

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
09/25	Sandcone	D-38	72150	57280	6951.0	TSC/SC	111.5	17.0	100	CL	Yes
	Sandcone	D-29	72850	57890	6952.0	TSC/SC	107.9	16.1	98	CL	Yes
	Sandcone	D-30	72750	57810	6952.2	TSC/SC	111.1	15.8	100	CL	Yes
	Sandcone	D-32	72570	57670	6951.0	TSC/SC	108.7	17.5	98	CL	Yes
	Sandcone	D-33	72510	57600	6951.0	TSC/SC	113.4	16.6	100	CL	Yes
	Sandcone	D-39	72070	57220	6951.0	TSC/SC	117.5	16.1	100	CL	Yes
	Sandcone	D-40	71980	57170	6951.4	TSC/SC	109.5	15.8	99	CL	Yes
	Gradation/ Atterberg	I-34	72110	57910	6960.0	RTS/SC	-	-	-	SM-SC	n/a
	Proctor (1 point) ASTM D698C	I-34	72110	57910	6960.0	RTS/SC	113.3	14.8	-	SM-SC	n/a
	*Gradation/ Atterberg	H-20	73280	58720	6962.6	TSC/CC	-	-	-	CL	Yes
	*Gradation/ Atterberg	B-20	73620	58250	6964.2	TSC/CC	-	-	-	CL-ML	Yes
	*Gradation/ Atterberg	F-20	73350	58550	6963.1	TSC/CC	-	-	-	CL	Yes
	*Gradation/ Atterberg	E-20	73410	58500	6963.4	TSC/CC	-	-	-	CL	Yes
09/26	Sandcone	E-29	72760	57950	6952.6	TSC/SC	111.8	15.2	100	CL	Yes
	Sandcone	E-30	72690	57890	6951.5	TSC/SC	112.6	15.4	100	CL	Yes
	*Gradation/ Atterberg	E-30	72690	57890	6951.5	TSC/SC	-	-	-	CL	Yes
	Sandcone	E-31	72600	57810	6951.0	TSC/SC	111.6	17.1	100	CL	Yes
	Sandcone	E-32	72530	57750	6951.0	TSC/SC	109.2	16.7	98	CL	Yes

*Summary revised 11/07/91 to include test results.
CC=Central Cell
SC=South Cell
TSC=Top of soil cover
RTS=Top of regraded tailings surface
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

United Nuclear Corporation
INTERIM RECLAMATION - 1991

Test Summary for Week of 09/23 - 09/27*

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
09/26	Sandcone	E-33	72440	57670	6951.0	TSC/SC	104.9	18.6 F	94 F	CL	No
	Sandcone	E-34	72350	57600	6951.0	TSC/SC	110.1	15.7	99	CL	Yes
	Sandcone	E-35	72290	59550	6951.0	TSC/SC	105.2	15.5	95	CL	Yes
	Sandcone	E-36	72210	57480	6951.0	TSC/SC	107.7	18.2 F	97	CL	No
	*Gradation/ Atterberg	E-36	72210	57480	6951.0	TSC/SC	-	-	-	CL-ML	Yes
	Sandcone	E-37	72150	57430	6951.0	TSC/SC	107.1	18.3 F	96	CL	No
	Sandcone	E-38	72090	57370	6951.0	TSC/SC	103.3	16.9	93	CL	No
	*Gradation/ Atterberg	E-38	72090	57370	6951.0	TSC/SC	-	-	-	CL	Yes
	Sandcone	E-39	72000	57250	6951.0	TSC/SC	109.7	17.0	99	CL	Yes
	Sandcone	E-40	71850	57220	6951.0	TSC/SC	113.1	15.3	100	CL	Yes
09/27	*Sandcone	F-30	72610	57950	6952.1	TSC/SC	108.5	16.0	96	CL	Yes
	*Sandcone	F-35	72220	57620	6951.0	TSC/SC	107.8	18.7 F	95	CL	No
	*Sandcone	F-34	72380	57680	6951.0	TSC/SC	111.6	16.9 F	98	CL	No
	*Sandcone	F-33	72330	57750	6951.0	TSC/SC	104.5	15.8	92 F	CL	No
	*Sandcone	F-32	72450	57820	6951.0	TSC/SC	112.5	15.5	99	CL	Yes
	*Sandcone	F-31	72610	57820	6951.0	TSC/SC	106.3	17.0 F	94 F	CL	No
	*Sandcone	F-40	71870	57270	6954.3	TSC/SC	99.5	17.0 F	88 F	CL	No
	*Sandcone	F-39	71940	57370	6951.0	TSC/SC	103.4	19.4 F	91 F	CL	No
	*Sandcone	F-38	72030	57450	6951.0	TSC/SC	103.2	20.7 F	91 F	CL	No
	*Sandcone	F-37	72080	57500	6951.0	TSC/SC	103.0	18.5 F	91 F	CL	No
	*Sandcone	F-36	72150	57560	6951.0	TSC/SC	115.2	17.6 F	100	CL	No

*Summary revised 11/07/91 to include test results.
SC=South Cell
TSC=Top of soil cover
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

United Nuclear Corporation
INTERIM RECLAMATION - 1991

Test Summary for Week of 09/23 - 09/27*

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
09/27	*Retest Sandcone	E-33	72440	57670	6951.0	TSC/SC	106.7	15.3	96	CL	Yes
	*Retest Sandcone	E-36	72210	57480	6951.0	TSC/SC	108.9	15.6	98	CL	Yes
	*Retest Sandcone	E-37	72150	57430	6951.0	TSC/SC	107.0	15.1	96	CL	Yes
	*Retest Sandcone	E-38	72090	57370	6951.0	TSC/SC	107.8	15.7	97	CL	Yes

*Summary revised 11/07/91 to include test results.
SC=South Cell
TSC=Top of soil cover
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

WESTERN TECHNOLOGIES INC.

400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410925

Project 1991 Reclamation Testing — Report No. — Date 10/02/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT — Date 09/23/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor — Superintendent

Earthwork in progress and/or completed since last report: Nielsons Inc. placed fill in northeast section of central cell. No compaction was performed.

Unexpected site conditions: none

Sampling and/or testing performed: Performed sampling for one gradation/Atterberg test (E line) and one proctor.

Conformance of earthwork materials, operations and/or test results to project requirements: n/a

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: none

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: 09/24/91

Copies: Client (3) Field Copy (1) Billing (1) /sr

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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410925

Project 1991 Reclamation Testing — Report No. — Date 10/02/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT — Date 09/24/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor — Superintendent

Earthwork in progress and/or completed since last report: Nielsons Inc. processed soil cover material north of evaporation ponds and regraded tailings surface between I-33 and I-34. No compaction effort occurred in either area, however, Nielsons stated both areas will need compaction tests tomorrow.

Unexpected site conditions: none

Sampling and/or testing performed: Two gradation/Atterberg tests and one unit weight on borrow pit #2 fill materials.

Conformance of earthwork materials, operations and/or test results to project requirements: n/a

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: Ed Morales requested unit weight and gradation/Atterberg tests be performed on old Church Rock fill and gradation/Atterberg test on mill site fill, both being placed in borrow pit #2.

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: 09/25/91

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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client: United Nuclear Corporation — Invoice No. 31410925

Project: 1991 Reclamation Testing — Report No. ____ Date 10/02/91

Location: Church Rock, New Mexico — Report By H. Kuebler/WT Date 09/25/91

Prime Contractor: Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor: ____ Superintendent ____

Earthwork in progress and/or completed since last report: Nielsons Inc. compacted soil cover material along grid line 20, north of evaporation ponds and between grid lines D and E. Regraded tailings surface between I-33 and I-34 was also compacted.

Unexpected site conditions: none

Sampling and/or testing performed: Twenty one compaction tests, one gradation/Atterberg test and a one point proctor were performed.

Conformance of earthwork materials, operations and/or test results to project requirements: n/a

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: Compaction test results will be completed on 09/26/91.

Tech./Eng'r time on project today: 10 hours — No. of visits today: 1

Time and date for next visit: 09/26/91

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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410925

Project 1991 Reclamation Testing — Report No. — Date 10/02/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT — Date 09/26/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor — Superintendent

Earthwork in progress and/or completed since last report: Nielsons Inc. processed and compacted E to F lin on soil cover elevation.

Unexpected site conditions: none

Sampling and/or testing performed: Twelve compaction tests were performed.

Conformance of earthwork materials, operations and/or test results to project requirements: Compaction results will be known tomorrow (09/27/91).

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: none

Tech./Eng'r time on project today: 12 hours — No. of visits today: 1

Time and date for next visit: 09/27/91

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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410925

Project 1991 Reclamation Testing — Report No. ____ Date 10/02/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT Date 09/27/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor ____ Superintendent ____

Earthwork in progress and/or completed since last report: Nielsons Inc. processed and compacted between F and G lines and processed between G and H lines.

Unexpected site conditions: none

Sampling and/or testing performed: Performed eleven compaction tests and four retests.

Conformance of earthwork materials, operations and/or test results to project requirements: n/a

Person/persons notified of nonconformance to project requirements: Bruce Berry of Nielsons Inc. was notified of four locations that had failed on E line soil cover material.

Nonconformance corrected: n/a

Instructions or information received/from: Test results will be completed on Monday (09/30/91).

Tech./Eng'r time on project today: 9 hours — No. of visits today: 1

Time and date for next visit: 09/30/91

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United Nuclear Corporation
INTERIM RECLAMATION - 1991

Test Summary for Week of 09/30 - 10/03

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
09/30	Retest Sandcone	F-40	71870	57270	6954.3	TSC/SC	112.4	14.9	99	CL	Yes
	Retest Sandcone	F-39	71940	57370	6951.0	TSC/SC	107.5	13.3	95	CL	Yes
	Retest Sandcone	F-38	72080	57500	6951.0	TSC/SC	108.3	15.7	95	CL	Yes
	Retest Sandcone	F-37	72080	57500	6951.0	TSC/SC	114.2	14.8	100	CL	Yes
	Retest Sandcone	F-36	72150	57560	6951.0	TSC/SC	115.2	15.1	100	CL	Yes
	Retest Sandcone	F-35	72220	57620	6951.0	TSC/SC	116.5	14.9	100	CL	Yes
	Retest Sandcone	F-34	72380	57680	6951.0	TSC/SC	112.6	15.8	99	CL	Yes
	Proctor ASTM D698A	F-34	72380	57680	6951.0	TSC/SC	113.5	14.0	-	CL	n/a
	Gradation/ Atterberg	F-34	72380	57680	6951.0	TSC/SC	-	-	-	CL	Yes
	Retest Sandcone	F-33	72330	57750	6951.0	TSC/SC	117.6	14.9	100	CL	Yes
	Retest Sandcone	F-31	72610	57820	6951.0	TSC/SC	114.2	15.1	100	CL	Yes
	Gradation/ Atterberg	F-31	72610	57820	6951.0	TSC/SC	-	-	-	CL	Yes
	Gradation/ Atterberg	F-37	72030	57440	6951.0	TSC/SC	-	-	-	CL	Yes
10/01	Sandcone	G-29	72620	58100	6952.8	TSC/SC	113.2	14.8	100	CL-ML	Yes
	Sandcone	G-30	72550	58050	6951.6	TSC/SC	109.1	15.2	96	CL-ML	Yes

TSC=Top of soil cover
SC=South Cell
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

United Nuclear Cor ation
INTERIM RECLAMATIC 1991

Test Summary for Week of 09/30 - 10/03

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/01	Proctor ASTM D698A	G-30	72550	58050	6951.6	TSC/SC	113.4	14.0	-	CL-ML	n/a
	Gradation/ Atterberg	G-30	72550	58050	6951.6	TSC/SC	-	-	-	CL-ML	Yes
	Sandcone	G-31	72460	57960	6951.0	TSC/SC	112.4	15.6	99	CL	Yes
	Sandcone	G-32	72380	57890	6951.0	TSC/SC	112.6	14.7	99	CL	Yes
	Gradation/ Atterberg	G-32	72380	57890	6951.0	TSC/SC	-	-	-	CL-ML	
	Sandcone	G-33	72310	57820	6951.0	TSC/SC	113.4	14.2	100	CL-ML	Yes
	Sandcone	G-34	72300	57750	6951.0	TSC/SC	118.2	14.0	100+	CL-ML	Yes
	Gradation/ Atterberg	G-35	72170	57640	6951.0	TSC/SC	-	-	-	CL	
	Sandcone	Q-7	73700	60250	6980.7	TSC/CC	111.7	15.1	99	CL	Yes
	Proctor ASTM D698A	Q-7	73700	60250	6980.7	TSC/CC	112.3	13.8	-	CL	n/a
	Gradation/ Atterberg	Q-7	73700	60250	6980.7	TSC/CC	-	-	-	CL	Yes
	Sandcone	Q-6.5	73750	60250	6980.7	TSC/CC	113.1	13.0 F	100	CL	No
	Sandcone	Q-6	73780	60270	6980.7	TSC/CC	101.5	10.1 F	90 F	CL	No
	Sandcone	Q-5	73840	60380	6980.6	TSC/CC	105.4	16.6 F	94 F	CL	No
	Sandcone	Q-4	73930	60450	6980.8	TSC/CC	100.7	10.8 F	90 F	CL	No
	Sandcone	R-7	73660	60330	6981.0	TSC/CC	117.4	3.6 F	100	CL-ML	No
	Sandcone	R-6	73730	60400	6981.0	TSC/CC	112.2	15.7	100	CL-ML	Yes
	Sandcone	R-5	73730	60450	6981.0	TSC/CC	108.1	14.8	96	CL-ML	Yes
	Sandcone	P-3	74080	60450	6980.4	TSC/CC	108.9	13.9	97	CL-ML	Yes

CC=Central Cell
SC=South Cell
TSC=Top of soil cover
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

United Nuclear Corp ation
INTERIM RECLAMATION - 1991

Test Summary for Week of 09/30 - 10/03

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/01	Sandcone	P-4	74000	60360	6980.4	TSC/CC	104.9	12.0	93 F	CL-ML	No
	Sandcone	P-5	73930	60300	6979.9	TSC/CC	105.1	14.7	94 F	CL-ML	No
	Sandcone	P-6	73830	60250	6980.3	TSC/CC	108.5	14.2	97	CL-ML	Yes
	Sandcone	P-7	73770	60190	6980.3	TSC/CC	110.0	14.2	98	CL-ML	Yes
	Sandcone	N-6.75	73930	60150	6979.5	TSC/CC	104.1	17.3 F	92 F	CL-ML	No
	Proctor ASTM D698A	N-6.75	73930	60150	6979.5	TSC/SC	113.8	13.6	-	CL-ML	n/a
	Gradation/ Atterberg	N-6.75	73930	60150	6979.5	TSC/CC	-	-	-	CL-ML	Yes
	Sandcone	N-5.75	74000	60220	6979.0	TSC/CC	109.2	13.1 F	96	CL-ML	No
	Sandcone	O-17	73830	60100	6980.5	TSC/CC	105.6	13.5 F	93 F	CL-ML	No
	Sandcone	O-16	73910	60170	6979.9	TSC/CC	109.5	11.7 F	96	CL-ML	No
	Sandcone	O-15	73990	60220	6979.3	TSC/CC	112.4	12.3 F	99	CL-ML	No
	Sandcone	O-14	74060	60300	6979.7	TSC/CC	97.1	11.9	85 F	CL-ML	No
	Sandcone	O-3	72020	60570	6980.1	TSC/CC	111.1	14.0	98	CL-ML	Yes
10/02	Sandcone	H-31	72410	58100	6951.0	TSC/SC	107.8	14.8	95	CL-ML	Yes
	Sandcone	H-30	72430	58110	6952.3	TSC/SC	108.1	14.4	95	CL-ML	Yes
	Proctor (1 Point) ASTM D698	H-30	72430	58110	6952.3	TSC/SC	113.4	14.0	-	CL-ML	n/a
	Retest Sandcone	R-7	73660	60330	6981.0	TSC/CC	109.3	16.8 F	97	CL	No
	Gradation/ Atterberg	R-7	73660	60330	6981.0	TSC/CC	-	-	-	CL	
	Retest Sandcone	Q-6.5	73750	60250	6980.7	TSC/CC	115.6	15.3	100	CL	Yes

CC=Central Cell
SC=South Cell
TSC=Top of soil cover
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

United Nuclear Cor, ıtion
INTERIM RECLAMATION - 1991

Test Summary for Week of 09/30 - 10/03

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/02	Retest Sandcone	N-5.75	74000	60220	6979.0	TSC/CC	111.2	14.5	98	CL-ML	Yes
10/03	Sandcone Calibration										
	Retest Sandcone	O-6	73910	60170	6979.5	TSC/CC	116.8	14.4	100	CL-ML	Yes
	Proctor (1 Point) ASTM D698A	O-6	73910	60170	6979.5	TSC/CC	112.3	12.1	-	CL-ML	n/a
	Retest Sandcone	O-7	73830	60100	6980.3	TSC/CC	112.0	15.7	98	CL	Yes
	Gradation/ Atterberg	O-7	73830	60100	6980.3	TSC/CC	-	-	-	CL	Yes
	Retest Sandcone	Q-5	73840	60380	6980.6	TSC/CC	117.6	14.6	100	CL	Yes
	Gradation/ Atterberg	Q-6	73780	60270	6980.7	TSC/CC	-	-	-	CL-ML	Yes
	Retest Sandcone	R-7	73660	60330	6981.0	TSC/CC	115.7	14.4	100	CL	Yes
	Sandcone	C-29	72990	57800	6953.8	TSC/SC	107.2	14.8	95	CL-ML	Yes
	Sandcone	F-29	72700	58030	6953.0	TSC/SC	111.7	14.2	99	CL	Yes
	Gradation/ Atterberg	F-29	72700	58030	6953.0	TSC/SC	-	-	-	CL	
	Sandcone	H-29	72570	58200	6953.6	TSC/SC	117.7	14.0	100	CL-ML	Yes
	Gradation/ Atterberg	H-29	72570	58200	6953.6	TSC/SC	-	-	-	CL-ML	Yes
	Gradation/ Atterberg	H-31	72410	58100	6951.0	TSC/SC	-	-	-	ML	Yes

CC=Central Cell
SC=South Cell
TSC=Top of soil cover
HRS=Haul Road Surface
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

United Nuclear Corporation
INTERIM RECLAMATION - 1991

Test Summary for Week of 09/30 - 10/03

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/03	Sandcone	Haul Road-Sta.	32+00		6955.0	HRS	106.5	7.1	94 F	CL	No
	Sandcone	Haul Road-Sta.	34+00		6955.0	HRS	100.1	8.6	89 F	CL	No
	Sandcone	Haul Road-Sta.	36+00		6955.0	HRS	104.1	7.2	92 F	CL	No
	Sandcone	Haul Road-Sta.	38+00		6955.0	HRS	107.1	9.3	95	CL	Yes
	Sandcone	Haul Road-Sta.	22+00		6955.0	HRS	108.9	7.4	96	CL	Yes
	Sandcone	Haul Road-Sta.	24+00		6955.0	HRS	106.6	7.5	94	CL	No
	Sandcone	Haul Road-Sta.	26+00		6955.0	HRS	107.1	4.2	95	CL	Yes
	Sandcone	Haul Road-Sta.	28+00		6955.0	HRS	107.3	7.2	95	CL	Yes
	Sandcone	Haul Road-Sta.	30+00		6955.0	HRS	107.0	6.7	95	CL	Yes

HRS=Haul Road Surface
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

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400 South Lorena Avenue
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(505) 327-4966

FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410925

Project 1991 Reclamation Testing — Report No. — Date 11/01/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT Date 10/01/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor — Superintendent

Earthwork in progress and/or completed since last report: Nielsons Inc. compacted the NE section of central cell and grid line G on south cell.

Unexpected site conditions: none

Sampling and/or testing performed: Performed 26 field density tests, three proctors, and five gradation/Atterberg tests.

Conformance of earthwork materials, operations and/or test results to project requirements: G. line met job specifications.

Person/persons notified of nonconformance to project requirements: NE section of central cell failed.

Nonconformance corrected: Nielsons Inc. reworked failing areas.

Instructions or information received/from: none

Tech./Eng'r time on project today: Lead tech-11.5 hours, Add'l tech-11.5 No. of visits today: 1

Time and date for next visit: 10/02/91

Copies: Client (3) Field Copy (1) Billing (1) /sr

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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client: United Nuclear Corporation — Invoice No. 31410925

Project: 1991 Reclamation Testing — Report No. — Date 10/25/91

Location: Church Rock, New Mexico — Report By H. Kuebler/WT — Date 10/02/91

Prime Contractor: Nielsons Inc. — Superintendent: Bruce Berry

Earthwork Subcontractor — Superintendent

Earthwork in progress and/or completed since last report: Nielsons Inc. fine graded "H" line on south cell.

Unexpected site conditions: none

Sampling and/or testing performed: Fifteen compaction tests and a one point proctor were performed today.

Conformance of earthwork materials, operations and/or test results to project requirements: Grid line H met job specifications.

Person/persons notified of nonconformance to project requirements: Nielsons Inc. was notified of areas in northeast section of central cell which failed due to high moisture.

Nonconformance corrected: n/a

Instructions or information received/from: WT will retest failing areas on 10/03/91.

Tech./Eng'r time on project today: S. G./11 hrs. H.K./11 hrs. — No. of visits today: 1

Time and date for next visit: 10/03/91

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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410925

Project 1991 Reclamation Testing — Report No. ____ Date 10/25/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT Date 10/03/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor ____ Superintendent ____

Earthwork in progress and/or completed since last report: Nieslons Inc. fine graded the south cell site, and shaped contours at line 29 to meet specifications.

Unexpected site conditions: none

Sampling and/or testing performed: Sixteen compaction tests, one sandcone calibration, one gradation/atterberg test.

Conformance of earthwork materials, operations and/or test results to project requirements: Compaction tests on grid line "29" met specifications.

Person/persons notified of nonconformance to project requirements: Nielsons Inc. was notified of failing areas.

Nonconformance corrected: n/a

Instructions or information received/from: Bruce Berry/Nielsons Inc. was informed of failing tests on Haul Road.

Tech./Eng'r time on project today: S. G./10 hrs. H. K./11 hrs. — No. of visits today: 1

Time and date for next visit: ____

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United Nuclear Corp ion
INTERIM RECLAMATION - 1991

Test Summary for Week of 10/07 - 10/11

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/07	Sandcone	P/Q-7	73730	60230	6980.7	TSC/CC	115.2	14.2	100	CL-ML	Yes
	Sandcone	Q-4	73950	60430	6980.8	TSC/CC	113.7	14.4	100	CL-ML	Yes
	Sandcone	P-6	73850	60250	6980.3	TSC/CC	110.4	13.9	98	CL-ML	Yes
	Sandcone	I-33.5	72150	57950	6961.0	TSC/SC	108.1	14.6	95	CL-ML	Yes
	Sandcone	I-34	72110	57910	6961.0	TSC/SC	110.0	15.9	97	CL-ML	Yes
	Proctor (1 Point) ASTM D698A	I-34	72110	57910	6961.0	TSC/SC	113.3	14.0	-	CL-ML	n/a
	Retest Sandcone	Haul Road-Sta. 32+00			6955.0	HRS	110.1	11.7	97	CL	Yes
	Retest Sandcone	Haul Road-Sta. 34+00			6955.0	HRS	109.2	10.4	97	CL	Yes
	Retest Sandcone	Haul Road-Sta. 36+00			6955.0	HRS	109.5	9.1	97	CL	Yes
	Retest Sandcone	Haul Road-Sta. 24+00			6955.0	HRS	108.7	8.9	96	CL	Yes
	Retest Sandcone	Haul Road-Sta. 40+00			6955.0	HRS	113.9	8.4	100	CL	Yes
	Retest Sandcone	Haul Road-Sta. 42+00			6955.0	HRS	110.8	9.2	98	CL	Yes

CC=Central Cell
SC=South Cell
TSC=Top of soil cover
HRS=Haul Road Surface
F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

WESTERN TECHNOLOGIES INC.

400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410973

Project 1991 Reclamation Testing — Report No. ____ Date 11/06/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT Date 10/07/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor ____ Superintendent ____

Earthwork in progress and/or completed since last report: Nielsons Inc. reworked Haul Road and NE section of central cell.

Unexpected site conditions: none

Sampling and/or testing performed: Compaction tests on Haul Road, I line of South Cell and on NE section of central cell.

Conformance of earthwork materials, operations and/or test results to project requirements: Compaction tests today met specifications.

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: none

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: 10/08/91

Copies: Client(3) Billing (1) /sr

Joseph A Phillips
Reviewed By

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Farmington, New Mexico 87401
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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation

Invoice No. 31410973

Project 1991 Reclamation Testing

Report No. Date 11/06/91

Location Church Rock, New Mexico

Report By H. Kuebler/WT Date 10/08/91

Prime Contractor Nielsons Inc.

Superintendent Bruce Berry

Earthwork Subcontractor

Superintendent

Earthwork in progress and/or completed since last report: Nielsons Inc. decontaminated equipment by washing with water.

Unexpected site conditions: none

Sampling and/or testing performed: Western Technologies worked on laboratory testing, gradation and Atterberg testing.

Conformance of earthwork materials, operations and/or test results to project requirements: n/a

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: none

Tech./Eng'r time on project today: 8 hours

No. of visits today: 1

Time and date for next visit: 10/09/91

Copies: Client (3) Billing (1) /sr

Joseph A. Phillips
Reviewed By

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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410973

Project 1991 Reclamation Testing — Report No. ____ Date 11/06/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT Date 10/09/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor ____ Superintendent ____

Earthwork in progress and/or completed since last report: Nielsons Inc. completed cleaning equipment. This was Nielsons last day on site.

Unexpected site conditions: none

Sampling and/or testing performed: Western Technologies continued on site laboratory testing.

Conformance of earthwork materials, operations and/or test results to project requirements: n/a

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: none

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: 10/10/91

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Reviewed By

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Farmington, New Mexico 87401
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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410973

Project 1991 Reclamation Testing — Report No. ____ Date 11/06/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT Date 10/10/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor ____ Superintendent ____

Earthwork in progress and/or completed since last report: No work in progress.

Unexpected site conditions: none

Sampling and/or testing performed: Laboratory work being completed.

Conformance of earthwork materials, operations and/or test results to project requirements: n/a

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: Ed Morales requested permeabilities be performed on three grid points on south cell.

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: 10/11/91

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FIELD REPORT

REVIEW OF EARTHWORK CONSTRUCTION

Job No. 3141K062

Client United Nuclear Corporation — Invoice No. 31410973

Project 1991 Reclamation Testing — Report No. ____ Date 11/06/91

Location Church Rock, New Mexico — Report By H. Kuebler/WT Date 10/11/91

Prime Contractor Nielsons Inc. — Superintendent Bruce Berry

Earthwork Subcontractor ____ Superintendent ____

Earthwork in progress and/or completed since last report: No work in progress.

Unexpected site conditions: none

Sampling and/or testing performed: On site laboratory work completed.

Conformance of earthwork materials, operations and/or test results to project requirements: n/a

Person/persons notified of nonconformance to project requirements: n/a

Nonconformance corrected: n/a

Instructions or information received/from: Western Technologies completed on-site work, today was last day on site.

Tech./Eng'r time on project today: 8 hours — No. of visits today: 1

Time and date for next visit: n/a

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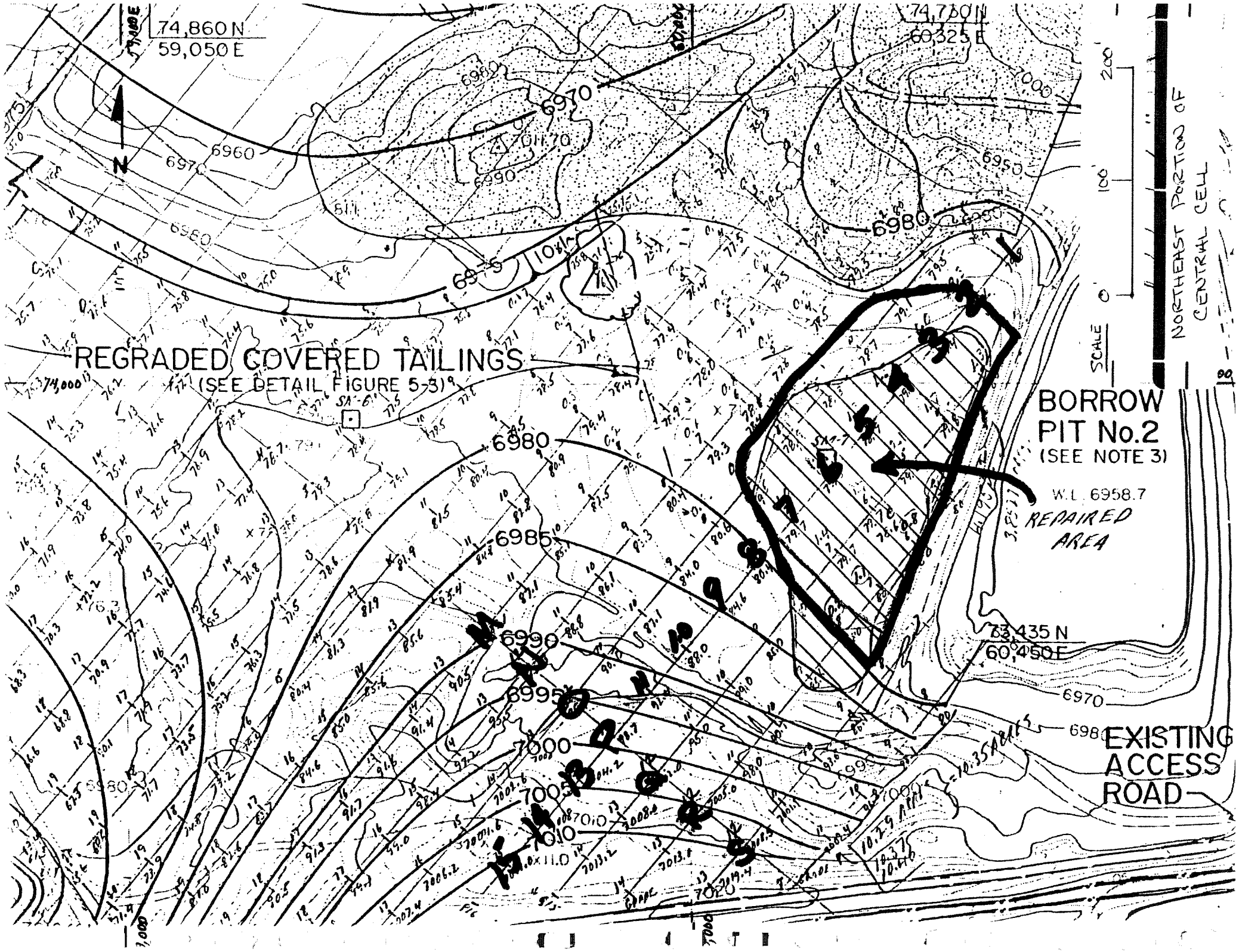
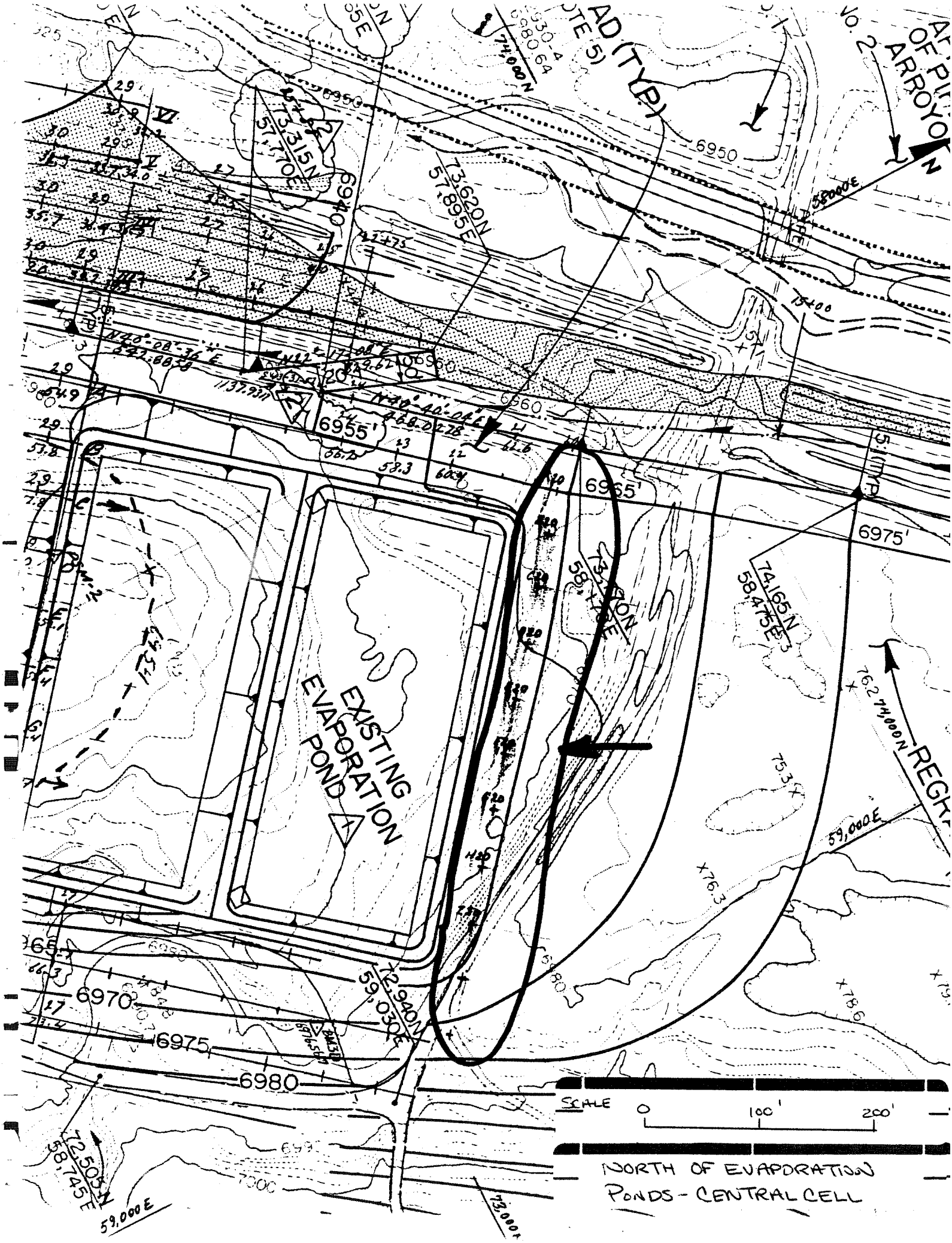
Joseph A. Phillips
Reviewed By


74,860 N
59,050 E
74,700 N
60,325 E
N
6970
6960
6990
6980
6985
6995
7000
7005
7010
7020
REGRADED COVERED TAILINGS
(SEE DETAIL FIGURE 5-3)
BORROW
PIT No.2
(SEE NOTE 3)
W.L. 6958.7
REPAIRED
AREA
73,435 N
60,450 E
EXISTING
ACCESS
ROAD
SCALE
0
100
200
NORTHEAST PORTION OF
CENTRAL CELL



NORTH OF EVAPORATION PONDS - CENTRAL CELL

APPENDIX B

APPENDIX B

SOIL COVER TEST RESULTS
NORTH OF EVAPORATION PONDS

CENTRAL CELL INTERIM RECLAMATION-1991

NORTH OF EVAPORATION PONDS
Top of Soil Cover

Sandcone Field Density Tests

Gradation/Atterberg Tests

Proctor Tests

SOIL COVER MATERIAL

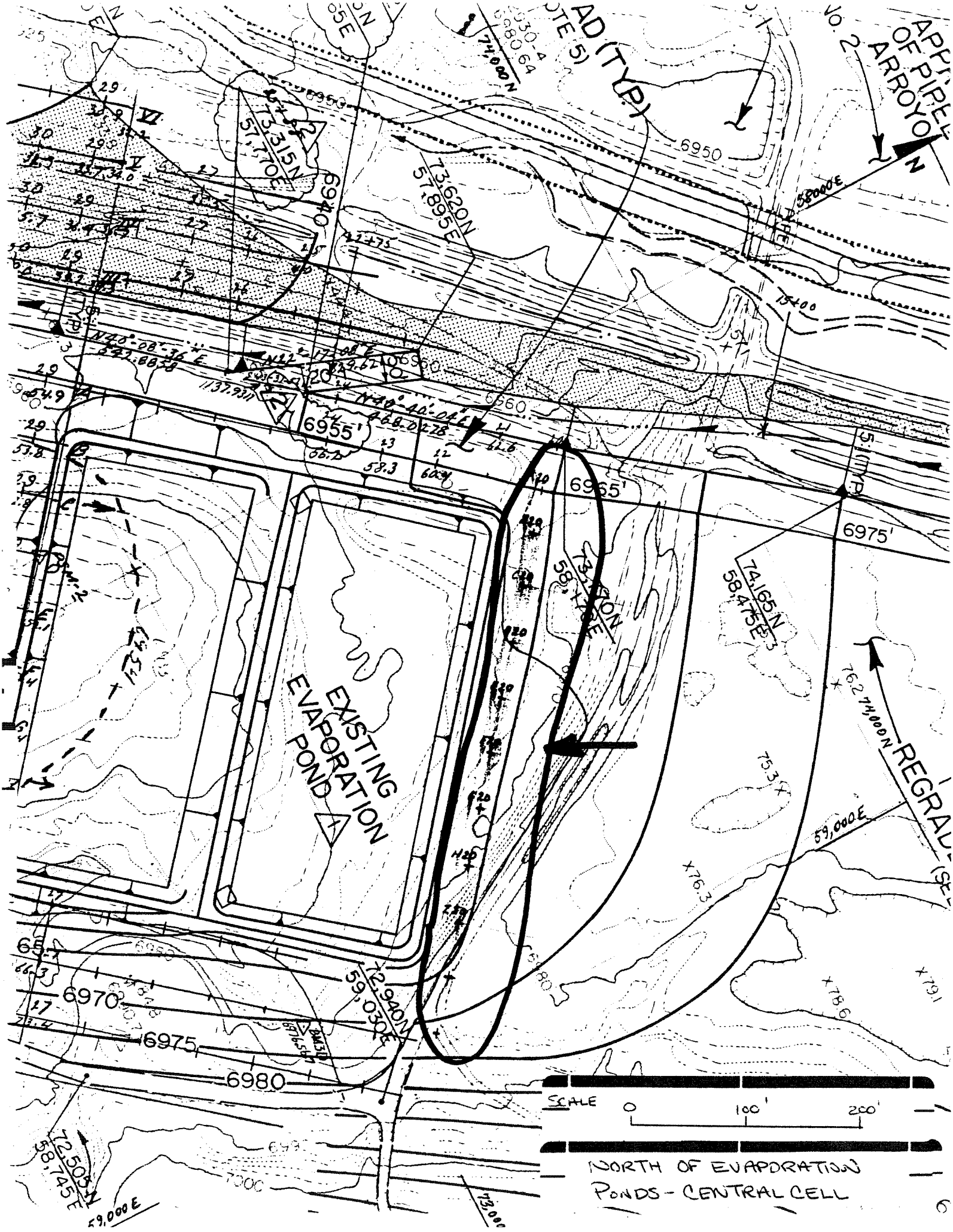
(North of Evaporation Ponds in Central Cell)

A soil cover material layer (1' thick) was placed on areas of tailing materials. Soil cover material was obtained from the Haul Road Embankment. Soil ranged from sandy silty clay (CL-ML) to sandy lean clay (CL). Four gradation and atterberg tests were taken from north of the Evaporation Ponds.

Nielsons Inc. used a rome plow (large disc) to process water into the soil. A sheepfoot compactor was used to knead the soil and a pneumatic roller was used to further compact and seal the soil cover surface. Nielsons Inc. placed the entire 12 inch lift to prevent contaminating soil cover material from underlying tailings material.

Seven field density tests were performed on material from north of the Evaporation Ponds. All test locations met job specifications. One proctor test was performed during North of Evaporation Ponds soil cover placement.

UNC verified, using surveying methods, that at least one foot of soil cover material had been placed on tailing materials.


EXISTING EVAPORATION POND
6955'
6965'
6975'
6970
6975
6980
6950
73,620N
57,895E
73,315N
57,770E
74,165N
58,475E
72,940N
59,030E
72,505N
58,745E
74,000N
59,000E
58,000E
SCALE
0
100'
200'
NORTH OF EVAPORATION PONDS - CENTRAL CELL

United Nuclear Corporation
CENTRAL CELL INTERIM RECLAMATION - 1991
North of Evaporation Pond

Final Test Summary

Sandcone Field Density Tests
Top of Soil Cover

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
09/25	Sandcone	B-20+65	73620	58250	6964.2	TSC	111.3	16.4	100	CL	Yes
	Sandcone	C-20+65	73550	58250	6963.9	TSC	107.2	16.8	97	CL	Yes
	Sandcone	D-20+65	73500	58410	6963.7	TSC	106.9	16.7	96	CL	Yes
	Sandcone	E-20+65	73410	58500	6963.4	TSC	106.8	16.1	96	CL	Yes
	Sandcone	F-20+65	73350	58550	6963.1	TSC	110.7	16.7	100	CL	Yes
	Sandcone	G-20+30	73340	58650	6962.9	TSC	116.4	15.9	100	CL	Yes
	Sandcone	H-20+30	73280	58720	6962.6	TSC	111.6	15.9	100	CL	Yes

F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

WESTERN TECHNOLOGIES INC.
400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

LABORATORY REPORT

SOIL/AGGREGATE FIELD DENSITY TESTS

Client: United Nuclear Corporation 30992
Attn: Mr. Ed Morales
P.O. Drawer QQ
Gallup, NM 87301

Job No. 3141K062
Lab/Invoice No. 31410925
Date 10/02/91
Reviewed By Joseph A. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico
Type of Material: Sandy lean clay-Top of Soil Cover
Source of Material: On site
Authorized By: E. Morales/Client
Date: 09/25/91
Tested/Calc. By: H. Kuebler/WT
Moisture/Density Relationship: ASTM D698 Meth. A
Test Locations Designated By: H. Kuebler/WT

Test No.	Date	Location of Test Hole	Elevation of Test Datum †
3	09/25/91	73260N & 58250E (B-20+65)	6964.2*
4	09/25/91	73550N & 58250E (C-20+65)	6963.9*
5	09/25/91	73500N & 58410E (D-20+65)	6963.7*
6	09/25/91	73410N & 58500E (E-20+65)	6963.4*
7	09/25/91	73350N & 58550E (F-20+65)	6963.1*
8	09/25/91	73340N & 58650E (G-20+30)	6962.9*
9	09/25/91	73280N & 58720E (H-20+30)	6962.6*

Test No.	Moisture Density Lab No.	Optimum Moisture %	Max. Dry Density pcf	In-Place Characteristics Moisture %	In-Place Characteristics Dry Density pcf	Relative Compaction %	Within Specs. ?	Comments *
3		15.8	111.1	16.4	111.3	100+	Yes	1-10-13-14-18
4		15.8	111.1	16.8	107.2	97	Yes	1-10-13-14-18
5		15.8	111.1	16.7	106.9	96	Yes	1-10-13-14-18
6		15.8	111.1	16.1	106.8	96	Yes	1-10-13-14-18
7		15.8	111.1	16.7	110.7	100	Yes	1-10-13-14-18
8		15.8	111.1	15.9	116.4	100+	Yes	1-10-13-14-18
9		15.8	111.1	15.9	111.6	100+	Yes	1-10-13-14-18

* Comments
1. Subgrade
2. Subbase Fill
3. Base Course
4. Backfill
5. Pavement Area
6. Below Footing Bottom
7. Above Footing Bottom
8. 100% min. req'd.
9. 98% min. req'd.
10. 95% min. req'd.
11. 90% min. req'd.
12. 85% min. req'd.
13. moisture content opt. to +2% of opt.
14. Tested D-1556/~~XXXXXXXX~~
15. Tested ASTM D-2922/D-3017
16. Tested ASTM D-2922/AASHTO T-217
17. Rock correction applied to maximum dry density. AASHTO T-224
18. Other ASTM D2216
19. Test Locations on Accompanying Site Plan
20. Specifications Unknown

† Datum Sea Level

Note: Tests reported herein are not part of a continuous monitoring program of compaction operations and accordingly apply only to the actual location tested.

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*Note: Elevations represent Top of Soil Cover.

United Nuclear Corporation
CENTRAL CELL INTERIM RECLAMATION - 1991
North of Evaporation Pond

Final Test Summary

Gradation/Atterberg Tests
Top of Soil Cover

DATE	TYPE OF TEST	GR.ID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
09/25	Gradation/ Atterberg	E-20	73410	58500	6963.4	TSC	-	-	-	CL	Yes
	Gradation/ Atterberg	H-20	73280	58720	6962.6	TSC	-	-	-	CL	Yes
	Gradation/ Atterberg	B-20	73620	58250	6964.2	TSC	-	-	-	CL-ML	Yes
	Gradation/ Atterberg	F-20	73350	58550	6963.1	TSC	-	-	-	CL	Yes

Elevations are given in feet above mean sea level

United Nuclear Corporation
CENTRAL CELL INTERIM RECLAMATION - 1991
North of Evaporation Pond

Final Test Summary

Proctor Tests
Top of Soil Cover

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
09/20	Proctor ASTM D698A	E-20	73350	58650	6963.4	TSC	111.1	15.8	-	CL	n/a

Elevations are given in feet above mean sea level

WESTERN TECHNOLOGIES INC.

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LABORATORY REPORT

Client: United Nuclear Corporation
Post Office Drawer QQ
Gallup, New Mexico 87301

Job No. 3141K062
Invoice No. 31410844
Date of Report 09/24/91
Reviewed by Joseph R Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 09/20/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 09/20/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 09/20/91
Source of Material: 73350N & 58650E (E-20) Elevation 6963.4

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs
1-1/2"		
1"		
3/4"	100	95-100
1/2"	100	
3/8"	100	
No. 4	98	90-100
No. 10	96	85-100
No. 40	89	65-100
No. 100	70	50-100
No. 200	50	40-85

Plasticity Index, ASTM D4318

Liquid Limit 31
Plasticity Index 17

Moisture Density Relations ASTM D698 A

Maximum Dry Density, pcf 111.1
Optimum Moisture Content, % 15.8

Soils Classification ASTM D2487

Group Symbol CL
Group Name Sandy lean clay

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LABORATORY REPORT

Client: United Nuclear Corporation
Post Office Drawer QQ
Gallup, New Mexico 87301

Job No. 3141K062
Invoice No. 31410925
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 09/25/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 09/25/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 09/25/91
Source of Material: 73410N & 58500E (E-20) Elevation 6963.4

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	100	95-100
3/8"	100	
No. 4	99	90-100
No. 10	98	85-100
No. 40	94	65-100
No. 100	81	50-100
No. 200	65	40-85

Plasticity Index, ASTM D4318

Liquid Limit	28
Plasticity Index	13

Soils Classification ASTM D2487

Group Symbol	CL
Group Name	Sandy lean clay

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LABORATORY REPORT

Client: United Nuclear Corporation
Post Office Drawer QQ
Gallup, New Mexico 87301

Job No. 3141K062
Invoice No. 31410925
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 09/25/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 09/25/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 09/25/91
Source of Material: 73280N & 58720E (H-20) Elevation 6962.6

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
3/4"	100	95-100
1/2"	99	
3/8"	99	
No. 4	98	90-100
No. 10	96	85-100
No. 40	92	65-100
No. 100	77	50-100
No. 200	58	40-85

Plasticity Index, ASTM D4318

Liquid Limit	32
Plasticity Index	11

Soils Classification ASTM D2487

Group Symbol	CL
Group Name	Sandy lean clay

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LABORATORY REPORT

Client: United Nuclear Corporation
Post Office Drawer QQ
Gallup, New Mexico 87301

Job No. 3141K062
Invoice No. 31410925
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 09/25/91
Material: Sandy silty clay Submitted by H. Kuebler/WT Date 09/25/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 09/25/91
Source of Material: 73620N & 58250E (B-20) Elevation 6964.2

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	100	95-100
3/8"	100	
No. 4	99	90-100
No. 10	98	85-100
No. 40	94	65-100
No. 100	77	50-100
No. 200	62	40-85

Plasticity Index, ASTM D4318

Liquid Limit	27
Plasticity Index	5

Soils Classification ASTM D2487

Group Symbol	CL-ML
Group Name	Sandy silty clay

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LABORATORY REPORT

Client: United Nuclear Corporation
Post Office Drawer QQ
Gallup, New Mexico 87301

Job No. 3141K062
Invoice No. 31410925
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 09/25/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 09/25/91
Description: Top of Soil Cover Authorized by R. Morales/UNC Date 09/25/91
Source of Material: 73350N & 58550R (F-20) Elevation 6963.1

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
3/4"	100	95-100
1/2"	99	
3/8"	99	
No. 4	98	90-100
No. 10	97	85-100
No. 40	94	65-100
No. 100	79	50-100
No. 200	68	40-85

Plasticity Index, ASTM D4318

Liquid Limit	31
Plasticity Index	11

Soils Classification ASTM D2487

Group Symbol	CL
Group Name	Sandy lean clay

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CENTRAL CELL INTERIM RECLAMATION-1991

Specific Gravity Test

WESTERN TECHNOLOGIES INC.

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Farmington, New Mexico 87401
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LABORATORY REPORT

Client: United Nuclear Corporation
Post Office Drawer QQ
Gallup, New Mexico 87301

Job No. 3141K062
Invoice No. 31410973
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date See Note
Material: Sandy lean clay Submitted by H. Kuebler/WT Date See Note
Description: See Note Authorized by E. Morales/UNC Date See Note
Source of Material: See Note

Material	SoilType	Specific Gravity
Soil Cover (Central Cell)	CL-ML	2.69

Note: Material for specific gravities was sampled from compaction test moisture samples. A composite sample for each soil type encountered was kept. A total of five specific gravities, three on regraded tailings surface materials and two on soil cover material, south and central cells were performed.

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APPENDIX C

APPENDIX C

SOIL COVER TEST RESULTS
NORTHEAST PORTION OF CENTRAL CELL

CENTRAL CELL INTERIM RECLAMATION-1991

NORTHEAST PORTION OF CENTRAL CELL

Top of Soil Cover

Sandcone Field Density Tests

Gradation/Atterberg Tests

Proctor Tests

SOIL COVER MATERIAL

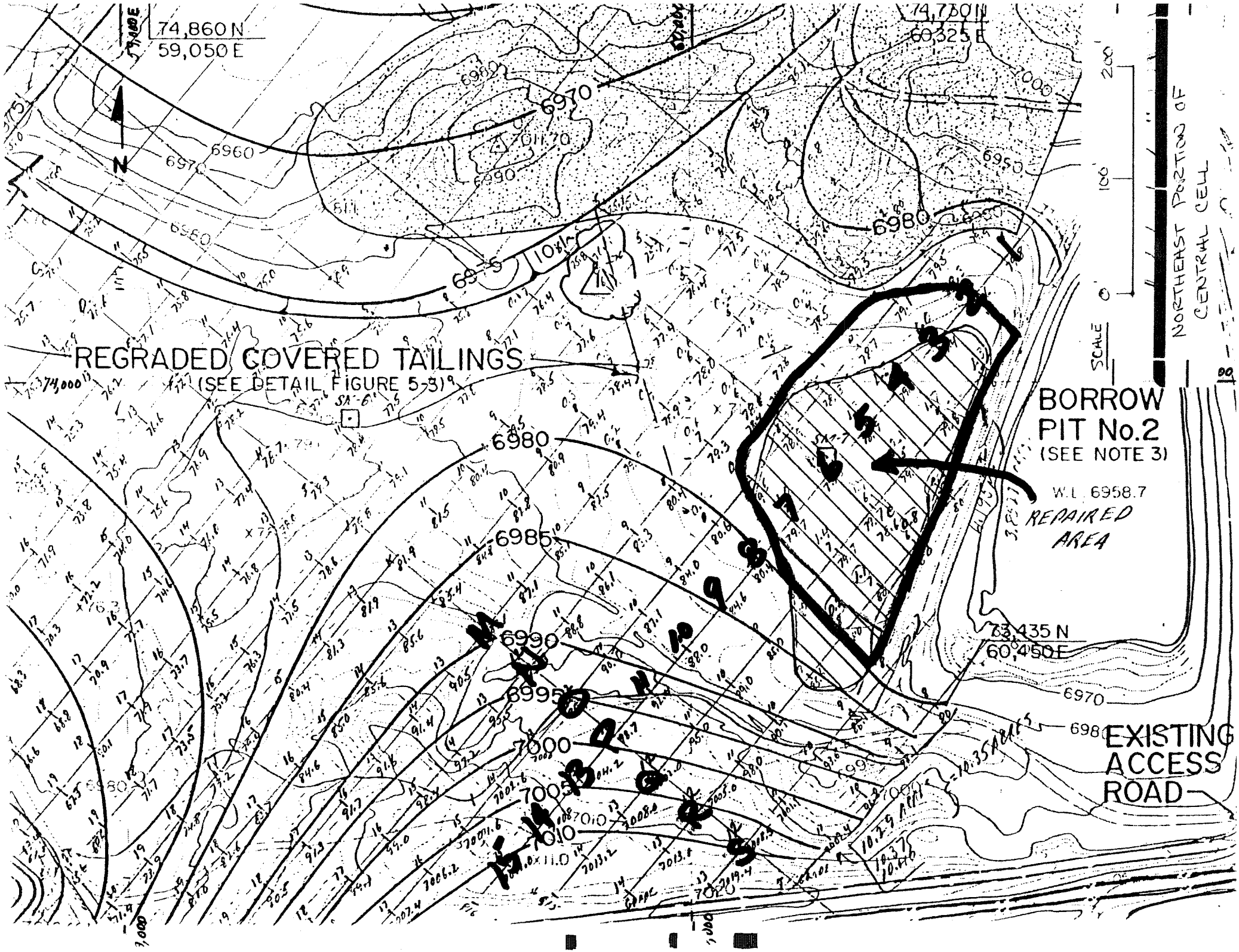
(Northeast Portion of Central Cell)

A soil cover material layer (1' thick) was placed on areas of tailing materials. Soil cover material was obtained from Borrow Pit #2 Stockpile. Soil ranged from sandy silty clay (CL-ML) to sandy lean clay (CL). Ten gradation and atterberg tests were taken from the N.E. section of Central Cell.

Nielsons Inc. used a rome plow (large disc) to process water into the soil. A sheepfoot compactor was used to knead the soil and a pneumatic roller was used to further compact and seal the soil cover surface. Nielsons Inc. placed the entire 12 inch lift to prevent contaminating soil cover material from underlying tailings material.

Twenty-three locations were tested for density in the N.E. section of the Central Cell. Including retests and tests on finish grade, a total of forty tests were taken on soil cover for the Northeast portion of the Central cell. All density tests (or their retests) met job specifications. Three proctor tests were performed during Northeast Portion of Central Cell soil cover placement.

UNC verified, using surveying methods, that at least one foot of soil cover material had been placed on tailing materials.


74,860 N
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60,325 E
N
6970
6960
6990
6980
6985
6995
7000
7005
7010
REGRADED COVERED TAILINGS
(SEE DETAIL FIGURE 5-3)
BORROW
PIT No.2
(SEE NOTE 3)
W.L. 6958.7
REPAIRED
AREA
73,435 N
60,450 E
EXISTING
ACCESS
ROAD
SCALE
200
100
0
NORTHEAST PORTION OF
CENTRAL CELL

United Nuclear Corporation
CENTRAL CELL INTERIM RECLAMATION - 1991
Northeast Section

Final Test Summary

Sandcone Field Density Tests
Top of Soil Cover

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/01	Sandcone	Q-7	73700	60250	6980.7	TSC	111.7	15.1	99	CL	Yes
	Sandcone	Q-6.5	73750	60250	6980.7	TSC	113.1	13.0 F	100	CL	No
	Sandcone	Q-6	73780	60270	6980.7	TSC	101.5	10.1 F	90 F	CL	No
	Sandcone	Q-5	73840	60380	6980.6	TSC	105.4	16.6 F	94 F	CL	No
	Sandcone	Q-4	73930	60450	6980.8	TSC	100.7	10.8 F	90 F	CL	No
	Sandcone	R-7	73660	60330	6981.0	TSC	117.4	3.6 F	100	CL-ML	No
	Sandcone	R-6	73730	60400	6981.0	TSC	112.2	15.7	100	CL-ML	Yes
	Sandcone	R-5	73730	60450	6981.0	TSC	108.1	14.8	96	CL-ML	Yes
	Sandcone	P-3	74080	60450	6980.4	TSC	108.9	13.9	97	CL-ML	Yes
	Sandcone	P-4	74000	60360	6980.4	TSC	104.9	12.0	93 F	CL-ML	No
	Sandcone	P-5	73930	60300	6979.9	TSC	105.1	14.7	94 F	CL-ML	No
	Sandcone	P-6	73830	60250	6980.3	TSC	108.5	14.2	97	CL-ML	Yes
	Sandcone	P-7	73770	60190	6980.3	TSC	110.0	14.2	98	CL-ML	Yes
	Sandcone	N-6.75	73930	60150	6979.5	TSC	104.1	17.3 F	92 F	CL-ML	No
	Sandcone	N-5.75	74000	60220	6979.0	TSC	109.2	13.1 F	96	CL-ML	No
	Sandcone	O-7	73830	60100	6980.5	TSC	105.6	13.5 F	93 F	CL-ML	No
	Sandcone	O-6	73910	60170	6979.9	TSC	109.5	11.7 F	96	CL-ML	No
	Sandcone	O-5	73990	60220	6979.3	TSC	112.4	12.3 F	99	CL-ML	No
	Sandcone	O-4	74060	60300	6979.7	TSC	97.1	11.9	85 F	CL-ML	No
	Sandcone	O-3	72020	60570	6980.1	TSC	111.1	14.0	98	CL-ML	Yes

F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

United Nuclear Corporation
CENTRAL CELL INTERIM RECLAMATION - 1991
Northeast Section

Final Test Summary

Sandcone Field Density Tests
Top of Soil Cover

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/02	Retest Sandcone	R-7	73660	60330	6981.0	TSC	109.3	16.8 F	97	CL	No
	Retest Sandcone	Q-6.5	73750	60250	6980.7	TSC	115.6	15.3	100	CL	Yes
	Retest Sandcone	Q-6	73780	60270	6980.7	TSC	117.9	14.1	100	CL	Yes
	Retest Sandcone	Q-5	73840	60380	6980.6	TSC	114.2	16.5 F	100	CL	No
	Retest Sandcone	Q-4	73930	60450	6980.8	TSC	113.3	14.0	100	CL	Yes
	Retest Sandcone	P-5	73930	60300	6979.9	TSC	111.3	14.6	99	CL	Yes
	Retest Sandcone	P-4	74000	60360	6980.3	TSC	108.1	15.8	96	SC	Yes
	Retest Sandcone	O-7	73830	60100	6980.3	TSC	104.9	18.3 F	92 F	CL	No
	Retest Sandcone	O-6	73910	60170	6979.5	TSC	105.4	16.4 F	93 F	CL	No
	Retest Sandcone	O-5	73990	60220	6979.0	TSC	111.1	15.8	98	CL	Yes
	Retest Sandcone	O-4	74060	60300	6979.7	TSC	113.0	14.2	99	CL	Yes
	Retest Sandcone	N-6.75	73930	60150	6979.5	TSC	109.0	15.5	96	CL-ML	Yes
	Retest Sandcone	N-5.75	74000	60220	6979.0	TSC	111.2	14.5	98	CL-ML	Yes

F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

United Nuclear Corporation
CENTRAL CELL INTERIM RECLAMATION - 1991
Northeast Section

Final Test Summary

Sandcone Field Density Tests
Top of Soil Cover

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/03	Retest Sandcone	O-6	73910	60170	6979.5	TSC	116.8	14.4	100	CL-ML	Yes
	Retest Sandcone	O-7	73830	60100	6980.3	TSC	112.0	15.7	98	CL	Yes
	Retest Sandcone	Q-5	73840	60380	6980.6	TSC	117.6	14.6	100	CL	Yes
	Retest Sandcone	R-7	73660	60330	6981.0	TSC	115.7	14.4	100	CL	Yes
10/07	Sandcone	P/Q-7	73730	60230	6980.7	TSC	115.2	14.2	100	CL-ML	Yes
	Sandcone	Q-4	73950	60430	6980.8	TSC	113.7	14.4	100	CL-ML	Yes
	Sandcone	P-6	73850	60250	6980.3	TSC	110.4	13.9	98	CL-ML	Yes

F=Failing specification
P=Passing specification
Elevations are given in feet above mean sea level

WESTERN TECHNOLOGIES INC.
400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

SOIL/AGGREGATE FIELD DENSITY TESTS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No. 3141K062
Lab/Invoice No. 31410925
Date 11/06/91
Reviewed By J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico
Type of Material: Sandy lean clay-Top of Soil Cover
Source of Material: Native
Moisture/Density Relationship: ASTM D698 Meth. A

Authorized By: E. Morales/Client
Date: 10/01/91
Tested/Calc. By: H. Kuebler/WT
Test Locations Designated By: H. Kuebler/WT

Test No.	Date	Location of Test Hole	Elevation of Test Datum †
1	10/01/91	73700N & 60250E (Q-7)	6980.7*
2	10/01/91	73750N & 60250E (Q-6.5)	6980.7*
3	10/01/91	73780N & 60270E (Q-6)	6980.7*
4	10/01/91	73840N & 60380E (Q-5)	6980.6*
5	10/01/91	73930N & 60450E (Q-4)	6980.8*
6	10/01/91	73660N & 60330E (R-7)	6981.0*
7	10/01/91	73730N & 60400E (R-6)	6981.0*
8	10/01/91	73730N & 60450E (R-5)	6981.0*

Test No.	Moisture Density Lab No.	Optimum Moisture %	Max. Dry Density pcf	In-Place Characteristics Moisture %	In-Place Characteristics Dry Density pcf	Relative Compaction %	Within Specs. ?	Comments *
1		13.8	112.3	15.1	111.7	99	Yes	1-10-13-14-18
2		13.8	112.3	13.0	113.1	100	No	1-10-13-14-18
3		13.8	112.3	10.1	101.5	90	No	1-10-13-14-18
4		13.8	112.3	16.6	105.4	94	No	1-10-13-14-18
5		13.8	112.3	10.8	100.7	90	No	1-10-13-14-18
6		13.8	112.3	3.6	117.4	100	No	1-10-13-14-18
7		13.8	112.3	15.7	112.2	100	Yes	1-10-13-14-18
8		13.8	112.3	14.8	108.1	96	Yes	1-10-13-14-18

* Comments
1. Subgrade
2. Subbase Fill
3. Base Course
4. Backfill
5. Pavement Area
6. Below Footing Bottom
7. Above Footing Bottom
8. 100% min. req'd.
9. 98% min. req'd.
10. 95% min. req'd.
11. 90% min. req'd.
12. 85% min. req'd.
13. moisture opt. to +2% of opt.
14. Tested D-1556/~~XXXXXXXX~~
15. Tested ASTM D-2922/D-3017
16. Tested ASTM D-2922/AASHTO T-217
17. Rock correction applied to maximum dry density. AASHTO T-224
18. Other ASTM D2216
19. Test Locations on Accompanying Site Plan
20. Specifications Unknown

† Datum Sea Level

Note: Tests reported herein are not part of a continuous monitoring program of compaction operations and accordingly apply only to the actual location tested.

*Test elevations represent Top of Soi cover.

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WESTERN TECHNOLOGIES INC.
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Farmington, New Mexico 87401
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SOIL/AGGREGATE FIELD DENSITY TESTS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No. 3141K062
Lab/Invoice No. 31410925
Date 11/06/91
Reviewed By J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico
Type of Material: Sandy lean clay-Top of Soil Cover
Source of Material: Native
Moisture/Density Relationship: ASTM D698 Meth. A

Authorized By: E. Morales/Client Date: 10/01/91
Tested/Calc. By: S. Gutka/WT & H. Kuebler/WT
Test Locations Designated By: S. Gutka/WT & H. Kuebler/W

Test No.	Date	Location of Test Hole	Elevation of Test Datum †
9	10/01/91	74080N & 60450E (P-3)	6980.4*
10	10/01/91	74000N & 60360E (P-4)	6980.4*
11	10/01/91	73930N & 60300E (P-5)	6979.9*
12	10/01/91	73830N & 60250E (P-6)	6980.3*
13	10/01/91	73777N & 60190E (P-7)	6980.3*
14	10/01/91	73930N & 60150E (N.675)	6979.5*
15	10/01/91	74000N & 60220E (N.575)	6979.0*
16	10/01/91	73830N & 60100E (O-7)	6980.5*

Test No.	Moisture Density Lab No.	Optimum Moisture %	Max. Dry Density pcf	In-Place Characteristics Moisture %	In-Place Characteristics Dry Density pcf	Relative Compaction %	Within Specs. ?	Comments *
9		13.8	112.3	13.9	108.9	97	Yes	1-10-13-14-18
10		13.8	112.3	12.0	104.9	93	No	1-10-13-14-18
11		13.8	112.3	14.7	105.1	94	No	1-10-13-14-18
12		13.8	112.3	14.2	108.5	97	Yes	1-10-13-14-18
13		13.8	112.3	14.2	110.0	98	Yes	1-10-13-14-18
14		13.8	113.8	17.3	104.1	92	No	1-10-13-14-18
15		13.8	113.8	13.1	109.2	96	No	1-10-13-14-18
16		13.6	113.8	13.5	105.6	93	No	1-10-13-14-18

* Comments
1. Subgrade
2. Subbase Fill
3. Base Course
4. Backfill
5. Pavement Area
6. Below Footing Bottom
7. Above Footing Bottom
8. 100% min. req'd.
9. 98% min. req'd.
10. 95% min. req'd.
11. 90% min. req'd.
12. 85% min. req'd.
13. moisture opt. to +2% of opt.
14. Tested D-1556/~~XXXXXXXX~~
15. Tested ASTM D-2922/D-3017
16. Tested ASTM D-2922/AASHTO T-217
17. Rock correction applied to maximum dry density. AASHTO T-224
18. Other ASTM D2216
19. Test Locations on Accompanying Site Plan
20. Specifications Unknown

† Datum Sea Level

Note: Tests reported herein are not part of a continuous monitoring program of compaction operations and accordingly apply only to the actual location tested.

*Test elevations represent Top of Soil Cover.

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LABORATORY REPORT

SOIL/AGGREGATE FIELD DENSITY TESTS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No. 3141K062
Lab/Invoice No. 31410925
Date 11/06/91
Reviewed By J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico
Type of Material: Sandy silty clay-Top of Soil Cover
Authorized By: E. Morales/Client
Date: 10/01/91
Source of Material: Native
Tested/Calc. By: S. Gutka/WT
Moisture/Density Relationship: ASTM D698 Meth. A
Test Locations Designated By: S. Gutka/WT

Test No.	Date	Location of Test Hole	Elevation of Test Datum †
17	10/01/91	73910N & 60170E (0-6)	6979.9*
18	10/01/91	73990N & 60220E (0-5)	6979.3*
19	10/01/91	74060N & 60300E (0-4)	6979.7*
20	10/01/91	72020N & 60570E (0-3)	6980.1*

Test No.	Moisture Density Lab No.	Optimum Moisture %	Max. Dry Density pcf	In-Place Characteristics Moisture %	In-Place Characteristics Dry Density pcf	Relative Compaction %	Within Specs. ‡	Comments *
17		13.6	113.8	11.7	109.5	96	No	1-10-13-14-18
18		13.6	113.8	12.3	112.4	99	No	1-10-13-14-18
19		13.6	113.8	11.9	97.1	85	No	1-10-13-14-18
20		13.6	113.8	14.0	111.1	98	Yes	1-10-13-14-18

* Comments
1. Subgrade
2. Subbase Fill
3. Base Course
4. Backfill
5. Pavement Area
6. Below Footing Bottom
7. Above Footing Bottom
8. 100% min. req'd.
9. 98% min. req'd.
10. 95% min. req'd.
11. 90% min. req'd.
12. 85% min. req'd.
13. moisture opt. to +2% of opt.
14. Tested D-1556/~~XXXXXXXX~~
15. Tested ASTM D-2922/D-3017
16. Tested ASTM D-2922/AASHTO T-217
17. Rock correction applied to maximum dry density. AASHTO T-224
18. Other ASTM D2216
19. Test Locations on Accompanying Site Plan
20. Specifications Unknown

† Datum Sea Level

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*Test elevations represent Top of Soi cover.

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LABORATORY REPORT

SOIL/AGGREGATE FIELD DENSITY TESTS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No. 3141K062
Lab/Invoice No. 31410925
Date 11/06/91
Reviewed By J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico
Type of Material: Sandy silty clay-Top of Soil Cover
Source of Material: Native
Moisture/Density Relationship: ASTM D698 Meth. A

Authorized By: E. Morales/Client Date: 10/02/91
Tested/Calc. By: H. Kuebler/WT
Test Locations Designated By: H. Kuebler/WT

Test No.	Date	Location of Test Hole	Elevation of Test Datum †
1R	10/02/91	Retest of #6 (10/01/91) 73660N & 60330E (R-7)	6981.0*
2R	10/02/91	Retest of #2 (10/01/91) 73750N & 60250E (Q-6.5)	6980.7*
3R	10/02/91	Retest of #3 (10/01/91) 73780N & 60270E (Q-6)	6980.7*
4R	10/02/91	Retest of #4 (10/01/91) 73840N & 60380E (Q-5)	6980.6*
5R	10/02/91	Retest of #5 (10/01/91) 73930N & 60450E (Q-4)	6980.8*
6R	10/02/91	Retest of #11 (10/01/91) 73930N & 60300E (P-5)	6979.9*
7R	10/02/91	Retest of #10 (10/01/91) 74000N & 60360E (P-4)	6980.3*
8R	10/02/91	Retest of #16 (10/01/91) 73830N & 60100E (O-7)	6980.3*

Test No.	Moisture Density Lab No.	Optimum Moisture %	Max. Dry Density pcf	In-Place Characteristics		Relative Compaction %	Within Specs. ?	Comments *
				Moisture %	Dry Density pcf			
1R		13.8	112.3	16.8	109.3	97	No	1-10-13-14-18
2R		13.8	112.3	15.3	115.6	100+	Yes	1-10-13-14-18
3R		13.8	112.3	14.1	117.9	100+	Yes	1-10-13-14-18
4R		13.8	112.3	16.5	114.2	100+	No	1-10-13-14-18
5R		13.8	112.3	14.0	113.3	100+	Yes	1-10-13-14-18
6R		13.8	112.3	14.6	111.3	99	Yes	1-10-13-14-18
7R		13.8	112.3	15.8	108.1	96	Yes	1-10-13-14-18
8R		13.6	113.8	18.3	104.9	92	No	1-10-13-14-18

* Comments
1. Subgrade
2. Subbase Fill
3. Base Course
4. Backfill
5. Pavement Area
6. Below Footing Bottom
7. Above Footing Bottom
8. 100% min. req'd.
9. 98% min. req'd.
10. 95% min. req'd.
11. 90% min. req'd.
12. 85% min. req'd.
13. moisture opt. to +2% of opt.
14. Tested D-1556/~~XXXXXXXX~~
15. Tested ASTM D-2922/D-3017
16. Tested ASTM D-2922/AASHTO T-217
17. Rock correction applied to maximum dry density. AASHTO T-224
18. Other ASTM D2216
19. Test Locations on Accompanying Site Plan
20. Specifications Unknown

† Datum Sea Level

Note: Tests reported herein are not part of a continuous monitoring program of compaction operations and accordingly apply only to the actual location tested.

*Test elevations represent Top of Soil cover.

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SOIL/AGGREGATE FIELD DENSITY TESTS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No. 3141K062
Lab/Invoice No. 31410925
Date 11/06/91
Reviewed By J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico
Type of Material: Sandy silty clay-Top of Soil Cover
Source of Material: Native
Authorized By: E. Morales/Client
Date: 10/02/91
Tested/Calc. By: H. Kuebler/WT
Moisture/Density Relationship: ASTM D698 Meth. A
Test Locations Designated By: H. Kuebler/WT

Test No.	Date	Location of Test Hole	Elevation of Test Datum †
9R	10/02/91	Retest of #17 (10/01/91) 73910N & 60170E (O-6)	6979.5*
10R	10/02/91	Retest of #18 (10/01/91) 73990N & 60220E (O-5)	6979.0*
11R	10/02/91	Retest of #19 (10/01/91) 74060N & 60300E (O-4)	6979.7*
12R	10/02/91	Retest of #14 (10/01/91) 73930N & 60150E (N-6.75)	6979.5*
13R	10/02/91	Retest of #15 (10/01/91) 74000N & 60220E (N-5.75)	6979.0*

Test No.	Moisture Density Lab No.	Optimum Moisture %	Max. Dry Density pcf	In-Place Characteristics Moisture %	In-Place Characteristics Dry Density pcf	Relative Compaction %	Within Specs. ?	Comments *
9R		13.6	113.8	16.4	105.4	93	No	1-10-13-14-18
10R		13.6	113.8	15.8	111.1	98	Yes	1-10-13-14-18
11R		13.6	113.8	14.2	113.0	99	Yes	1-10-13-14-18
12R		13.6	113.8	15.5	109.0	96	Yes	1-10-13-14-18
13R		13.6	113.8	14.5	111.2	98	Yes	1-10-13-14-18

* Comments
1. Subgrade
2. Subbase Fill
3. Base Course
4. Backfill
5. Pavement Area
6. Below Footing Bottom
7. Above Footing Bottom
8. 100% min. req'd.
9. 98% min. req'd.
10. 95% min. req'd.
11. 90% min. req'd.
12. 85% min. req'd.
13. moisture opt. to +2% of opt.
14. Tested D-1556/~~XXXXXXXX~~
15. Tested ASTM D-2922/D-3017
16. Tested ASTM D-2922/AASHTO T-217
17. Rock correction applied to maximum dry density. AASHTO T-224
18. Other ASTM D2216
19. Test Locations on Accompanying Site Plan
20. Specifications Unknown

† Datum Sea Level

Note: Tests reported herein are not part of a continuous monitoring program of compaction operations and accordingly apply only to the actual location tested.

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*Test elevations represent Top of Soil Cover.

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LABORATORY REPORT

SOIL/AGGREGATE FIELD DENSITY TESTS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No. 3141K062
Lab/Invoice No. 31410925
Date 11/06/91
Reviewed By J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico
Type of Material: Sandy silty clay-Top of Soil Cover
Source of Material: Native
Authorized By: E. Morales/Client
Date: 10/03/91
Tested/Calc. By: H. Kuebler/WT
Moisture/Density Relationship: ASTM D698 Meth. A
Test Locations Designated By: H. Kuebler/WT

Test No.	Date	Location of Test Hole	Elevation of Test Datum †
1R	10/03/91	Retest of #17 (10/01/91) & #9R (10/02/91) 73910N & 60170E (O-6)	6979.5*
2R	10/03/91	Retest of #16 (10/01/91) & #8R (10/02/91) 73830N & 60100E (O-7)	6980.3*
3R	10/03/91	Retest of #4 (10/01/91) & #4R (10/02/91) 73840N & 60380E (Q-5)	6980.6*
4R	10/03/91	Retest of #6 (10/01/91) & #1R (10/02/91) 73660N & 60330E (R-7)	6981.0*

Test No.	Moisture Density Lab No.	Optimum Moisture %	Max. Dry Density pcf	In-Place Characteristics Moisture %	In-Place Characteristics Dry Density pcf	Relative Compaction %	Within Specs. ?	Comments *
1R		13.6	113.8	14.4	116.8	100+	Yes	1-10-13-14-18
2R		13.6	113.8	15.7	112.0	98	Yes	1-10-13-14-18
3R		13.8	112.3	14.6	117.6	100+	Yes	1-10-13-14-18
4R		13.8	112.3	14.4	115.7	100+	Yes	1-10-13-14-18

* Comments
1. Subgrade
2. Subbase Fill
3. Base Course
4. Backfill
5. Pavement Area
6. Below Footing Bottom
7. Above Footing Bottom
8. 100% min. req'd.
9. 98% min. req'd.
10. 95% min. req'd.
11. 90% min. req'd.
12. 85% min. req'd.
13. moisture opt. to +2% of opt.
14. Tested D-1556/~~XXXXXXXX~~
15. Tested ASTM D-2922/D-3017
16. Tested ASTM D-2922/AASHTO T-217
17. Rock correction applied to maximum dry density. AASHTO T-224
18. Other ASTM D2216
19. Test Locations on Accompanying Site Plan
20. Specifications Unknown

† Datum Sea Level

Note: Tests reported herein are not part of a continuous monitoring program of compaction operations and accordingly apply only to the actual location tested.

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*Test elevations represent Top of Soil cover.

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LABORATORY REPORT

SOIL/AGGREGATE FIELD DENSITY TESTS

Client: United Nuclear Corporation 30992
P.O. Drawer QQ
Gallup, NM 87301

Job No. 3141K062
Lab/Invoice No. 31410973
Date 11/06/91
Reviewed By J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico
Type of Material: Sandy silty clay-Top of Soil Cover
Source of Material: Native
Moisture/Density Relationship: ASTM D698 Meth. A

Authorized By: E. Morales/Client
Date: 10/07/91
Tested/Calc. By: H. Kuebler/WT
Test Locations Designated By: H. Kuebler/WT

Test No.	Date	Location of Test Hole	Elevation of Test Datum †
1	10/07/91	73730N & 60230E (P/Q-7)	6980.7*
2	10/07/91	73950N & 60430E (Q-4)	6980.8*
3	10/07/91	73850N & 60250E (P-6)	6980.3*

Test No.	Moisture Density Lab No.	Optimum Moisture %	Max. Dry Density pcf	In-Place Characteristics Moisture %	In-Place Characteristics Dry Density pcf	Relative Compaction %	Within Specs. ?	Comments *
1		13.8	112.3	14.2	115.2	100+	Yes	1-10-13-14-18
2		13.8	112.3	14.4	113.7	100+	Yes	1-10-13-14-18
3		13.8	112.3	13.9	110.4	98	Yes	1-10-13-14-18

* Comments
1. Subgrade
2. Subbase Fill
3. Base Course
4. Backfill
5. Pavement Area
6. Below Footing Bottom
7. Above Footing Bottom
8. 100% min. req'd.
9. 98% min. req'd.
10. 95% min. req'd.
11. 90% min. req'd.
12. 85% min. req'd.
13. moisture opt. to +2% of opt.
14. Tested D-1556/~~XXXXXXXX~~
15. Tested ASTM D-2922/D-3017
16. Tested ASTM D-2922/AASHTO T-217
17. Rock correction applied to maximum dry density. AASHTO T-224
18. Other ASTM D2216
19. Test Locations on Accompanying Site Plan
20. Specifications Unknown

† Datum Sea Level

Note: Tests reported herein are not part of a continuous monitoring program of compaction operations and accordingly apply only to the actual location tested.

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United Nuclear Corporation
CENTRAL CELL INTERIM RECLAMATION - 1991
Northeast Section

Final Test Summary

Gradation/Atterberg Tests
Top of Soil Cover

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/01	Gradation/ Atterberg	Q-7	73700	60250	6980.7	TSC	-	-	-	CL	Yes
	Gradation/ Atterberg	N-6.75	73930	60150	6979.5	TSC	-	-	-	CL-ML	Yes
10/02	Gradation/ Atterberg	R-7	73660	60330	6981.0	TSC	-	-	-	CL	
	Gradation/ Atterberg	Q-5	73840	60380	6980.6	TSC	-	-	-	CL	Yes
	Gradation/ Atterberg	Q-4	73930	60450	6980.8	TSC	-	-	-	CL	Yes
	Gradation/ Atterberg	P-5	73930	60300	6979.9	TSC	-	-	-	CL	Yes
	Gradation/ Atterberg	P-4	74000	60360	6980.3	TSC	-	-	-	SC	Yes
	Gradation/ Atterberg	O-4	74060	60300	6979.7	TSC	-	-	-	CL	
10/03	Gradation/ Atterberg	O-7	73830	60100	6980.3	TSC	-	-	-	CL	Yes
	Gradation/ Atterberg	Q-6	73780	60270	6980.7	TSC	-	-	-	CL-ML	Yes

Elevations are given in feet above mean sea level

United Nuclear Corporation
CENTRAL CELL INTERIM RECLAMATION - 1991
Northeast Section

Final Test Summary

Proctor Tests
Top of Soil Cover

DATE	TYPE OF TEST	GRID	N	E	ELEV.	MATERIAL	DENSITY lb/Ft.^{3}	MOISTURE %	RELATIVE COMPACT. %	USCS SOIL CL.	WITHIN SPECIFICATIONS?
10/01	Proctor ASTM D698A	N-6.75	73930	60150	6979.5	TSC	113.8	13.6	-	CL-ML	n/a
	Proctor ASTM D698A	Q-7	73700	60250	6980.7	TSC	112.3	13.8	-	CL	n/a
10/03	Proctor (1 Point) ASTM D698A	O-6	73910	60170	6979.5	TSC	112.3	12.1	-	CL-ML	n/a

Elevations are given in feet above mean sea level

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LABORATORY REPORT

Client: United Nuclear Corporation
Post Office Drawer QQ
Gallup, New Mexico 87301

Job No. 3141K062
Invoice No. 31410925
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/01/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 10/01/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/01/91
Source of Material: 73830N & 60100E (Q-7) Elevation 6980.7

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs
1-1/2"	100	
1"	100	
3/4"	100	95-100
1/2"	99	
3/8"	99	
No. 4	97	90-100
No. 10	94	85-100
No. 40	91	65-100
No. 100	69	50-100
No. 200	52	40-85

Plasticity Index, ASTM D4318

Liquid Limit 26
Plasticity Index 8

Moisture Density Relations ASTM D698 A

Maximum Dry Density, pcf 112.3
Optimum Moisture Content, % 13.8

Soils Classification ASTM D2487

Group Symbol CL
Group Name Sandy lean clay

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Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/01/91
Material: Sandy silty clay Submitted by H. Kuebler/WT Date 10/01/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/01/91
Source of Material: 73930N & 60150E (N-6.75) Elevation 6979.5

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs
1-1/2"	100	
1"	100	
3/4"	100	95-100
1/2"	100	
3/8"	99	
No. 4	97	90-100
No. 10	96	85-100
No. 40	94	65-100
No. 100	63	50-100
No. 200	57	40-85

Plasticity Index, ASTM D4318

Liquid Limit 27
Plasticity Index 6

Moisture Density Relations ASTM D698 A

Maximum Dry Density, pcf 113.8
Optimum Moisture Content, % 13.6

Soils Classification ASTM D2487

Group Symbol ML-CL
Group Name Sandy silty clay

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Invoice No. 31410925
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/02/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 10/02/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/02/91
Source of Material: 73660N & 60330E (R-7) Elevation 6981.0

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	100	95-100
3/8"	99	
No. 4	98	90-100
No. 10	96	85-100
No. 40	93	65-100
No. 100	66	50-100
No. 200	56	40-85

Plasticity Index, ASTM D4318

Liquid Limit	28
Plasticity Index	9

Soils Classification ASTM D2487

Group Symbol	CL
Group Name	Sandy lean clay

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Material: Sandy lean clay Submitted by H. Kuebler/WT Date 10/02/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/02/91
Source of Material: 73840N & 60380E (Q-5) Elevation 6980.6

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	100	95-100
3/8"	99	
No. 4	97	90-100
No. 10	96	85-100
No. 40	93	65-100
No. 100	73	50-100
No. 200	56	40-85

Plasticity Index, ASTM D4318

Liquid Limit	27
Plasticity Index	9

Soils Classification ASTM D2487

Group Symbol	CL
Group Name	Sandy lean clay

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Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/02/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 10/02/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/02/91
Source of Material: 73930N & 60450E (Q-4) Elevation 6980.8

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	100	95-100
3/8"	99	
No. 4	97	90-100
No. 10	96	85-100
No. 40	91	65-100
No. 100	75	50-100
No. 200	55	40-85

Plasticity Index, ASTM D4318

Liquid Limit	29
Plasticity Index	11

Soils Classification ASTM D2487

Group Symbol	CL
Group Name	Sandy lean clay

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Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/02/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 10/02/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/02/91
Source of Material: 73930N & 60300E (P-5) Elevation 6979.9

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	100	95-100
3/8"	99	
No. 4	97	90-100
No. 10	96	85-100
No. 40	94	65-100
No. 100	71	50-100
No. 200	55	40-85

Plasticity Index, ASTM D4318

Liquid Limit	28
Plasticity Index	11

Soils Classification ASTM D2487

Group Symbol	CL
Group Name	Sandy lean clay

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Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/02/91
Material: Clayey sand Submitted by H. Kuebler/WT Date 10/02/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/02/91
Source of Material: 74000N & 60360E (P-4) Elevation 6980.3

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	95	95-100
3/8"	93	
No. 4	91	90-100
No. 10	90	85-100
No. 40	87	65-100
No. 100	58	50-100
No. 200	49	40-85

Plasticity Index, ASTM D4318

Liquid Limit	28
Plasticity Index	11

Soils Classification ASTM D2487

Group Symbol	SC
Group Name	Clayey sand

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Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/02/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 10/02/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/02/91
Source of Material: 74060N & 60300E (0-4) Elevation 6979.7

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	100	95-100
3/8"	99	
No. 4	98	90-100
No. 10	97	85-100
No. 40	94	65-100
No. 100	67	50-100
No. 200	56	40-85

Plasticity Index, ASTM D4318

Liquid Limit	26
Plasticity Index	9

Soils Classification ASTM D2487

Group Symbol	CL
Group Name	Sandy lean clay

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Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/03/91
Material: Sandy lean clay Submitted by H. Kuebler/WT Date 10/03/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/03/91
Source of Material: 73830N & 60100E (0-7) Elevation 6980.3

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	99	95-100
3/8"	98	
No. 4	97	90-100
No. 10	95	85-100
No. 40	93	65-100
No. 100	70	50-100
No. 200	57	40-85

Plasticity Index, ASTM D4318

Liquid Limit	28
Plasticity Index	10

Soils Classification ASTM D2487

Group Symbol	CL
Group Name	Sandy lean clay

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LABORATORY REPORT

Client: United Nuclear Corporation
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Job No. 3141K062
Invoice No. 31410925
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/03/91
Material: Sandy silty clay Submitted by H. Kuebler/WT Date 10/03/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/03/91
Source of Material: 73780N & 60270E (Q-6) Elevation 6980.7

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	%Passing Accumulative	Specs.
1"	100	
3/4"	100	95-100
3/8"	97	
No. 4	95	90-100
No. 10	93	85-100
No. 40	90	65-100
No. 100	66	50-100
No. 200	55	40-85

Plasticity Index, ASTM D4318

Liquid Limit	24
Plasticity Index	7

Soils Classification ASTM D2487

Group Symbol	CL-ML
Group Name	Sandy silty clay

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LABORATORY REPORT

Client: United Nuclear Corporation
Post Office Drawer QQ
Gallup, New Mexico 87301

Job No. 3141K062
Invoice No. 31410925
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date 10/03/91
Material: Sandy silty clay Submitted by H. Kuebler/WT Date 10/03/91
Description: Top of Soil Cover Authorized by E. Morales/UNC Date 10/03/91
Source of Material: 73910N & 60170E (0-6) Elevation 6979.9

Moisture Density Relations (1 point method)*

Single Point Data:

Dry Density, pcf	112.3
Moisture Content, %	12.1

The single point data falls on the same curve as that drawn for material sampled from N-6.75 on 10/01/91. Therefore, the following values should be used.

Maximum Dry Density, pcf	113.8
Optimum Moisture Content, %	13.6

*The single point was tested in accordance with the applicable portions of ASTM D698 Method A.

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CENTRAL CELL INTERIM RECLAMATION-1991

Specific Gravity Test

WESTERN TECHNOLOGIES INC.
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Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

LABORATORY REPORT

Client: United Nuclear Corporation
Post Office Drawer QQ
Gallup, New Mexico 87301

Job No. 3141K062
Invoice No. 31410973
Date of Report 11/07/91
Reviewed by J. Phillips

Project: 1991 Reclamation Testing
Location: Church Rock, New Mexico Sampled by H. Kuebler/WT Date See Note
Material: Sandy lean clay Submitted by H. Kuebler/WT Date See Note
Description: See Note Authorized by E. Morales/UNC Date See Note
Source of Material: See Note

Material	SoilType	Specific Gravity
Soil Cover (Central Cell)	CL-ML	2.69

Note: Material for specific gravities was sampled from compaction test moisture samples. A composite sample for each soil type encountered was kept. A total of five specific gravities, three on regraded tailings surface materials and two on soil cover material, south and central cells were performed.

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