



APPENDIX E

PROCTOR TESTS, RADON ATTENUATION COVER

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

DATE OF REPORT 09/17/95

TEST SUMMARY FOR PROCTORS

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
06/27/94	Proctor	G + 19	73420	58720	6967.75	RAC	115.3	10.0	---	CL	Yes
06/27/94	Proctor	A + 18	73880	58280	6970.7	RAC	114.6	14.6	---	CL	Yes
06/29/94	Proctor	C + 16	73980	58670	6973.65	RAC	112.9	15.3	---	CL	Yes
06/29/94	Proctor	A + 19	73780	58270	6970.5	RAC	115.7	12.3	---	CL	Yes
07/06/94	Proctor	I + 19	73300	58870	6969.0	RAC	112.5	12.9	---	CL	Yes
07/06/94	Proctor	K + 16	73400	59220	6980.75	RAC	110.5	15.8	---	CL	Yes
07/06/94	Proctor	J + 19	73220	58950	6971.4	RAC	113.0	12.6	---	CL	Yes
07/07/94	Proctor	E + 14	73930	58870	6976.2	RAC	114.8	13.8	---	CL	Yes
07/07/94	Proctor	F + 14	73710	58820	6973.6	RAC	116.8	14.4	---	CL	Yes
07/18/94	Proctor	I + 16	73540	59060	6975.3	RAC	113.0	14.2	---	CL	Yes
07/18/94	Proctor	E + 17	73700	58700	6971.6	RAC	115.7	13.6	---	CL	Yes
07/19/94	Proctor	J + 13	73700	59340	6980.2	RAC	114.7	14.1	---	CL	Yes

RAC = Radon Attenuation Cover



JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

DATE OF REPORT 09/17/95

TEST SUMMARY FOR PROCTORS

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/19/94	Proctor Point	A + 17	73930	58400	6970.9	RAC	113.0	12.6	...	CL	Yes
07/19/94	Proctor Point	C + 16	73900	58600	6973.6	RAC	114.6	14.6	...	CL	Yes
07/19/94	Proctor Point	F + 18	73420	58700	6970.0	RAC	114.8	13.8	...	CL	Yes
07/19/94	Proctor	G + 14	73800	59050	6977.2	RAC	115.8	12.8	...	CL	Yes
07/19/94	Proctor Point	B + 14.5	74120	58630	6977.4	RAC	112.9	15.3	...	CL	Yes
07/19/94	Proctor Point	D + 16.5	73760	58650	6970.4	RAC	112.9	15.3	...	CL	Yes
07/19/94	Proctor	G + 14	73800	58040	6977.7	RAC	115.8	12.8	...	CL	Yes
07/20/94	Proctor	B + 13	73260	58650	6977.2	RAC	116.1	13.4	...	CL	Yes
07/20/94	Proctor Point	D + 18	73590	58550	6970.1	RAC	114.8	13.8	...	CL	Yes
07/20/94	Proctor Point	K + 18	73250	59080	6973.3	RAC	114.6	14.6	...	CL	Yes
07/20/94	Proctor Point	C + 13.5	74090	58750	6976.5	RAC	114.7	14.1	...	CL	Yes
07/21/94	Proctor Point	H + 15	73670	59050	6976.5	RAC	114.8	13.8	...	CL	Yes

RAC=Radon Attenuation Cover



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKC

TEST SUMMARY FOR PROCTORS

DATE OF REPORT 09/17/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/21/94	Proctor Point	F+13	73950	59030	6977.7	RAC	113.6	13.4	...	CL	Yes
07/22/94	Proctor Point	L+17	73250	59220	6983.9	RAC	114.1	12.5	...	CL	Yes
07/22/94	Proctor Point	J+15	73460	59130	6977.1	RAC	113.0	14.2	...	CL	Yes
07/24/94	Proctor	P+8	73690	60100	6982.2	RAC	114.1	13.8	...	CL	Yes
07/25/94	Proctor	O+7	73830	60100	6980.5	RAC	115.7	13.3	...	CL	Yes
07/25/94	Proctor	J+10	73940	59540	6979.8	RAC	113.6	13.4	...	CL	Yes
07/25/94	Proctor	L+7	74050	59870	6978.2	RAC	114.1	12.5	...	CL	Yes
07/25/94	Proctor	S+9	73420	60280	6987.8	RAC	116.5	13.0	...	CL	Yes
07/25/94	Proctor Point	H+11	73980	59300	6979.6	RAC	114.8	13.8	...	CL	Yes
07/27/94	Proctor Point	O+4	74040	60300	6980.4	RAC	114.1	13.8	...	CL	Yes
07/27/94	Proctor Point	P+7.5	73720	60150	6981.6	RAC	114.1	13.8	...	CL	Yes
07/27/94	Proctor Point	P+5	73970	60310	6979.8	RAC	118.0	12.0	...	CL	Yes

RAC = Radon Attenuation Cover



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144-JKO

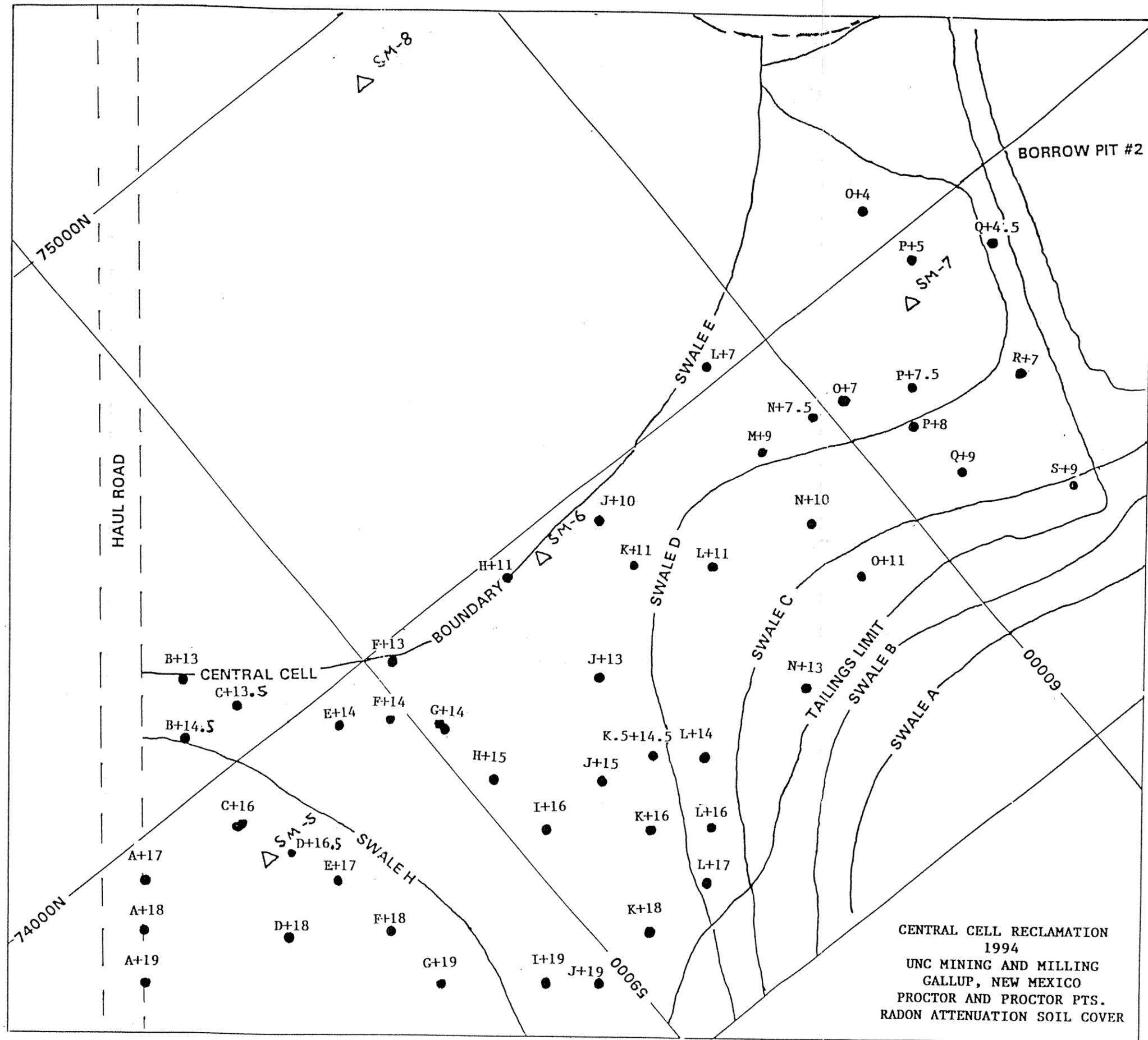
TEST SUMMARY FOR PROCTORS

DATE OF REPORT 09/17/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
07/27/94	Proctor Point	O + 11	73520	59850	6992.7	RAC	114.7	14.1	...	CL	Yes
07/27/94	Proctor	L + 11	73700	59620	6936.1	RAC	118.0	12.0	...	CL	Yes
07/27/94	Proctor Point	Q + 4.5	73900	60420	6980.0	RAC	115.7	13.3	...	CL	Yes
07/28/94	Proctor	L + 16	73230	59280	6985.4	RAC	116.6	12.8	...	CL	Yes
08/01/94	Proctor Point	M + 9	73800	59820	6983.8	RAC	114.1	13.8	...	CL	Yes
08/01/94	Proctor Point	K + 11	73750	59580	6982.9	RAC	115.8	12.8	...	CL	Yes
08/01/94	Proctor Point	L + 16	73300	59220	6985.7	RAC	116.6	12.8	...	CL	Yes
08/01/94	Proctor Point	K.5-14	73520	59400	6985.0	RAC	115.3	10.0	...	CL	Yes
08/01/94	Proctor Point	N + 13	73440	59560	6997.2	RAC	114.7	14.1	...	CL	Yes
08/01/94	Proctor Point	L + 14.5	73520	59400	6985.0	RAC	116.1	13.4	...	CL	Yes
08/02/94	Proctor Point	R + 7	73650	60320	6981.4	RAC	115.7	13.3	...	CL	Yes
08/02/94	Proctor Point	N + 10	73660	59840	6987.8	RAC	114.1	13.8	...	CL	Yes
08/04/94	Proctor Point	Q + 9	73550	60120	6986.5	RAC	116.5	13.0	...	CL	Yes
08/09/94	Proctor Point	N + 7.5	73850	60000	6980.7	RAC	114.1	13.8	...	CL	Yes

RAC = Radon Attenuation Cover

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CENTRAL CELL RECLAMATION  
 1994  
 UNC MINING AND MILLING  
 GALLUP, NEW MEXICO  
 PROCTOR AND PROCTOR PTS.  
 RADON ATTENUATION SOIL COVER



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400 South Lorena Avenue  
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(505) 327-4966 • fax 327-5293

**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/27/94</u>
Source: <u>G + 19, (RAC) Bottom Lift,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/27/94</u>
<u>73420 N. &amp; 58720 E.,</u>	Authorized By: <u>Client</u>	Date: <u>06/27/94</u>
<u>Elevation 6967.75</u>		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>115.3</u>
Optimum Moisture, %	<u>10.0</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
184.25/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

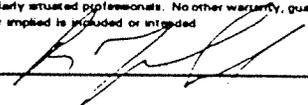
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>06/27/94</u>
Source:	<u>Line A-18, (RAC) Top Lift,</u> <u>73880 N. &amp; 58280 E.,</u> <u>Elevation 6970.7</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>06/27/94</u>
		Authorized By:	<u>Client</u> Date <u>06/27/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>114.6</u>
Optimum Moisture, %	<u>14.6</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
184.24/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay, (RAC)      Sampled By: R. Whitaker/WT      Date 06/29/94

Source: Grid Point C-16, Top Lift      Submitted By: R. Whitaker/WT      Date 06/29/94

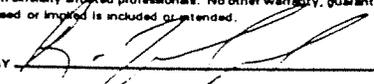
73980 N. & 58670 E.      Authorized By: Client      Date 06/29/94  
Elevation 6973.65

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>112.9</u>
Optimum Moisture, %	<u>15.3</u>

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184.30/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay, (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>06/29/94</u>
Source:	<u>Grid Point A-19, Bottom Lift</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>06/29/94</u>
	<u>73780 N. &amp; 58270 E.</u>	Authorized By:	<u>Client</u> Date <u>06/29/94</u>
	<u>Elevation 6970.5</u>		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>115.7</u>
Optimum Moisture, %	<u>12.3</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
184.29/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay, (RAC)</u>	Sampled By:	<u>R.Whitaker/WT</u> Date <u>07/06/94</u>
Source:	<u>Grid Pt. I-19, (Botton Lift)</u>	Submitted By:	<u>R.Whitaker/WT</u> Date <u>07/06/94</u>
	<u>73300 N. &amp; 58870 E.</u>	Authorized By:	<u>Client</u> Date <u>07/06/94</u>
	<u>Elevation 6969.0</u>		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>112.5</u>
Optimum Moisture, %	<u>12.9</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.5/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay, (RAC)</u>	Sampled By:	<u>R.Whitaker/WT</u> Date <u>07/06/94</u>
Source:	<u>Grid Pt. K-16, (Bottom Lift)</u>	Submitted By:	<u>R.Whitaker/WT</u> Date <u>07/06/94</u>
	<u>73400 N. &amp; 59220 E.</u>	Authorized By:	<u>Client</u> Date <u>07/06/94</u>
	<u>Elevation 6980.75</u>		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>110.5</u>
Optimum Moisture, %	<u>15.8</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.3/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay, (RAC)</u>	Sampled By: <u>R. Whitaker/WT</u>	Date: <u>07/06/94</u>
Source: <u>Grid Pt. J-19, (Top Lift)</u>	Submitted By: <u>R. Whitaker/WT</u>	Date: <u>07/06/94</u>
<u>73220 N. &amp; 58950 E.</u>	Authorized By: <u>Client</u>	Date: <u>07/06/94</u>
<u>Elevation 6971.4</u>		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.0</u>
Optimum Moisture, %	<u>12.6</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.4/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Clayey Sand</u>	Sampled By: <u>H. Kuelber/WT</u>	Date: <u>07/07/94</u>
Source: <u>Grid Pt. E-14,73930 N. &amp; 58870 E.</u>	Submitted By: <u>B. Coker/WT</u>	Date: <u>07/07/94</u>
<u>Elevation 6976.2</u>	Authorized By: <u>Client</u>	Date: <u>07/07/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>114.8</u>
Optimum Moisture, %	<u>13.8</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.15/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Brown Clayey Sand      Sampled By: R.Whitaker/WT      Date 07/07/94

Source: Grid Pt. F-14,73710 N. & 58820 E.      Submitted By: R.Whitaker/WT      Date 07/07/94

Elevation 6973.6      Authorized By: Client      Date 07/07/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>116.8</u>
Optimum Moisture, %	<u>14.4</u>

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235.14/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/27/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/18/94</u>
Source: <u>Grid Pt. I-16, 73540 N. &amp; 59060 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/18/94</u>
Elevation <u>6975.3</u>	Authorized By: <u>Client</u>	Date: <u>07/18/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.0</u>
Optimum Moisture, %	<u>14.2</u>

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235.20/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>07/27/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/18/94</u>
Source:	<u>Grid Pt. E-17,73700 N. &amp; 58700 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/18/94</u>
	<u>Elevation 6971.6</u>	Authorized By:	<u>Client</u> Date <u>07/18/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>115.7</u>
Optimum Moisture, %	<u>13.6</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.21/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/27/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay (RAC)      Sampled By: H. Kuebler/WT      Date 07/19/94

Source: Grid Pt. J-13,73700 N. & 59340 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

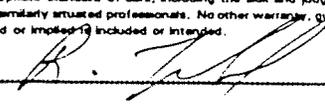
Elevation 6980.2      Authorized By: Client      Date 07/19/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>114.7</u>
Optimum Moisture, %	<u>14.1</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.22/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay (RAC)      Sampled By: H. Kuebler/WT      Date: 07/19/94

Source: A + 17, 73930 N. & 58400 E.      Submitted By: H. Kuebler/WT      Date: 07/19/94

Elevation 6970.9      Authorized By: Client      Date: 07/19/94

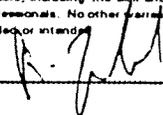
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>113.0</u>
Optimum Moisture, %	<u>12.6</u>

(Corresponds with Proctor J-19)  
Copies to: Addressee (3), Billing (1)  
235.3/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
Source:	<u>C + 16, 73900 N. &amp; 58600 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
	<u>Elevation 6973.6</u>	Authorized By:	<u>Client</u> Date <u>07/19/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.6</u>
Optimum Moisture, %	<u>14.6</u>

(Corresponds with Proctor A-18)  
Copies to: Addressee (3), Billing (1)  
235.4/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050

Lab/Inv. No. 31440235

Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay (RAC)      Sampled By: H. Kuebler/WT      Date 07/19/94

Source: F+18, 73420 N. & 58700 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

Elevation 6970.0      Authorized By: Client      Date 07/19/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.8</u>
Optimum Moisture, %	<u>13.8</u>

(Corresponds with Proctor E+14)  
Copies to: Addressee (3), Billing (1)  
235.5/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/02/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay (RAC)      Sampled By: H. Kuebler/WT      Date 07/19/94

Source: Grid Pt. G-14,73800 N. & 59050 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

Elevation 6977.2      Authorized By: Client      Date 07/19/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>115.8</u>
Optimum Moisture, %	<u>12.8</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.35/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
Source:	<u>B + 14.5, 74120 N. &amp; 58630 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
	<u>Elevation 6977.4</u>	Authorized By:	<u>Client</u> Date <u>07/19/94</u>

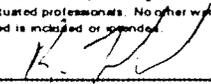
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>112.9</u>
Optimum Moisture, %	<u>15.3</u>

(Corresponds with Proctor C-16)  
Copies to: Addressee (3), Billing (1)  
235.2/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay (RAC)      Sampled By: H. Kuebler/WT      Date: 07/19/94

Source: D + 16.5, 73760 N. & 58650 E.      Submitted By: H. Kuebler/WT      Date: 07/19/94

Elevation 6970.4      Authorized By: Client      Date: 07/19/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>112.9</u>
Optimum Moisture, %	<u>15.3</u>

(Corresponds with Proctor C-16)  
Copies to: Addressee (3), Billing (1)  
235.1/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/27/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay (RAC)      Sampled By: H. Kuebler/WT      Date 07/19/94

Source: Grid Pt. G-14,73800 N. & 58040 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

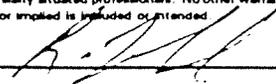
Elevation 6977.7      Authorized By: Client      Date 07/19/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>115.8</u>
Optimum Moisture, %	<u>12.8</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.23/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/26/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Silty Sand with Clay (Native)      Sampled By: H. Kuebler/WT      Date 07/20/94

Source: Grid Pt. B-13,73260 N. & 58650 E.      Submitted By: H. Kuebler/WT      Date 07/20/94

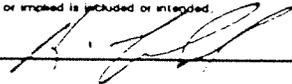
Elevation 6977.2      Authorized By: Client      Date 07/20/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>116.2</u>
Optimum Moisture, %	<u>13.4</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.36/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/20/94</u>
Source:	<u>D + 18, 73590 N. &amp; 58550 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/20/94</u>
	<u>Elevation 6970.1</u>	Authorized By:	<u>Client</u> Date <u>07/20/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.8</u>
Optimum Moisture, %	<u>13.8</u>

(Corresponds with Proctor E + 14)  
Copies to: Addressee (3), Billing (1)  
235.6/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/20/94</u>
Source:	<u>K + 18, 73250 N. &amp; 59080 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/20/94</u>
	<u>Elevation 6973.3</u>	Authorized By:	<u>Client</u> Date <u>07/20/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.6</u>
Optimum Moisture, %	<u>14.6</u>

(Corresponds with Proctor A+18)  
Copies to: Addressee (3), Billing (1)  
235.7/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay (RAC)      Sampled By: H. Kuebler/WT      Date: 07/20/94

Source: C + 13.5, 74090 N. & 58750 E.      Submitted By: H. Kuebler/WT      Date: 07/20/94

Elevation 6976.5      Authorized By: Client      Date: 07/20/94

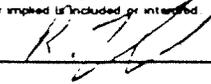
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.7</u>
Optimum Moisture, %	<u>14.1</u>

(Corresponds with Proctor J+13)  
Copies to: Addressee (3), Billing (1)  
235.8/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/24/94
Project:	1994 Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Clay (RAC)	Sampled By:	H. Kuebler/WT Date 07/21/94
Source:	H + 15, 73670 N. & 59050 E.	Submitted By:	H. Kuebler/WT Date 07/21/94
	Elevation 6976.5	Authorized By:	Client Date 07/21/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	114.8
Optimum Moisture, %	13.8

(Corresponds with Proctor E+14)  
Copies to: Addressee (3), Billing (1)  
235.10/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/22/94</u>
Source:	<u>L + 17, 73250 N. &amp; 59220 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/22/94</u>
	<u>Elevation 6983.9</u>	Authorized By:	<u>Client</u> Date <u>07/22/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.1</u>
Optimum Moisture, %	<u>12.5</u>

(Corresponds with Proctor L+7)  
Copies to: Addressee (3), Billing (1)  
235.12/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/24/94
Project:	1994 Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Clay (RAC)	Sampled By:	H. Kuebler/WT Date 07/21/94
Source:	F + 13, 73950 N. & 59030 E.	Submitted By:	H. Kuebler/WT Date 07/21/94
	Elevation 6977.7	Authorized By:	Client Date 07/21/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	113.6
Optimum Moisture, %	13.4

(Corresponds with Proctor J+10)  
Copies to: Addressee (3), Billing (1)  
235.9/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/24/94
Project:	1994 Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Clay (RAC)	Sampled By:	H. Kuebler/WT Date 07/22/94
Source:	J+ 15, 73460 N. & 59130 E.	Submitted By:	H. Kuebler/WT Date 07/22/94
	Elevation 6977.1	Authorized By:	Client Date 07/22/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	113.0
Optimum Moisture, %	14.2

(Corresponds with Proctor I+16)  
Copies to: Addressee (3), Billing (1)  
235.11/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

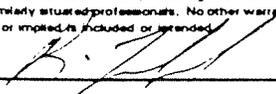
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/10/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay, (RAC)</u>	Sampled By:	<u>H. Kuelber/WT</u> Date <u>07/24/94</u>
Source:	<u>Grid Pt. P-8, 73690 N. &amp; 60100 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/24/94</u>
	<u>Elevation 6982.2</u>	Authorized By:	<u>Client</u> Date <u>07/24/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>114.1</u>
Optimum Moisture, %	<u>13.8</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.39/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/02/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay, (RAC)      Sampled By: H. Kuebler/WT      Date 07/25/94

Source: Grid Pt. O-7,73830 N. & 60100 E.      Submitted By: H. Kuelber/WT      Date 07/25/94

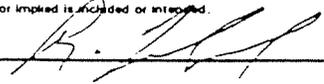
Elevation 6980.5      Authorized By: Client      Date 07/25/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>115.7</u>
Optimum Moisture, %	<u>13.3</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.45/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/02/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay, (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
Source:	<u>Grid Pt. J-10,73940 N. &amp; 59540 E.</u>	Submitted By:	<u>H. Kuelber/WT</u> Date <u>07/25/94</u>
	<u>Elevation 6979.8</u>	Authorized By:	<u>Client</u> Date <u>07/25/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.6</u>
Optimum Moisture, %	<u>13.4</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.44/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

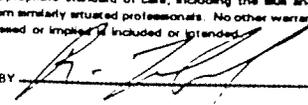
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/02/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay, (RAC)</u>	Sampled By:	<u>H. Kuelber/WT</u> Date <u>07/25/94</u>
Source:	<u>Grid Pt. L-7, 74050 N. &amp; 59870 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
	<u>Elevation 6979.2</u>	Authorized By:	<u>Client</u> Date <u>07/25/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>114.1</u>
Optimum Moisture, %	<u>12.5</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.40/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/10/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Clay, (RAC)</u>	Sampled By:	<u>H. Kuelber/WT</u>	Date	<u>07/25/94</u>
Source:	<u>Grid Pt. S-9, 73420 N. &amp; 60280 E.</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>07/25/94</u>
	<u>Elevation 6987.8</u>	Authorized By:	<u>Client</u>	Date	<u>07/25/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>116.5</u>
Optimum Moisture, %	<u>13.0</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.41/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/25/94</u>
Source: <u>H + 11, 73980 N. &amp; 59300 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/25/94</u>
<u>Elevation 6979.6</u>	Authorized By: <u>Client</u>	Date: <u>07/25/94</u>

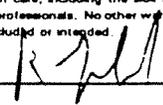
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.8</u>
Optimum Moisture, %	<u>13.8</u>

(Corresponds with Proctor E+14)  
Copies to: Addressee (3), Billing (1)  
235.13/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/27/94</u>
Source: <u>O + 4, 74040 N. &amp; 60300 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/27/94</u>
<u>Elevation 6980.4</u>	Authorized By: <u>Client</u>	Date: <u>07/27/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.1</u>
Optimum Moisture, %	<u>13.8</u>

(Corresponds with Proctor P+8)  
Copies to: Addressee (3), Billing (1)  
235.17/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>07/27/94</u>
Source:	<u>P + 7.5, 73720 N. &amp; 60150E.</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>07/27/94</u>
	<u>Elevation 6981.6</u>	Authorized By:	<u>Client</u>	Date	<u>07/27/94</u>

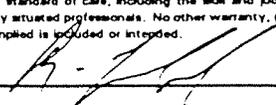
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.1</u>
Optimum Moisture, %	<u>13.8</u>

(Corresponds with Proctor P+8)  
Copies to: Addressee (3), Billing (1), Field File (1)  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/27/94</u>
Source: <u>P+5, 73970 N. &amp; 60310 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/27/94</u>
<u>Elevation 6979.8</u>	Authorized By: <u>Client</u>	Date: <u>07/27/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>118.0</u>
Optimum Moisture, %	<u>12.0</u>

(Corresponds with Proctor L+11)  
Copies to: Addressee (3), Billing (1)  
235.18/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>07/27/94</u>
Source:	<u>O + 11, 73520 N. &amp; 59850 E.</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>07/27/94</u>
	<u>Elevation 6992.7</u>	Authorized By:	<u>Client</u>	Date	<u>07/27/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.7</u>
Optimum Moisture, %	<u>14.1</u>

(Corresponds with Proctor J+13)  
Copies to: Addressee (3), Billing (1)  
235.14/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/24/94
Project:	1994 Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Clay (RAC)	Sampled By:	H. Kuebler/WT Date 07/27/94
Source:	L + 11, 73700 N. & 59620E.	Submitted By:	H. Kuebler/WT Date 07/27/94
	Elevation 6936.1	Authorized By:	Client Date 07/27/94

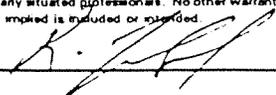
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	118.0
Optimum Moisture, %	12.0

Copies to: Addressee (3), Billing (1), Field File (1)  
235.50/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>07/27/94</u>
Source:	<u>Q+4.5, 73900 N. &amp; 60420 E.</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>07/27/94</u>
	<u>Elevation 6980.0</u>	Authorized By:	<u>Client</u>	Date	<u>07/27/94</u>

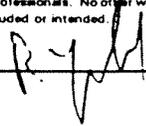
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>115.7</u>
Optimum Moisture, %	<u>13.3</u>

(Corresponds with Proctor O+7)  
Copies to: Addressee (3), Billing (1)  
235.15/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/10/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay (RAC) Sampled By: H. Kuebler/WT Date 07/28/94

Source: L + 16, 73230 N. & 59280 E. Submitted By: H. Kuebler/WT Date 07/28/94

Elevation 6985.4 Authorized By: Client Date 07/28/94

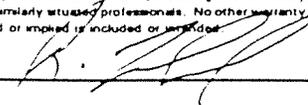
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>116.6</u>
Optimum Moisture, %	<u>12.8</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.51/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>08/01/94</u>
Source: <u>K + 11, 73750 N. &amp; 59580 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>08/01/94</u>
<u>Elevation 6982.9</u>	Authorized By: <u>Client</u>	Date: <u>08/01/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>115.8</u>
Optimum Moisture, %	<u>12.8</u>

(Corresponds with Proctor G + 14)  
Copies to: Addressee (3), Billing (1)  
279.10/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>08/01/94</u>
Source:	<u>L + 16, 73300 N. &amp; 59220 E.</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>08/01/94</u>
	<u>Elevation 6985.7</u>	Authorized By:	<u>Client</u>	Date	<u>08/01/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>116.6</u>
Optimum Moisture, %	<u>12.8</u>

(Corresponds with Proctor L+16)  
Copies to: Addressee (3), Billing (1)  
279.9/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>08/01/94</u>
Source:	<u>K5-14, 73520 N. &amp; 59400 E.</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>08/01/94</u>
	<u>Elevation 6985.0</u>	Authorized By:	<u>Client</u>	Date	<u>08/01/94</u>

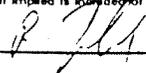
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>115.3</u>
Optimum Moisture, %	<u>10.0</u>

(Corresponds with Proctor G+19)  
Copies to: Addressee (3), Billing (1)  
279.14/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>08/01/94</u>
Source:	<u>N + 13, 73440 N. &amp; 59560 E.</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>08/01/94</u>
	<u>Elevation 6997.2</u>	Authorized By:	<u>Client</u>	Date	<u>08/01/94</u>

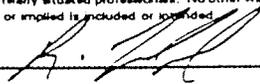
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>114.7</u>
Optimum Moisture, %	<u>14.1</u>

(Corresponds with Proctor J+13)  
Copies to: Addressee (3), Billing (1)  
279.8/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440279
		Report Date:	08/24/94
Project:	1994 Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Clay (RAC)	Sampled By:	H. Kuebler/WT Date 08/01/94
Source:	L + 14.5, 73520 N. & 59400 E.	Submitted By:	H. Kuebler/WT Date 08/01/94
	Elevation 6985.0	Authorized By:	Client Date 08/01/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	116.1
Optimum Moisture, %	13.4

(Corresponds with Proctor L+16)  
Copies to: Addressee (3), Billing (1)  
279.12/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/24/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Clay (RAC)      Sampled By: H. Kuebler/WT      Date 08/02/94

Source: N + 10, 73660 N. & 59840 E.      Submitted By: H. Kuebler/WT      Date 08/02/94

Elevation 6987.8      Authorized By: Client      Date 08/02/94

Moisture Density Relations, pcf (ASTM D698 Method A)

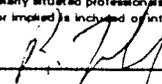
One Point Check

Maximum Dry Density, pcf 114.1

Optimum Moisture, % 13.8

(Corresponds with Proctor P+8)  
Copies to: Addressee (3), Billing (1)  
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APPENDIX F

ROCK QUALITY DETERMINATIONS, ROCK MULCH AND RIPRAP



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**ROCK QUALITY DETERMINATION**

United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305-3077  
Attn: Mr. Ed Morales

Job No. 3144JK050  
Inv. No. 31440111  
Date of Report 05/31/94  
Reviewed By [Signature]

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 04/14/94

Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 04/14/94

Material Type: Crushed Basalt Intended Use D50 - 1.5"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.739	9.53	9	85.8
Absorption, %	1.96	3	2	6.0
L.A. Abrasion, 100 rev, %	2.331	9.3	1	9.3
Sodium Soundness Loss, %	5	8	11	88

Total = Rock Quality Score =  $189.1/230 \times 100 = 82$

Dist: Client (3) Billing (1) Field File (1)

/cb:ROD.UNC



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305-3077 Attn: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440111
		Report Date:	05/11/94
Project:	1994 Church Rock Uranium Mill Tailings Reclamation Project		
Location:	Church Rock, New Mexico		
Material:	D <sup>50</sup> - 1.5" Aggregate	Sampled By:	H. Kuebler/WT
		Date	04/14/94
Source:	Hmailton Brothers	Submitted By:	H. Kuebler/WT
		Date	04/14/94
Supplier:	Hamilton Brothers Construction	Authorized By:	E. Morales/Client
		Date	04/14/94

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs.      5  

% Loss at 500 Revs.     29 

Copies to: Addressee (3), Billing (1), Field File (1)  
111.2/bc

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**Western Technologies Inc.**

400 South Lorena Avenue  
Farmington, New Mexico 87401  
(505) 325-1111 **SOUNDNESS OF AGGREGATES**

**LABORATORY REPORT**

Client: The Quality People Corporation  
United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305

Job No. 3144JK050  
Lab/Inv. No. 31440111  
Report Date: 05/03/94

Project: Church Rock Uranium Mill tailings Reclamation

Location: Chuch Rock, NM

Material: D<sup>50</sup> - 1.5" Aggregate Sampled By: H. Kuebler/WT Date 04/14/94

Source: Hamilton Brothers Submitted By: H. Kuebler/WT Date 04/14/94

Procedure: ASTMC88 Authorized By: Client Date 04/14/94

Solution: Sodium Sulfate (Used)

FINE AGGREGATE

<u>Fine Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weight Percentage Loss, %</u>
Minus No. 100				
No. 50 to No. 100				
No. 30 to No. 50				
No. 16 to No. 30				
No. 8 to No. 16				
No. 4 to No. 8				
3/8 to No. 4				
Totals				

COARSE AGGREGATE

<u>Coarse Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weighted Percentage Loss, %</u>
2-1/2" to 2"				
2" to 1-1/2"				
1-1/2" to 1"	29	1004.5	4.908	1.423
1" to 3/4"	48	501.4	.379	.182
3/4" to 1/2"	14	672.2	2.51.160	.162
1/2" to 3/8"	5	333.4	11.277	.564
3/8" to No. 4	4			
Minus No. 4				
Totals				2.331

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1)  
111.1/bc

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REVIEWED BY [Signature]



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### ROCK QUALITY DETERMINATION

United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305-3077  
Attn: Mr. Ed Morales

Job No. 3144JK050  
Inv. No. 31440135  
Date of Report 08/04/94  
Reviewed By [Signature]

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 05/24/94

Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 05/24/94

Material Type: Basaltic Igneous Intended Use \_\_\_\_\_

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.773	10	9	90
Absorption, %	1.55	4	2	8
L.A. Abrasion, 100 rev, %	4.3	8	11	88
Sodium Soundness Loss, %	.81	10	1	10

Total = Rock Quality Score =  $196/230 \times 100 = 85$

Dist: Client (3) Billing (1) Field File (1)

/cb:RQD.UNC



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305

Job No. 3144JK050

Lab/Inv. No. 31440135

Report Date: 08/02/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Gallup, NM

Material: Basaltic Rock, D<sup>50</sup> - 1.5 Aggregate

Sampled By: H. Kuebler/WT Date 05/24/94

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 05/24/94

Authorized By: Client Date 05/24/94

Coarse Aggregate, ASTM C127

Bulk Specific Gravity 2.731

Bulk Specific Gravity (SSD) 2.773

Apparent Specific Gravity 2.852

Absorption, Percent 1.55

Copies to: Addressee (3), Billing (1), Field File (1)  
135.10A/bc

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400 South Lorena Avenue  
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(505) 325-4941  
**SOUNDNESS OF AGGREGATES**

Client: The Quality People  
United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305

Job No. 3144JK050  
Lab/Inv. No. 31440135  
Report Date: 08/02/94

Project: Church Rock Uranium Mill tailings Reclamation

Location: Chuch Rock, NM

Material: Basaltic Rock, D<sup>50</sup> - 1.5 Aggregate      Sampled By: H. Kuebler/WT      Date: 05/24/94

Source: Hamilton Brothers      Submitted By: H. Kuebler/WT      Date: 05/24/94

Procedure: ASTMC88      Authorized By: Client      Date: 05/24/94

Solution: Sodium Sulfate (Used)

FINE AGGREGATE

<u>Fine Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weight Percentage Loss, %</u>
Minus No. 100				
No. 50 to No. 100				
No. 30 to No. 50				
No. 16 to No. 30				
No. 8 to No. 16				
No. 4 to No. 8				
3/8 to No. 4				
Totals				

COARSE AGGREGATE

<u>Coarse Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weighted Percentage Loss, %</u>
2-1/2" to 2"				
2" to 1-1/2"	2.7	5016.2	.720	.02
1-1/2" to 1"	68.7	1045.2	.05	.03
1" to 3/4"	12.8	519.5	3.5	.45
3/4" to 1/2"	2.2	672.6	1.4	.18
1/2" to 3/8"		333.1	5.9	.13
3/8" to No. 4				
Minus No. 4				
Totals				0.81

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1)  
135.11/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305-3077 Attn: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440135</u>
		Report Date:	<u>08/02/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation Project</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>Basaltic Rock, D<sup>50</sup> - 1.5 Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>05/24/94</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>05/24/94</u>
Supplier:	<u>Hamilton Brothers Construction</u>	Authorized By:	<u>E. Morales/Client</u> Date <u>05/24/94</u>

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 4.3

% Loss at 500 Revs.     

Copies to: Addressee (3), Billing (1), Field File (1)  
135.10B/bc

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**ROCK QUALITY DETERMINATION**

United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305-3077  
Attn: Mr. Ed Morales

Job No. 3144JK050  
Inv. No. 31440235  
Date of Report 09/09/94  
Reviewed By [Signature]

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/22/94

Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/21/94

Material Type: Basaltic 1.5 Aggregate Intended Use D50 1.5 Aggregate

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.750	10	9	90
Absorption, %	2.0	3	2	6
L.A. Abrasion, 100 rev, %	7.1	6	1	6
Sodium Soundness Loss, %	.41	10	11	110

Total = 212, Rock Quality Score =  $212/230 \times 100 = 92$

Dist: Client (3) Billing (1) Field File (1)

/cb:RQD.UNC



**Western Technologies Inc.**

400 South Lorena Avenue  
Farmington, New Mexico 87401  
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**SOUNDNESS OF AGGREGATES**

Client: The Quality People Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/08/94

Project: Church Rock Uranium Mill tailings Reclamation

Location: Chuch Rock, NM

Material: D<sup>50</sup> - 1.5 Aggregate Sampled By: H. Kuebler/WT Date 07/21/94

Source: Windrow on site Submitted By: H. Kuebler/WT Date 07/21/94

Procedure: ASTMC88, 5 cycles Authorized By: Client Date 07/21/94

Solution: Sodium Sulfate (Fresh)

FINE AGGREGATE

<u>Fine Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weight Percentage Loss, %</u>
Minus No. 100				
No. 50 to No. 100				
No. 30 to No. 50				
No. 16 to No. 30				
No. 8 to No. 16				
No. 4 to No. 8				
3/8 to No. 4				
Totals				

COARSE AGGREGATE

<u>Coarse Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weighted Percentage Loss, %</u>
2-1/2" to 2"				
2" to 1-1/2"	24	2008.4	0.7	.17
1-1/2" to 1"	50	999.9	0.3	.15
1" to 3/4"	17	497.8	0.4	.07
3/4" to 1/2"	8	670.9	0.3	.02
1/2" to 3/8"				
3/8" to No. 4				
Minus No. 4				
Totals				0.41

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1)  
235.38/bc

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REVIEWED BY H. Kuebler



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/08/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: D<sup>50</sup> - 1.5 Aggregate      Sampled By: H. Kuebler/WT      Date 07/21/94

Source: Windrow on site      Submitted By: H. Kuebler/WT      Date 07/21/94

Authorized By: Client      Date 07/21/94

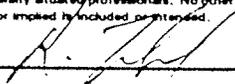
Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.695
Bulk Specific Gravity (SSD)	2.750
Apparent Specific Gravity	2.851
Absorption, Percent	2.0

Copies to:  
235.37B/bc

Addressee (3), Billing (1), Field File (1)

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

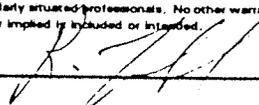
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305-3077 Attn: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/08/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation Project</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>D<sup>50</sup> - 1.5 Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/21/94</u>
Source:	<u>Windrow on site</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/21/94</u>
Supplier:	<u>Hamilton Brothers Construction</u>	Authorized By:	<u>E. Morales/Client</u> Date <u>07/21/94</u>

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 7.1  
% Loss at 500 Revs.     

Copies to: Addressee (3), Billing (1), Field File (1)  
135.37A/bc

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### ROCK QUALITY DETERMINATION

United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305-3077  
Attn: Mr. Ed Morales

Job No. 3144JK050  
Inv. No. \_\_\_\_\_  
Date of Report 08/04/94  
Reviewed By \_\_\_\_\_

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 08/04/94

Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 08/04/94

Material Type: Crushed Basalt Intended Use D50-3"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.73	9.5	9	85.5
Absorption, %	1.48	4.2	2	8.4
L.A. Abrasion, 100 rev, %	4.72	8.3	1	8.3
Sodium Soundness Loss, %	.280	10	11	110.0

Total = 212, Rock Quality Score =  $212.2/230 \times 100 = 92$

Dist: Client (3) Billing (1) Field File (1)

/cb:RQD.UNC



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305-3077  
Attn: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 10/03/95

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

Location: Church Rock, New Mexico

Material: D<sup>60</sup> - 3" Aggregate      Sampled By: H. Kuebler/WT      Date 08/04/94

Source: Hamilton Brothers      Submitted By: H. Kuebler/WT      Date 08/04/94

Authorized By: E. Morales/Client      Date 08/04/94

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.69</u>
Bulk Specific Gravity (SSD)	<u>2.73</u>
Apparent Specific Gravity	<u>2.80</u>
Absorption, Percent	<u>1.48</u>

Copies to:  
279.001/bc

Addressee (3), Billing (1)

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**Western Technologies Inc.**

400 South Lorena Avenue  
Farmington, New Mexico 87401  
(505) 325-5400 SOUNDNESS OF AGGREGATES

**LABORATORY REPORT**

Client: The Quality People  
United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 10/03/94

Project: Aggregate Sample Testing

Location: San Juan County, NM

Material: D<sup>50</sup> - 3" Aggregate      Sampled By: H. Kuebler/WT      Date: 08/04/94  
Source: Hamilton Brothers      Submitted By: P. Christensen/WT      Date: 08/04/94  
Procedure: ASTMC88      Authorized By: Client      Date: 08/04/94  
Solution: Sodium Sulfate (Used)

FINE AGGREGATE

<u>Fine Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weight Percentage Loss, %</u>
Minus No. 100				
No. 50 to No. 100				
No. 30 to No. 50				
No. 16 to No. 30				
No. 8 to No. 16				
No. 4 to No. 8				
3/8 to No. 4				
Totals				

COARSE AGGREGATE

<u>Coarse Fraction Size</u>	<u>Grading of Original Sample Percent</u>	<u>Wt. of Test Fractions Before Test, grams</u>	<u>Percentage Passing Designated Sieve</u>	<u>Weighted Percentage Loss, %</u>
2-1/2" to 2"	29.0	5070.7	.59	.171
2" to 1-1/2"				
1-1/2" to 1"	44.0	1501.2	1.0	.044
1" to 3/4"				
3/4" to 1/2"	26.0	1000.0	2.5	.065
1/2" to 3/8"				
3/8" to No. 4				
Minus No. 4				
Totals				.280

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305-3077 Attn: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440279</u>
		Report Date:	<u>10/03/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation Project</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>D<sup>50</sup> - 3" Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>08/04/94</u>
Source:	<u>Hmailton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>08/04/94</u>
Supplier:	<u>Hamilton Brothers Construction</u>	Authorized By:	<u>E. Morales/Client</u> Date <u>08/04/94</u>

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs.    4.72

% Loss at 500 Revs.        

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APPENDIX G

ROCK GRADATION TESTS, ROCK MULCH AND RIPRAP

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY FOR D50 1.5 MATERIAL

DATE OF REPORT 10/03/94

DATE	SAMPLE LOCATION	% PASS 2" SPEC. 100%	% PASS 1" SPEC. 20-37%	% PASS #4 SPEC. 0-8%	% PASS #10 SPEC. 47-94%	% PASS #40 SPEC. 23-70%	% PASS 200 SPEC. 15-30%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. 7
04/14/94	Hamilton Brothers	100	71	3	...	...	...	N/A	...	NOTE
04/28/94	Hamilton Brothers	100	63	2	...	...	...	N/A	...	NOTE
05/10/94	Hamilton Brothers	100	6	0	...	...	...	N/A	...	NOTE
05/10/94	Hamilton Brothers	100	14	.4	...	...	...	N/A	...	NOTE
05/12/94	Hamilton Brothers	100	34	.2	...	...	...	N/A	...	Yes
05/24/94	Hamilton Brothers	100	29	.5	...	...	...	...	...	Yes
07/21/94	Window On Site	100	26	.5	...	...	...	...	...	Yes
08/04/94	Hamilton Brothers	100	34	1.7	...	...	...	...	...	Yes
09/26/94	Window On Site	100	25	.3	...	...	...	...	...	Yes
	AVERAGE of 5/12 - 9/26/94 Samples	100	30	.6	...	...	...	...	...	...

NOTE: Hamilton Brothers stated material which did not meet project requirements was discarded.

1994 UNC/cb

Dust Client (3) Field File (1) Billing (1)





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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
Project:	Church Rock Uranium Mill Tailings Reclamation	Lab/Inv. No.	31440111
Location:	Church Rock, NM	Report Date:	05/05/94
Material:	D <sup>50</sup> - 1.5" Aggregate	Sampled By:	H. Kuebler/WT Date 04/14/94
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT Date 04/14/94
		Authorized By:	Client Date 04/14/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	100
1-1/2"		
1-1/8"		
1"	71	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	3	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

Copies to: Addressee (3), Billing (1)  
111.3/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440111  
Report Date: 05/03/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: D<sup>50</sup> - 1.5" Aggregate Sampled By: H. Kuebler/WT Date 04/28/94

Source: Hamilton Brothers Submitted By: H. Kuebler/WT Date 04/28/94

Authorized By: Client Date 04/28/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	100
1-1/2"		
1-1/8"		
1"	63	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	2	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440135  
Report Date: 05/17/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: D<sup>50</sup> - 1.5 Aggregate Sampled By: H. Kuebler/WT Date 05/10/94

Source: Hamilton Brothers Submitted By: H. Kuebler/WT Date 05/10/94

Authorized By: Client Date 05/10/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	100
1-1/2"		
1-1/8"		
1"	6	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	0	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client: United Nuclear Corporation Job No. 3144JK050  
Post Office Box 3077  
Gallup, New Mexico 87305 Lab/Inv. No. 31440135  
ATTN: Ed Morales Report Date: 05/17/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: D<sup>50</sup> - 1.5 Aggregate Sampled By: H. Kuebler/WT Date 05/10/94

Source: Hamilton Brothers Submitted By: H. Kuebler/WT Date 05/10/94

Authorized By: Client Date 05/10/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	100
1-1/2"		
1-1/8"		
1"	14	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	.4	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

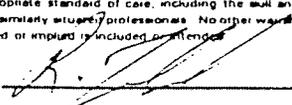
Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440135
		Report Date:	05/17/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	D <sup>50</sup> - 1.5 Aggregate	Sampled By:	H. Kuebler/WT Date 05/12/94
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT Date 05/12/94
		Authorized By:	Client Date 05/12/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	100
1-1/2"		
1-1/8"		
1"	34	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	.2	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

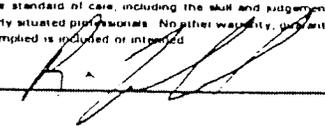
Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440135
		Report Date:	05/27/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	D <sup>50</sup> - 1.5 Aggregate	Sampled By:	H. Kuebler/WT      Date 05/24/94
Source:	Stockpile	Submitted By:	H. Kuebler/WT      Date 05/24/94
		Authorized By:	Client                  Date 05/24/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	100
1-1/2"		
1-1/8"		
1"	30	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	.4	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440135  
Report Date: 05/27/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Basaltic Rock, D<sup>50</sup> - 1.5 Aggregate

Sampled By: H. Kuebler/WT Date 05/24/94

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 05/24/94

Authorized By: Client Date 05/24/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	100
1-1/2"		
1-1/8"		
1"	29	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	.5	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/08/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>D<sup>50</sup> - 1.5" Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/21/94</u>
Source:	<u>Windrow on site</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/21/94</u>
		Authorized By:	<u>Client</u> Date <u>07/21/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	100
1-1/2"		
1-1/8"		
1"	26	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	.5	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

Copies to: Addressee (3), Billing (1)  
235.37/bc

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REVIEWED BY H. Kuebler



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Ed Morales

Job No. 3144JK050

Lab/Inv. No. 31440279

Report Date: 08/08/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: D<sup>50</sup> - 1.5" Aggregate

Sampled By: H. Kuebler/WT Date 08/04/94

Source: Hamilton Brothers Belt

Submitted By: H. Kuebler/WT Date 08/04/94

Authorized By: Client Date 08/04/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	100
1-1/2"		
1-1/8"		
1"	34	20-37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	1.7	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

Copies to: Addressee (3), Billing (1)  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050

Lab/Inv. No. 31440336

Report Date: 10/03/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: D<sup>60</sup> - 1.5 Aggregate

Sampled By: H. Kuebler/WT Date 09/26/94

Source: Windrow on site

Submitted By: H. Kuebler/WT Date 09/26/94

Authorized By: Client Date 09/26/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1-1/2"		
1-1/8"		
1"	25	20+37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	0.3	0-8
8		
10		
16		
30		
40		
50		
100		
200		

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/02/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>D<sup>50</sup> - 3.0" Aggregate</u>	Sampled By:	<u>B. Coker/WT</u> Date <u>07/26/94</u>
Source:	<u>Hamilton Brothers Stockpile</u>	Submitted By:	<u>B. Coker/WT</u> Date <u>07/26/94</u>
		Authorized By:	<u>Client</u> Date <u>07/26/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
6"	100	100
4"	71	45-80
4-1/2"		
1"	.2	0-22
3/4"		
1/2"		
3/8"		
1/4"		
No. 4.		
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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APPENDIX H  
ROCK MULCH THICKNESS

### D50 1.5 AGGREGATE PLACEMENT

After the additional radon cover was placed and accepted by UNC, the D50 1.5 aggregate was placed on the site. The majority of D50 1.5 aggregate was placed in wind rows on site by Hamilton Brothers Inc. Nielson's, Inc. used a motor grader to spread the D50 1.5 aggregate. WT measured the thickness of in-place D50 1.5 aggregate. If the required minimum 3" thickness had not been achieved, Nielson's, Inc. would rework the area of the failing tests. D50 1.5 aggregate thickness measurement ranged from 3" to 4". WT measured the thickness to determine if in-place thickness at the specific locations checked, met the project requirements for thickness.



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**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/19/94**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
08/08/94 to 08/12/94**

Location	Thickness	Location	Thickness
C + 17	3 1/2"	C.5 + 17.5	4"
C + 18	3 3/4"	C.5 + 18.5	4"
C + 19	4"	C.5 + 19.5	4"
C + 20	3"	D + 15.5	3 3/4"
D.5 + 15.5	4"	D + 16	4"
D.5 + 16.5	3 1/2"	D + 17	4"
D.5 + 17.5	4"	D + 18	3 3/4"
D.5 + 18.5	3 1/2"	D + 19	4"
D.5 + 19.5	3 1/4"	D + 20	4"
E + 16	3 1/2"	E.5 + 16.5	4"
E + 17	3 3/4"	E.5 + 17.5	4"
E + 18	4"	E.5 + 18.5	3 3/4"
E + 19	3 3/4"	E.5 + 19.5	3 1/4"
E + 20	4"	F + 17.5	3 3/4"

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**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/19/94**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
08/08/94 to 08/12/94**

Location	Thickness	Location	Thickness
A.5 + 14.5	3 3/4"	A + 15	4"
A.5 + 15	4"	A + 16	4"
A.5 + 16.5	4"	A + 17	4"
A.5 + 17.5	3"	A + 18	4"
A.5 + 18.5	4"	A + 19	4"
A.5 + 19.5	4"	A + 20	3 1/4"
B.5 + 14.5	4"	B + 15	4"
B.5 + 15	4"	B + 16	4"
B.5 + 16.5	4"	B + 17	3 1/2"
B.5 + 17.5	3"	B + 18	3"
B.5 + 18.5	4"	B + 19	4"
B.5 + 19.5	3 1/4"	B + 20	3 1/4"
C + 15	4"	C.5 + 15	4"
C + 16	4"	C.5 + 16.5	4"

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DATE OF REPORT 08/19/94

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
08/08/94 to 08/12/94**

Location	Thickness	Location	Thickness
F + 17	4"	F.5 + 17.5	3 3/4"
F + 18	3"	F.5 + 18.5	4"
F + 19	4"	F.5 + 19.5	4"
F + 20	3 1/2"	G + 18.5	4"
G.5 + 18.5	3 1/2"	G + 19	3 3/4"
G.5 + 19.5	3 1/2"	G + 20	3"
H + 18.5	3 1/4"	H + 19	3 3/4"
H.5 + 19.5	4"	H + 20	3 1/2"

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**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/24/94**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
Week of 08/19/94**

Location	Thickness	Location	Thickness
F+15	3 1/2"	F+16	3 1/2"
F+16.5	3 1/2"	F.5+13.5	3 1/2"
F.5+14.5	4"	F.5+15.5	3 1/2"
F.5+16.5	3 1/2"	G+15	3 3/4"
G+16	3"	G+17	3 1/4"
G+17.5	3 1/2"	G.5+14.5	4"
G.5+15.5	3"	G.5+16.5	4"
G.5+17.5	3 1/2"	H+16	4"
H+17	3 1/2"	H+18	3"
H+18.5	3"	H.5+15.5	4"
H.5+16.5	3"	H.5+17.5	3 1/2"
H.5+18.5	3 1/2"	H.5+19.5	3 1/4"
I+16	4"	I+17	3 1/4"
I+18	4"	I+19	3 1/2"

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WT JOB NO. 3144JK050

DATE OF REPORT 08/24/94

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**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
Week of 08/19/94**

Location	Thickness	Location	Thickness
A + 14.5	3 1/2"	A + 14	4"
A + 13	4"	A.5 + 13.5	4"
B + 14.5	4"	B.5 + 13.5	3"
B + 14	4"	B.5 + 14.5	3"
B + 13	3"	C + 14.5	3 3/4"
C + 14	3 3/4"	C.5 + 13.5	3 1/2"
C + 13	4"	D + 15	3 1/2"
D + 14	3"	D + 13	3 3/4"
D.5 + 15.5	3 1/2"	D.5 + 14.5	3 1/4"
D.5 + 13.5	3 1/4"	E + 13	4"
E + 14	3 1/2"	E + 15	3 3/4"
E + 16	4"	E.5 + 13.5	3"
E.5 + 14.5	3"	E.5 + 15.5	3 3/4"
F + 13	3"	F + 14	3 3/4"

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**DATE OF REPORT 08/24/94**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
Week of 08/19/94**

Location	Thickness	Location	Thickness
I + 20	3 3/4"	I.5 + 16.5	3 1/2"
I.5 + 17.5	3"	I.5 + 18.5	3 1/2"
I.5 + 19.5	3 3/4"	J + 17	3"
J + 18	4"	J + 19	4"
J + 20	3"	J.5 + 17.5	3"
J.5 + 18.5	3"	J.5 + 19.5	3 1/4"
K + 18	3"	K + 19	3 1/2"
K + 20	4"	K.5 + 18.5	4"
K.5 + 19.5	3 1/4"		

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**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/29/94**

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
Week of 08/26/94**

Location	Thickness	Location	Thickness
F.5 + 12.5	3"	G + 12	4"
G + 13	3 1/2"	G + 14	4"
G.5 + 11.5	3 1/4"	G.5 + 12.5	3 1/4"
G.5 + 13.5	4"	H + 12	3"
H + 13	3 1/2"	H + 14	3 1/4"
H + 15	3 1/2"	H.5 + 10.5	3"
H.5 + 11.5	3 1/4"	H.5 + 12.5	4"
H.5 + 13.5	4"	H.5 + 14.5	4"
I + 10	4"	I + 11	3"
I + 12	3"	I + 13	3 1/2"
I + 14	3 1/2"	I.5 + 9.5	4"
I.5 + 10.5	3 1/2"	I.5 + 11.5	4"
I.5 + 12.5	3"	I.5 + 13.5	4"
I.5 + 14.5	3 1/2"	I.5 + 15.5	3"

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WT JOB NO. 3144JK050

DATE OF REPORT 08/29/94

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
Week of 08/26/94**

Location	Thickness	Location	Thickness
J+9	4"	J+10	4"
J+11	4"	J+12	4"
J+13	3 1/2"	J+14	3 1/4"
J+15	3"	J+16	3 3/4"
J+17	3"	J.5+8.5	4"
J.5+9.5	3 1/4"	J.5+10.5	4"
J.5+11.5	3 1/2"	J.5+12.5	3"
J.5+13.5	3 1/2"	J.5+14.5	3 1/2"
J.5+15.5	3 1/2"	J.5+16.5	3"
J.5+17.5	3 1/4"	K+8	4"
K+9	3 1/4"	K+10	3"
K+11	4"	K+12	4"
K+13	3"	K+14	3"
K+15	4"	K+16	4"

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DATE OF REPORT 08/29/94

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
Week of 08/26/94**

Location	Thickness	Location	Thickness
K+17	3 1/2"	K+18	3"
K.5+7.5	3 1/2"	K.5+8.5	3 1/2"
K.5+9.5	3 1/4"	K.5+10.5	3"
K.5+14.5	3"	K.5+15.5	3"
K.5+16.5	3 1/4"	K.5+17.5	4"
L+8	3 1/2"	L+9	3 1/4"
L.5+6.5	3 1/2"	L.5+6.5	3 1/2"
L.5+8.5	4"	L+18	4"
L+6	3"	L+7	3 1/4"

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WT JOB NO. 3144JK050

DATE OF REPORT 09/02/94

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
Week of 08/30/94**

Location	Thickness	Location	Thickness
M+8	3 1/2"	M+7	3 1/2"
M+6	3 1/2"	M+5	3 1/4"
M+4	3 1/2"	M+3	3 1/2"
M+2	3"	M.5+3.5	3 3/4"
M.5+4.5	3 1/2"	M.5+5.5	3 1/2"
M.5+6.5	3 3/4"	M.5+7.5	3"
M.5+8.5	3"	L.5+6.5	3"
L.5+5.5	3"	L.5+4.5	3"
N+8	4"	N+7	3"
N+6	4"	N+5	4"
N+4	3 1/4"	N+3	3 1/2"
N.5+8.5	3"	N.5+7.5	3"
N.5+6.5	3 1/2"	N.5+5.5	3 1/2"
N.5+4.5	3 3/4"		

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WT JOB NO. 3144JK050

DATE OF REPORT 09/09/94

**D50 1.5 AGGREGATE PLACEMENT THICKNESS  
Summary Sheet  
Week of 09/06/94**

Location	Thickness	Location	Thickness
M+17	3"	M+16	3"
M+15	3 1/2"	M+14	3 1/4"
M+13	3"	M.3+12	3"
M.5+15.5	3 1/4"	M.5+14.5	3 1/4"
M.5+13.5	3 1/2"	M.5+12.5	3 1/4"
M.5+11.5	3"	N+11	3"
N+12	4"	N+13	4"
N+13.5	3 1/4"	N.5+10.5	3"
N.5+11.5	3 1/4"	N.5+12.5	3"
O+10.2	3 1/2"	O+11	3 1/2"
O+12	4"	O.5+10.5	3 1/4"
O.5+11.5	3"	P+10	3 1/4"
P+11	3 1/2"	P.5+10.5	3 1/2"
Q+9.5	3 1/2"	Q+10	3"
Q+10.4	3 1/2"	Q.5+9.5	3 1/2"

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

DATE OF REPORT 10/07/94

**D50 1.5 AGGREGATE  
10/03/94**

Location	Thickness	Location	Thickness
M+2	3 1/4"	M+2.5	3"
M.5+2.5	3"	N+1	3 1/4"
N+2	3 1/2"	N+2.5	3 1/2"
N.5+1.5	3 1/4"	N.5+2.5	3 1/2"
O+3	3"	O+2	3 1/2"
O+1	4"	O.5+.5	3 1/2"
O.5+1.5	3"	O.5+2.5	3"
P+3	3"	P+2	4"
P+1	3 1/2"	P.5+1.5	3"
P.5+2.5	3 1/4"	Q+3	3 1/2"
Q+2	3"		

Dist: Client (3) Field File (1) Billing (1)

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APPENDIX I  
SOIL/ROCK MATRIX MEASUREMENTS

### SOIL COVER ON D50 1.5 AGGREGATE

After D50 1.5 aggregate thickness was accepted by UNC, Nielson's, Inc. placed soil material on top of D50 1.5 aggregate. Soil material was obtained from the Borrow Pit #2 stockpile. The method of placement of the soil material was accomplished with a scraper. Contour of the soil material was completed with a motor grader. A pneumatic compactor was utilized in an attempt to achieve soil cover penetration into the D50 1.5 aggregate material.

Soil cover was required by the project specifications to penetrate the top two inches of D50 1.5 aggregate with an additional three (3") to four (4") inches placed on top of the D50 1.5 aggregate. Isolated areas were thickened to provide adequate drainage. WT performed thickness measurements to assist in determining penetration depth and thickness of soil material on top of the D50 1.5 aggregate.



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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

DATE OF REPORT 09/17/94

**SOIL COVER ON D50 1.5 AGGREGATE  
09/01/94**

*Handwritten mark*

Location	Thickness	Location	Thickness
F.5-17.5	10 1/2"	E.5-17.5	3 1/2"
D.5-17.5	3 3/4"	C.5-17.5	5 1/2"
B.5-17.5	4"	A.5-17.5	5 1/2"
A+17	4"	B+17	3 3/4"
C+17	3"	D+17	3 1/2"
E+17	4"	F+17	5 3/4"
F.5+16.5	4"	E.5+16.5	4"
D.5+16.5	6 3/4"	C.5+16.5	3 1/4"
B.5+16.5	3 1/4"	A.5+16.5	4"
A+16	4"	B+16	3 3/4"
C+16	3 1/4"	D+16	3"
D.5+16	4"	D.5+15.5	6"
C.5+15.5	3"	B.5+15.5	3 1/2"
A.5+15.5	6 1/2"	A+15	5 3/4"
B+15	4"	C+15	6"

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WT JOB NO. 3144JK050

DATE OF REPORT 09/17/94

**SOIL COVER ON D50 1.5 AGGREGATE  
09/01/94**

Location	Thickness	Location	Thickness
A + 20	3 3/4"	B + 20	2 3/4"
C + 20	3"	D + 20	3 1/2"
E + 20	4"	F + 20	3 1/2"
G + 20	3 3/4"	H + 20	5 1/4"
G.5 + 19.5	5 1/4"	F.5 + 19.5	3 3/4"
E.5 + 19.5	4"	D.5 + 19.5	3 1/2"
C.5 + 19.5	3 3/4"	B.5 + 19.5	3 1/4"
A.5 + 19.5	3"	A + 19	4"
B + 19	3 3/4"	C + 19	3 3/4"
D + 19	3 3/4"	E + 19	3 1/4"
F + 19	3 1/2"	G + 19	5 1/4"
G.5 + 18.5	10"	F.5 + 18.5	3 3/4"
E.5 + 18.5	3"	D.5 + 18.5	5"
C.5 + 18.5	3 1/4"	B.5 + 18.5	3"
A.5 + 18.5	5 1/4"	A + 18	3"
B + 18	4"	C + 18	4"
D + 18	3 1/4"	E + 18	4"
F + 18	3 1/2"	G + 18	5"



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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

DATE OF REPORT 09/17/94

**SOIL COVER ON D50 1.5 AGGREGATE  
09/12/94**

*N*

Location	Thickness	Location	Thickness
F.5+12.5	3 1/2"	F.5+13.5	3 1/2"
F.5+14.5	3"	F.5+15.5	3 1/2"
F.5+16.5	3 3/4"	G+13	3 1/2"
G+14	3 1/4"	G+15	3 3/4"
G+16	3"	G+17	3 1/2"
G.5+13.5	3 1/2"	G.5+14.5	4 1/4"
G.5+15.5	3 1/2"	G.5+16.5	4"
G.5+17.5	4"	H+14	4 1/2"
H+15	4 1/2"	H+16	3 3/4"
H+17	4"	H+18	4"
H+19	4"	H.5+14.5	4 1/2"
H.5+15.5	3 3/4"	H.5+16.5	3"
H.5+17.5	4 1/2"	H.5+18.5	3 3/4"
H.5+19.5	3 1/2"	I+15	3 1/4"
I+16	3 1/2"	I+17	4 1/4"
I+18	4"	I+19	3 1/4"
I+20	3 1/2"	I.5+15.5	3 3/4"
I.5+16.5	3"	I.5+17.5	3 3/4"



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WT JOB NO. 3144JK050

DATE OF REPORT 09/17/94

*WJ*

**SOIL COVER ON D50 1.5 AGGREGATE  
09/12/94**

Location	Thickness	Location	Thickness
A + 14.5	3"	A + 14	3 3/4"
A + 13	4"	A.5 + 14.5	3 1/2"
A.5 + 13.5	4"	B + 13	4"
B + 14	3 1/2"	B + 14.5	3 1/2"
B.5 + 13.5	4"	B.5 + 14.5	4"
C + 13	4"	C + 14	4"
C + 14.5	3 1/2"	C.5 + 13.5	3 1/4"
C.5 + 14.5	3"	D + 13	3"
D + 14	3 1/2"	D + 15	4 1/4"
D + 15.5	3"	D.5 + 13.5	3 1/2"
D.5 + 14.5	3"	D.5 + 15.5	4"
E + 13	3 1/4"	E + 14	3 1/2"
E + 15	3 1/4"	E + 16	3 1/2"
E.5 + 12.5	4"	E.5 + 13.5	3 1/2"
E.5 + 14.5	3 1/2"	E.5 + 15.5	4 1/2"
F + 12.5	4"	F + 13	3 1/2"
F + 14	3 1/2"	F + 15	3 1/4"
F + 16	3 1/2"	F + 16.5	3 1/4"





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WT JOB NO. 3144JK050

DATE OF REPORT 09/17/94

**SOIL COVER ON D50 1.5 AGGREGATE  
09/14/94**

Location	Thickness	Location	Thickness
M+17	3 3/4"	M+16	4"
M+15	3 1/2"	M+14	3"
M+13	4"	M.5+15.5	4 1/2"
M.5+14.5	3 1/2"	M.5+13.5	4 1/2"
M.5+12.5	3"	M.5+11.5	3 1/4"
N+11	3 3/4"	N+12	3 1/2"
N+13	3 1/2"	N+14	3 1/2"
N.5+12.5	3 1/2"	N.5+11.5	3"
N.5+10.5	4"	O+11	3"
O+12	3 1/2"	O.5+10.5	3 1/4"
O.5+11.5	3 1/2"	P.5+10	3"
P.5+10.5	3 1/2"	Q+9.5	4 1/4"
Q+10.5	4 1/2"	R+9.2	3 1/2"
R+10	4"	S+9	4 3/4"
S+9.5	4"	S+10	3 1/2"



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WT JOB NO. 3144JK050

DATE OF REPORT 09/26/94

**SOIL COVER ON D50 1.5 AGGREGATE  
09/19/94**

Location	Thickness	Location	Thickness
G.5 + 12.5	4"	G.5 + 11.5	3 1/2"
H + 11	4 3/4"	H + 12	4"
H + 13	3"	H + 14	3 1/2"
H.5 + 10.5	3 1/4"	H.5 + 11.5	4 1/2"
H.5 + 12.5	4"	H.5 + 13.5	3 1/2"
H.5 + 14.5	3 1/2"	I + 10	6"
I + 11	3 1/4"	I + 12	4 1/2"
I + 13	4"	I + 14	3"
I + 15	3 1/2"	I.5 + 9.5	4 1/2"
I.5 + 10.5	3 1/4"	I.5 + 11.5	4"
I.5 + 12.5	3 3/4"	I.5 + 13.5	3 3/4"
I.5 + 14.5	3"	I.5 + 15.5	3"
J + 9	5 1/2"	J + 10	3 1/4"
J + 11	3 1/2"	J + 12	4 1/2"
J + 13	4"	J + 14	4"
J + 15	3 3/4"	J + 16	3"
J.5 + 8.5	6 1/2"	J.5 + 9.5	3"
J.5 + 10.5	3"	J.5 + 11.5	5 3/4"

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WT JOB NO. 3144JK050

DATE OF REPORT 09/26/94

SOIL COVER ON D50 1.5 AGGREGATE  
09/19/94

Location	Thickness	Location	Thickness
J.5 + 12.5	4"	J.5 + 13.5	4 1/2"
J.5 + 14.5	4 1/2"	J.5 + 15.5	3 1/2"
J.5 + 16.5	4"	K + 8	5 1/2"
K + 9	3 1/2"	K + 10	3"
K + 11	3"	K + 12	3 3/4"
K + 13	3"	K + 14	3"
K + 15	4"	K + 16	3"
K + 17	3 1/2"	K.5 + 6.5	5"
K.5 + 7.5	5"	K.5 + 8.5	3 1/2"
K.5 + 9.5	3 1/2"	K.5 + 14.5	4"
K.5 + 15.5	4"	K.5 + 16.5	3 1/2"
K.5 + 17.5	4 1/2"	L + 6	4 3/4"
L + 7	4 1/2"	L + 8	3 1/2"
L + 9	3"	L.5 + 4.5	4"
L.5 + 5.5	4 1/2"	L.5 + 6.5	4"
L.5 + 7.5	3 1/2"	L.5 + 8.5	3 1/2"
M + 2	3 3/4"	M + 3	3"
M + 4	3 1/2"	M + 5	4 1/2"
M + 6	4"	M + 7	4 3/4"
M + 8	4 3/4"	M + 8.5	3 1/2"

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WT JOB NO. 3144JK050

DATE OF REPORT 10/03/94

**SOIL COVER ON D50 1.5 AGGREGATE  
09/29/94**

Location	Thickness	Location	Thickness
M.5 + 8.5	3 1/2"	M.5 + 9.5	3 1/2"
M.5 + 10.5	3 1/2"	N + 8.5	4"
N + 9	3 1/2"	N + 10	3 1/4"
N + 11	4"	N.5 + 8.5	4"
N.5 + 9.5	3"	N.5 + 10.5	3 1/2"
O + 8	3 1/4"	O + 9	3"
O + 10	3"	O.5 + 8.5	3"
O.5 + 9.5	3"	O.5 + 3.5	3"
Q.5 + 4.5	3"	Q.5 + 5.5	3"
Q.5 + 6.5	3"	Q.5 + 7.5	4"
Q.5 + 8.5	3"	Q.5 + 9.5	3 1/2"
R + 9	3 1/4"	R + 8	3"
R + 7	3"	R + 6	4"
R.5 + 6.5	3"	R.5 + 7.5	4"
R.5 + 8.5	4"	S + 8	3 1/2"
S + 9	4"		

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WT JOB NO. 3144JK050

DATE OF REPORT 10/03/94

SOIL COVER ON D50 1.5 AGGREGATE  
09/29/94

Location	Thickness	Location	Thickness
L+17	3"	L+16	3"
L+15	4"	L+14	3"
L+13	3 1/4"	L+12	3 1/4"
L+11	3"	L+10	3"
L.5+9.5	3"	L.5+10.5	3"
L.5+11.5	3 1/2"	L.5+12.5	4"
L.5+13.5	3"	L.5+14.5	3"
L.5+15.5	3"	L.5+16.5	3"
L.5+17.5	3 1/2"	P+8	3"
P+9	4"	P+9.8	3"
P.5+7.5	3 1/2"	P.5+8.5	3 1/2"
P.5+9.5	3 1/2"	Q+7.3	4"
Q+8	3"	Q+9	3"
Q+9.5	3 1/2"	Q+3	3"
K+10	3 1/2"	K.5+9.5	3"
K.5+10.5	3 1/4"	K.5+11.5	3 1/2"
K.5+12.5	4"	K.5+13.5	3"
K.5+14.5	3 1/4"	K.5+15.5	3"
M+9	3 1/2"	M+10	4"
M+11	4"	M+12	3"

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WT JOB NO. 3144JK050

DATE OF REPORT 10/07/94

SOIL COVER ON D50 1.5 AGGREGATE  
10/04/94

Location	Thickness	Location	Thickness
L + 17	4"	L + 16	4"
L + 15	3"	L + 14	3 3/4"
L + 13	6"	L + 12	4"
L + 11	4"	L + 10	3 3/4"
L.5 + 9.5	3 3/4"	L.5 + 10.5	3 1/4"
L.5 + 11.5	4"	L.5 + 12.5	3 1/2"
L.5 + 13.5	3"	L.5 + 14.5	3 1/4"
L.5 + 5.5	5"	L.5 + 16.5	3 1/2"
L.5 + 17.5	3 1/2"	P + 8	4 3/4"
P + 9	3"	P + 9.8	4 1/4"
P.5 + 7.5	4"	P.5 + 8.5	3"
P.5 + 9.5	4 1/2"	Q + 7.3	4"
Q + 8	4"	Q + 9	3 1/2"
Q + 9.5	3 1/2"	Q + 3	4 3/4"
K + 10	3"	K.5 + 9.5	3"
K.5 + 10.5	3 1/2"	K.5 + 11.5	4"

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WT JOB NO. 3144JK050

DATE OF REPORT 10/07/94

SOIL COVER ON D50 1.5 AGGREGATE  
10/04/94

Location	Thickness	Location	Thickness
K.5 + 12.5	3 1/4"	K.5 + 13.5	3"
K.5 + 14.5	3 1/2"	K.5 + 15.5	4 1/2"
M + 9	4"	M + 10	3 1/4"
M + 11	4"	M + 12	3 1/2"
M.5 + 8.5	4 1/4"	M.5 + 9.5	3 3/4"
M.5 + 10.5	3"	N + 8.5	3 1/2"
N + 9	3"	N + 10	3"
N + 11	3"	N.5 + 8.5	4 1/4"
N.5 + 9.5	4"	N.5 + 10.5	3 3/4"
O + 8	4"	O + 9	3"
O + 10	3 1/2"	O.5 + 8.5	3 1/2"
O.5 + 9.5	4 1/2"	Q.5 + 3.5	3"
Q.5 + 4.5	3 1/2"	Q.5 + 5.5	7"
Q.5 + 6.5	3 1/4"	Q.5 + 7.5	4"
Q.5 + 8.5	3"	Q.5 + 9.5	3"
R + 9	3 1/4"	R + 8	4"

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WT JOB NO. 3144JK050

DATE OF REPORT 10/07/94

**SOIL COVER ON D50 1.5 AGGREGATE  
10/05/94**

Location	Thickness	Location	Thickness
M+2	4"	M+2.5	3 1/4"
M.5+2.5	3 1/4"	N+1	3 1/4"
N+2	3 1/2"	N+2.5	3 1/4"
N.5+1.5	3 1/4"	N.5+2.5	3 1/2"
O+3	3"	O+2	3 1/2"
O+1	3 1/4"	O.5+.5	3 1/2"
O.5+1.5	3"	O.5+2.5	3"
P+3	3 1/2"	P+2	4"
P+1	3 1/2"	P.5+1.5	3"
P.5+2.5	3 1/4"	Q+3	3 1/2"
Q+2	3 1/4"		

Dist: Client (3) Field File (1) Billing (1)

/cb:UNC.THI



APPENDIX J

TEST RESULTS, SWALES A, B, C, D AND H

## SWALES

Swales designated as A, B, C, D and H were constructed during the 1994 Reclamation project. Nielson's, Inc. contoured the existing native material to the excavation grade. Field density tests, in addition to maximum density proctor values were performed to assist in determining if native soil was compacted to a minimum of 90% of ASTM D698. Afterwards, Nielson's, Inc. placed approximately 1.75 feet of soil with the exception of Swales A and B; obtained from Borrow Pit #2 stockpile to the specified elevations provided by UNC. Swales A and B did not have radon attenuation cover placed since native materials were not tailings and showed no radon emissions. Radon attenuation cover was processed and compacted to a minimum of 95% of ASTM D698 as noted at the specific test locations with moisture specification of optimum to plus 2% of optimum moisture. Field densities, proctor values and soil classifications were completed to assist in determining if the radon attenuation cover (RAC) layer met project specifications.

Bedding material (crusher fines), was placed upon RAC in lifts ranging from 3 to 3 1/2 inches thick. Nielson's, Inc. placed bedding material by manual means. WT measured the in-place bedding material for thickness at various locations to indicate if thickness conformed to project specifications at the specific test locations.

D50 1.5 aggregate was placed on in-place bedding material with the exception of Swale H. D50 1.5 aggregate ranged from 3" to 4" thick. Swale H had D50 .35 aggregate and D50 3 inch aggregate placed instead of D50 1.5 aggregate. Nielson's, Inc. used manual means in an effort to meet project thickness requirement. WT measured aggregates for thickness to determine whether the materials conformed to the project requirements for thickness at the specific test locations.

Areas where material thickness were not in compliance were reworked by Nielson's, Inc.





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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay, Native</u>	Sampled By: <u>R. Whitaker/WT</u>	Date: <u>06/28/94</u>
Source: <u>Swale A; Station 6 + 00</u>	Submitted By: <u>R. Whitaker/WT</u>	Date: <u>06/28/94</u>
<u>Elevation 7004.1</u>	Authorized By: <u>Client</u>	Date: <u>06/28/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.7</u>
Optimum Moisture, %	<u>14.0</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
184.28/bc

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied, is included or intended.

REVIEWED BY R. Whitaker



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**SOIL/AGGREGATE FIELD DENSITY TEST**

ENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440279-7*  
REPORT DATE *09-02-94*  
REVIEWED BY *R. Zubrod*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *08-29-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	7.6	103.7	91	113.7	90	N/A	YES
2	10.4	115.5	100+	113.7	90	N/A	YES
3	11.7	110.4	97	113.7	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/29	Swale A, Station 7+00, Bottom of Swale	7003.9
2	08/29	Swale A, Station 9+00, W. Berm	7006.0
3	08/29	Swale A, Station 11+00, Bottom of Swale	7003.1

+DATUM: *Elev. of Test = Top of Native Subgrade*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY NATIVE	SWALE B, STA 14+00 E6993.68	14.0	113.7	D698-A

Copies to: Addressee - (3)  
Field File & Billing (2)



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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 09/02/94**

**SWALE A  
BEDDING SAND PLACEMENT  
THICKNESS  
08/31/94**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
13+00	3"	3 1/4"	3"
12+00	3"	3"	3"
11+00	3"	3 1/4"	3"
10+00	3 1/4"	3 1/2"	3"
9+00	3"	3 1/2"	3 1/4"
8+00	3"	3 1/4"	3 1/2"
7+00	3"	3 1/4"	3"
6+00	3 1/4"	3 1/2"	3 1/2"

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**WT JOB NO. 3144JK050**

**DATE OF REPORT 09/02/94**

**SWALE A  
BEDDING SAND PLACEMENT  
THICKNESS  
08/31/94**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
5 + 00	3"	3"	3"
4 + 00	3"	3"	3"

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 09/12/94**

*N*

**SWALE A  
D50 1.5 AGGREGATE  
THICKNESS  
09/08/94**

STATION NO.	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
5+00	3 1/2"	3"	3"
6+00	3"	3 3/4"	3 1/4"
7+00	3 1/4"	4"	3 1/2"
8+00	3 1/4"	4"	3 3/4"
9+00	3"	3 3/4"	3 1/4"
10+00	3 1/4"	3 1/2"	3 1/4"
11+00	3 1/2"	3 1/2"	3 3/4"
12+00	3 1/4"	3 1/4"	3 1/2"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050

TEST SUMMARY FOR SWALE B

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/20/94	Proctor	8+00	---	---	6998.6	Native	114.9	13.8	---	CL	Yes
06/28/94	Proctor	14+00	---	---	6993.68	Native	113.7	14.0	---	CL	Yes
08/18/94	Sandcone	14+00	Bottom of Berm	---	6993.6	Native	115.2	11.9	100	CL	Yes
08/18/94	Sandcone	12+00	West Berm	---	6995.3	Native	99.6	7.9	88	CL	No
08/18/94	Retest #2	---	---	---	6995.3	Native	102.1	6.8	90	---	Yes
08/18/94	Sandcone	10+00	Bottom of Swale	---	6997.0	Native	115.0	8.1	100	CL	Yes
08/18/94	Sandcone	8+00	West Berm	---	6998.6	Native	114.8	5.7	100	CL	Yes
08/23/94	Sandcone	6+00	Right Berm	---	7002.2	Native	106.4	10.7	93	CL	Yes
08/23/94	Sandcone	4+00	Bottom	---	7001.9	Native	117.6	9.7	100	CL	Yes
08/23/94	Sandcone	2+00	Left Berm	---	7005.3	Native	103.1	10.8	90	CL	Yes
08/29/94	Bedding Sand Thickness Measurement	---	---	---	---	---	---	---	---	---	Yes
09/08/94	D10 1.5 Aggregate	Thickness Measurement	---	---	---	---	---	---	---	---	Yes



Right Berm = West Berm

RAC = Radon Attenuation Cover

JK050.SUM/cb



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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Silty Lean Clay, Native      Sampled By: H. Kuebler/WT      Date 06/20/94

Source: Swale B, Station 8 +00,      Submitted By: H. Kuebler/WT      Date 06/20/94

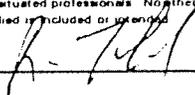
Elevation 6998.6      Authorized By: Client      Date 06/20/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>114.9</u>
Optimum Moisture, %	<u>13.8</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
184.18/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay, Native</u>	Sampled By: <u>R. Whitaker/WT</u>	Date: <u>06/28/94</u>
Source: <u>Swale B; Station 14 +00</u>	Submitted By: <u>R. Whitaker/WT</u>	Date: <u>06/28/94</u>
<u>Elevation 6993.68</u>	Authorized By: <u>Client</u>	Date: <u>06/28/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.7</u>
Optimum Moisture, %	<u>14.0</u>

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184.27/bc

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440279-4*  
REPORT DATE *08-24-94*  
REVIEWED BY *R. Zubrod*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *08-18-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	11.9	115.2	100+	113.7	90	N/A	YES
2	7.9	99.6	88	113.7	90	N/A	NO
3	6.8	102.1	90	113.7	90	N/A	YES
4	8.1	115.0	100+	113.7	90	N/A	YES
5	5.7	114.8	100+	113.7	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/18	Swale B, Station 14+00, Bottom of Berm	6993.6
2	08/18	Swale B, Station 12+00, West Berm	6995.3
3	08/18	Retest #2 (08/18/84)	6995.3
4	08/18	Swale B, Station 10+00, Bottom	6997.0
5	08/18	Swale B, Station 8+00, West Berm	6998.6

+ DATUM: Elev. of Test = Top of Finish Subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY NATIVE	SWALE B, STA 14+00 E6993.68	14.0	113.7	D698-A

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440279-6*  
REPORT DATE *08-30-94*  
REVIEWED BY *R. Zubrod*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *08-23-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	10.7	106.4	93	114.9	90	N/A	YES
2	9.7	117.6	100+	114.9	90	N/A	YES
3	10.8	103.1	90	114.9	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/23	Station 6+00, Swale B, Right Berm	7002.2
2	08/23	Station 4+00, Swale B, Bottom	7001.9
3	08/23	Station 2+00, Swale B, Left Berm	7005.3

+ DATUM: *Elev. of Test = Top of Native Subgrade*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	SWALE, B STA 8+00 NATIVE	13.8	114.9	D698-A

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/29/94**

**SWALE B  
BEDDING SAND PLACEMENT  
THICKNESS**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
14+00	3"	3 1/2"	3 1/2"
13+00	3 1/2"	3 1/2"	3 1/4"
12+00	3"	3"	3"
11+00	3"	3"	3"
10+00	3 1/4"	3 1/4"	3 1/2"
9+00	3"	3"	3 1/2"
8+00	3"	3"	3"
7+00	3 1/2"	3"	3 1/2"

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/29/94**

**SWALE B  
BEDDING SAND PLACEMENT  
THICKNESS**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
6+00	3 1/4"	3 1/2"	3"
5+00	3"	3 1/2"	3"
4+00	3"	3"	3"
3+00	3"	3"	3"

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 09/12/94**

**SWALE B  
D50 1.5 AGGREGATE  
THICKNESS  
09/08/94**

STATION NO.	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
13+00	3 1/4"	3 1/2"	3"
12+00	3 1/2"	3"	3 1/2"
11+00	3 1/4"	3 3/4"	3 1/4"
10+00	3"	3 1/2"	3 3/4"
9+00	3 1/2"	3"	3 1/4"
8+00	3"	3 3/4"	3"
7+00	4"	3 1/2"	3 3/4"
6+00	3 1/4"	3 1/4"	3 1/4"
5+00	3 1/4"	3 1/4"	3 1/4"
4+00	3 3/4"	3 1/2"	4"
3+00	4"	3 1/2"	3 1/2"
2+00	3 1/4"	3"	3 3/4"

Dist: Client (3) Field File (1) Billing (1)

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

TEST SUMMARY FOR SWALE C

DATE OF REPORT 10/03/94

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/14/94	Proctor	16+00	...	...	6983.6	Native	126.0	12.0	...	CL	Yes
06/14/94	Proctor	6+00	...	...	6988.0	Native	117.0	12.8	...	CL	Yes
06/14/94	Sandcone	6+00	Swale Bottom	...	6981.5	Native	125.2	9.2	100	CL	Yes
06/14/94	Sandcone	8+00	Swale Bottom	...	6980.9	Native	122.4	4.1	100	CL	Yes
06/14/94	Sandcone	10+00	Swale Bottom	...	6980.4	Native	113.6	3.7	97	CL	Yes
06/14/94	Sandcone	12+00	Swale Bottom	...	6979.8	Native	125.4	5.7	100	CL	Yes
06/14/94	Sandcone	14+00	East Slope Berm	...	6981.0	Native	119.3	7.5	95	CL	Yes
06/14/94	Sandcone	16+00	West Slope Berm	...	6979.5	Native	129.5	6.3	100	CL	Yes
06/14/94	Sandcone	18+00	East Slope Berm	...	6979.1	Native	130.4	5.4	100	CL	Yes
07/05/94	Proctor	6+00	...	...	6988.0	RAC	111.5	13.8	...	CL	Yes
08/10/94	Proctor Thickness Measurement	16+00	...	...	6984.8	RAC	113.5	13.2	...	CL	Yes

RAC = Radon Attenuation Cover

JK050 SUM/jcb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

TEST SUMMARY FOR SWALE C

DATE OF REPORT 10/03/99

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
08/15/94	Sandcone	10+00	Right Berm	...	6990.7	RAC	111.4	13.9	100	CL	Yes
08/15/94	Sandcone	8+00	Bottom	...	6989.8	RAC	120.6	15.6	100	CL	Yes
08/15/94	Sandcone	6+00	Left Berm	...	6992.8	RAC	116.8	14.9	100	CL	Yes
08/15/94	Sandcone	4+00	Bottom	...	6991.8	RAC	113.1	14.2	100	CL	Yes
08/15/94	Sandcone	16+00	Right Berm	...	6987.8	RAC	115.6	15.0	100	CL	Yes
08/15/94	Sandcone	14+00	Left Berm	...	6988.8	RAC	111.9	15.0	99	CL	Yes
08/15/94	Sandcone	12+00	Bottom	...	6987.8	RAC	115.5	14.6	100	CL	Yes
08/15/94	Sandcone	2+00	Bottom	...	6992.8	RAC	114.6	14.0	100	CL	Yes
08/19/94	Bedding Sand Thickness Measurement	...	...	...	...	...	...	...	...	...	Yes
08/24/94	D50 1.5 Aggregate	Thickness Measurement	...	...	...	...	...	...	...	...	Yes
09/26/94*	Soil Classification	13+00	...	...	6987.8	RAC	...	...	...	...	Yes
09/26/94*	Soil Classification	8+00	...	...	6990.3	RAC	...	...	...	...	Yes
09/26/94*	Soil Classification	4+00	...	...	6992.3	RAC	...	...	...	...	Yes

\* = Sampled during time of placement. Due to scheduling, samples were tested at later date.

RAC = Radon Attenuation Cover

JK050 SUM/cb







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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

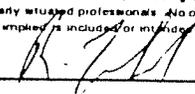
Material: <u>Silty Sand, Native</u>	Sampled By: <u>R. Davis/WT</u>	Date: <u>06/14/94</u>
Source: <u>Swale C, Station 6+00,</u>	Submitted By: <u>R. Davis/WT</u>	Date: <u>06/14/94</u>
<u>Elevation 6988.0</u>	Authorized By: <u>Client</u>	Date: <u>06/14/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>117.0</u>
Optimum Moisture, %	<u>12.8</u>

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**SOIL/AGGREGATE FIELD DENSITY TEST**

ENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-9  
REPORT DATE 10-19-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : R. Davis/WT

DATE : 06-14-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	9.2	125.2	100+	117.0	90	N/A	YES
2	4.1	122.4	100+	117.0	90	N/A	YES
3	3.7	113.6	97	117.0	90	N/A	YES
4	5.7	125.4	100	126.0	90	N/A	YES
5	7.5	119.3	95	126.0	90	N/A	YES
6	6.3	129.5	100+	126.0	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	6/14	Station 6+00 of Centerline; Bottom of Swale "C".	6981.5
2	6/14	Station 8+00 of Centerline; Bottom of Swale "C".	6980.9
3	6/14	Station 10+00 of Centerline; Bottom of Swale "C".	6980.4
4	6/14	Station 12+00 of Centerline; Bottom of Swale "C".	6979.8
5	6/14	Station 14+00; E. Slope; Swale "C"; 15' E. of Centerline.	6981.0
6	6/14	Station 16+00; W. Slope; 13" W. of Centerline; Swale "C".	6979.5

+DATUM: Elev of Test = Top of Native Subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217
6	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Clay	Borrow Pit #2 Stock Pile	12.8	117.0	D698-A
Silty Clay	Borrow Pit #2 Stock Pile	12.0	126.0	D698-A

Copies to: Addressee - (3)  
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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184-9*  
REPORT DATE *10-19-94*  
REVIEWED BY *M. Branson*  
PAGE 2

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *R. Davis/WT*

DATE : *06-14-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	5.4	130.4	100+	126.0	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	6/14	<i>Station 18+00; E. Slope; 8" E. of Centerline; Swale "C".</i>	6979.1

+ DATUM: *Elev of Test = Top of Native Subgrade*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
7	<i>Subgrade</i>	<i>ASTM D-1556/AASHTO T-217</i>



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales		Job No. <u>3144JK050</u>
			Lab/Inv. No. <u>31440184</u>
			Report Date: <u>07/18/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay, (RAC)</u>	Sampled By: <u>R.Whitaker/WT</u>	Date <u>07/05/94</u>
Source:	<u>Swale C; Station 6 + 00</u>	Submitted By: <u>R.Whitaker/WT</u>	Date <u>07/05/94</u>
	<u>Elevation 6988.0</u>	Authorized By: <u>Client</u>	Date <u>07/05/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>111.5</u>
Optimum Moisture, %	<u>13.8</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.2/bc

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REVIEWED BY *R. Whitaker*





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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/19/94**

**SWALE C  
BEDDING SAND PLACEMENT  
THICKNESS  
08/09/94**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
11+00	3"	3 1/2"	3 1/4"
12+00	3 1/2"	3 1/2"	3"
13+00	3 1/2"	3"	3 1/2"
14+00	3 1/4"	3"	3 1/4"
15+00	3 1/2"	3 1/4"	3 1/2"
16+00	3 1/4"	3 1/2"	3 1/2"

Dist: Client (3) Field File (1) Billing (1)

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**SOIL/AGGREGATE FIELD DENSITY TEST**

ENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440279-5*  
REPORT DATE *08-30-94*  
REVIEWED BY *R. Zubrod*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *08-15-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	13.9	111.4	100	111.5	95	13.8 to 15.8	YES
2	15.6	120.6	100+	111.5	95	13.8 to 15.8	YES
3	14.9	116.8	100+	111.5	95	13.8 to 15.8	YES
4	14.2	113.1	100+	111.5	95	13.8 to 15.8	YES
5	15.0	115.6	100+	113.0	95	13.2 to 15.2	YES
6	15.0	111.9	99	113.0	95	13.2 to 15.2	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/15	Swale C, Station 10+00, Right Berm	6990.7
2	08/15	Swale C, Station 8+00, Bottom	6989.8
3	08/15	Swale C, Station 6+00, Left Berm	6992.8
4	08/15	Swale C, Station 4+00, Bottom	6991.8
5	08/15	Swale C, Station 16+00, Right Berm	6987.8
6	08/15	Swale C, Station 14+00, Left Berm	6988.8

+DATUM: Elev. of Test = Top of RAC Soil Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217
6	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	W. CONTROL DITCH STA 18+50	13.2	113.0	D698-A
SANDY LEAN CLAY	SWALE C STA. 6+00 EL = 6988.	13.8	111.5	D698-A

Copies to: Addressee - (3)  
Field File & Billing (2)



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**SOIL/AGGREGATE FIELD DENSITY TEST**

ENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440279-5*  
REPORT DATE *08-30-94*  
REVIEWED BY *R. Zubrod*  
PAGE 2

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *08-15-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	14.6	115.5	100+	113.0	95	13.2 to 15.2	YES
8	14.0	114.6	100+	111.5	95	13.8 to 15.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	08/15	<i>Swale C, Station 12+00, Bottom</i>	6987.8
8	08/15	<i>Swale C, Station 2+00, Bottom</i>	6992.8

+ DATUM: *Elev. of Test = Top of RAC Soil Cover*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
7 8	<i>Subgrade Subgrade</i>	<i>ASTM D-1556/AASHTO T-217 ASTM D-1556/AASHTO T-217</i>



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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/19/94**

**SWALE C  
BEDDING SAND PLACEMENT  
THICKNESS  
08/12/94**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
10+00	3 1/4"	3"	3"
9+00	3"	3 1/4"	3"
8+00	3 1/4"	3"	3 1/2"
7+00	3"	3"	3"
6+00	3"	3"	3 1/4"
6+50	3"	3 1/4"	3"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050



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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/24/94**

**SWALE C  
BEDDING SAND PLACEMENT  
THICKNESS  
08/19/94**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
6+00	3"	3"	3"
5+00	3"	3"	3"
4+00	3 1/2"	3 1/4"	3 1/2"
3+00	3 1/4"	3"	3 1/2"
2+00	3"	3"	3"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050



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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/24/94**

**SWALE C  
D50 1.5 AGGREGATE PLACEMENT  
THICKNESS  
08/19/94**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
17+00	3 1/4"	3"	3 1/2"
16+00	3 1/4"	3 1/4"	3 1/2"
15+00	3 1/2"	3 1/2"	3 1/2"
14+00	3 1/4"	3"	3 1/2"
13+00	3 1/2"	3 1/4"	3 1/2"
12+00	3 1/2"	3 1/2"	3 1/2"
11+00	3 1/2"	3"	3"
10+00	3"	3 1/2"	3 1/4"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050



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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

DATE OF REPORT 08/24/94

*ni*

**SWALE C  
D50 1.5 AGGREGATE PLACEMENT  
THICKNESS  
08/19/94**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
9+00	3 1/2"	3 1/2"	3"
8+00	3 1/2"	3 1/2"	3 1/4"
7+00	3 1/2"	3 1/2"	3"
6+00	3"	3"	3 1/4"
5+00	3 1/2"	3"	3 1/2"
4+00	3 1/2"	3 1/2"	4"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 10/03/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 09/26/94

Source: Swale C, Station 13+00      Submitted By: H. Kuebler/WT      Date 09/26/94

Elevation 6987.8      Authorized By: Client      Date 09/26/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	96	90-100
8	93	
10	93	85-100
16	91	
30	90	
40	89	65-100
50	88	
100	77	50-100
200	55.0	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 16

Copies to: Addressee (3), Billing (1)  
336.12/bc

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WT and client. WT warrants that this was performed under the appropriate standard of care, including the skill and judgement that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

REVIEWED BY: *H. Kuebler*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 10/03/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 09/26/94

Source: Swale C, Station 8+00 (RAC)      Submitted By: H. Kuebler/WT      Date 09/26/94

Elevation 6990.3      Authorized By: Client      Date 09/26/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	98	
1/4"		
No. 4	95	90-100
8	92	
10	91	85-100
16	90	
30	89	
40	88	65-100
50	87	
100	76	50-100
200	60.0	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 26  
Plasticity Index 11

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050

Lab/Inv. No. 31440336

Report Date: 10/03/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay Sampled By: H. Kuebler/WT Date 09/26/94

Source: Swale C, Station 4+00 (RAC) Submitted By: H. Kuebler/WT Date 09/26/94

Elevation 6992.3 Authorized By: Client Date 09/26/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	97	90-100
8	95	
10	92	85-100
16	91	
30	91	
40	91	65-100
50	90	
100	78	50-100
200	51.0	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_

Dry Density, pcf \_\_\_\_\_

Maximum Swell, % \_\_\_\_\_

Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf

(ASTM D698A)

Maximum Dry Density \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 24

Plasticity Index 17

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REVIEWED BY \_\_\_\_\_

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK051

TEST SUMMARY FOR SWALE D

DATE OF REPORT 10/03/94

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
06/07/94	Proctor	14 + 50	...	...	6979.0	Tailings Native	114.4	13.0	...	SM	Yes
06/07/94	Proctor	7 + 00	...	...	6981.21	Native	110.6	12.7	...	SM	Yes
06/07/94	Sandcone	6 + 50	Swale Bottom	...	6981.3	Native	115.9	6.8	100	SM	Yes
06/07/94	Sandcone	8 + 50	East Slope Berm	...	6982.1	Native	101.8	5.1	92	SM	Yes
06/07/94	Sandcone	10 + 50	West Slope Berm	...	6981.6	Native	109.8	7.4	99	SM	Yes
06/07/94	Sandcone	12 + 50	Swale Bottom	...	6979.7	Native	99.4	6.8	90	SM	Yes
06/07/94	Sandcone	14 + 50	West Slope Berm	...	6979.0	Native	109.8	6.5	96	SM	Yes
06/07/94	Sandcone	16 + 50	East Slope Berm	...	6979.0	Native	108.5	7.4	95	SM	Yes
06/07/94	Sandcone	18 + 50	Swale Bottom	...	6978.0	Native	115.5	9.4	100	SM	Yes
06/08/94	Proctor	20 + 50	...	...	6978.6	Native	110.5	15.0	...	ML-CL	Yes
06/08/94	Sandcone	24 + 50	Swale Bottom	...	6976.3	Native	111.3	8.3	97	SM	Yes
06/08/94	Sandcone	22 + 50	Swale Bottom	...	6976.9	Native	104.3	7.8	94	ML-CL	Yes
06/08/94	Sandcone	20 + 50	East Slope Berm	...	6978.6	Native	101.1	7.4	91	ML-CL	Yes

RAC = Radon Attenuation Cover

JK050 SUM/cb

TEST SUMMARY FOR SWALE D

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
06/09/94	Proctor	8 + 00	...	...	6982.5	Intern RAC	108.7	16.4	...	CL	Yes
06/10/94	Soil Classification	8 + 00	...	...	6982.5	Intern RAC	...	...	...	CL	Yes
06/10/94	Proctor Point	22 + 00	...	...	6977.5	Intern RAC	108.7	16.4	...	CL	Yes
06/10/94	Soil Classification	22 + 00	...	...	6977.5	Intern RAC	...	...	...	CL	Yes
06/10/94	Sandcone	6 + 00	Swale Bottom	...	6982.5	Intern RAC	100.9	14.7	93	CL	No
06/10/94	Sandcone	8 + 00	Left Slope Berm	...	6983.5	Intern RAC	92.8	11.5	85	CL	No
06/10/94	Sandcone	26 + 00	Right Slope Berm	...	6978.1	Intern RAC	113.9	18.1	100	CL	Yes
06/10/94	Sandcone	24 + 00	Swale Bottom	...	6977.4	Intern RAC	102.0	17.1	94	CL	No
06/10/94	Sandcone	22 + 00	Left Slope Berm	...	6979.0	Intern RAC	102.6	17.6	94	CL	No
06/10/94	Sandcone	20 + 00	Right Slope Berm	...	6978.6	Intern RAC	102.3	17.7	94	CL	No

RAC = Radon Attenuation Cover



UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY FOR SWALE D

DATE OF REPORT 10/03/99

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
06/15/94	Sandcone	28+00	North Slope Berm	---	6978.1	Intern RAC	112.8	18.1	100+	CL	Yes
06/15/94	Sandcone	26+00	Retest 6/10/94	---	6978.1	Intern RAC	121.8	18.1	100+	CL	Yes
06/15/94	Sandcone	24+00	Retest 6/10/94	---	6977.4	Intern RAC	117.3	17.1	100+	CL	Yes
06/15/94	Sandcone	22+00	Retest 6/10/94	---	6979.0	Intern RAC	119.6	17.6	100+	CL	Yes
06/15/94	Sandcone	20+00	Retest 6/10/94	---	6978.6	Intern RAC	121.4	17.7	100+	CL	Yes
06/15/94	Sandcone	18+00	West of Center-Line, Swale Bottom Berm	---	6979.1	Intern RAC	119.3	18.3	100+	CL	Yes
06/15/94	Sandcone	16+00	15' East of Centerline, Berm Slope	---	6980.1	Intern RAC	119.3	17.5	100+	CL	Yes
06/15/94	Sandcone	14+00	10' South of Centerline, Berm Slope	---	6979.1	Intern RAC	116.4	16.8	100+	CL	Yes
06/15/94	Sandcone	12+00	8' North of Centerline, Berm Slope	---	6979.8	Intern RAC	122.4	17.4	100+	CL	Yes
06/15/94	Sandcone	10+00	Swale Bottom	---	6980.4	Intern RAC	110.7	17.4	100+	CL	Yes
06/15/94	Soil Classification	16+00	---	---	6979.1	Intern RAC	---	---	---	CL	Yes

RAC = Radon Attenuation Cover

TEST SUMMARY FOR SWALE D

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/16/94	Sandcone	8+00	Swale Bottom Retest 6/10/94	...	6981.9	Intern RAC	106.4	18.1	98	CL	Yes
06/16/94	Sandcone	6+00	Right Berm Retest 6/10/94	...	6983.6	Intern RAC	112.5	17.4	100	CL	Yes
06/16/94	Sandcone	4+00	Left Berm	...	6983.8	Intern RAC	107.9	17.9	99	CL	Yes
06/21/94	Proctor	5+00	...	...	6983.0	RAC	113.0	13.6	...	CL	Yes
06/21/94	Proctor	20+00	...	...	6978.2	RAC	113.0	13.4	...	CL	Yes
06/27/94	Proctor	26+00	...	...	6977.1	RAC	111.8	14.8	...	CL	Yes
06/28/94	Sandcone	4+00	...	...	6983.3	RAC	108.0	15.5	96	CL	Yes
06/28/94	Sandcone	8+00	...	...	6982.2	RAC	112.9	15.6	100	CL	Yes
07/01/94	Soil Classification	5+00	...	...	6983.0	RAC	...	...	...	CL	Yes
07/01/94	Sandcone	10+00	Left Berm	...	6983.6	RAC	101.3	9.7	90	CL	No
07/01/94	Sandcone	12+00	Swale Bottom	...	6981.1	RAC	111.5	15.2	99	CL	Yes
07/01/94	Sandcone	14+00	Left Berm	...	6982.0	RAC	97.1	12.5	86	CL	No

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

TEST SUMMARY FOR SWALE D

DATE OF REPORT 10/03/95

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/01/94	Sandcone	16+00	Right Berm	...	6981.9	RAC	104.7	14.6	93	CL	No
07/01/94	Sandcone	18+00	Swale Bottom	...	6979.3	RAC	99.4	17.4	88	CL	No
07/05/94	Sandcone	14+00	Retest	...	6982.0	RAC	120.4	13.5	100	CL	Yes
07/05/94	Sandcone	16+00	Retest	...	6981.9	RAC	107.3	14.6	95	CL	Yes
07/05/94	Sandcone	18+00	Retest	...	6979.3	RAC	110.4	13.5	98	CL	Yes
07/06/94	Soil Classification	12+00	...	...	6981.0	RAC	...	...	...	CL	Yes
07/06/94	Soil Classification	20+00	...	...	6978.6	RAC	...	...	...	CL	Yes
07/06/94	Soil Classification	4+00	...	...	6983.0	RAC	...	...	...	CL	Yes
07/08/94	Soil Classification	8+00	...	...	6981.9	RAC	...	...	...	CL	Yes
07/11/94	Sandcone	20+00	Right Berm	...	6980.9	RAC	108.3	15.2	96	CL	Yes
07/11/94	Sandcone	25+00	Swale Berm	...	6977.7	RAC	115.3	14.7	100	CL	Yes
07/11/94	Sandcone	27+00	Left Berm	...	6978.9	RAC	117.3	14.9	100	CL	Yes
07/11/94	Bedding Sand Thickness Measurement	...	...	...	...	...	...	...	...	...	Yes
08/01/94	D50 1.5 Aggregate Measurement	Thickness Measurement	...	...	...	...	...	...	...	...	Yes
08/08/94	D50 1.5 Aggregate Measurement	Thickness Measurement	...	...	...	...	...	...	...	...	Yes
09/15/94	Sandcone	10+00	Left Berm Retest #1 7/1/94	...	6983.6	RAC	112.9	15.2	100	CL	Yes

RAC = Radon Attenuation Cover



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 06/16/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Silty Sand Sampled By: H. Kuebler/WT Date 06/07/94

Source: Swale D, Station 14 + 50, Submitted By: H. Kuebler/WT Date 06/07/94

Elevation 6979.0 Authorized By: Client Date 06/07/94

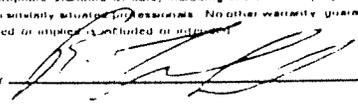
Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf 114.4

Optimum Moisture, % 13.0

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184.8/bc

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PREPARED BY: 



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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 06/16/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

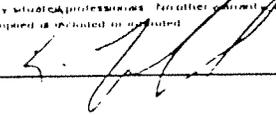
Material: <u>Silty Sand</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/07/94</u>
Source: <u>Swale D, Station 7 + 00,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/07/94</u>
<u>Elevation 6981.21</u>	Authorized By: <u>Client</u>	Date: <u>06/07/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>110.6</u>
Optimum Moisture, %	<u>12.7</u>

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184.7/bc

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-3  
REPORT DATE 06-16-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler

DATE : 06-07-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	6.8	115.9	100+	110.6	90	N/A	YES
2	5.1	101.8	92	110.6	90	N/A	YES
3	7.4	109.8	99	110.6	90	N/A	YES
4	6.8	99.4	90	110.6	90	N/A	YES
5	6.5	109.8	96	114.4	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	06/07	Swale D; Station 6+50; Bottom of Swale.	6981.
2	06/07	Swale D; Station 8+50; East Slope.	6982.
3	06/07	Swale D; Station 10+50; West Slope.	6981.
4	06/07	Swale D; Station 12+50; Bottom of Swale.	6979.
5	06/07	Swale D; Station 14+50; West Slope.	6979.

+ DATUM: Elev = Top of native subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Sand Tailing	Swale D, Sta. 7+00	12.7	110.6	698-A
Silty Sand Tailings	Swale D, Sta. 14+50	13.0	114.4	698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. 3144JK050  
LAB/INV NO. 31440184-4  
REPORT DATE 06-16-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler

DATE : 06-07-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
6	7.4	108.5	95	114.4	90	N/A	YES
7	9.4	115.5	100+	114.4	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
6	06/07	Swale D; Station 16+50, East Slope.	6979.
7	06/07	Swale D; Station 18+50, Bottom of Swale.	6978.

+ DATUM: Elev. = Top Native Subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
6 7	Subgrade Subgrade	ASTM D-1556/AASHTO T-217 ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Sand Tailings	Swale D, Sta. 14+50	13.0	114.4	698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-2  
REPORT DATE 06-16-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-08-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS:
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	8.3	111.3	97	114.4	90	N/A	YES
2	7.8	104.3	94	110.5	90	N/A	YES
3	7.4	101.1	91	110.5	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	06/08	Swale D; Station 24+50; Bottom of Trench.	6976.3
2	06/08	Swale D; Station 22+50; Bottom of Trench.	6976.3
3	06/08	Swale D; Station 20+50; East of Slope.	6978.1

+DATUM: Elev. of test = Top of Native Subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Sand Tailings Clayey Silt	Swale D, Sta. 14+50	13.0	114.4	698-A
	Native Swale D; Sta. 20+50	15.0	110.5	698-A

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay (RAC)      Sampled By: H. Kuebler/WT      Date 06/09/94

Source: Swale D, Station 8 + 00      Submitted By: H. Kuebler/WT      Date 06/09/94

Elevation 6982.5      Authorized By: Client      Date 06/09/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	<u>108.7</u>
Optimum Moisture, %	<u>16.4</u>

(Corresponds with Proctor 6/09/94, Swale D, Station 6+00)  
Copies to: Addressee (3), Billing (1), Field File (1).  
184.12A/bc

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay      Sampled By: H. Kuebler/WT      Date 06/10/94

Source: Swale D, Station 8+00      Submitted By: H. Kuebler/WT      Date 06/10/94

Elevation 6982.5      Authorized By: Client      Date 06/10/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	94	
100	81	50-100
200	59	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 12

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184.11/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Silty Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/10/94</u>	
Source: <u>Swale D, Station 22+00</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/10/94</u>	
<u>Elevation 6977.0</u>	Authorized By: <u>Client</u>	Date: <u>06/10/94</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	96	
10	95	85-100
16	94	
30	93	
40	93	65-100
50	92	
100	79	50-100
200	59	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf (ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 27  
Plasticity Index 10

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

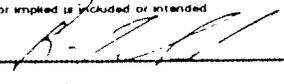
Material: <u>Silty Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/10/94</u>
Source: <u>Swale D, Station 22 + 00,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/10/94</u>
<u>Elevation 6977.0</u>	Authorized By: <u>Client</u>	Date: <u>06/10/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>108.7</u>
Optimum Moisture, %	<u>16.4</u>

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184.012/bc

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. 3144JK050  
LAB/INV NO. 31440184-10  
REPORT DATE 07-19-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-10-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	14.7	100.9	93	108.7	95	16.4 to 18.4	NO
2	11.5	92.8	85	108.7	95	16.4 to 18.4	NO
3	18.1	113.9	100+	108.7	95	16.4 to 18.4	YES
4	17.1	102.0	94	108.7	95	16.4 to 18.4	NO
5	17.6	102.6	94	108.7	95	16.4 to 18.4	NO
6	17.7	102.3	94	108.7	95	16.4 to 18.4	NO

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	6/10	Swale D; Station 6+00; Bottom.	6982.5
2	6/10	Swale D; Station 8+00; Left Berm.	6983.5
3	6/10	Swale D; Station 26+00; Right Berm.	6978.7
4	6/10	Swale D; Station 24+00; Bottom.	6977.4
5	6/10	Swale D; Station 22+00; Left Berm.	6979.0
6	6/10	Swale D; Station 20+00; Right Berm.	6978.6

+ DATUM: Elev. of test = Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217
6	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Clay	Borrow Pit #2 Stockpile	16.4	108.7	D698-A

Copies to: Addressee - (3)  
Field File & Billing (2)



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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184-8*  
REPORT DATE *06-27-94*  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *06-15-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	18.1	112.8	100+	108.7	95	16.4 to 18.4	YES
2	18.1	121.8	100+	108.7	95	16.4 to 18.4	YES
3	17.1	117.3	100+	108.7	95	16.4 to 18.4	YES
4	17.6	119.6	100+	108.7	95	16.4 to 18.4	YES
5	17.7	121.4	100+	108.7	95	16.4 to 18.4	YES
6	18.3	119.3	100+	108.7	95	16.4 to 18.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	6/15	Swale "D"; Station 28+00; N. Slope 10' from Centerline.	6978.1
2	6/15	Swale "D"; Station 26+00; Retest of 6/10/94	6978.1
3	6/15	Swale "D"; Station 24+00; Retest of 6/10/94	6977.4
4	6/15	Swale "D"; Station 22+00; Retest of 6/10/94	6979.0
5	6/15	Swale "D"; Station 20+00; Retest of 6/10/94 8' from Centerline.	6978.6
6	6/15	Station 18+00; Swale "D"; 10' W. of Centerline.	6979.1

+ DATUM: Elev. of Test = Top of Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217
6	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Clay	Borrow Pit #2 Stockpile	16.4	108.7	D698-A

Copies to: Addressee - (3)  
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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184-8*  
REPORT DATE *06-27-94*  
REVIEWED BY *M. Branson*  
PAGE 2

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *06-15-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS:
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	17.5	119.3	100+	108.7	95	16.4 to 18.4	YES
8	16.8	116.4	100+	108.7	95	16.4 to 18.4	YES
9	17.4	122.4	100+	108.7	95	16.4 to 18.4	YES
10	17.4	110.7	100+	108.7	95	16.4 to 18.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION + DATUM
7	6/15	Station 16+00; Swale "D"; 15' E. of Centerline.	6980.
8	6/15	Station 14+00; Swale "D"; 10' S. of Centerline.	6979.
9	6/15	Station 12+00; Swale "D"; 08' N. of Centerline.	6979.
10	6/15	Station 10+00; Swale "D"; Bottom	6980.

+DATUM: *Elev. of Test = Top of Intern Cover*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
7	<i>Subgrade</i>	<i>ASTM D-1556/AASHTO T-217</i>
8	<i>Subgrade</i>	<i>ASTM D-1556/AASHTO T-217</i>
9	<i>Subgrade</i>	<i>ASTM D-1556/AASHTO T-217</i>
10	<i>Subgrade</i>	<i>ASTM D-1556/AASHTO T-217</i>



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Farmington, New Mexico 87401  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay      Sampled By: H. Kuebler/WT      Date 06/16/94

Source: Swale D, Station 16+00      Submitted By: H. Kuebler/WT      Date 06/16/94

Elevation 6979.1      Authorized By: Client      Date 06/16/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	98	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	93	
100	85	50-100
200	57.4	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 31  
Plasticity Index 13

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184.17/bc

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184-7*  
REPORT DATE *06-27-94*  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *06-16-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	18.1	106.4	98	108.7	95	16.4 to 18.4	YES
2	17.4	112.5	100+	108.7	95	16.4 to 18.4	YES
3	17.9	107.9	99	108.7	95	16.4 to 18.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	6/16	Swale "D"; Station 8+00 Bottom.	6981.5
2	6/16	Swale "D"; Station 6+00 Right Berm	6983.0
3	6/16	Swale "D"; Station 4+00 Left Berm.	6983.0

+DATUM: *Elev. of Test = Intern Cover*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1 2 3	<i>Subgrade</i> <i>Subgrade</i> <i>Subgrade</i>	<i>ASTM D-1556/AASHTO T-217</i> <i>ASTM D-1556/AASHTO T-217</i> <i>ASTM D-1556/AASHTO T-217</i>

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
<i>Silty Clay</i>	<i>Borrow Pit #2 Stockpile</i>	<i>16.4</i>	<i>108.7</i>	<i>D698-A</i>

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

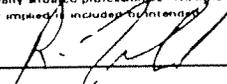
Material: <u>Sandy Lean Clay</u>	Sampled By: <u>R. Whitaker/WT</u>	Date: <u>06/21/94</u>
Source: <u>Swale D, Station 5 + 00, (RAC)</u>	Submitted By: <u>R. Whitaker/WT</u>	Date: <u>06/21/94</u>
Elevation 6983.0	Authorized By: <u>Client</u>	Date: <u>06/21/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.0</u>
Optimum Moisture, %	<u>13.6</u>

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 06/21/94

Source: Swale D, Station 20 + 00, (RAC)      Submitted By: H. Kuebler/WT      Date 06/21/94

Elevation 6978.2      Authorized By: Client      Date 06/21/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.0</u>
Optimum Moisture, %	<u>13.4</u>

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Lean Clay, (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>06/27/94</u>
Source:	<u>Swale D; Station 26 + 00</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>06/27/94</u>
	<u>Elevation 6977.1</u>	Authorized By:	<u>Client</u>	Date	<u>06/27/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>111.8</u>
Optimum Moisture, %	<u>14.8</u>

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184-11*  
REPORT DATE *07-05-94*  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *06-28-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS:
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.5	108.0	96	113.0	95	13.6 to 15.6	YES
2	15.6	112.9	100	113.0	95	13.6 to 15.6	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	6/28	<i>Swale D; Station 4+00 RAC</i>	6983.0
2	6/28	<i>Swale D; Station 8+00 RAC</i>	6982.0

+DATUM: *Elev. of test = Top of RAC Soil Cover*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	<i>Subgrade</i>	<i>ASTM D-1556/AASHTO T-217</i>
2	<i>Subgrade</i>	<i>ASTM D-1556/AASHTO T-217</i>

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
<i>Sandy Clean Sand</i>	<i>Borrow pit #2 Stockpile</i>	13.6	113.0	698-A

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/06/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 07/01/94

Source: Swale D, Station 5 + 00      Submitted By: H. Kuebler/WT      Date 07/01/94

Elevation 6983.0      Authorized By: Client      Date 07/01/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	99	90-100
8	98	
10	97	85-100
16	96	
30	96	
40	95	65-100
50	94	
100	81	50-100
200	59	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 32  
Plasticity Index 15

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440235*  
REPORT DATE *07-13-94*  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *R. Whitaker/WT*

DATE : *07-01-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	9.7	101.3	90	113.0	95	13.4 to 15.4	NO
2	15.2	111.5	99	113.0	95	13.4 to 15.4	YES
3	12.5	97.1	86	113.0	95	13.4 to 15.4	NO
4	14.6	104.7	93	113.0	95	13.4 to 15.4	NO
5	17.4	99.4	88	113.0	95	13.4 to 15.4	NO

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	7/1	Swale D, Station 10+00, Left Berm	6983.6
2	7/1	Swale D, Station 12+00, Bottom of Swale	6981.7
3	7/1	Swale D, Station 14+00, Left Berm	6982.0
4	7/1	Swale D, Station 16+00, Right Berm	6981.9
5	7/1	Swale D, Station 18+00, Bottom of Swale	6979.3

+DATUM: Elev. of Test = Top of RAC

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	SWALE D, STA20+00 (RAC)	13.4	113.0	698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440235-1  
REPORT DATE 07-13-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 07-05-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	13.5	120.4	100+	113.0	95	13.4 to 15.4	YES
2	14.6	107.3	95	113.0	95	13.4 to 15.4	YES
3	13.5	110.4	98	113.0	95	13.4 to 15.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	7/5	Swale D, Retest of #3 from 7/1/94	6982.
2	7/5	Swale D, Retest of #4 from 7/1/94	6981.
3	7/5	Swale D, Retest of #5 from 7/1/94	6979.

+ DATUM: Elev. of Test = Top of RAC

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	SWALE D, STA20 + 00 (RAC)	13.4	113.0	698-A

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: <u>Sandy Lean Clay, Intern Atten. Cover</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/06/94</u>	
Source: <u>Swale D, Station 12 +00</u>	Submitted By: <u>R. Whitaker/WT</u>	Date: <u>07/07/94</u>	
Elevation 6981.00	Authorized By: <u>Client</u>	Date: <u>07/06/94</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	98	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	84	50-100
200	59.6	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 12

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay, Intern Atte. Cover      Sampled By: H. Kuebler/WT      Date 07/06/94

Source: Swale D, Station 20+00      Submitted By: R. Whitaker/WT      Date 07/07/94

Elevation 6978.6      Authorized By: Client      Date 07/06/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	96	
10	95	85-100
16	94	
30	92	
40	91	65-100
50	89	
100	74	50-100
200	54.7	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 30  
Plasticity Index 16

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay (RAC)      Sampled By: H. Kuebler/WT      Date 07/06/94

Source: Swale D, Station 4 + 00      Submitted By: R. Whitaker/WT      Date 07/07/94

Elevation 6983.0      Authorized By: Client      Date 07/06/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	96	
30	94	
40	94	65-100
50	91	
100	66	50-100
200	56.0	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_

Dry Density, pcf \_\_\_\_\_

Maximum Swell, % \_\_\_\_\_

Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf (ASTM D698A)

Maximum Dry Density \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 28

Plasticity Index 8

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: <u>Sandy Lean Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/06/94</u>	
Source: <u>Swale D, Station 8+00</u>	Submitted By: <u>R. Whitaker/WT</u>	Date: <u>07/07/94</u>	
<u>Elevation 6981.9</u>	Authorized By: <u>Client</u>	Date: <u>07/06/94</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	99	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	94	
100	83	50-100
200	59.9	40-85

Expansive Properties of Cohesive Soil

Water Content	_____
Dry Density, pcf	_____
Maximum Swell, %	_____
Surcharge, KSF	_____

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density	_____
Optimum Moisture, %	_____

Plasticity Index, ASTM D4318

Liquid Limit	<u>30</u>
Plasticity Index	<u>14</u>

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235.9/bc

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440235-7*  
REPORT DATE *07-19-94*  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *07-11-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.2	108.3	96	113.0	95	11.4 to 15.4	YES
2	14.7	115.3	100+	111.8	95	12.8 to 16.8	YES
3	14.9	117.3	100+	111.8	95	12.8 to 16.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	07/11	Swale D Station 20+00 Right Berm	6980.
2	07/11	Swale D Station 25+00 Swale Bottom	6977.
3	07/11	Swale D Station 27+00 Left Berm	6978.

+ DATUM: Test Elev. = Radon Atten. Cover Material

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Clean Clay SANDY LEAN CLAY	Swale "D"; Sta. 26+00	14.8	111.8	698-A
	SWALE D, STA20+00 (RAC)	13.4	113.0	698-A

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 07/11/94**

**SWALE D  
BEDDING SAND PLACEMENT  
THICKNESS**

STATION NO.	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
2+00	3 1/4"	3"	3 1/4"
3+00	3 1/4"	3"	3 1/2"
4+00	3 1/2"	3"	3"
5+00	3"	3"	3 1/2"
6+00	3 1/2"	3 1/4"	3"
7+00	3"	3 1/4"	3"
8+00	3 1/4"	3 1/4"	3 1/4"
9+00	3 1/4"	3 1/2"	3 1/2"
10+00	3 1/4"	3"	3 1/4"

Dist: Client (3) Field File (1) Billing (1)

NOTE: Station 0+00 is behind Technician

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 08/01/94

SWALE D  
BEDDING SAND PLACEMENT  
THICKNESS

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
11+00	3"	3 1/2"	3 1/2"
12+00	3"	3"	3 1/4"
13+00	3"	3"	3 1/4"
14+00	3 1/4"	3"	3 1/4"
15+00	3 1/4"	3"	3 1/2"
16+00	3 1/2"	3 1/2"	3 1/4"
17+00	3 1/4"	3 1/4"	3 1/4"
18+00	3 1/2"	3 1/4"	3 1/4"

Dist: Client (3) Field File (1) Billing (1)

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/01/94**

**SWALE D  
D50 1.5 AGGREGATE PLACEMENT  
THICKNESS**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
2+00	3 1/2"	3 1/4"	3"
3+00	3 1/2"	3 1/2"	3"
4+00	3 1/2"	3"	3 1/2"
5+00	3 1/2"	3 1/2"	3 1/2"
6+00	3 1/4"	3 1/2"	4"
7+00	3 1/2"	3 1/2"	3 1/2"
8+00	3 1/2"	3 1/2"	3 1/2"
9+00	3"	3 1/4"	3 1/2"
10+00	3 1/4"	3 1/2"	4"
11+00	4"	3 1/2"	3 1/2"
12+00	3 1/2"	4"	3"

Dist: Client (3) Field File (1) Billing (1)

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 08/01/94

SWALE D  
BEDDING SAND PLACEMENT  
THICKNESS

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
19+00	3 1/4"	3 1/2"	3"
21+00	3 1/4"	3 1/4"	3"
22+00	3"	3"	3"
23+00	3"	3 1/4"	3 1/4"
24+00	3 1/4"	3 1/4"	3"
25+00	3"	3"	3"
26+00	3"	3"	3 1/2"
27+00	3 1/2"	3 1/4"	3"
28+00	3 1/2"	3 1/4"	3 1/2"

Dist: Client (3) Field File (1) Billing (1)

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/08/94**

*N*

**SWALE D  
D 50 1.5 AGGREGATE PLACEMENT  
THICKNESS**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
21+00	3 1/2"	3 1/2"	3 1/2"
22+00	3 1/2"	3 1/2"	3"
23+00	3 1/2"	3 1/4"	3"
24+00	3 1/2"	3 1/4"	3 1/4"
25+00	3 1/2"	3 1/2"	3"
26+00	3 1/4"	3 1/4"	3 1/4"
27+00	3 1/4"	3 1/4"	3 1/2"
28+00	3 1/2"	3 1/2"	3"

Dist: Client (3) Field File (1) Billing (1)

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 08/08/94

h

SWALE D  
D 50 1.5 AGGREGATE PLACEMENT  
THICKNESS

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
13+00	3 1/2"	3 1/2"	3 1/2"
14+00	3 1/2"	3 1/2"	3"
15+00	3 1/2"	3 1/4"	3 1/2"
16+00	3 1/4"	3 1/4"	3 1/4"
17+00	3 1/4"	3 1/2"	3 1/4"
18+00	3 1/4"	3 1/4"	3 1/4"
19+00	3 1/4"	3 1/2"	3 1/2"
20+00	3 1/2"	3 1/4"	3 1/2"

Dist: Client (3) Field File (1) Billing (1)

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440336*  
REPORT DATE *10-03-94*  
REVIEWED BY *R. Zubrod*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *09-15-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.2	113.0	100	113.0	95	11.4 to 15.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	09/15	<i>Swale D, Station 10+00, Left Berm, Retest of 7/01/94</i>	6983.0

+DATUM: 100' = Top of Radon Attenuation Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	<i>Subgrade, Roadway Crossing was Removed</i>	<i>ASTM D-1556/AASHTO T-217</i>

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
<i>SANDY LEAN CLAY</i>	<i>SWALE D, STA20+00 (RAC)</i>	13.4	113.0	<i>D698-A</i>

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TEST SUMMARY FOR SWALE H

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/01/94	Proctor	30+00	---	---	6971.0	Tailings Native	110.8	15.2	---	SM	Yes
06/01/94	Proctor	26+00	---	---	6968.0	Tailings Native	113.8	13.4	---	SM	Yes
06/01/94	Sandcone	30+00	Swale Bottom	---	6971.6	Tailings Native	104.2	5.6	94	SM	Yes
06/01/94	Sandcone	28+00	Swale Bottom	---	6969.9	Tailings Native	103.8	12.1	94	SM	Yes
06/01/94	Sandcone	26+00	South Slope Berm	---	6970.0	Tailings Native	103.9	10.8	91	SM	Yes
06/02/94	Sandcone	24+00	Swale Bottom	---	6966.5	Tailings Native	102.9	12.4	90	SM	Yes
06/02/94	Sandcone	22+00	North Slope Berm	---	6964.8	Tailings Native	117.4	9.2	100	SM	Yes
06/06/94	Proctor	24+00	---	---	6967.5	Intern RAC	111.4	15.9	---	CL	Yes
06/06/94	Proctor	29+00	---	---	6971.5	Intern RAC	112.4	14.7	---	CL	Yes
06/10/94	Sandcone	22+00	Swale Bottom	---	6964.8	Intern RAC	103.8	17.2	93	CL	Yes
06/10/94	Sandcone	26+00	Left Berm	---	6972.1	Intern RAC	105.4	16.4	95	CL	Yes
06/10/94	Sandcone	28+00	Right Berm	---	6975.0	Intern RAC	98.6	18.5	88	CL	No
06/10/94	Sandcone	30+00	Swale Bottom	---	6972.6	Intern RAC	107.7	16.6	96	CL	Yes

RAC = Radon Attenuation Cover

TEST SUMMARY FOR SWALE H

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
06/17/94	Soil Classification	23+00	...	...	6967.2	Intern	...	...	...	CL	Yes
06/17/94	Soil Classification	29+00	...	...	6971.6	Intern	...	...	...	CL	Yes
06/17/94	Sandcone	22+00	Retest 6/10/94	...	6964.8	Intern	106.8	16.0	96	CL	Yes
06/17/94	Sandcone	24+00	Retest 6/10/94	...	6967.5	Intern	107.4	16.6	96	CL	Yes
06/17/94	Sandcone	28+00	Retest 6/10/94	...	6975.0	Intern	110.4	15.6	98	CL	Yes
06/20/94	Proctor	24+00	...	...	6968.0	RAC	110.4	15.8	...	CL	Yes
06/21/94	Sandcone	30+00	Swale Bottom	...	6973.3	RAC	108.8	15.8	99	CL	Yes
06/21/94	Sandcone	26+00	Right Berm	...	6972.5	RAC	107.9	16.2	98	CL	Yes
06/21/94	Sandcone	23+00	Left Berm	...	6969.9	RAC	107.4	16.3	97	CL	Yes
07/06/94	Soil Classification	26+00	...	...	6972.5	RAC	...	...	...	CL	Yes
07/11/94	Bedding Sand Thickness Measurement	...	...	...	...	...	...	...	...	...	Yes
07/13/94	Combined .35 Aggregate and Bedding Sand	Thickness Measurement	...	...	...	...	...	...	...	...	Yes
08/08/94	D50 3.0 Aggregate	Thickness Measurement	...	...	...	...	...	...	...	...	Yes

RAC = Radon Attenuation Cover



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440184
		Report Date:	06/07/94
Project:	Chuck Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Silty Sand, Native Subgrade	Sampled By:	H. Kuebler/WT
		Date	06/01/94
Source:	Swale H, Station 30 +00,	Submitted By:	H. Kuebler/WT
		Date	06/01/94
	Elevation 6971.0	Authorized By:	Client
		Date	06/01/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	110.8
Optimum Moisture, %	15.2

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184.2/bc

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

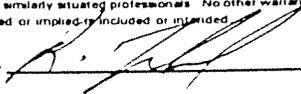
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>06/07/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Silty Sand, Native Subgrade</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>06/01/94</u>
Source:	<u>Swale H, Station 26 + 00,</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>06/01/94</u>
	<u>Elevation 6968.0</u>	Authorized By:	<u>Client</u> Date <u>06/01/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.8</u>
Optimum Moisture, %	<u>13.4</u>

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184*  
REPORT DATE *07-11-94*  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *06-01-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS.
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	5.6	104.2	94	110.8	90	N/A	YES
2	12.1	103.8	94	110.8	90	N/A	YES
3	10.8	103.9	91	113.8	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	06/01	Swale "H", 30+00 Bottom.	6971.0
2	06/01	Swale "H", 28+00 Bottom.	6969.5
3	06/01	Swale "H", 26+00 South Slope.	6970.0

+ DATUM: Elev. of test = Top of native subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3		ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Sand	Swale "H"	15.2	110.8	698-A
Silty Sand	Swale "H"	13.4	113.8	698-A

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-1  
REPORT DATE 07-11-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-02-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	12.4	102.9	90	113.8	90	N/A	YES
2	9.2	117.4	100+	113.8	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	06/02	Swale "H"; Station 24+00 Bottom	6966.
2	06/02	Swale "H"; Station 22+00 North Slope.	6964.

+ DATUM: Elev. of Test = Top of Native Subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1 2	Subgrade	ASTM D-1556/AASHTO T-217 ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TEST PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Sand	Swale "H"	13.4	113.8	698-A

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 06/16/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Silty Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/06/94</u>
Source: <u>Swale H, Station 24 + 00,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/06/94</u>
<u>Elevation 6967.5</u>	Authorized By: <u>Client</u>	Date: <u>06/06/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>111.4</u>
Optimum Moisture, %	<u>15.9</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
184.5/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 06/16/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

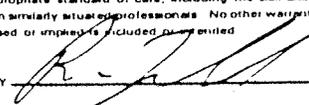
Material: <u>Silty Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/06/94</u>
Source: <u>Swale H, Station 29 + 00,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/06/94</u>
<u>Elevation 6871.5</u>	Authorized By: <u>Client</u>	Date: <u>06/06/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>112.4</u>
Optimum Moisture, %	<u>14.7</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. 3144JK050  
LAB/INV NO. 31440184-10  
REPORT DATE 07-19-94  
REVIEWED BY M. Branson  
PAGE 2

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-10-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	17.2	103.8	93	111.4	95	15.9 to 17.9	NO
8	16.4	105.4	95	111.4	95	15.9 to 17.9	YES
9	18.5	98.6	88	112.4	95	14.7 to 16.7	NO
10	16.6	107.7	96	112.4	95	14.7 to 16.7	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
7	6/10	Swale H; Station 22+00; Bottom.	6964.0
8	6/10	Swale H; Station 26+00; Left Berm.	6972.0
9	6/10	Swale H; Station 28+00; Right Berm.	6975.0
10	6/10	Swale H; Station 30+00; Bottom.	6972.0

+ DATUM: Elev. of test = Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
7	Subgrade	ASTM D-1556/AASHTO T-217
8	Subgrade	ASTM D-1556/AASHTO T-217
9	Subgrade	ASTM D-1556/AASHTO T-217
10	Subgrade	ASTM D-1556/AASHTO T-217



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: <u>Sandy Silty Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/17/94</u>	
Source: <u>Swale H, Station 23+00</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/17/94</u>	
Elevation 6967.2	Authorized By: <u>Client</u>	Date: <u>06/17/94</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	98	
10	98	85-100
16	97	
30	96	
40	96	65-100
50	95	
100	79	50-100
200	66	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 35  
Plasticity Index 13

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184.15/bc

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REVIEWED BY: *R. J. [Signature]*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050

Lab/Inv. No. 31440184

Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Silty Clay Sampled By: H. Kuebler/WT Date 06/17/94

Source: Swale H, Station 29 + 00 Submitted By: H. Kuebler/WT Date 06/17/94

Elevation 6971.6 Authorized By: Client Date 06/17/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	100	90-100
8	98	
10	98	85-100
16	98	
30	97	
40	96	65-100
50	95	
100	82	50-100
200	67.2	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_

Dry Density, pcf \_\_\_\_\_

Maximum Swell, % \_\_\_\_\_

Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf

(ASTM D698A)

Maximum Dry Density \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 33

Plasticity Index 15

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. 3144JK050  
LAB/INV NO. 31440184-6  
REPORT DATE 06-27-94  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler

DATE : 06-17-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	16.0	106.8	96	111.4	95	15.9 to 17.9	YES
2	16.6	107.4	96	111.4	95	15.9 to 17.9	YES
3	15.6	110.4	98	112.4	95	14.7 to 16.7	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	6/17	Swale "H"; Station 22+00; Retest 6/10/94	6964.8
2	6/17	Swale "H"; Station 24+00; Retest 6/10/94	6967.5
3	6/17	Swale "H"; Station 28+00; Retest 6/10/94	6975.0

+DATUM: Elev. of Test = Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SILTY SAND	SWALE H, STA. 24+00	15.9	111.4	698-A
SILTY CLAY	SWALE H; STA. 29+00	14.7	112.4	698-A

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay, Native</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/20/94</u>
Source: <u>Swale H, Station 24 + 00, (RAC)</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/20/94</u>
Elevation 6968.0	Authorized By: <u>Client</u>	Date: <u>06/20/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>110.4</u>
Optimum Moisture, %	<u>15.8</u>

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184-5*  
REPORT DATE *06-27-94*  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *06-21-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.8	108.8	99	110.4	95	15.8 to 17.8	YES
2	16.2	107.9	98	110.4	95	15.8 to 17.8	YES
3	16.3	107.4	97	110.4	95	15.8 to 17.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	6/21	Swale "H"; Station 30+00 Bottom.	6973.0
2	6/21	Swale "H"; Station 26+00 Right Berm.	6972.0
3	6/21	Swale "H"; Station 23+00 Left Berm.	6969.0

+ DATUM: Elevation of Test = RAC

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Sandy Clean Clay	Borrow Pit #2 Stockpile	15.8	110.4	D698-A

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050

Lab/Inv. No. 31440235

Report Date: 07/20/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: Clayey Sand (RAC)      Sampled By: H. Kuebler/WT      Date 07/06/94

Source: Swale H, Station 26 + 00      Submitted By: H. Kuebler/WT      Date 07/07/94

Elevation 6972.5      Authorized By: Client      Date 07/06/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	98	
10	98	85-100
16	97	
30	96	
40	96	65-100
50	95	
100	90	50-100
200	63.8	40-85

**Expansive Properties of Cohesive Soil**

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

**Moisture Density Relations, pcf  
(ASTM D698A)**

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

**Plasticity Index, ASTM D4318**

Liquid Limit 30  
Plasticity Index 11

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 07/11/94**

**SWALE H  
BEDDING SAND PLACEMENT  
THICKNESS**

STATION NO.	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
30+00	3 1/4"	3"	3"
29+00	3"	3 1/2"	3 1/4"
28+00	3 1/4"	3 1/2"	3 1/2"
27+00	3 1/2"	3 1/4"	3"
26+00	3 1/2"	3 1/2"	3"
25+00	3 1/4"	3 1/4"	3 1/4"
24+00	3 1/4"	3 1/2"	3 1/4"
23+00	3"	3"	3"
22+00	3 1/2"	3 1/4"	3"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 07/13/94

SWALE H  
.35 AGGREGATE AND BEDDING SAND PLACEMENT  
THICKNESS

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
30+00	7 1/4"	7"	7 1/4"
29+00	6 1/4"	6"	7 1/2"
28+00	7 1/2"	7 1/4"	6 1/2"
27+00	7 1/2"	7 1/2"	6 1/2"
26+00	7 1/2"	7 1/4"	6 1/2"
25+00	6 1/2"	7"	6 1/2"
24+00	7"	7 1/2"	7 1/4"
23+00	7 1/2"	6 1/4"	7"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 08/08/94

SWALE H  
D 50 3.0 AGGREGATE PLACEMENT  
THICKNESS

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
30+00	6"	6 1/2"	8"
29+00	6 3/4"	6 1/4"	7"
28+00	6 1/4"	6 1/4"	6 1/2"
27+00	8 1/4"	6 3/4"	7"
26+00	6 1/2"	6"	7 1/2"
25+00	6"	8"	6"
24+00	7 1/4"	6 1/2"	7 1/4"
23+00	6"	6 1/4"	6 1/4"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050

APPENDIX  
K

APPENDIX K  
BEDDING MATERIAL GRADATION TESTS





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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440111</u>
		Report Date:	<u>05/05/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Bedding Sand</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>04/29/94</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>04/29/94</u>
		Authorized By:	<u>Client</u> Date <u>04/29/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	85-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	100	65-100
8	91	
10	87	47-94
16	77	
30	65	
40	58	23-70
50	49	
100	30	
200	20.9	15-30

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440135</u>
		Report Date:	<u>05/17/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Bedding Sand</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>05/09/94</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>05/09/94</u>
		Authorized By:	<u>Client</u> Date <u>05/09/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	85-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	100	65-100
8	88	
10	85	47-94
16	75	
30	64	
40	58	23-70
50	50	
100	29	
200	21.9	15-30

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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REVIEWED BY H. Kuebler



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440135</u>
		Report Date:	<u>05/27/94</u>

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Bedding Sand</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>05/24/94</u>
Source:	<u>Stockpile</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>05/24/94</u>
		Authorized By:	<u>Client</u>	Date	<u>05/24/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	85-100
1/2"		
3/8"		
1/4"		
No. 4	99	65-100
8		
10	86	47-94
16		
30		
40	58	23-70
50		
100		
200	20	15-30

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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135.9/bc

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REVIEWED BY: *H. Kuebler*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440135</u>
		Report Date:	<u>05/27/94</u>

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Bedding Sand</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>05/23/94</u>
-------------------------------	----------------------------------	-----------------------

Source: <u>Hamilton Brothers</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>05/23/94</u>
----------------------------------	------------------------------------	-----------------------

Authorized By: <u>Client</u>	Date: <u>05/23/94</u>
------------------------------	-----------------------

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	85-100
1/2"		
3/8"		
1/4"		
No. 4	99	65-100
8		
10	82	47-94
16		
30		
40	54	23-70
50		
100		
200	21	15-30

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

Copies to: Addressee (3), Billing (1), Field File (1).  
135.6/bc

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REVIEWED BY:

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY FOR .35 AGGREGATE MATERIAL

DATE OF REPORT 09/12/99

DATE	SAMPLE LOCATION	% PASS 3" SPEC. 65-100%	% PASS 3/4" SPEC. 43-80%	% PASS #4 SPEC. 22-60%	% PASS #10 SPEC. 15-38%	% PASS #40 SPEC. 5-12%	% PASS 200 SPEC. 0-10%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. 7
06/03/94	Belt Sample	100	84	24	15	7.7	3.7	N/A	N/A	NOTE
06/10/94	Belt Sample	100	89	44	10	16.0	7.1	N/A	N/A	NOTE
06/24/94	Belt Sample	100	67	27.9	17	8.0	4.6	N/A	N/A	Yes
06/29/94	Windrow	100	68	27.1	17	9.0	5.2	N/A	N/A	Yes
07/08/94	Windrow	100	45	21	15	10.0	5.6	N/A	N/A	OK'd by E. Morales
	AVERAGE	100	71	29	15	10	5.0	N/A	N/A	---

NOTE: 6/3/94 to 6/10/94 aggregate production was blended with aggregates produced after 06/10/94. The blended material was sampled on the job site.





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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>06/07/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>.35 Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>06/03/94</u>
Source:	<u>Hamilton Brothers, Belt Sample</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>06/03/94</u>
		Authorized By:	<u>Client</u> Date <u>06/03/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	84	43-80
1/2"		
3/8"		
1/4"		
No. 4	24	22-60
8		
10	15	15-38
16		
30		
40	7.7	5-12
50		
100		
200	3.7	0-10

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/13/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>.35 Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>06/10/94</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>06/10/94</u>
		Authorized By:	<u>Client</u> Date <u>06/10/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	89	43-80
1/2"		
3/8"		
1/4"		
No. 4	44	22-60
8		
10	30	15-38
16		
30		
40	16	5-12
50		
100		
200	7.1	0-10

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440184
		Report Date:	07/12/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	.35 Aggregate	Sampled By:	H. Kuebler/WT      Date 06/24/94
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT      Date 06/24/94
		Authorized By:	Client                  Date 06/24/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	67	43-80
1/2"		
3/8"		
1/4"		
No. 4	28	22-60
8		
10	17	15-38
16		
30		
40	9	5-12
50		
100		
200	4.6	0-10

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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REVIEWED BY: *[Signature]*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>.35 Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>06/29/94</u>
Source:	<u>Windrow at Site</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>06/29/94</u>
		Authorized By:	<u>Client</u> Date <u>06/29/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	68	43-80
1/2"		
3/8"		
1/4"		
No. 4	27	22-60
8		
10	17	15-38
16		
30		
40	9	5-12
50		
100		
200	5.2	0-10

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

Copies to: Addressee (3), Billing (1), Field File (1).  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/02/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	.35 Aggregate	Sampled By:	H. Kuebler/WT Date 07/08/94
Source:	Stockpile	Submitted By:	H. Kuebler/WT Date 07/08/94
		Authorized By:	Client Date 07/08/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
3"	100	65-100
2"		
1-1/2"		
1"		
3/4"	45	43-80
1/2"		
3/8"		
1/4"		
No. 4	21	22-60
8		
10	17	15-38
16		
30		
40	10	5-12
50		
100		
200	5.6	0-10

Moisture Density Relations, pcf

(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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235.16/bc

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**ROCK QUALITY DETERMINATION**

United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305-3077  
Attn: Mr. Ed Morales

Job No. 3144JK050  
Inv. No. 31440235  
Date of Report 08/04/94  
Reviewed By [Signature]

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/08/94  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/08/94  
Material Type: .35 Aggregate Igneous Intended Use \_\_\_\_\_

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.78	10	9	90
Absorption, %	1.60	3	2	6
L.A. Abrasion, 100 rev, %	5.0	8	11	88
Sodium Soundness Loss, %	.74	10	1	10

Total = Rock Quality Score =  $194/230 \times 100 = 84$

Dist: Client (3) Billing (1) Field File (1)

/cb:RQD.UNC



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305-3077 Attn: Mr. Ed Morales	Job No.	3144JK050		
		Lab/Inv. No.	31440135		
		Report Date:	08/02/94		
Project:	1994 Church Rock Uranium Mill Tailings Reclamation Project				
Location:	Church Rock, New Mexico				
Material:	.35 Aggregate	Sampled By:	H. Kuebler/WT	Date	07/08/94
Source:	Stockpile	Submitted By:	H. Kuebler/WT	Date	07/08/94
Supplier:	Hamilton Brothers Construction	Authorized By:	E. Morales/Client	Date	07/08/94

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs.      5  

% Loss at 500 Revs.     21 

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135.16A/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

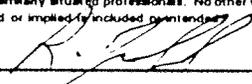
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/02/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Gallup, NM</u>		
Material:	<u>.35 Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/08/94</u>
Source:	<u>Stockpile</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/08/94</u>
		Authorized By:	<u>Client</u> Date <u>07/08/94</u>

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.74</u>
Bulk Specific Gravity (SSD)	<u>2.78</u>
Apparent Specific Gravity	<u>2.87</u>
Absorption, Percent	<u>1.6</u>

Copies to:            Addressee (3), Billing (1), Field File (1)  
235.16B/bc

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**LABORATORY REPORT**

SOUNDNESS OF AGGREGATES

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/02/94

Project: Church Rock Uranium Mill tailings Reclamation

Location: Chuch Rock, NM

Material: .35 Aggregate Sampled By: H. Kuebler/WT Date: 07/07/94

Source: Stockpile Submitted By: H. Kuebler/WT Date: 07/08/94

Procedure: ASTM C88 Authorized By: Client Date: 07/08/94

Solution: Sodium Sulfate (Fresh)

FINE AGGREGATE

Fine Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weight Percentage Loss, %
Minus No. 100				
No. 50 to No. 100				
No. 30 to No. 50				
No. 16 to No. 30				
No. 8 to No. 16				
No. 4 to No. 8				
3/8 to No. 4				
Totals				

COARSE AGGREGATE

Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2"				
2" to 1-1/2"	16			
1-1/2" to 1"	31	1008.7	.38	.12
1" to 3/4"	8	508.5	.669	.15
3/4" to 1/2"	9	673.5	1.3	.12
1/2" to 3/8"	6	331.3	3.3	.20
3/8" to No. 4	9	300.9	2.8	.25
Minus No. 4				
Totals	79			0.74

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

Copies to: Addressee (3), Billing (1), Field File (1)  
235.17/bc

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REVIEWED BY:

**APPENDIX  
L**

APPENDIX L

TEST RESULTS, RUNOFF CONTROL DITCH

## WEST CONTROL DITCH

West control ditch was to be contoured to 1994 Reclamation plan specifications. Nielson's, Inc. worked on the west control ditch periodically, with final completion of the control ditch on October 10, 1994. The west berm of the west control berm was built-up to a higher elevation than its previous existing elevation and the control ditch bottom was contoured to a width and elevation as prescribed in the 1994 Reclamation plans. Field density tests were performed to determine if the fill placement was according to project specifications for compaction and moisture content requirements at the specific test locations.

Bedding material was placed in a lift ranging from 3 to 3 1/2 inches thick. Nielson's, Inc. graded the material by manual means (rake and shovel). Thickness measurements were performed to determine if the material met project specifications for thickness at the specific test locations.

D50 1.5 aggregate was placed on the bedding material to act as an erosion protection layer. Nielson's, Inc. placed D50 1.5 aggregate by manual means. Project specifications stated D50 1.5 aggregate was to be placed in a lift between 3" to 4" thick. Thickness measurements were performed to determine if the material met project specifications for thickness at the specific locations.

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY FOR WEST CONTROL DITCH

DATE OF REPORT 10/11/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/12/94	Proctor	18+50	...	...	6958.0	Native	113.0	13.2	...	CL	Yes
07/18/94	Proctor	19+50	...	...	6957.1	Native	120.0	11.2	...	CL	Yes
08/30/94	Sandcone	12+00	...	...	6958.3	Native	116.0	6.8	100	CL	Yes
08/30/94	Sandcone	14+00	...	...	6959.4	Native	120.8	11.0	100	CL	Yes
08/30/94	Sandcone	16+00	...	...	6956.5	Native	113.7	6.2	100	CL	Yes
08/30/94	Sandcone	18+00	...	...	6957.7	Native	113.5	7.4	100	CL	Yes
08/30/94	Sandcone	20+00	...	...	6956.4	Native	115.2	6.9	100	CL	Yes
08/30/94	Sandcone	22+00	...	...	6956.0	Native	121.0	11.6	100	CL	Yes
09/13/94	Thickness Requirements	Bedding Sand	...	...	...	...	...	...	...	...	Yes
09/15/94	Thickness Requirements	D50 1.5 Aggregate	...	...	...	...	...	...	...	...	Yes
10/06/94	Thickness Requirements	D50 1.5 Aggregate	...	...	...	...	...	...	...	...	Yes



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>07/18/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Clayey Silty Sand (Native)</u>	Sampled By:	<u>R.Whitaker/WT</u> Date <u>07/12/94</u>
Source:	<u>West Control Ditch, Station 19 + 50</u>	Submitted By:	<u>R.Whitaker/WT</u> Date <u>07/12/94</u>
		Authorized By:	<u>Client</u> Date <u>07/12/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>120.0</u>
Optimum Moisture, %	<u>11.2</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.18/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	07/18/94
Project:	Chuck Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Lean Clay (Native)	Sampled By:	R.Whitaker/WT
		Date	07/12/94
Source:	West Control Ditch, Station 18 + 50	Submitted By:	R.Whitaker/WT
		Date	07/12/94
		Authorized By:	Client
		Date	07/12/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	113.0
Optimum Moisture, %	13.2

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**SOIL/AGGREGATE FIELD DENSITY TEST**

IT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440279-8  
REPORT DATE 09-08-94  
REVIEWED BY R. Zubrod  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 08-30-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	6.8	116.0	100+	113.0	95	N/A	YES
2	11.0	120.8	100+	120.0	95	N/A	YES
3	6.2	113.7	100+	113.0	95	N/A	YES
4	7.4	113.5	100	113.0	95	N/A	YES
5	6.9	115.2	100+	113.0	95	N/A	YES
6	11.6	121.0	100+	120.0	95	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/30	W. Control Channel, Station 12+00, Bottom of Ditch	6958.3
2	08/30	W. Control Channel, Station 14+00, E. Berm	6959.4
3	08/30	W. Control Channel, Station 16+00, Bottom of Ditch	6956.5
4	08/30	W. Control Channel, Station 18+00, W. Berm	6957.7
5	08/30	W. Control Channel, Station 20+00, W. Berm	6956.4
6	08/30	W. Control Channel, Station 22+00, W. Berm	6956.0

+ DATUM: Elev. of Test = Top of Native Subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217
6	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
CLAYEY SILTY SAND SANDY LEAN CLAY	W. CONTROL DITCH STA 19+50	11.2	120.0	D698-A
	W. CONTROL DITCH STA 18+50	13.2	113.0	D698-A

Copies to: Addressee - (3)  
Field File & Billing (2)



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 09/19/94

WEST CONTROL DITCH  
BEDDING SAND PLACEMENT  
THICKNESS  
09/13/94

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
12+00	3 1/4"	3"	3"
13+00	3"	3"	3 1/2"
14+00	3 1/4"	3 1/2"	3"
15+00	3 1/2"	3 1/2"	3 1/2"
16+00	3 1/4"	3 1/2"	3 1/2"
17+00	3 1/4"	3"	3 1/4"
18+00	3 1/2"	3 1/4"	3 1/2"
19+00	3"	3 1/4"	3 1/2"
20+00	3 1/2"	3 1/2"	3 1/4"
21+00	3"	3 1/2"	3 1/4"
22+00	3"	3 1/4"	3 1/4"
23+00	3"	3 1/4"	3 1/2"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 09/26/94

WEST CONTROL DITCH  
BEDDING SAND PLACEMENT  
THICKNESS  
09/15/94

STATION NO.	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
12+00	3 1/2"	4"	3 1/2"
13+00	3 1/2"	3"	3"
14+00	3 1/4"	3 1/2"	3 1/2"
15+00	3"	3"	3 1/4"
16+00	3 1/4"	3"	3"
17+00	3"	3 1/4"	3 1/4"
18+00	3"	3 1/4"	3 1/2"
19+00	3 1/2"	3"	3 1/2"
20+00	3 1/4"	3 1/4"	3 1/4"
21+00	3 3/4"	3 3/4"	3 1/4"
22+00	3 1/4"	3 1/4"	3"
23+00	3 1/4"	3 1/2"	3 3/4"

Dist: Client (3) Field File (1) Billing (1)

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 10/11/94**

**WEST CONTROL DITCH  
D 50 1.5 AGGREGATE  
EAST BERM SLOPE  
THICKNESS  
10/06/94**

STATION NO.	THICKNESS	STATION NO.	THICKNESS
13+00	3 1/2"	14+00	3"
15+00	3 1/4"	16+00	3 1/2"
17+00	3 1/2"	18+00	4"
19+00	4"	20+00	4"
21+00	4"	22+00	3"
23+00	3 1/2"		

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050