



APPENDIX A
RECLAMATION PLAN TABLES AND FIGURES

TABLE 5.6

RIPRAP MATERIAL GRADATION REQUIREMENTS (a)

Location	D ₅₀ (b) (inches)	Layer Thickness (inches)	Sieve Size:	Percent Passing by Weight								No. 4		
				20 Inch	15 Inch	12 Inch	10 Inch	6 Inch	5 Inch	4 Inch	3 Inch		1 Inch	
Upper Section of South Cell Drainage Channel	15	23		100		28-40				2-14	0-10			
Upper and Middle Reaches of North Cell Drainage Channel, Outer Curve Section in Lower Reach of North Cell Drainage Channel	9.0	15		100			45-58		10-33		0-23			
North Diversion Ditch, Lower Reach of North Cell Drainage Channel (prior to curve)	6.0	10					100	28-51		13-36			0-9	
Buried Jetty	6.0	96					100	28-51		13-36			0-9	
Branch Swales H and I, Lower Reach of Runoff Control Ditch, Inner Curve in Lower Reach of North Cell Drainage Channel	3.0	6						100		45-67			0-22	
Soil/Rock Matrix, Branch Swales, Upper Reach of Runoff Control Ditch	1.5	3									100	8-37	0-8	

Notes:

- (a) The rock quality will be determined in accordance with Appendix D of the NRC's Staff Technical Position (STP) on "Design of Erosion Protection Covers" dated August 1990.
- (b) Rock Sizes shown will be oversized, if required, based on their rock quality rating by the methods provided in Appendix D of NRC's STP.
- (c) See Table 5.7 for bedding material requirements.

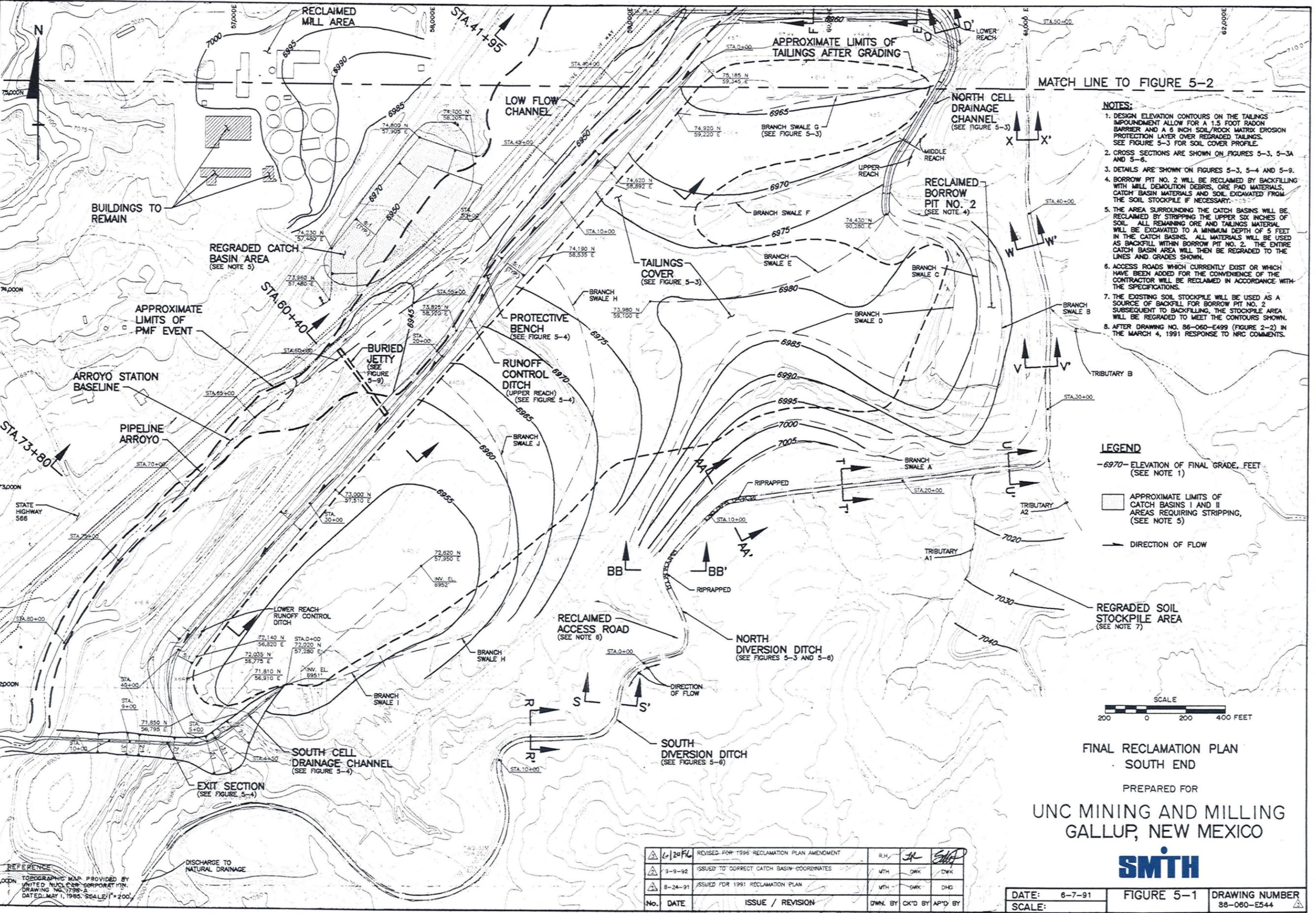


TABLE 5.7

BEDDING MATERIAL REQUIREMENTS

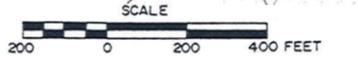
Location	Bedding Layers	Bedding D ₅₀ (b) (inches)	Thickness (inches)	Sieve Size:	Bedding D ₅₀ (b) (inches)	Bedding Material Gradation					
						3-inch	3/4-inch	No. 4	No. 10	No. 40	No. 200
Upper Section of South Cell Drainage Channel	Layer 1	0.02	3	Bedding Layer 1	0.02	100	85-100	65-100	47-94	23-70	15-30
	Layer 2	0.35	3								
Upper and Middle Reaches of North Cell Drainage Channel, Outer Curve Section in Lower Reach of North Cell Drainage Channel	Layer 1	0.02	3	Bedding Layer 2	0.35	65-100	43-80	22-60	15-38	5-12	0-10
	Layer 2	0.35	3								
North Diversion Ditch, Lower Reach of North Cell Drainage Channel (prior to curve)	Layer 1	0.02	3								
	Layer 2	0.35	3								
Buried Jetty	None	NA	NA								
Branch Swales H and I, Lower Reach of Runoff Control Ditch Inner Curve in Lower Reach of North Cell Drainage Channel	Layer 1	0.02	3								
	Layer 2	0.35	3								
Inner Curve in Lower Reach of North Cell Drainage Channel											
Soil/Rock Matrix, Branch Swales, Upper Reach of Runoff Control Ditch	Layer 1	0.02	3								

DRAWING NUMBER 86-060-E544
E639



- NOTES:**
- DESIGN ELEVATION CONTOURS ON THE TAILINGS IMPOUNDMENT ALLOW FOR A 1.5 FOOT RADON IMPROVEMENT ALLOW FOR A 6 INCH SOIL/ROCK MATRIX EROSION PROTECTION LAYER OVER REGRADED TAILINGS. SEE FIGURE 5-3 FOR SOIL COVER PROFILE.
 - CROSS SECTIONS ARE SHOWN ON FIGURES 5-3, 5-3A AND 5-6.
 - DETAILS ARE SHOWN ON FIGURES 5-3, 5-4 AND 5-9.
 - BORROW PIT NO. 2 WILL BE RECLAIMED BY BACKFILLING WITH MILL DEMOLITION DEBRIS, ORE PAD MATERIALS, CATCH BASIN MATERIALS AND SOIL EXCAVATED FROM THE SOIL STOCKPILE IF NECESSARY.
 - THE AREA SURROUNDING THE CATCH BASINS WILL BE RECLAIMED BY STRIPPING THE UPPER SIX INCHES OF SOIL. ALL REMAINING ORE AND TAILINGS MATERIAL WILL BE EXCAVATED TO A MINIMUM DEPTH OF 5 FEET IN THE CATCH BASINS. ALL MATERIALS WILL BE USED AS BACKFILL WITHIN BORROW PIT NO. 2. THE ENTIRE CATCH BASIN AREA WILL THEN BE REGRADED TO THE LINES AND GRADES SHOWN.
 - ACCESS ROADS WHICH CURRENTLY EXIST OR WHICH HAVE BEEN ADDED FOR THE CONVENIENCE OF THE CONTRACTOR WILL BE RECLAIMED IN ACCORDANCE WITH THE SPECIFICATIONS.
 - THE EXISTING SOIL STOCKPILE WILL BE USED AS A SOURCE OF BACKFILL FOR BORROW PIT NO. 2. SUBSEQUENT TO BACKFILLING, THE STOCKPILE AREA WILL BE REGRADED TO MEET THE CONTOURS SHOWN.
 - AFTER DRAWING NO. 86-060-E499 (FIGURE 2-2) IN THE MARCH 4, 1991 RESPONSE TO NRC COMMENTS.

- LEGEND**
- 6970- ELEVATION OF FINAL GRADE, FEET (SEE NOTE 1)
 - APPROXIMATE LIMITS OF CATCH BASINS I AND II AREAS REQUIRING STRIPPING, (SEE NOTE 5)
 - DIRECTION OF FLOW



FINAL RECLAMATION PLAN
SOUTH END
PREPARED FOR
UNC MINING AND MILLING
GALLUP, NEW MEXICO

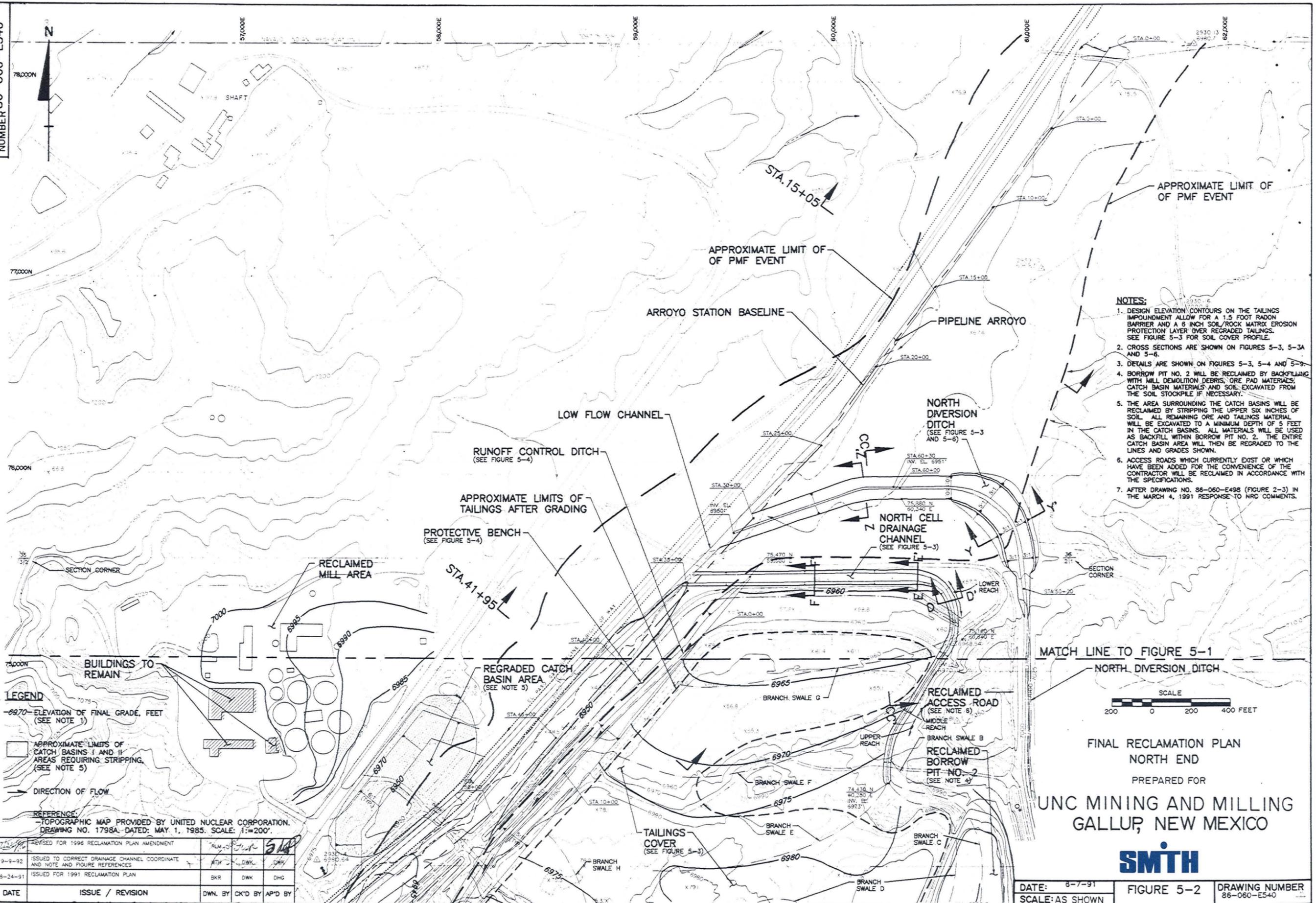


REFERENCE
TOPOGRAPHIC MAP PROVIDED BY
UNITED NUCLEAR CORPORATION
DRAWING NO. 1798-2
DATED MAY 1, 1986. SCALE 1" = 200'

6/20/96	REVISED FOR 1996 RECLAMATION PLAN AMENDMENT	R.H.	JR	SA	
9-9-92	ISSUED TO CORRECT CATCH BASIN COORDINATES	MTH	DWK	DWK	
8-24-91	ISSUED FOR 1991 RECLAMATION PLAN	MTH	DWK	DHG	
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	APP'D BY

DATE: 6-7-91
SCALE:
FIGURE 5-1
DRAWING NUMBER 86-060-E544

86-060-B593
DRAWING NUMBER
86-060-E540



- NOTES:**
- DESIGN ELEVATION CONTOURS ON THE TAILINGS IMPOUNDMENT ALLOW FOR A 1.5 FOOT RADON BARRIER AND A 6 INCH SOIL/ROCK MATRIX EROSION PROTECTION LAYER OVER REGRADED TAILINGS. SEE FIGURE 5-3 FOR SOIL COVER PROFILE.
 - CROSS SECTIONS ARE SHOWN ON FIGURES 5-3, 5-3A AND 5-6.
 - DETAILS ARE SHOWN ON FIGURES 5-3, 5-4 AND 5-9.
 - BORROW PIT NO. 2 WILL BE RECLAIMED BY BACKFILLING WITH MILL DEMOLITION DEBRIS, ORE PAD MATERIALS, CATCH BASIN MATERIALS AND SOIL EXCAVATED FROM THE SOIL STOCKPILE IF NECESSARY.
 - THE AREA SURROUNDING THE CATCH BASINS WILL BE RECLAIMED BY STRIPPING THE UPPER SIX INCHES OF SOIL. ALL REMAINING ORE AND TAILINGS MATERIAL WILL BE EXCAVATED TO A MINIMUM DEPTH OF 5 FEET IN THE CATCH BASINS. ALL MATERIALS WILL BE USED AS BACKFILL WITHIN BORROW PIT NO. 2. THE ENTIRE CATCH BASIN AREA WILL THEN BE REGRADED TO THE LINES AND GRADES SHOWN.
 - ACCESS ROADS WHICH CURRENTLY EXIST OR WHICH HAVE BEEN ADDED FOR THE CONVENIENCE OF THE CONTRACTOR WILL BE RECLAIMED IN ACCORDANCE WITH THE SPECIFICATIONS.
 - AFTER DRAWING NO. 86-060-E498 (FIGURE 2-3) IN THE MARCH 4, 1991 RESPONSE TO NRC COMMENTS.

LEGEND

6970 - ELEVATION OF FINAL GRADE, FEET (SEE NOTE 1)

APPROXIMATE LIMITS OF CATCH BASINS I AND II AREAS REQUIRING STRIPPING. (SEE NOTE 5)

DIRECTION OF FLOW

REFERENCE
TOPOGRAPHIC MAP PROVIDED BY UNITED NUCLEAR CORPORATION. DRAWING NO. 1798A. DATED: MAY 1, 1985. SCALE: 1"=200'

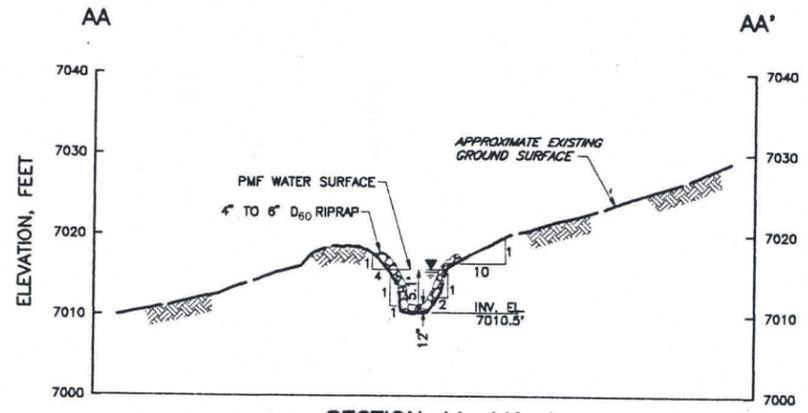
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
1	7-1-91	REVISED FOR 1996 RECLAMATION PLAN AMENDMENT	RLM	DKW	DKW
2	9-9-92	ISSUED TO CORRECT DRAINAGE CHANNEL COORDINATE AND NOTE AND FIGURE REFERENCES	DKW	DKW	DKW
3	8-24-91	ISSUED FOR 1991 RECLAMATION PLAN	BKR	DKW	DHG

FINAL RECLAMATION PLAN
NORTH END
PREPARED FOR
UNC MINING AND MILLING
GALLUP, NEW MEXICO



DATE: 8-7-91
SCALE: AS SHOWN
FIGURE 5-2
DRAWING NUMBER 86-060-E540

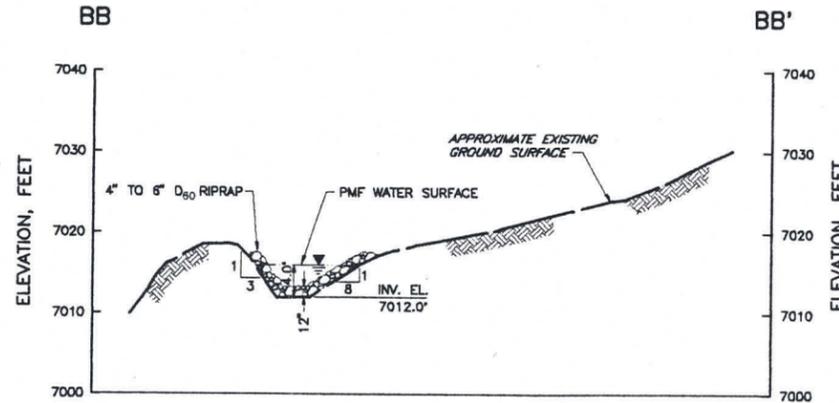
DRAWING NUMBER 86-060-E569



SECTION AA-AA' *
NORTH DIVERSION DITCH
(LOOKING NORTHEAST)



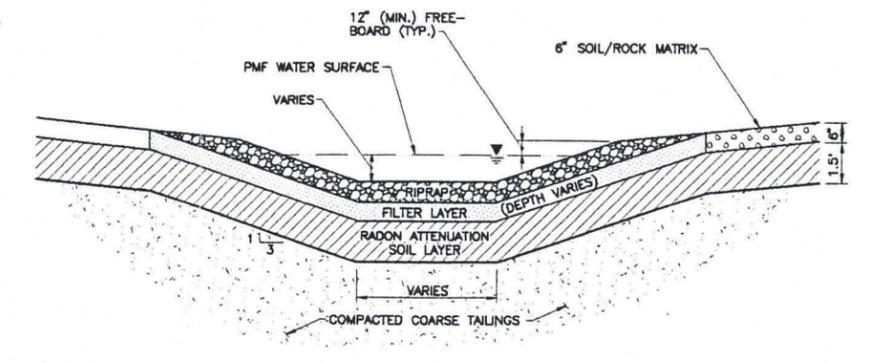
VERTICAL EXAGGERATION = 5x
NOTE:
1. SEE FIGURE 5-1 FOR SECTION LOCATION.



SECTION BB-BB' *
NORTH DIVERSION DITCH
(LOOKING NORTH)

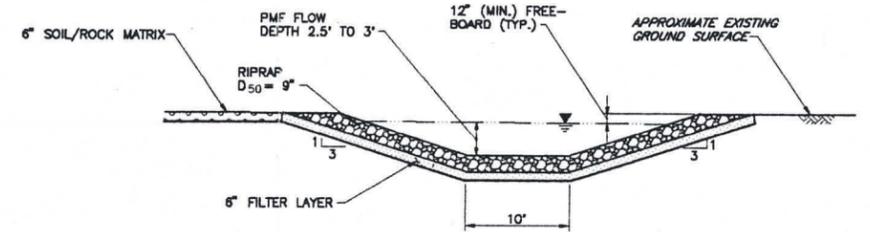


NOTE:
1. SEE FIGURE 5-1 FOR SECTION LOCATION.



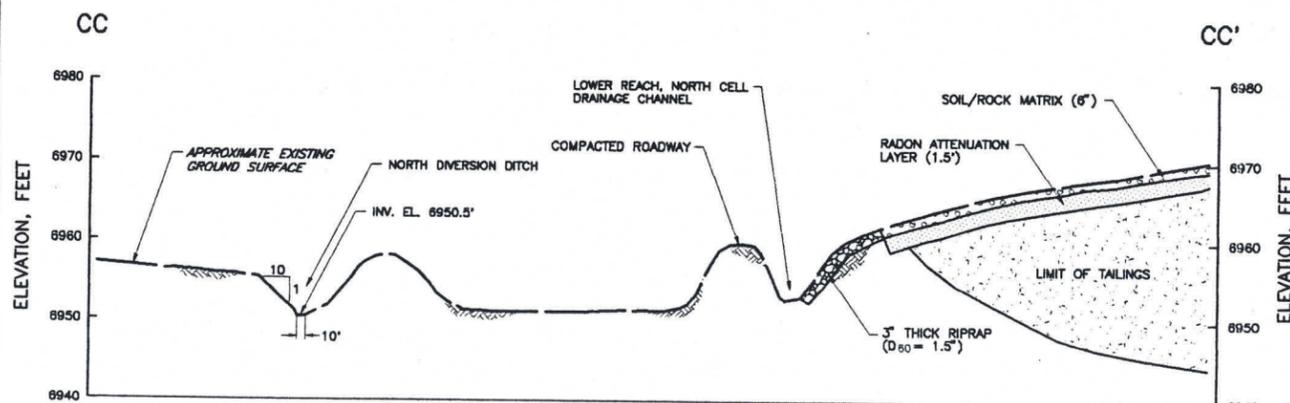
TYPICAL BRANCH SWALE

NOTE:
1. BRANCH SWALE DIMENSIONS AND RIPRAP SIZES PROVIDED IN TABLES 5.5, 5.6, AND 5.7. (TABLES B.2, B.3, AND B.4 IN THE SPECIFICATIONS.)



TYPICAL SECTION
NORTH CELL DRAINAGE CHANNEL
UPPER AND MIDDLE REACHES
(LOOKING NORTH)

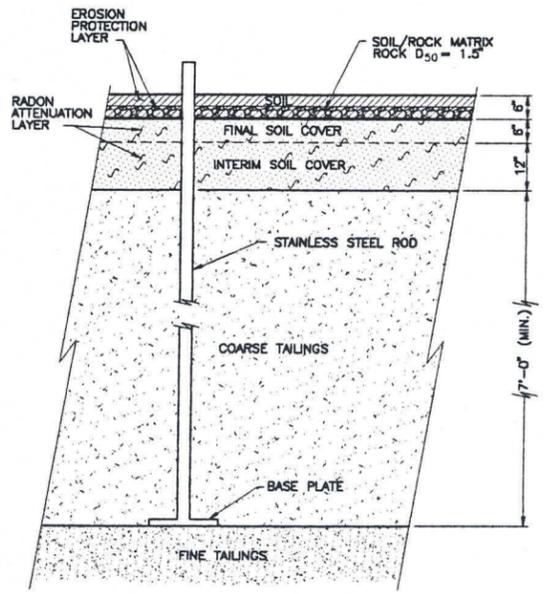
NOT TO SCALE



SECTION CC-CC' *
NORTH DIVERSION DITCH TO
NORTHERN PORTION OF TAILINGS PILE
(LOOKING EAST)



VERTICAL EXAGGERATION = 10x
NOTE:
1. SEE FIGURE 5-2 FOR SECTION LOCATION.



SOIL COVER PROFILE

NOT TO SCALE

NOTES:
1. RADON ATTENUATION SOIL COVER DESIGN IS DESCRIBED IN SECTION 5.0.
2. PLAN LOCATIONS OF MONUMENTS ARE SHOWN ON FIGURES 4-1 AND 4-2.
3. AFTER DRAWING No. 86-060-A496 (FIGURE 2) IN THE MARCH 4, 1991 RESPONSE TO NRC COMMENTS.

SOIL COVER AND
SURFACE WATER CONTROL DETAILS
PREPARED FOR

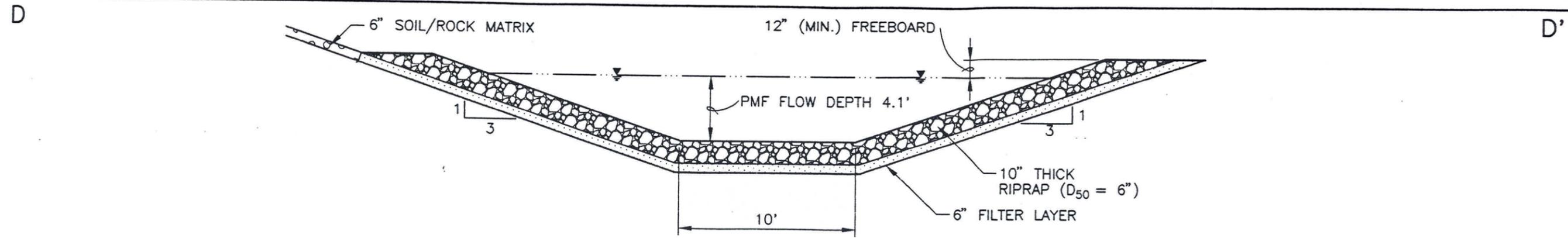
UNC MINING AND MILLING
GALLUP, NEW MEXICO



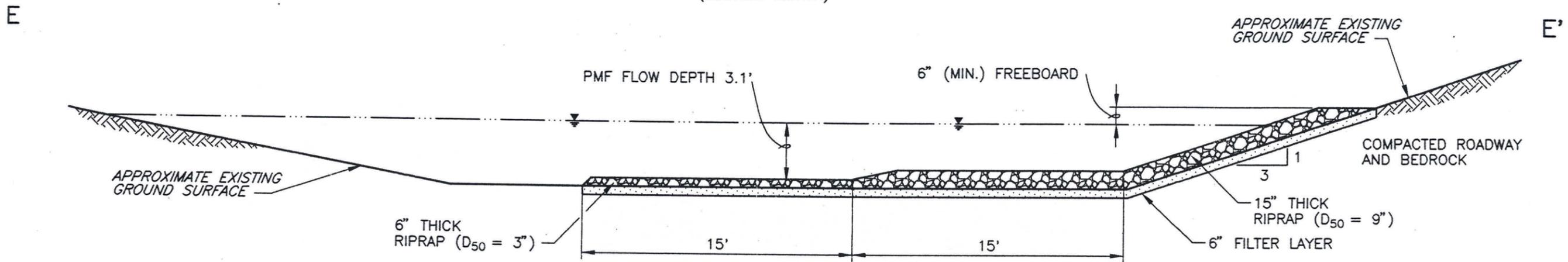
* AFTER DRAWING No. 86-060-E274 (FIGURE 12) IN THE OCTOBER, 1989 TAILINGS IMPOUNDMENT STABILITY ENGINEER'S REPORT.

2/22/92	REVISED FOR 1996 RECLAMATION PLAN AMENDMENT	DCM	JWR	SLP	
8-24-91	ISSUED FOR 1991 RECLAMATION PLAN	M.T.H.	D.W.K.	D.H.G.	
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY

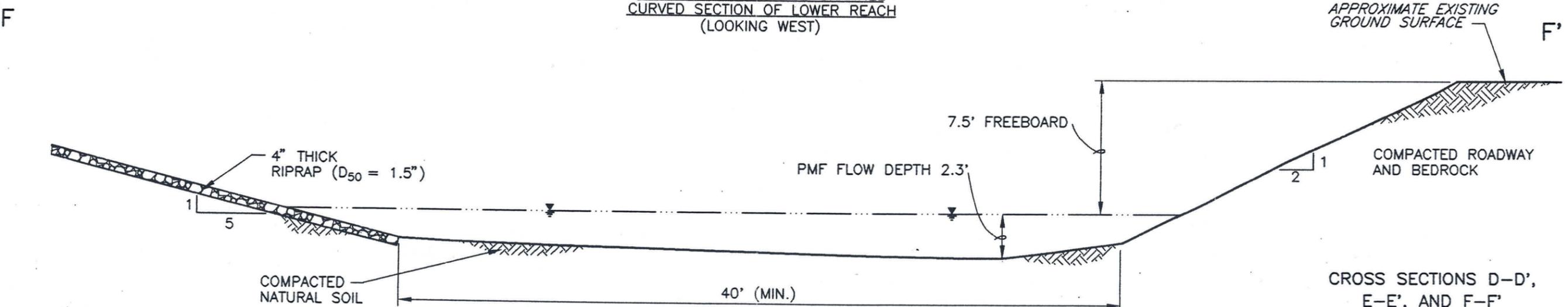
DATE:	6-10-91	DRAWING NUMBER	86-060-E569
SCALE:	AS SHOWN		
FIGURE 5-3			



SECTION D-D'
NORTH CELL DRAINAGE CHANNEL
MIDDLE REACH
(LOOKING NORTH)



SECTION E-E'
NORTH CELL DRAINAGE CHANNEL
CURVED SECTION OF LOWER REACH
(LOOKING WEST)



SECTION F-F'
NORTH CELL DRAINAGE CHANNEL
LOWER REACH
(LOOKING WEST)

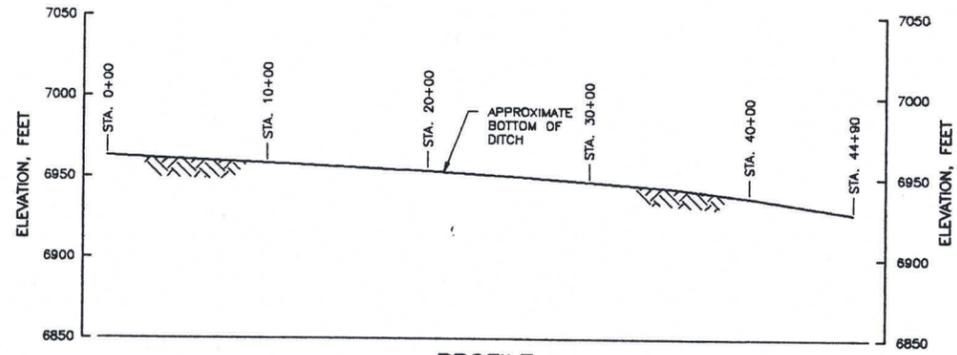
CROSS SECTIONS D-D',
E-E', AND F-F'
PREPARED FOR
UNC MINING AND MILLING
GALLUP, NEW MEXICO



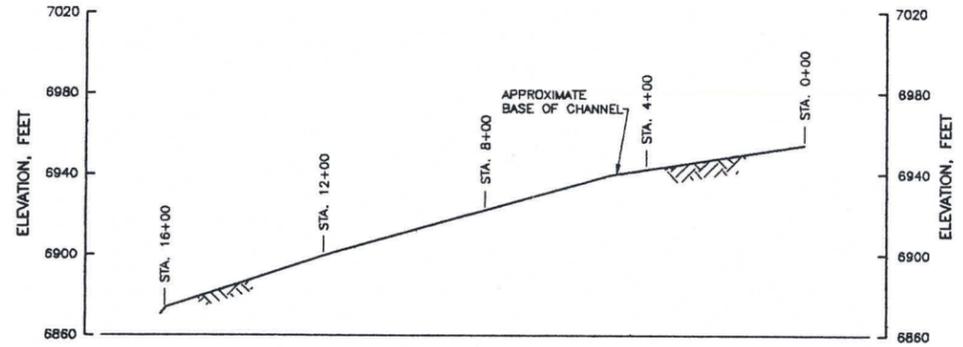
▲	2/22/96	ISSUED FOR 1996 RECLAMATION PLAN AMENDMENT	DCM	<i>AW</i>	<i>SM</i>
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	APP'D BY

DATE: 1-24-96	FIGURE 5-3A	DRAWING NUMBER 86-060-B1031
SCALE: AS SHOWN		

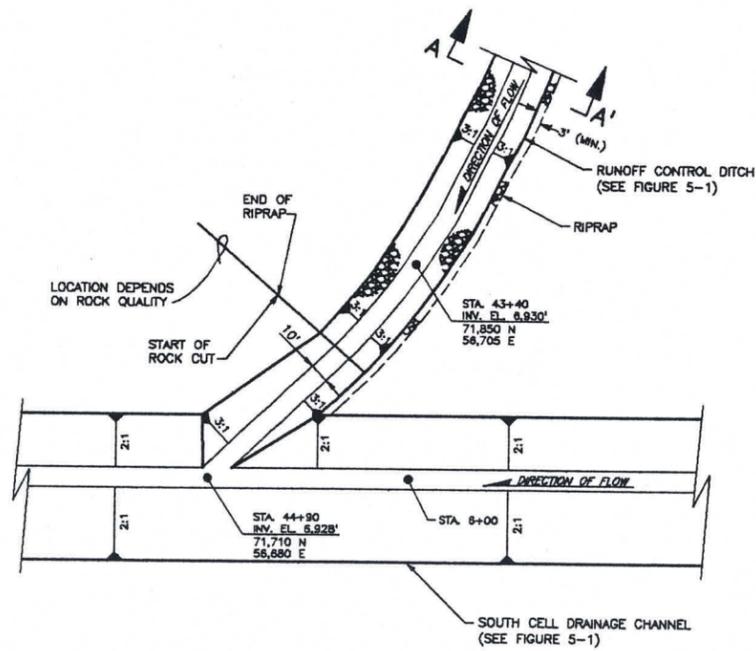
DRAWING NUMBER
86-060-E565



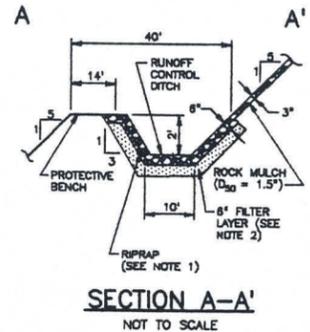
PROFILE
RUNOFF CONTROL DITCH



PROFILE
SOUTH CELL DRAINAGE CHANNEL

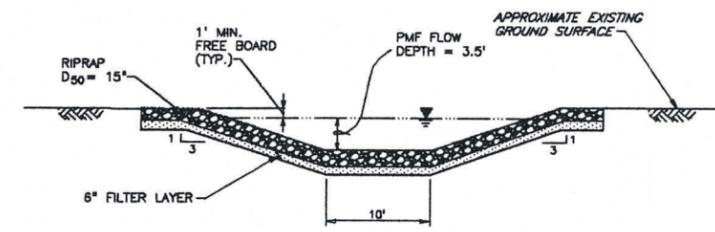


PLAN
EXIT SECTION RUNOFF CONTROL DITCH
INTO SOUTH CELL DRAINAGE CHANNEL



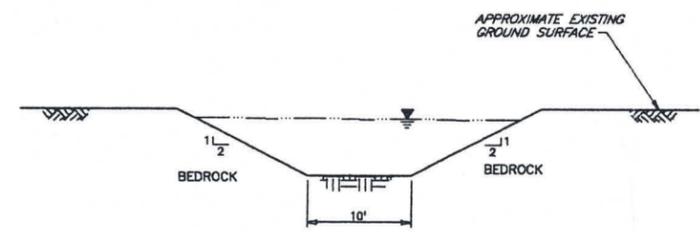
SECTION A-A'
NOT TO SCALE

- NOTES:
1. RIPRAP $D_{50} = 1.5'$ IN UPPER REACH OF RUNOFF CONTROL DITCH. $D_{50} = 3.0'$ IN LOWER REACH OF RUNOFF CONTROL DITCH.
 2. RIPRAP LAYER 3" AND FILTER LAYER 3" IN UPPER REACH OF RUNOFF CONTROL DITCH.

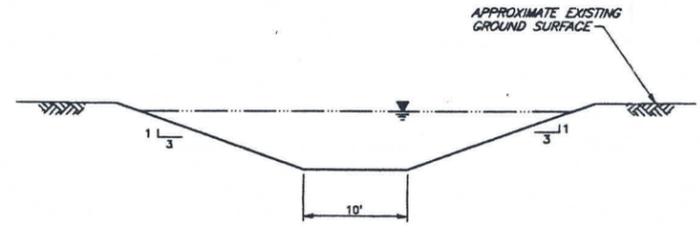


SOUTH CELL DRAINAGE CHANNEL
STA. 0+00 TO STA. 4+50
NOT TO SCALE

NOTE:
1. AFTER DRAWING No. RM86-060-E43 (FIGURE 7-9) IN THE 1987 RECLAMATION PLAN (CANONIE, 1987b).



SOUTH CELL DRAINAGE CHANNEL
STA. 4+50 TO STA. 9+00
NOT TO SCALE



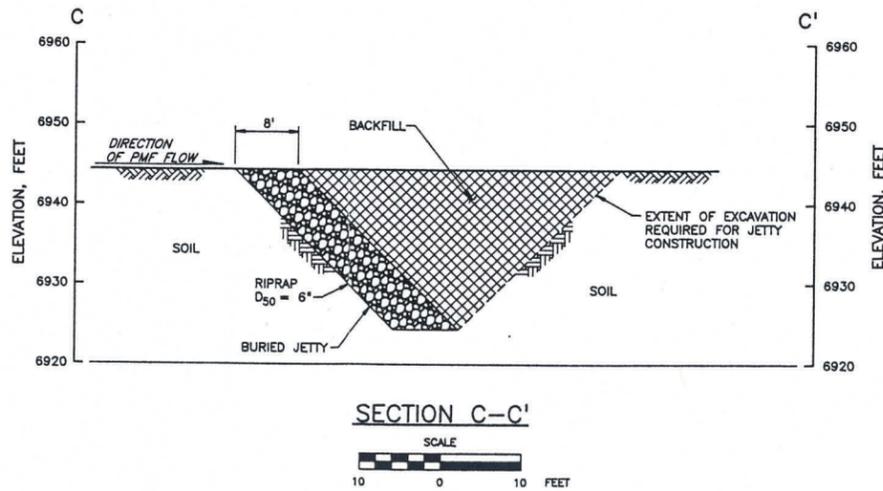
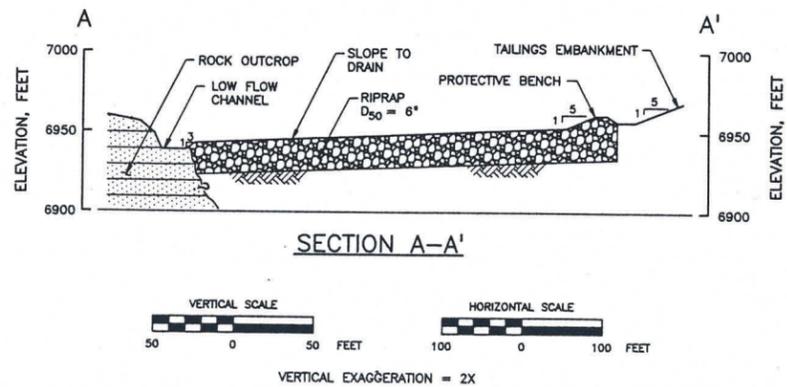
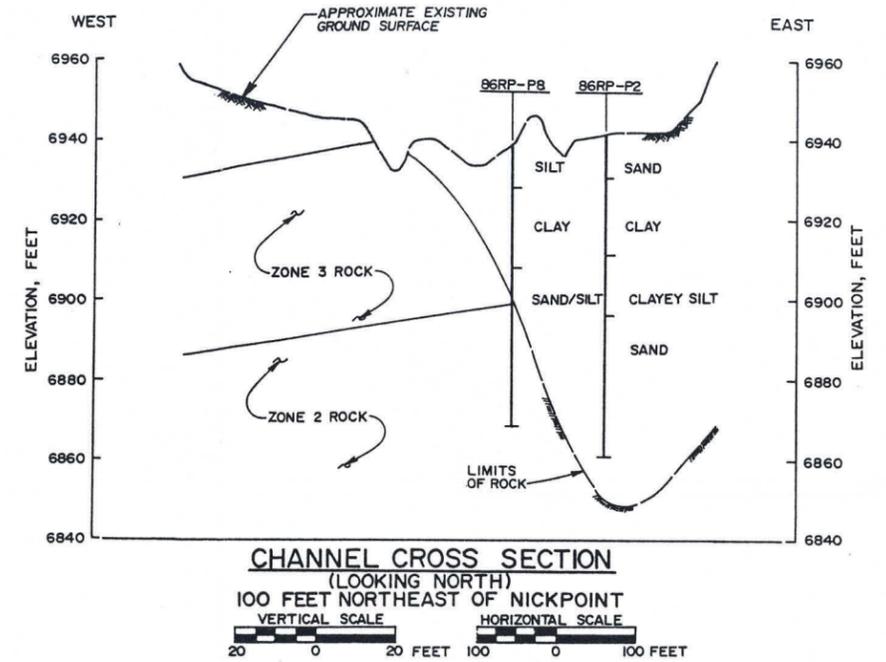
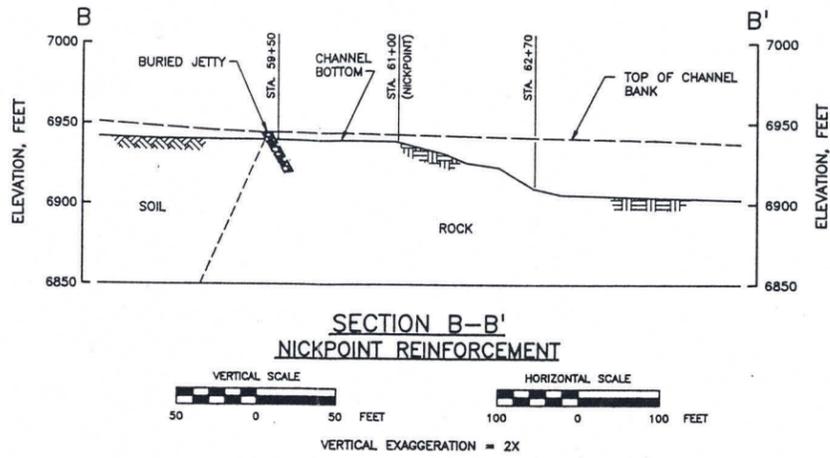
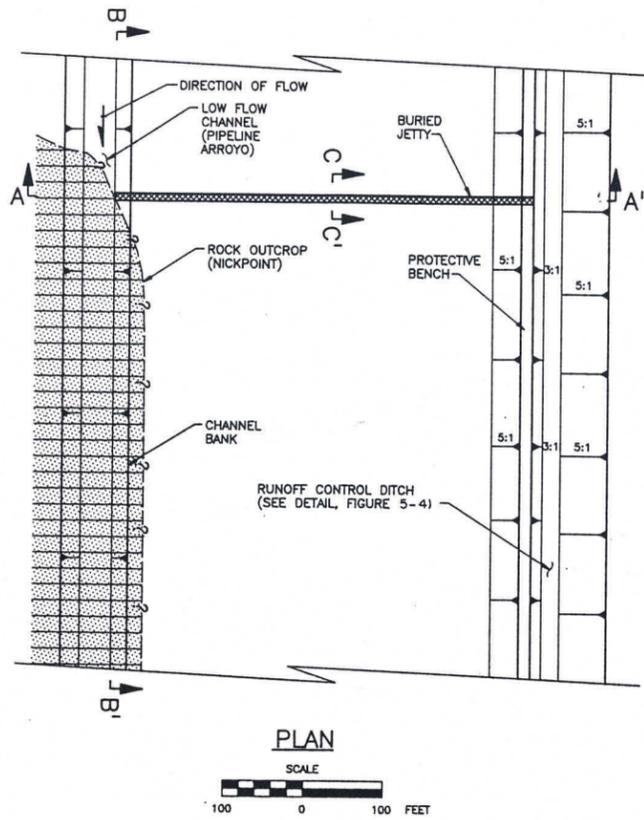
SOUTH CELL DRAINAGE CHANNEL
STA. 9+00 TO STA. 16+00
NOT TO SCALE

RUNOFF CONTROL DITCH AND SOUTH CELL DRAINAGE CHANNEL DETAILS
PREPARED FOR
UNC MINING AND MILLING
GALLUP, NEW MEXICO



9-9-92	ISSUED TO CORRECT SECTION A-A'	M.T.H.	D.W.K.	D.W.K.
8-24-91	ISSUED FOR 1991 RECLAMATION PLAN	M.T.H.	D.W.K.	D.H.G.
No.	DATE	ISSUE / REVISION		DWN. BY
		CK'D BY	AP'D BY	

DATE:	6-10-91	FIGURE 5-4	DRAWING NUMBER	86-060-E565
SCALE:	AS SHOWN			



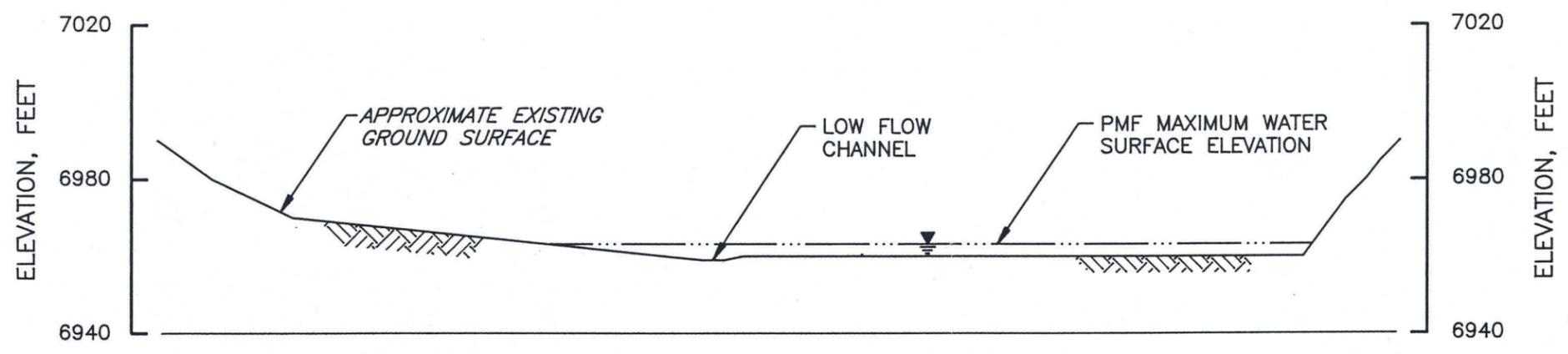
NOTE:
1. AFTER DRAWING No. 86-060-E419 (FIGURE 2-8) IN THE DECEMBER 4, 1990 RESPONSE TO NRC COMMENTS AND DRAWING No. RM 86-060-E37 (FIGURE 7-5) IN THE 1987 RECLAMATION PLAN (CANONIE 1987b).

PIPELINE ARROYO CHANNEL
AND BURIED JETTY DETAILS
PREPARED FOR
UNC MINING AND MILLING
GALLUP, NEW MEXICO



△ B-24-11	ISSUED FOR 1991 RECLAMATION PLAN	M.T.H.	DWK	DHG
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY
			AP'D BY	

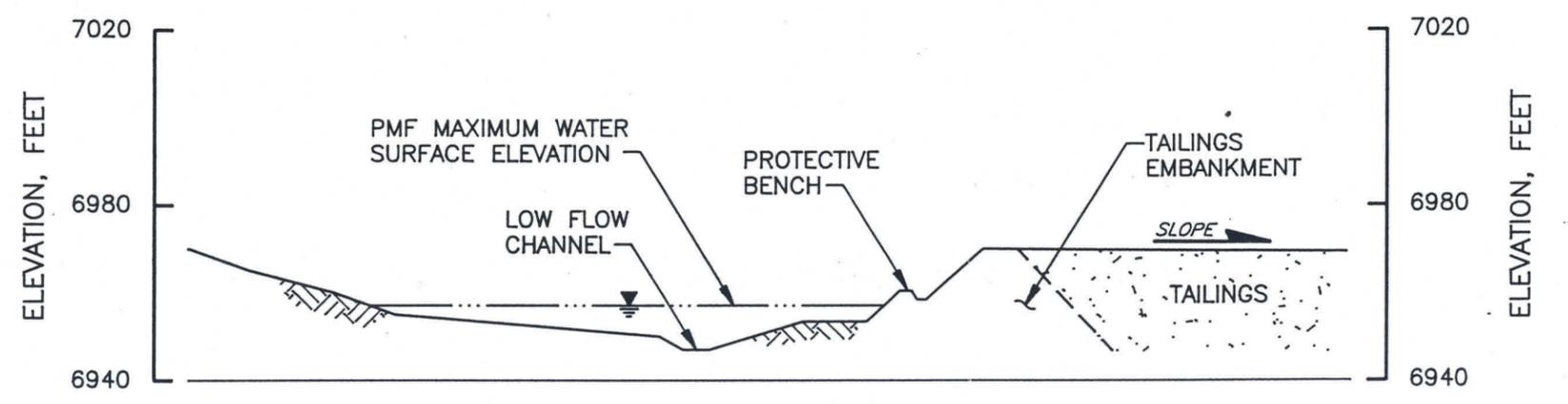
DATE:	5-29-91	FIGURE 5-9	DRAWING NUMBER 86-060-E631
SCALE:	AS SHOWN		



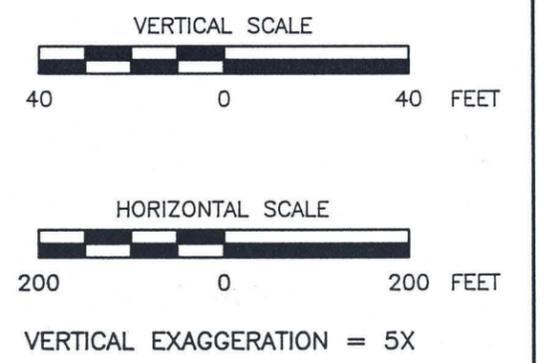
PIPELINE ARROYO CROSS SECTION
 STATION 15+05
 (LOOKING NORTH)

NOTES:

- CROSS SECTION LOCATIONS ARE SHOWN ON FIGURES 5-1 AND 5-2.
- AFTER DRAWING No. 86-060-B424 (FIGURE 2-5) IN THE DECEMBER 4, 1990 RESPONSE TO NRC COMMENTS.



PIPELINE ARROYO CROSS SECTION
 STATION 41+95
 (LOOKING NORTH)

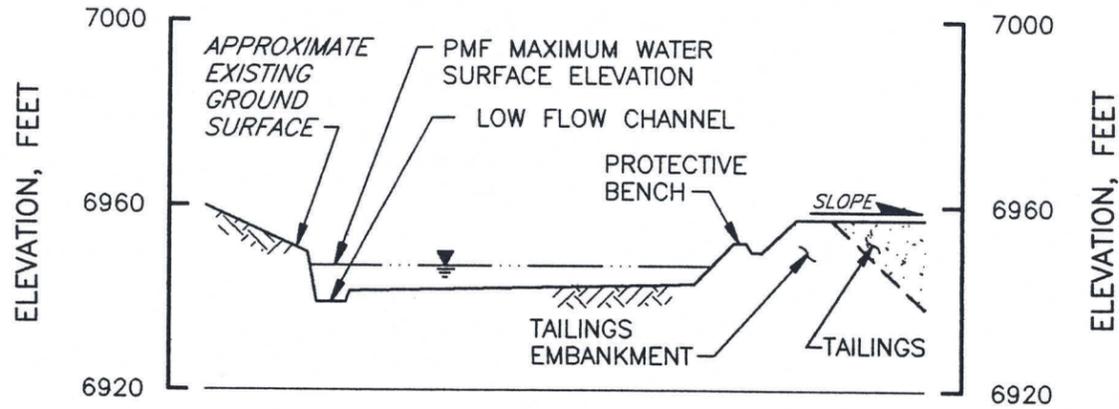


PIPELINE ARROYO CROSS SECTIONS
 15+05 AND 41+95
 PREPARED FOR
 UNC MINING AND MILLING
 GALLUP, NEW MEXICO

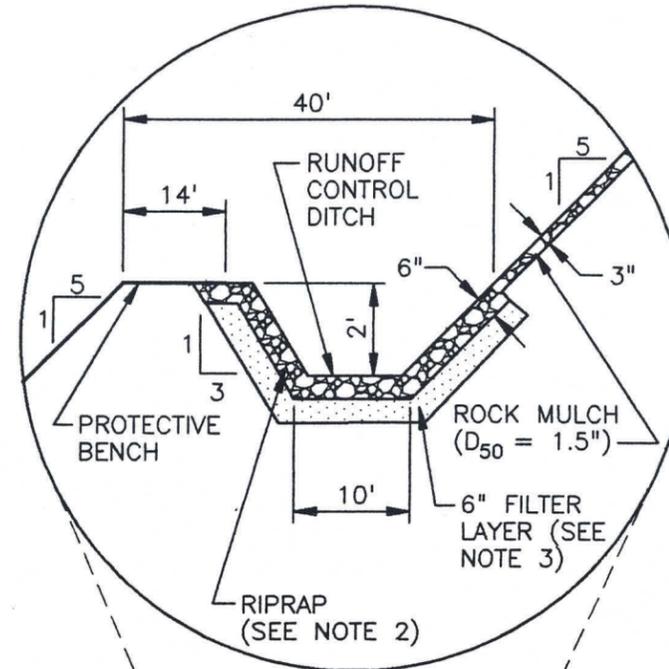


△	8-24-91	ISSUED FOR 1991 RECLAMATION PLAN	P.M.W.	DLK	DHG
No.	DATE	ISSUE / REVISION	OWN. BY	CK'D BY	AP'D BY

DATE: 5-23-91	FIGURE 5-12	DRAWING NUMBER 86-060-B621
SCALE: AS SHOWN		



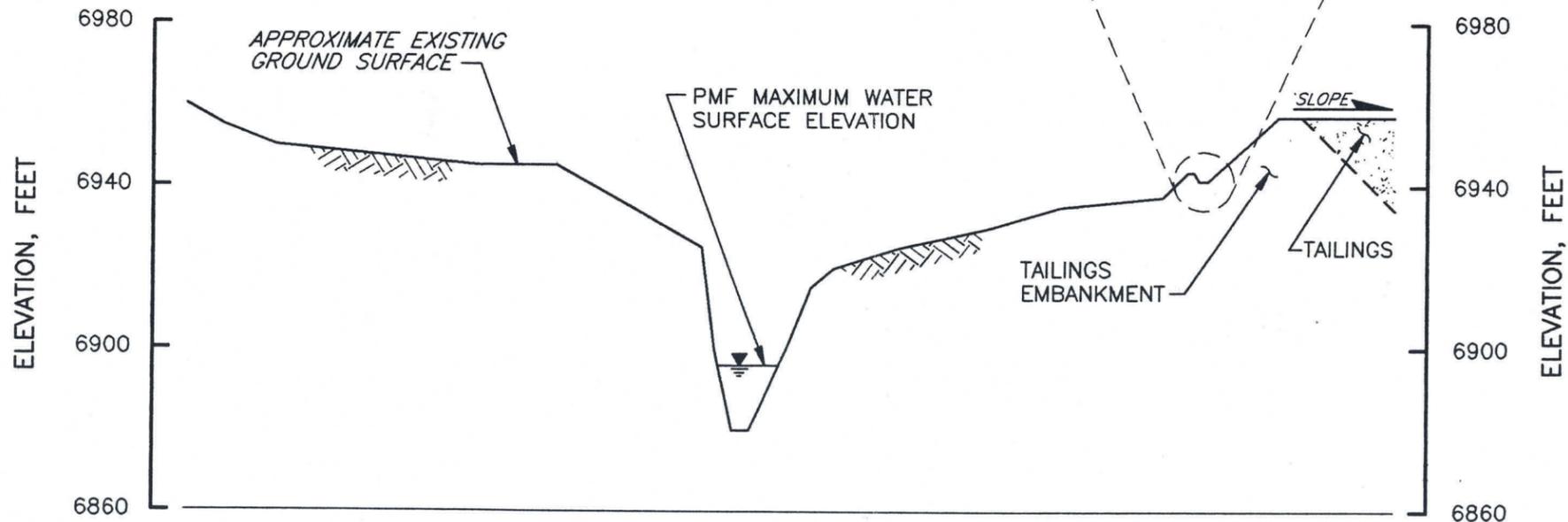
PIPELINE ARROYO CROSS SECTION
STATION 60+40
(LOOKING NORTH)



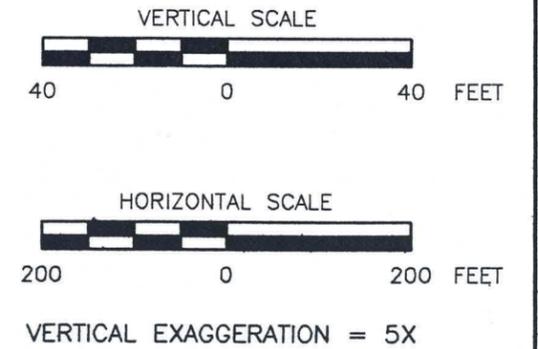
RUNOFF CONTROL DITCH
NOT TO SCALE

NOTES:

1. CROSS SECTION LOCATIONS ARE SHOWN ON FIGURES 5-1 AND 5-2.
2. RIPRAP $D_{50} = 1.5"$ IN UPPER REACH OF RUNOFF CONTROL DITCH. $D_{50} = 3.0"$ IN LOWER REACH OF RUNOFF CONTROL DITCH.
3. RIPRAP LAYER 3" AND FILTER LAYER 3" IN UPPER REACH OF RUNOFF CONTROL DITCH.
4. AFTER DRAWING No. 86-060-B421 (FIGURE 2-6) IN THE DECEMBER 4, 1990 RESPONSE TO NRC COMMENTS.



PIPELINE ARROYO CROSS SECTION
STATION 73+80
(LOOKING NORTH)



PIPELINE ARROYO CROSS SECTIONS
60+40 AND 73+80

PREPARED FOR
UNC MINING AND MILLING
GALLUP, NEW MEXICO



9-9-92	ISSUED TO CORRECT RUNOFF CONTROL DITCH DETAIL	M.T.H.	DWK	DWK	
8-24-91	ISSUED FOR 1991 RECLAMATION PLAN	P.M.W.	D.W.K.	D.H.G.	
No.	DATE	ISSUE / REVISION	OWN. BY	CK'D BY	AP'D BY

DATE: 5-23-91	FIGURE 5-13	DRAWING NUMBER 86-060-B622
SCALE: AS SHOWN		



APPENDIX B
TEST METHODS AND FIELD REPORTS

TEST METHODS

The soil materials placed were tested as dictated in the project specification for *gradation*, *atterberg limits* and *relative compaction*. The compaction was determined based on moisture density relationship tests and in-place field density tests.

The following is a more detailed description of the test procedures used on this reclamation project.

Atterberg Limits

Liquid limit and plasticity index of the soils were determined by the procedure identified in ASTM D4318 using the dry preparation and the one-point liquid limit methods.

The results of the atterberg limits and gradations were used to determine the Unified Soils Classifications. This classification and the soil descriptions were determined by the method identified in ASTM D2487.

Gradation

Gradation samples were tested in accordance with ASTM C136 with a minus 200 wash in accordance with the applicable portions of ASTM C117.

In-Place Density Tests

The in-place density of the soils was determined by the procedures of ASTM D1556 (sand cone method) with the in-place moisture content determined by ASTM D2216 (oven dry method).

LA Abrasion

LA abrasion was determined by the procedures of ASTM C535 at 100 revolutions during the production of D⁵⁰ 1.5, D⁵⁰ 3.0 and D⁵⁰ .35 aggregates.

Moisture Density Relations

Moisture density relations of the soil were determined in accordance with ASTM D698A (standard proctor). In some cases, "one-point proctors" were run to verify a moisture density relationship. For these tests, the one-point was run in accordance with test procedures in ASTM D698. The dry density and moisture content of this



point were then compared to previously run moisture density curves. When a curve was found for which the one-point could be plotted one or near the moisture density line, that curve was considered to represent the new material tested.

Specific Gravity and Absorption of Coarse Aggregate

Specific gravity and absorption was determined by the procedures of ASTM C127 during the production of D⁵⁰ 1.5, D⁵⁰ 3.0 and D⁵⁰ .35 aggregates.





Western Technologies Inc.

The Quality People
Since 1955

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

FIELD REPORT

REVIEW OF JOBSITE CONDITIONS

Client United Nuclear Corporation
Attn: Ed Morales
PO Box 3077
Gallup, NM 87305

Job No: 3146JB025
Lab/Invoice No: 31460177
Date of Report: 06-17-96

Project 1996 Reclamation
Location Church Rock, NM
Contractor Nielson Inc. Report By H.K. /WT Date 06-04-96
Subject Testing/Observations Superintendent H. Hampson

Observations and Action Taken: Nielson Inc. placed fill in buried Getty behind D⁵⁰
- 6 inches. Compaction tests indicated fill placement met project requirement after Nielson Inc.
adjusted moisture content in fill.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
6-4\RGO:UNC25

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



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

FIELD REPORT

REVIEW OF JOBSITE CONDITIONS

Client United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No: 3146JB025
Lab/Invoice No: 31460226
Date of Report: 7-15-96

Project 1996 Reclamation

Location Church Rock, NM

Contractor Nielson's Inc. Report By H.K./WT Date 7-10-96

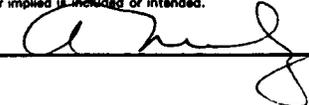
Subject Testing and Observations Superintendent H. Hampson

Observations and Action Taken: Crew continued to place rip-rap materials in designated channels and swale. Thickness measurement indicated rip-rap met project specifications,

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
710\ha:UN025

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 



APPENDIX C

FIELD DESIGN MODIFICATIONS CENTRAL AND SOUTH CELL RECLAMATION

June 26, 1995

86-060-20

Mr. Edward M. Morales
United Nuclear Corporation
P.O. Box 3077
Gallup, NM 87305-3077

Transmittal
Field Design Modifications
Central and South Cell Reclamation

Dear Ed:

This letter summarizes the minor field modifications made in the reclamation design of the Central and South Cells of the tailings disposal area in conjunction with 1995 reclamation activities. These field modifications were designed in accordance with NRC guidelines and serve to fit the approved reclamation design to actual site conditions encountered during reclamation.

Branch Swales B and C

Branch Swale B of the Central Cell was originally designed to pass through the area where the North Cross-Dike Pump-Back Wells are located prior to discharging into the North Cell Drainage Channel. This design was based on the assumption that ground water remediation in Zone 1 would be completed by this time and that the North Cross-Dike Pump-Back Wells would be decommissioned. This was a reasonable design assumption given the limited ground water impacts in Zone 1 and concurrence by the regulatory agencies that extensive remediation in this formation was infeasible. Unfortunately, regulatory delays have caused the remediation of Zone 1 to be extended, and the wells, although currently inactive, have not been approved for decommissioning.

To avoid unnecessary delays in the reclamation of the tailings disposal area, United Nuclear has proposed rerouting the final 367 feet of Swale B around the North Cross-Dike Pump-Back Wells by combining Swale B with Swale C at Survey Station 30+00, as

RMW:\88-060\FDM.LTR (Jun. 26, 1995)

94 Inverness Terrace E. • Suite 100 • Englewood, CO 80112 • (303) 790-1747 • fax (303) 799-7398

shown on the enclosed sketch. The grade of Swales B and BC are to be 0.0102 from Stations SB 27 to SBC 31 and 0.083 from Stations SB 31 to SB 33+61.7. Canonie/Smith Environmental Technologies Corporation has reviewed this field modification to the reclamation design and has determined that it is consistent with the NRC's reclamation guidelines and the approved reclamation plan, provided that the modified design incorporates the following:

1. The combined swale is to be 20 feet wide at its base and armored with riprap having a D_{50} of 3.0 inches.
2. The combined swale is to be 2.1 feet deep or deeper to allow for adequate freeboard during the design event.

A copy of the supporting calculations for the change in configuration of Swales B and C is enclosed.

Branch Swales H, I and J

The lower portion of Branch Swale H was originally designed to pass through the bedrock outcrop area southeast of the South Cell of the tailings area. However, this design requires substantial excavation in the bedrock to construct the swale to the design grade. United Nuclear has proposed moving Swale H closer to the tailings areas as shown on the enclosed modified Figure 5-1. The invert elevation where Swale I flows into the South Cell Drainage Channel will also require modification from an elevation of 6951 feet to approximately 6947.85 feet (assuming a 3.5-foot deep swale) to match Swale I to the South Cell as-built contours.

These two field modifications result in moving the juncture between Swales J and H approximately 200 feet further to the northeast and increasing the grades of Swale I from 0.0040 to 0.0067 and Swale H from 0.0085 to 0.010. The grade of Swale J will remain the same at 0.0047. These modifications will not require any change in specified swale depths, bedding material or riprap because the calculated safety factors remain above 1.0. A copy of the supporting calculations for the changes in configuration of Swales H, I and J is enclosed.

South Cell Drainage Channel

Lowering the invert elevation where Swale I flows into the South Cell Drainage Channel will also reduce the grade in the South Cell Drainage Channel. The optimum place to make this grade change is the first 450 feet of channel because, after this point, the channel is to be constructed in bedrock. This would result in a grade reduction from

0.0244 to 0.0174 over the 450-foot section. As shown in the enclosed calculations, the D_{50} of the riprap could also be reduced from 1.25 feet (i.e., 15 inches) to 0.83 foot (i.e., 10 inches). Alternately, the channel could be widened from 10 to 12 feet and the D_{50} reduced to 0.75 foot (i.e., 9 inches) if a smaller sized riprap is desired.

Bedding Layer 2

The reclamation plan calls for the placement of Bedding Layer 2 in a number of channels and swales, including Branch Swales H and I, which are to be completed this year. The bedding gradation specification listed in Table 5.7 of the reclamation plan calls for 5 to 12 percent passing the No. 40 screen size. However, the bedding material produced by the quarry is typically running about 14 percent passing the No. 40 screen.

Review of the original gradation calculations presented in United Nuclear's March 1991 response to NRC comments shows that Bedding Layer 2 (also called Filter Layer No. 2) can have up to 20 percent passing the No. 40 screen size in Swales H and I and the Lower Reach of the Runoff Control Ditch. Therefore, use of the finer gradation is acceptable for these areas, but would be unacceptable for the South and North Cell Drainage Channels and the North Diversion Ditch. Figure 1 of the original gradation calculations is enclosed for reference purposes.

If you have any questions or need further information, please call me at (303) 790-1747.

Very truly yours,



Frank J. Filas, P.E.
Project Engineer

FJF/wde

Enclosures

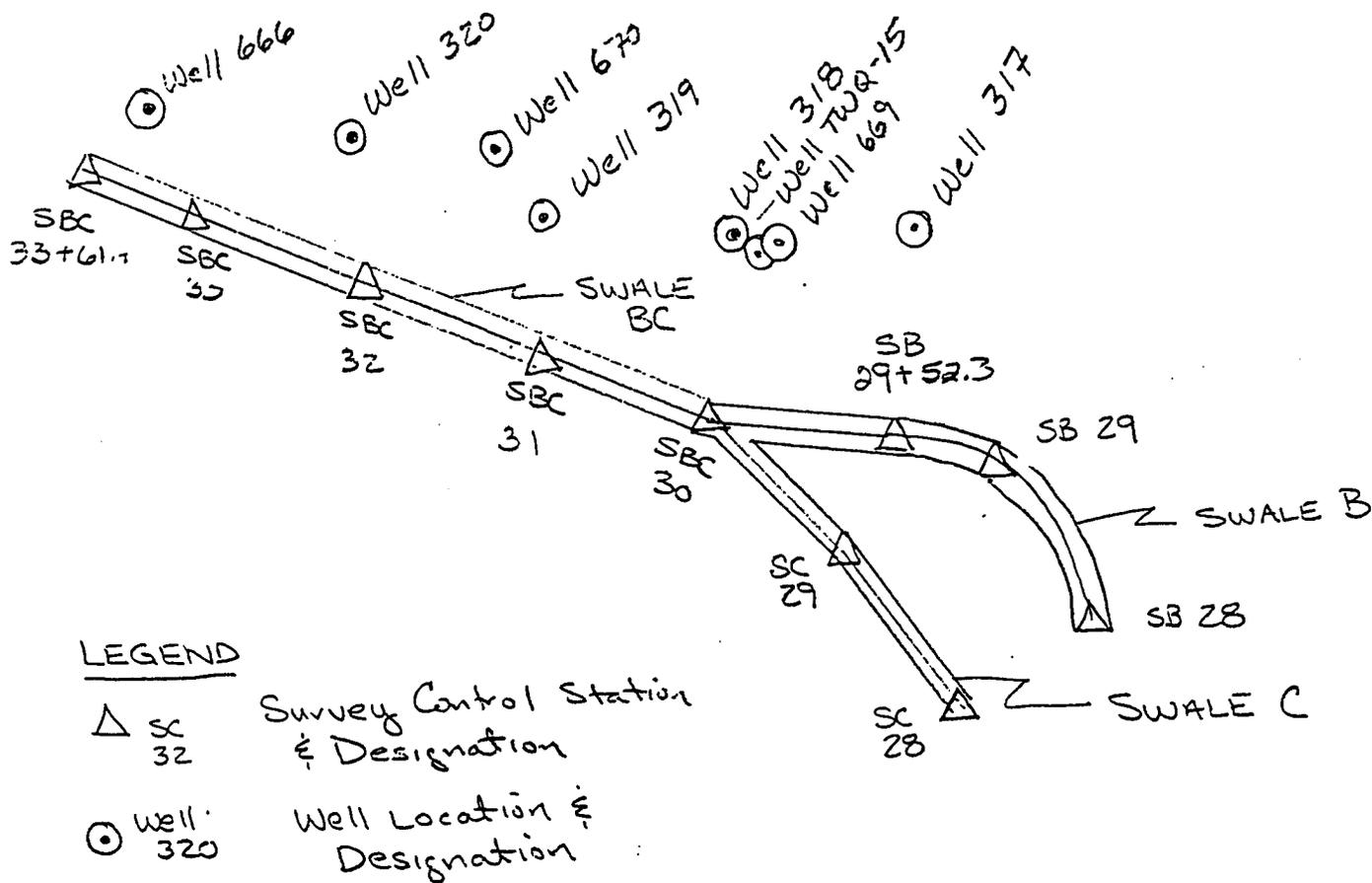
cc: Mr. Juan Velasquez, United Nuclear Corporation



CALCULATIONS

BRANCH SWALES B AND C

CHURCH ROCK SITE
CENTRAL CELL RECLAMATION



LEGEND

- △ SC 32 Survey Control Station & Designation
- ⊙ Well 320 Well Location & Designation

MODIFIED DESIGN OF SWALES B & C
Scale : 1" = 100'

RIPRAP DETERMINATION B. SAFETY FACTOR METHOD
 REF: "Applied Hydrology and Sedimentology
 for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE B FIELD MODIFICATION

DISCHARGE = 137 CFS (Drainage swales A+B)
 BOTTOM WIDTH = 20 FT
 Z (SIDE SLOPE) = 3 Alpha = 18.43 Degrees
 CHANNEL SLOPE = 0.0102 Theta = 0.58 Degrees
 RIPRAP S.G. = 2.72 Phi = 37.00 Degrees
 COEF FOR t = 0.75 see Fig 3.16, ref.

CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT
 n = 0.031
 d = 1.20 FT -
 A = 28.32 FT²
 R = 1.03 FT
 Q (CALC) = 138.0 CFS -
 v = 4.87 FPS
 t = 0.76 PSF
 nb = 0.598
 SFb = 1.64

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT
 n = 0.031
 d = 1.20 FT -
 A = 28.32 FT²
 R = 1.03 FT
 Q (CALC) = 138.0 CFS -
 v = 4.87 FPS
 t = 0.57 PSF
 nb = 0.45
 Beta = 27.98
 n' = 0.33
 SFs = 1.35

Design values

Channel Depth 1.70 FT Depth from top of freeboard to top of riprap
 Dmax 0.5 FT = 2* D50
 Layer Thickness 0.5 FT = 2* D50

Design Modification

Specific Gravity increased from 2.5 to 2.72 to match as-built conditions
 Rip rap D50 increased from 0.125 FT to 0.25 FT
 Swale A discharge of 40 cfs added to original 97 cfs

REFERENCE: FILE RIPSF105.WR1

RIPRAP DETERMINATION L. SAFETY FACTOR METHOD
 REF: "Applied Hydrology and Sedimentology
 for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE B + C

DISCHARGE = 212 CFS (Drainage swales A+B and Swale C)
 BOTTOM WIDTH = 20 FT (assume same width as Swale B)
 Z (SIDE SLOPE) = 3 Alpha = 18.43 Degrees
 CHANNEL SLOPE = 0.0102 Theta = 0.58 Degrees
 RIPRAP S.G. = 2.72 Phi = 37.00 Degrees
 COEF FOR t = 0.75 see Fig 3.16, ref.

CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT
 n = 0.031
 d = 1.54 FT -
 A = 37.91 FT²
 R = 1.27 FT
 Q (CALC) = 213.4 CFS -
 v = 5.63 FPS
 t = 0.98 PSF
 nb = 0.767
 SFb = 1.28

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT
 n = 0.031
 d = 1.58 FT -
 A = 39.09 FT²
 R = 1.30 FT
 Q (CALC) = 223.3 CFS -
 v = 5.71 FPS
 t = 0.75 PSF
 nb = 0.59
 Beta = 34.93
 n' = 0.47
 SFs = 1.17

Design values

Channel Depth 2.04 FT Depth from top of freeboard to top of riprap
 Dmax 0.5 FT = 2* D50
 Layer Thickness 0.5 FT = 2* D50

REFERENCE: FILE RIPS103.WR1

RIPRAP DETERMINATION B. SAFETY FACTOR METHOD
 REF: "Applied Hydrology and Sedimentology
 for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE B + C

DISCHARGE = 212 CFS (Drainage swales A+B and Swale C)
 BOTTOM WIDTH = 20 FT (assume same width as Swale B)
 Z (SIDE SLOPE) 3 Alpha = 18.43 Degrees
 CHANNEL SLOPE = 0.0083 Theta = 0.48 Degrees
 RIPRAP S.G. = 2.72 Phi = 37.00 Degrees
 COEF FOR t = 0.75 see Fig 3.16, ref.

CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT
 n = 0.031
 d = 1.63 FT -
 A = 40.57 FT²
 R = 1.34 FT
 Q (CALC) = 212.8 CFS -
 v = 5.24 FPS
 t = 0.84 PSF
 nb = 0.661
 SFb = 1.49

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT
 n = 0.031
 d = 1.58 FT -
 A = 39.09 FT²
 R = 1.30 FT
 Q (CALC) = 201.4 CFS -
 v = 5.15 FPS
 t = 0.61 PSF
 nb = 0.48
 Beta = 29.67
 n' = 0.36
 SFs = 1.31

Design values

Channel Depth 2.13 FT Depth from top of freeboard to top of riprap
 Dmax 0.5 FT = 2* D50
 Layer Thickness 0.5 FT = 2* D50

REFERENCE: FILE RIPS113.WR1

CALCULATIONS

BRANCH SWALES H, I AND J

DRAWING NUMBER 86-060-E544
E639

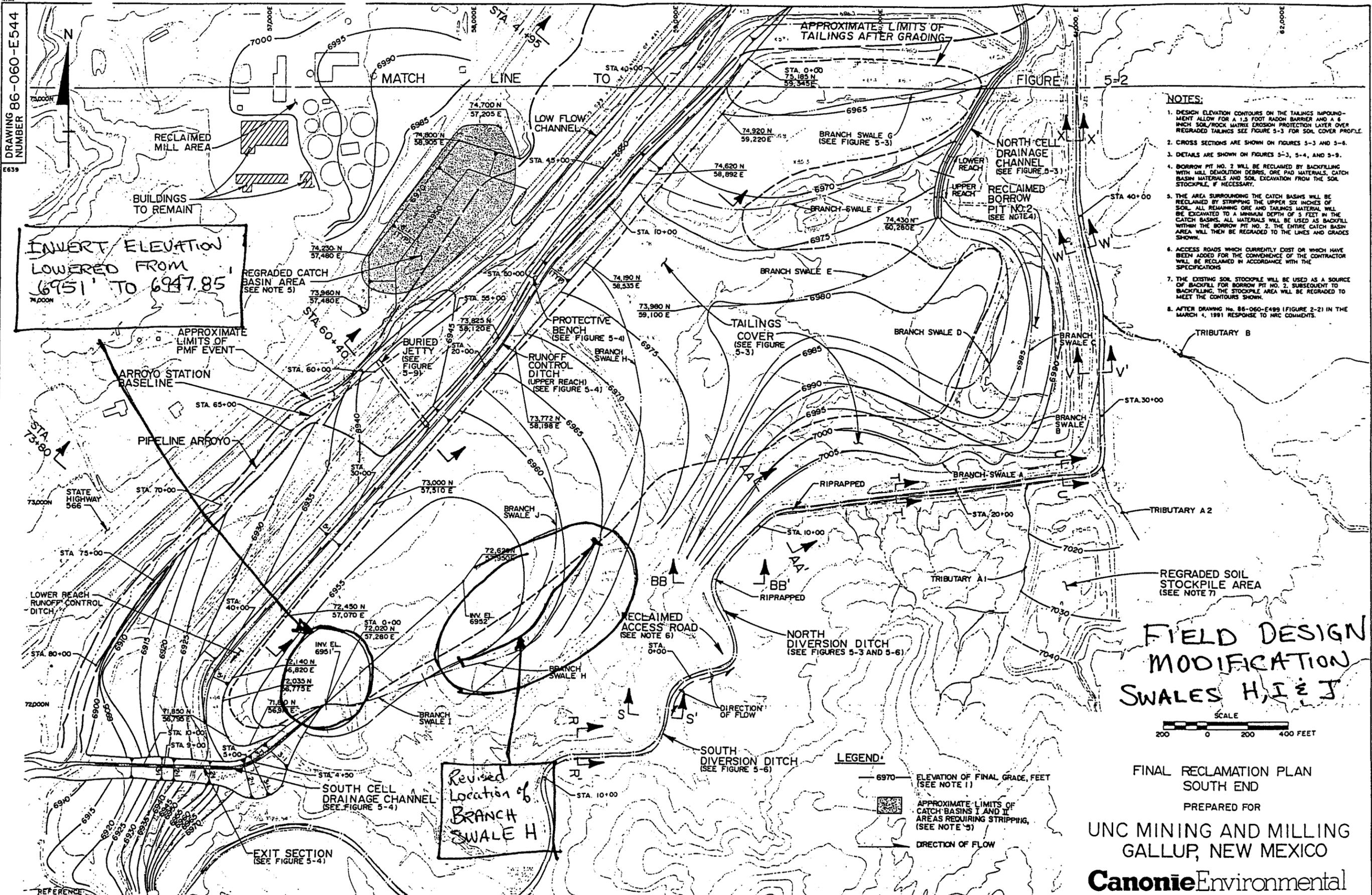
INVERT ELEVATION LOWERED FROM 6951' TO 6947.85'

Revised Location of BRANCH SWALE H

FIELD DESIGN MODIFICATION SWALES H, I & J



- NOTES:**
- DESIGN ELEVATION CONTOURS ON THE TAILINGS IMPONEMENT ALLOW FOR A 1.5 FOOT RADON BARRIER AND A 6 INCH SOIL/ROCK MATRIX EROSION PROTECTION LAYER OVER REGRADED TAILINGS SEE FIGURE 5-3 FOR SOIL COVER PROFILE.
 - CROSS SECTIONS ARE SHOWN ON FIGURES 5-3 AND 5-6.
 - DETAILS ARE SHOWN ON FIGURES 5-3, 5-4, AND 5-9.
 - BORROW PIT NO. 2 WILL BE RECLAIMED BY BACKFILLING WITH MILL DEVIOLATION DEBRIS, ONE PAD MATERIALS, CATCH BASIN MATERIALS AND SOIL EXCAVATION FROM THE SOIL STOCKPILE, IF NECESSARY.
 - THE AREA SURROUNDING THE CATCH BASINS WILL BE RECLAIMED BY STRIPPING THE UPPER SIX INCHES OF SOIL. ALL REMAINING ORE AND TAILINGS MATERIAL WILL BE EXCAVATED TO A MINIMUM DEPTH OF 5 FEET IN THE CATCH BASINS. ALL MATERIALS WILL BE USED AS BACKFILL WITHIN THE BORROW PIT NO. 2. THE ENTIRE CATCH BASIN AREA WILL THEN BE REGRADED TO THE LINES AND GRADES SHOWN.
 - ACCESS ROADS WHICH CURRENTLY EXIST OR WHICH HAVE BEEN ADDED FOR THE CONVENIENCE OF THE CONTRACTOR WILL BE RECLAIMED IN ACCORDANCE WITH THE SPECIFICATIONS.
 - THE EXISTING SOIL STOCKPILE WILL BE USED AS A SOURCE OF BACKFILL FOR BORROW PIT NO. 2. SUBSEQUENT TO BACKFILLING, THE STOCKPILE AREA WILL BE REGRADED TO MEET THE CONTOURS SHOWN.
 - AFTER DRAWING No. 86-060-E499 (FIGURE 2-21) IN THE MARCH 4, 1991 RESPONSE TO NRC COMMENTS.



LEGEND

- 6970 ELEVATION OF FINAL GRADE, FEET (SEE NOTE 1)
- APPROXIMATE LIMITS OF CATCH BASINS I AND II AREAS REQUIRING STRIPPING, (SEE NOTE 5)
- DIRECTION OF FLOW

FINAL RECLAMATION PLAN
SOUTH END
PREPARED FOR
UNC MINING AND MILLING
GALLUP, NEW MEXICO
Canonie Environmental

REFERENCE
TOPOGRAPHIC MAP PROVIDED BY UNITED NUCLEAR CORPORATION, DRAWING NO. 1798-A DATED MAY 1, 1985. SCALE 1" = 200'

DISCHARGE TO NATURAL DRAINAGE

8-24-91	ISSUED FOR 1991 RECLAMATION PLAN	M.T.M.	D.W.K.	D.H.G.
No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY

DATE: 5-30-91	FIGURE 5-1	DRAWING NUMBER 86-060-E544
SCALE: AS SHOWN		

RIPSF106.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

REF: "Applied Hydrology and Sedimentology
for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE I FIELD MODIFICATION

DISCHARGE =	385 CFS		
BOTTOM WIDTH =	20 FT		
Z (SIDE SLOPE)	3	Alpha =	18.43 Degrees
CHANNEL SLOPE =	0.0067	Theta =	0.38 Degrees
RIPRAP S.G. =	2.72	Phi =	37.00 Degrees
COEF FOR t =	0.75	see Fig 3.16, ref.	

CHANNEL BOTTOM

D50 (ASSUM) =	0.25 FT	
n =	0.031	
d =	2.42 FT	-
A =	65.97 FT ²	
R =	1.87 FT	
Q (CALC) =	388.3 CFS	-
v =	5.89 FPS	
t =	1.01 PSF	
nb =	0.792	
SFb =	1.25	

CHANNEL SIDE SLOPES

D50 (ASSUM) =	0.25 FT	
n =	0.031	
d =	1.90 FT	-
A =	48.83 FT ²	
R =	1.53 FT	
Q (CALC) =	251.0 CFS	-
v =	5.14 FPS	
t =	0.60 PSF	
nb =	0.47	
Beta =	28.96	
n' =	0.35	
SFs =	1.33	

Design values

Channel Depth 2.92 FT Depth from top of freeboard to top of riprap
Dmax 0.50 FT = 2* D50
Layer Thickness 0.50 FT = 2* D50

DESIGN MODIFICATION

SPECIFIC GRAVITY INCREASED FROM 2.5 TO 2.72 TO MATCH AS-BUILT CONDITIONS
CHANNEL SLOPE INCREASED TO 0.067 (ASSUMES 3.5 FT DEPTH AT END OF SWALE I)

RIPSF107.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

REF: "Applied Hydrology and Sedimentology
for Disturbed Areas", pages 185-194

LOCATION: UNC -- DRAINAGE SWALE H FIELD MODIFICATION

DISCHARGE = 284 CFS
BOTTOM WIDTH = 20 FT
Z (SIDE SLOPE) = 3 Alpha = 18.43 Degrees
CHANNEL SLOPE = 0.01 Theta = 0.57 Degrees
RIPRAP S.G. = 2.72 Phi = 37.00 Degrees
COEF FOR t = 0.75 see Fig 3.16, ref.

CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT
n = 0.031
d = 1.82 FT -
A = 46.34 FT²
R = 1.47 FT
Q (CALC) = 284.0 CFS -
v = 6.13 FPS
t = 1.14 PSF
nb = 0.889
SFb = 1.11

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT
n = 0.031
d = 1.90 FT -
A = 48.83 FT²
R = 1.53 FT
Q (CALC) = 306.7 CFS -
v = 6.28 FPS
t = 0.89 PSF
nb = 0.70
Beta = 39.43
n' = 0.57
SFs = 1.06

Design values

Channel Depth 2.32 FT Depth from top of freeboard to top of riprap
Dmax 0.50 FT = 2* D50
Layer Thickness 0.50 FT = 2* D50

DESIGN MODIFICATION

SPECIFIC GRAVITY INCREASED FROM 2.5 TO 2.72 TO MATCH AS-BUILT CONDITIONS
SLOPE INCREASED FROM 0.0085 TO 0.010



CALCULATIONS

SOUTH CELL DRAINAGE CHANNEL

RIPSF109.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

REF: "Applied Hydrology and Sedimentology
for Disturbed Areas", pages 185-194

LOCATION: South Cell Drainage Channel

DISCHARGE = 694 CFS
BOTTOM WIDTH = 10 FT
Z (SIDE SLOPE) = 3
CHANNEL SLOPE = 0.0174
RIPRAP S.G. = 2.7
COEF FOR t = 0.75 see Fig 3.16, ref.

Alpha = 18.43 Degrees
Theta = 1.00 Degrees
Phi = 37.00 Degrees

CHANNEL BOTTOM

D50 (ASSUM) = 0.83 FT
n = 0.038
d = 3.70 FT -
A = 78.07 FT²
R = 2.34 FT
Q (CALC) = 703.9 CFS -
v = 9.02 FPS
t = 4.02 PSF
nb = 0.958
SFb = 1.02

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.83 FT
n = 0.038
d = 3.70 FT -
A = 78.07 FT²
R = 2.34 FT
Q (CALC) = 703.9 CFS -
v = 9.02 FPS
t = 3.01 PSF
nb = 0.72
Beta = 40.15
n' = 0.60
SFs = 1.04

Design values

Channel Depth 4.2 ft. Depth from top of freeboard to top of riprap
Dmax 1.66 ft = 2* D50
Layer Thickness 1.66 FT. = 2* D50

RIPSF110.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

REF: "Applied Hydrology and Sedimentology
for Disturbed Areas", pages 185-194

LOCATION: South Cell Drainage Channel

DISCHARGE = 694 CFS
BOTTOM WIDTH = 12 FT
Z (SIDE SLOPE) = 3
CHANNEL SLOPE = 0.0174
RIPRAP S.G. = 2.72
COEF FOR t = 0.75 see Fig 3.16, ref.

Alpha = 18.43 Degrees
Theta = 1.00 Degrees
Phi = 37.00 Degrees

CHANNEL BOTTOM

D50 (ASSUM) = 0.75 FT
n = 0.038
d = 3.45 FT -
A = 77.11 FT²
R = 2.28 FT
Q (CALC) = 695.4 CFS -
v = 9.02 FPS
t = 3.75 PSF
nb = 0.977
SFb = 1.00

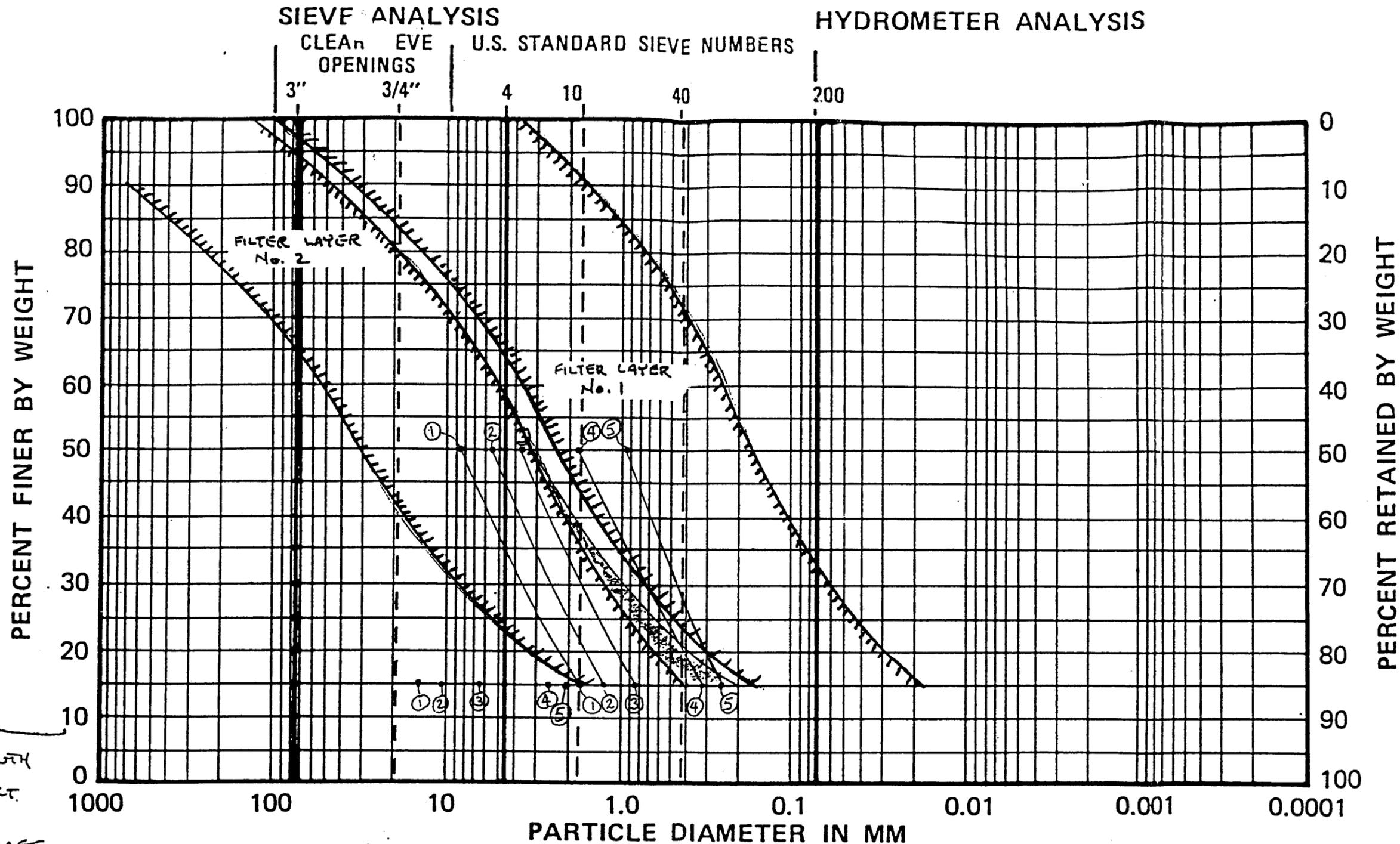
CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.75 FT
n = 0.038
d = 3.45 FT -
A = 77.11 FT²
R = 2.28 FT
Q (CALC) = 695.4 CFS -
v = 9.02 FPS
t = 2.81 PSF
nb = 0.73
Beta = 40.70
n' = 0.61
SFs = 1.02

Design values

Channel Depth 4.0 ft. Depth from top of freeboard to top of riprap
Dmax 1.5 ft. = 2* D50
Layer Thickness 1.5 FT. = 2* D50

FIGURE 1
BEDDING LAYER GRADATIONS



- ① UPPER SECTION SOUTH CELL DRAINAGE SECT.
- ② NORTH CELL DRAINAGE.
- ③ NORTH DIVERSION DITCH, BURIED SETTY
- ④ SWALES H.I., LOWER REACH OF RUNOFF CONTROL
- ⑤ SOIL/ROCK MATRIX, SWALES, UPPER REACH RUNOFF CONTROL DITCH.

COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

TYPICAL FORMAT
GRAIN SIZE DISTRIBUTION DATA

LOWER BOUND OF FILTER CRITERIA W/RESPECT TO 5 RIPRAP SIZES

FIGURE 1



APPENDIX D

QC TESTING, SOUTH CELL DRAINAGE CHANNEL



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION (UNC)

WT Job No: 3146JB025

SOUTH CELL DRAINAGE CHANNEL

Nielson Inc. excavated South Cell Drainage Channel from south end of Swale I, Station 0 + 00 to intersection Lower Reach Runoff Control Ditch. Subgrade consisted of sandstone bedrock. No compaction tests could be performed. Visual observation indicated subgrade was compacted. According to specifications no riprap material was needed to be placed since bedrock was encountered. UNC decided to place riprap from 200 ft south of Station 0 + 00 of Swale I. To ensure transitional, area was protected from erosion. D⁵⁰ - .02 Aggregate was placed on bedrock subgrade. Thickness Measurements ensured .02 Aggregate met thickness requirements of 3 inches to 3 1/2 inches. D⁵⁰ - .35 Aggregate was placed over .02 Aggregate. D⁵⁰ - .35 Aggregate thickness was monitored for correct thickness between 3 inches to 4 inches. D⁵⁰ - 10 Aggregate was placed over D⁵⁰ - .35 Aggregate with minimum thickness of 15 inches. Thickness measurements were performed after Aggregate placement.



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

**SOUTH CELL DRAINAGE CHANNEL
D⁵⁰ .02" AGGREGATE**

WT JOB NO. 3146JB025

DATE OF REPORT 08/21/96

Location	West Berm	Bottom	East Berm
Station 0 + 00	3 ¹ / ₄	3	3
Station 0 + 50	3 ¹ / ₂	3 ¹ / ₄	3 ¹ / ₂
Station 1 + 00	3 ¹ / ₂	3	3 ¹ / ₂
Station 1 + 50	3 ¹ / ₄	3 ¹ / ₂	3 ¹ / ₂
Station 2 + 00	3 ¹ / ₂	3	3 ¹ / ₂

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

**SOUTH CELL DRAINAGE CHANNEL
D⁵⁰ .35" AGGREGATE**

WT JOB NO. 3146JB025

DATE OF REPORT 08/21/96

Location	West Berm	Bottom	East Berm
Station 0 + 00	4	3	3
Station 0 + 50	3 ¹ / ₂	3 ¹ / ₄	3 ¹ / ₂
Station 1 + 00	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 1 + 50	4	3 ¹ / ₄	3
Station 2 + 00	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₄

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

**SOUTH CELL DRAINAGE CHANNEL
D⁵⁰ 10" AGGREGATE**

WT JOB NO. 3146JB025

DATE OF REPORT 08/21/96

Location	West Berm	Bottom	East Berm
Station 0 + 00	17	15	16
Station 0 + 50	15	17 ¹ / ₂	16 ¹ / ₂
Station 1 + 00	17	21	17
Station 1 + 50	16	19	15 ¹ / ₂
Station 2 + 00	17	18	17

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 _____



APPENDIX E

QC TESTING, NORTH CELL DRAINAGE CHANNEL



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION (UNC)

WT Job No: 3146JB025

NORTH DIVERSION CHANNEL

The North Diversion Channel located along the northeast perimeter of the North Cell was extended approximately 370 ft. Compaction tests were performed during berm building.

Nielson Inc. placed .02 aggregate by manual means. After .02 aggregate met thickness requirements of 3 - 3 $\frac{1}{2}$ inches, D⁵⁰ .35 aggregate was placed over the .02 aggregate. Thickness requirements for D⁵⁰ .35 were 3 - 4 inches.

D⁵⁰ 6 inch was placed in the channel bottom along the south side, while D⁵⁰ 10 inches was placed along berm slope and along the north side of the channel bottom. Thickness measurements of D⁵⁰ 6 inch and D⁵⁰ 10 inch conformed to project requirements; D⁵⁰ 6 inch minimum is 10 inches thick and D⁵⁰ 10 inch minimum is 15 inches thick.

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



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

**UNITED NUCLEAR CORPORATION 1996 RECLAMATION
NORTH DIVERSION CHANNEL (NDC)**

**WT JOB NO.: 3146JB025
DATE OF REPORT: 07-23-96**

DATE	TYPE OF TEST	LOCATION OF TEST	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOIS. %	RELATIVE COMPACTION	WITHIN SPECS.
02-01-96	SOIL CLASS	NDC #1		CL				
02-01-96	SOIL CLASS	NDC #2		SM				
02-01-96	SOIL CLASS	NDC #3		SM				
02-01-96	SOIL CLASS	NDC #4		SM				
02-01-96	SOIL CLASS	NDC #5		SM				
02-01-96	SOIL CLASS	NDC #6		SC				
06-24-96	PROCTOR	NDC		SM	114.7	14.1		
06-24-96	SANDCONE #26	STATION 0+92, TOP OF BERM, NDC	6959.4	SM	109.9	9.9	96	YES
06-24-96	SANDCONE #27	STATION 0+72 BOTTOM OF SWALE, NDC	6955.6	SM	109.5	9.7	95	YES
06-24-96	SANDCONE #28	STATION 1+75 MIDDLE BERM, NDC	6957.4	SM	114.6	11.4	100	YES
07-05-96	THICKNESS MEAS.	.02 SAND						
07-05-96	THICKNESS MEAS.	.35 AGG.						
08-22-96	THICKNESS MEAS.	D ⁵⁰ 6" D ⁵⁰ 10"						

Copies: Client (3), Billing (1), Field File (1)
RGO/UNC25

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.



Western Technologies Inc.
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460036
Report Date: 02/07/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay Sampled By: Client Date: Unknown

Source: NDC #1 Submitted By: Client Date: 02/01/96

Authorized By: Client Date: 02/01/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"		
1/2"	100	
3/8"	91	
1/4"	---	
No. 4	85	
8	79	
10	79	
16	76	
30	75	
40	75	
50	74	
100	70	
200	53.8	

Moisture Density Relations, pcf (ASTM D698 Method A)

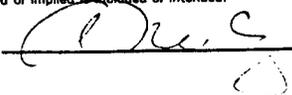
Maximum Dry Density, pcf N/A
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit 28
Plasticity Index 11

Copies: Client (3), Billing (1), Field File (1)
1-1/dn:UNC.025

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 



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460036
Report Date: 02/07/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: Silty Sand Sampled By: Client Date: Unknown

Source: NDC #2 Submitted By: Client Date: 02/01/96

Authorized By: Client Date: 02/01/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"		
1/2"		
3/8"	100	
1/4"	---	
No. 4	100	
8	100	
10	100	
16	100	
30	100	
40	100	
50	99	
100	76	
200	44.5	

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit NV
Plasticity Index NP

Copies: Client (3), Billing (1), Field File (1)
?-1.2/dn:UNC.025

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 *Ed Morales*



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460036
Report Date: 02/07/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: Silty Sand Sampled By: Client Date: Unknown

Source: NDC #3 Submitted By: Client Date: 02/01/96

Authorized By: Client Date: 02/01/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
-1/8"		
1"		
3/4"		
1/2"	100	
3/8"	99	
1/4"	---	
No. 4	99	
8	99	
10	99	
16	99	
30	98	
40	98	
50	96	
100	78	
200	36.9	

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit NV
Plasticity Index NP

Copies: Client (3), Billing (1), Field File (1)
3/dn:UNC.025

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 *[Signature]*



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460036
Report Date: 02/07/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: Sand with Silt Sampled By: Client Date: Unknown

Source: NDC #4 Submitted By: Client Date: 02/01/96

Authorized By: Client Date: 02/01/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"		
1/2"		
3/8"	100	
1/4"	---	
No. 4	100	
8	99	
10	99	
16	99	
30	97	
40	95	
50	78	
100	28	
200	11.9	

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit NV
Plasticity Index NP

Copies: Client (3), Billing (1), Field File (1)
2-1.4/dn:UNC.025

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 *A. Rudy*



Western Technologies Inc.
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3146JB025
		Lab/Inv. No.	31460036
		Report Date:	02/07/96
Project:	1996 Reclamation		
Location:	Church Rock, New Mexico		
Material:	Sandy Silty Clay	Sampled By:	Client
		Date	Unknown
Source:	NDC #5	Submitted By:	Client
		Date	02/01/96
		Authorized By:	Client
		Date	02/01/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"		
1/2"		
3/8"	100	
1/4"	---	
No. 4	100	
8	99	
10	99	
16	98	
30	96	
40	95	
50	94	
100	67	
200	49.3	

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

Liquid Limit	26
Plasticity Index	3

Copies: Client (3), Billing (1), Field File (1)
-1.5/dn:UNC.025

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



Western Technologies Inc.
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460036
Report Date: 02/07/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: Clayey Sand Sampled By: Client Date Unknown

Source: NDC #6 Submitted By: Client Date 02/01/96

Authorized By: Client Date 02/01/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"		
1/2"	100	
3/8"	100	
1/4"	---	
No. 4	98	
8	96	
10	95	
16	94	
30	93	
40	92	
50	89	
100	70	
200	51.2	

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit 26

Plasticity Index 8

Copies: Client (3), Billing (1), Field File (1)
1.6/dn:UNC.025

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 



Western Technologies Inc.
The Quality People
Since 1955

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

PHYSICAL PROPERTIES OF AGGREGATES

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **01-30-97**

Job No. **3146JB025**

Event / Invoice No. **31460177**

Lab No. **6**

Authorized By **ED MORALES**

Date **06-24-96**

Sampled By **H. KUEBLER/WT**

Date **06-24-96**

Submitted By **H. KUEBLER/WT**

Date **06-24-96**

Project **1996 RECLAMATION**
Contractor
Type / Use of Material **SILTY SAND**
Sample Source / Location **NORTH DIVERSION CHANNEL**

Location **CHURCH ROCK, NEW MEXICO**

Arch. / Engr.

Supplier / Source

Source / Location Desig. By

Date

Reference:
Special Instructions:

TEST RESULTS

SIEVE ANALYSIS <input type="checkbox"/> ASTM C136 <input type="checkbox"/> AASHTO T27		LAB COMPACTION CHARACTERISTICS <input checked="" type="checkbox"/> ASTM D698 <input type="checkbox"/> AASHTO T99 <input type="checkbox"/> ASTM D1557 <input type="checkbox"/> AASHTO T180 METHOD A	
SIEVE SIZE	ACCUMULATIVE % PASSING	SPECIFICATION	
FINER THAN NO. 200 <input type="checkbox"/> ASTM C117 <input type="checkbox"/> AASHTO T11			
LIQUID & PLASTIC PROPERTIES <input type="checkbox"/> ASTM D4318 <input type="checkbox"/> AASHTO T89 & T90 RESULT SPECIFICATION LIQUID LIMIT PLASTIC LIMIT PLASTICITY INDEX SAMPLE AIR DRIED: <input type="checkbox"/> YES <input type="checkbox"/> NO ESTIMATED % RETAINED ON NO. 40 METHOD <input type="checkbox"/> A <input type="checkbox"/> B		SOIL CLASSIFICATION <input type="checkbox"/> ASTM D2487 <input type="checkbox"/> AASHTO M145 <input type="checkbox"/> ASTM D2488 VISUAL / MANUAL GROUP SYMBOL NAME	
		RESISTANCE TO DEGRADATION BY L.A. MACHINE SMALL COARSE AGGREGATE 100 REV., % LOSS → <input type="checkbox"/> ASTM C131 <input type="checkbox"/> AASHTO T96 GRADING 500 REV., % LOSS → LARGE COARSE AGGREGATE 200 REV., % LOSS → <input type="checkbox"/> ASTM C535 GRADING 1000 REV., % LOSS →	
		TEST RESULTS SPECIFICATION	

Comments: **REVISED 01/30/97**

Copies To: **CLIENT - (3)**
FIELD FILE (2)

LABORATORY TEST RESULTS REPORTED HEREIN APPLY ONLY TO THE SPECIFIC SAMPLE ON WHICH THE TEST WAS RUN. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESSED OR IMPLIED IS INCLUDED OR INTENDED.

REVIEWED BY

422W/095W/TI
030696



Western Technologies Inc.
The Quality People
Since 1955

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

**SOIL / AGGREGATE
FIELD UNIT WEIGHT TESTS
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **08-21-96**
Job No. **3146JB025** Page 1 of 1
Event/Invoice No. **31460177-7**
Authorized By **CLIENT** Date **06-24-96**
Tested By **H. KUEBLER /WT** Date **06-24-96**

Client **UNC MINING AND MILLING**
Project **1996 RECLAMATION**
Location **CHURCH ROCK, NEW MEXICO**

Test Locations Designated By **HARRY KUEBLER /WT**
Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**
Calibrated Volume of Sand Cone Apparatus **0.0384** cu. ft. Bulk Unit Weight of Sand **86.4** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
27	0.0456	9.9	109.9	0.0	6	114.7	14.1	96		90	YES
28	0.0361	9.7	109.5	0.0	6	114.7	14.1	95		90	YES
29	0.0372	11.4	114.6	0.0	6	114.7	14.1	100		90	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
27	NORTH DIVERSION CHANNEL, STATION 0 + 92, TOP OF BERM	3.8	6959.4	EMBANKMENT FILL
28	NORTH DIVERSION CHANNEL, STATION 0 + 72, BOTTOM OF SWALE		6955.6	EMBANKMENT FILL
29	NORTH DIVERSION CHANNEL, STATION 1 + 75, MIDDLE OF BERM	2.0	6957.4	EMBANKMENT FILL

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
6	31460177	SILTY SAND	NORTH DIVERSION CHANNEL	14.1	114.7	698-A

Comments: * DATUM 6955.6 = BOTTOM OF SWALE

Distribution : CLIENT - (3)
FIELD FILE (2)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY _____

R. ZUBROD

(SIGNED COPY ON FILE)



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

WT JOB NO. 3146JB025

DATE OF REPORT 07-05-96

**NORTH DIVERSION CHANNEL
.02 BEDDING SAND
07-01-96**

STATION NO.	NORTH BERM	BOTTOM OF CHANNEL	SOUTH BERM
0 + 50	3 1/2"	3 1/2"	*
1 + 00	3 1/2"	3 1/4"	*
1 + 50	3 1/2"	3 1/4"	*
2 + 00	3 1/4"	3 1/4"	*
2 + 50	3 1/4"	3 1/2"	*
3 + 00	3 1/2"	3 1/2"	*
3 + 50	3 1/2"	3 1/2"	*

* - NO SOUTH BERM

Copies: Client (3), Billing (1), Field File (1)
7-1/RGO:UNC25

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 Harry Kuebler



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

WT JOB NO. 3146JB025

DATE OF REPORT 07-05-96

**NORTH DIVERSION CHANNEL
D⁵⁰ .35 AGGREGATE
07-01-96**

STATION NO.	NORTH BERM	BOTTOM OF CHANNEL	SOUTH BERM
0 + 50	3 1/2"	3 1/2"	*
1 + 00	3 1/2"	3 1/2"	*
1 + 50	3 1/2"	3 1/2"	*
2 + 00	3 3/4"	3 1/2"	*
2 + 50	3 1/2"	3 1/2"	*
3 + 00	3 1/2"	3"	*
3 + 50	3 1/2"	3 1/4"	*

*** - NO SOUTH BERM**

Copies: Client (3), Billing (1), Field File (1)
7-11/RGO:UNC25

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

NORTH DIVERSION CHANNEL

WT JOB NO. 3146JB025

DATE OF REPORT 08/22/96

Location	D ⁵⁰ - 6" Bottom	D ⁵⁰ - 10" Bottom	D ⁵⁰ 10" Berm
Station 0 + 00	12	15 ¹ / ₄	15 ¹ / ₂
Station 0 + 50	11	15	16
Station 1 + 00	10 ¹ / ₂	16	16 ¹ / ₂
Station 1 + 50	10 ¹ / ₂	16 ¹ / ₂	15 ¹ / ₂
Station 2 + 00	12 ¹ / ₂	15	15
Station 2 + 50	14	15 ¹ / ₂	17
Station 3 + 00	12 ¹ / ₂	16 ¹ / ₄	15
Station 3 + 50	13 ¹ / ₂	15	16

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 _____



APPENDIX F

QC TESTING, NORTH DIVERSION DITCH



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION (UNC)

WT Job No: 3146JB025

NORTH DIVERSION DITCH

Two areas classified as AA-AA (300 ft long) and BB-BB (225 ft long) had riprap placed to provide erosion and energy dissipater. Project requirement stated no compaction or moisture tests was needed. D⁵⁰ .02 Aggregate was placed over natural ground. Thickness measurements were performed after D⁵⁰ .02 Aggregate placement. Thickness requirements were between 3 inches to 3 1/2 inches. After D⁵⁰ .02 Aggregate was accepted for thickness D⁵⁰ .35 Aggregate was placed over D⁵⁰ .02 Aggregate. Thickness measurements on .35 Aggregate were performed after placement. Project thickness requirements for .35 Aggregate was 3 inches to 4 inches. Once thickness requirements were met, D⁵⁰ 6 inch was placed over D⁵⁰ .35 Aggregate. Thickness monitoring was performed on D⁵⁰ 6 inch placement.



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

**NORTH DIVERSION DITCH, SECTION AA - AA
D⁵⁰ .02" AGGREGATE**

WT JOB NO. 3146JB025

DATE OF REPORT 08/22/96

Location	West Berm	Bottom	East Berm
Station 0 + 00	3 ¹ / ₄	3 ¹ / ₂	3 ¹ / ₂
Station 0 + 50	3	3 ¹ / ₄	3 ¹ / ₄
Station 1 + 00	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 1 + 50	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 2 + 00	3 ¹ / ₄	3 ¹ / ₄	3 ¹ / ₄
Station 2 + 50	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 3 + 00	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

NORTH DIVERSION DITCH, SECTION AA - AA D⁵⁰ .35" AGGREGATE

WT JOB NO. 3146JB025

DATE OF REPORT 08/22/96

Location	West Berm	Bottom	East Berm
Station 0 + 00	4	3 ¹ / ₂	3 ¹ / ₂
Station 0 + 50	4	3 ¹ / ₂	3 ¹ / ₂
Station 1 + 00	4	3 ¹ / ₂	3 ¹ / ₂
Station 1 + 50	4 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 2 + 00	4	3 ¹ / ₄	3 ¹ / ₂
Station 2 + 50	3 ¹ / ₄	3 ¹ / ₄	3 ¹ / ₂
Station 3 + 00	3 ¹ / ₂	3 ¹ / ₄	3 ¹ / ₂

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

**NORTH DIVERSION DITCH, SECTION AA - AA
D⁵⁰ 6 inch**

WT JOB NO. 3146JB025

DATE OF REPORT 08/22/96

Location	West Berm	Bottom	East Berm
Station 0 + 00	10 ¹ / ₂	10 ¹ / ₂	13 ¹ / ₂
Station 0 + 50	10 ¹ / ₂	11 ¹ / ₂	11 ¹ / ₄
Station 1 + 00	10	12	10 ¹ / ₂
Station 1 + 50	10 ¹ / ₂	13	13
Station 2 + 00	11	11	13 ¹ / ₂
Station 2 + 50	13	13	11
Station 3 + 00	12 ¹ / ₂	10	12

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

NORTH DIVERSION DITCH, SECTION BB - BB D⁵⁰ .02 AGGREGATE

WT JOB NO. 3146JB025

DATE OF REPORT 08/22/96

Location	West Berm	Bottom	East Berm
Station 0 + 00	3 ¹ / ₄	3 ¹ / ₄	3 ¹ / ₂
Station 0 + 50	3 ¹ / ₂	3 ¹ / ₄	3 ¹ / ₂
Station 1 + 00	3 ¹ / ₄	3 ¹ / ₂	3 ¹ / ₂
Station 1 + 50	3	3	3 ¹ / ₄
Station 2 + 00	3 ¹ / ₄	3	3 ¹ / ₄

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

**NORTH DIVISION DITCH, SECTION BB-BB
D⁵⁰ .35 AGGREGATE**

WT JOB NO. 3146JB025

DATE OF REPORT 08/22/96

Location	West Berm	Bottom	East Berm
Station 0 + 00	4 ¹ / ₂	3 ¹ / ₄	4
Station 0 + 50	4 ¹ / ₂	3 ¹ / ₂	4
Station 1 + 00	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 1 + 50	3 ¹ / ₂	3 ¹ / ₄	3 ¹ / ₂
Station 2 + 00	4 ¹ / ₄	3 ¹ / ₂	3 ¹ / ₂

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

**NORTH DIVERSION DITCH, SECTION BB - BB
D⁵⁰ 6 inch**

WT JOB NO. 3146JB025

DATE OF REPORT 08/22/96

Location	West Berm	Bottom	East Berm
Station 0 + 00	12	11	11
Station 0 + 50	10 ¹ / ₂	11	10 ¹ / ₂
Station 1 + 00	12	11	10 ¹ / ₂
Station 1 + 50	11 ¹ / ₂	11	10
Station 2 + 00	10 ¹ / ₂	12	13

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 _____



APPENDIX G
QC TESTING, BURIED JETTY



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION (UNC)

WT Job No: 3146JB025

BURIED GETTY

Buried Getty was constructed across the Low Flow channel to provide protection against major flooding.

The Buried Getty Channel was excavated at varied depths below the existing channel and is a minimum of forty-five (45') feet in width. (The depth varied from 9 feet at the west bank of the arroyo to 28 feet at the east protective bench, the depth of the Buried Getty Channel was determined by the Gallup Sandstone subcrop.)

An eight (8') foot wide length of crushed basalt (D⁵⁰ - 6 inch) was placed in three (3') foot lifts to the top of the existing channel (20' in height) along the north side of the proposed Getty.

The remainder of the Getty structure was backfilled with on-site fine grain soil (sandy clay). Material was placed in loose lifts and compacted to 95% of ASTM 698.



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

**UNITED NUCLEAR CORPORATION 1996 RECLAMATION
BURIED GETTY (BG)**

**WT JOB NO.: 3146JB025
DATE OF REPORT: 07-23-96**

DATE	TYPE OF TEST	LOCATION OF TEST	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOIS. %	RELATIVE COMPACTION	WITHIN SPECS.
06-03-96	PROCTOR	LOWER CHANNEL		SM	108.3	15.1		YES
06-03-96	PROCTOR	LOWER CHANNEL		SM	111.5	12.0		YES
06-04-96	SANDCONE #1	50' E. OF W. END BG	6926.5	SM	105.5	10.8	95	YES
06-04-96	SANDCONE #2	CENTER OF BG	6927.5	SM	97.7	8.2	88	NO
06-04-96	SANDCONE #3	RETEST OF TEST #2	6927.5	SM	108.2	13.0	97	YES
06-04-96	SANDCONE #4	85' W. OF E. END BG	6928.5	SM	105.9	8.4	95	YES
06-05-96	SANDCONE #5	50' W. OF E. END BG	6929.5	SM	107.5	7.2	96	YES
16-05-96	SANDCONE #6	CENTER OF BG	6930.5	SM	105.6	8.6	95	YES
06-05-96	SANDCONE #7	50' E. OF W. END BG	6931.5	SM	104.5	8.6	96	YES
06-05-96	SANDCONE #8	65' W. OF E. END	6932.5	SM	104.2	12.6	96	YES
06-06-96	SANDCONE #9	CENTER OF BG	6933.5	SM	104.0	11.4	96	YES
06-06-96	SANDCONE #10	30' W. OF E. END BG	6934.5	SM	107.9	11.0	100	YES

Copies: Client (3), Billing (1), Field File (1)
RGO/UNC254

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 _____



Western Technologies Inc.
The Quality People
Since 1955

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

**UNITED NUCLEAR CORPORATION 1996 RECLAMATION
BURIED GETTY (BG)**

**WT JOB NO.: 3146JB025
DATE OF REPORT: 07-23-96**

DATE	TYPE OF TEST	LOCATION OF TEST	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOIS. %	RELATIVE COMPACTION	WITHIN SPECS.
06-06-96	SANDCONE #11	60' E. OF W. END BG	6935.5	SM	109.6	13.1	95	YES
06-06-96	PROCTOR	LOWER FLOW CHANNEL		CL	109.5	14.0		YES
06-10-96	SANDCONE #12	30' E. OF W. END BG	6936.5	CL	112.4	12.2	95	YES
06-10-96	SANDCONE #13	65' W. OF E. END BG	6937.5	CL	93.3	11.4	95	NO
06-10-96	SANDCONE #14	RETEST OF #13	6937.5	CL	103.8	11.4	95	YES
06-11-96	SANDCONE #15	20' E. OF W. END BG	6938.5	CL	105.0	11.0	96	YES
06-11-96	SANDCONE #16	30' W. OF E. END BG	6939.5	CL	106.6	12.8	97	YES
06-11-96	SANDCONE #17	CENTER BG	6940.5	CL	108.7	12.2	99	YES
06-11-96	SANDCONE #18	45' E. OF W. END BG	6942.0	CL	108.3	10.4	99	YES

Copies: Client (3), Billing (1), Field File (1)
RGO/UNC253

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 _____



Western Technologies Inc.
The Quality People
Since 1955

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

PHYSICAL PROPERTIES OF AGGREGATES

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **01-30-97**
Job No. **3146JB025**

Event / Invoice No. **31460177** Lab No. **06G117**
Authorized By **ED MORALES** Date **06-03-96**
Sampled By **H. KUEBLER/WT** Date **06-03-96**
Submitted By **H. KUEBLER/WT** Date **06-03-96**

Project **1996 RECLAMATION**
Contractor **N/A**
Type / Use of Material **SILTY SAND**
Sample Source / Location **LOWER CHANNEL**

Location **CHURCH ROCK, NEW MEXICO**
Arch. / Engr. **N/A**
Supplier / Source
Source / Location Desig. By
Date

Reference:
Special Instructions:

TEST RESULTS

SIEVE ANALYSIS <input type="checkbox"/> ASTM C136 <input type="checkbox"/> AASHTO T27			LAB COMPACTION CHARACTERISTICS <input checked="" type="checkbox"/> ASTM D698 <input type="checkbox"/> AASHTO T99 <input type="checkbox"/> ASTM D1557 <input type="checkbox"/> AASHTO T180 METHOD A		
SIEVE SIZE	ACCUMULATIVE % PASSING	SPECIFICATION	<p>DRY UNIT WEIGHT, LBF / FT³</p> <p>MOISTURE, % DRY WEIGHT</p>		
FINER THAN NO. 200					
<input type="checkbox"/> ASTM C117			SAMPLE PREPARATION: <input type="checkbox"/> WET <input checked="" type="checkbox"/> DRY RAMMER USED: <input checked="" type="checkbox"/> 2 IN. CIRCULAR FACE <input type="checkbox"/> OTHER <input type="checkbox"/> MECHANICAL <input checked="" type="checkbox"/> MANUAL PERCENT OVERSIZE IN TOTAL SAMPLE: 0.0 ASSUMED SPECIFIC GRAVITY: 2.65 MAXIMUM DENSITY, LBF / FT ³ → 108.3 OPTIMUM MOISTURE CONTENT, % → 15.1		
<input type="checkbox"/> AASHTO T11			LIQUID & PLASTIC PROPERTIES <input type="checkbox"/> ASTM D4318 <input type="checkbox"/> AASHTO T89 & T90 RESULT SPECIFICATION LIQUID LIMIT PLASTIC LIMIT PLASTICITY INDEX SAMPLE AIR DRIED: <input type="checkbox"/> YES <input type="checkbox"/> NO ESTIMATED % RETAINED ON NO. 40 METHOD <input type="checkbox"/> A <input type="checkbox"/> B		
			SOIL CLASSIFICATION <input type="checkbox"/> ASTM D2487 <input type="checkbox"/> AASHTO M145 <input type="checkbox"/> ASTM D2488 VISUAL / MANUAL GROUP SYMBOL NAME		
			RESISTANCE TO DEGRADATION BY L.A. MACHINE SMALL COARSE AGGREGATE 100 REV., % LOSS → <input type="checkbox"/> ASTM C131 <input type="checkbox"/> AASHTO T96 GRADING 500 REV., % LOSS → LARGE COARSE AGGREGATE 200 REV., % LOSS → <input type="checkbox"/> ASTM C535 GRADING 1000 REV., % LOSS →		
			TEST RESULTS	SPECIFICATION	

Comments: **REVISED 01/30/97**

Copies To: **CLIENT - (3)**
FIELD FILE (2)

LABORATORY TEST RESULTS REPORTED HEREIN APPLY ONLY TO THE SPECIFIC SAMPLE ON WHICH THE TEST WAS RUN. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPLICIT OR IMPLIED IS INCLUDED OR INTENDED.

REVIEWED BY



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

**SOIL / AGGREGATE
FIELD UNIT WEIGHT TESTS
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **08-21-96**
Job No. **3146JB025** Page 1 of 1
Event/Invoice No. **31460177**
Authorized By **CLIENT** Date **06-04-96**
Tested By **H. KUEBLE /WT** Date **06-04-96**

Client **UNC MINING AND MILLING**
Project **1996 RECLAMATION**
Location **CHURCH ROCK, NEW MEXICO**
Test Locations Designated By **CLIENT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**
Calibrated Volume of Sand Cone Apparatus **0.0384** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
1	0.0375	10.8	105.5	0.0	1	111.5	12.0	95		95	YES
2	0.0496	8.2	97.7	0.0	1	111.5	12.0	88		95	NO
3	0.0382	13.0	108.2	0.0	1	111.5	12.0	97		95	YES
4	0.0475	8.4	105.9	0.0	1	111.5	12.0	95		95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
1	50' EAST OF WEST END OF BURIED GETTY	4.0	6926.5	STRUCTURE BACKFILL
2	CENTER OF BURIED GETTY	5.0	6927.5	STRUCTURE BACKFILL
3	RETEST OF TEST HOLE #2, SAME LOCATION	5.0	6927.5	STRUCTURE BACKFILL
4	85' WEST OF EAST END OF BURIED GETTY	6.0	6928.5	STRUCTURE BACKFILL

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
1	31460177	SILT	LOWER FLOW CHANNEL	12.0	111.5	698-A

Comments: * DATUM 6942.2 = TOP OF BURIED GETTY

Distribution : CLIENT - (3)
FIELD FILE (2)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY _____ **A. NEELY**
(SIGNED COPY ON FILE)



Western Technologies Inc.
The Quality People
Since 1955

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

**SOIL / AGGREGATE
FIELD UNIT WEIGHT TESTS
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **08-21-96**
Job No. **3146JB025** Page 1 of 1
Event/Invoice No. **31460177-1**
Authorized By **CLIENT** Date **06-05-96**
Tested By **H. KUEBLER /WT** Date **06-05-96**

Client **UNC MINING AND MILLING**
Project **1996 RECLAMATION**
Location **CHURCH ROCK, NEW MEXICO**

Test Locations Designated By **CLIENT**
Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**
Calibrated Volume of Sand Cone Apparatus **0.0384 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
5	0.0460	7.2	107.5	0.0	1	111.5	12.0	96		95	YES
6	0.0372	8.6	105.6	0.0	1	111.5	12.0	95		95	YES
7	0.0439	8.6	104.5	0.0	2	108.3	15.1	96		95	YES
8	0.0474	12.6	104.2	0.0	2	108.3	15.1	96		95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
5	50' WEST OF EAST END OF BURIED GETTY	7.0	6929.5	STRUCTURE BACKFILL
6	CENTER OF BURIED GETTY	8.0	6930.5	STRUCTURE BACKFILL
7	50' EAST OF WEST END OF BURIED GETTY	9.0	6931.5	STRUCTURE BACKFILL
8	65' WEST OF EAST END OF BURIED GETTY	10.0	6932.5	STRUCTURE BACKFILL

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
1	31460177	SILT	LOWER FLOW CHANNEL	12.0	111.5	698-A
2	31460177	SILTY SAND	LOWER CHANNEL	15.1	108.3	698-A

Comments: * DATUM 6942.2 = TOP OF BURIED GETTY

Distribution : **CLIENT - (3)**
FIELD FILE (2)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY _____ **A. NEELY**
(SIGNED COPY ON FILE)



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

**SOIL / AGGREGATE
FIELD UNIT WEIGHT TESTS
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **08-21-96** Page 1 of 1
Job No. **3146JB025**
Event/Invoice No. **31460177-2**
Authorized By **CLIENT** Date **06-06-96**
Tested By **H. KUEBLER /WT** Date **06-06-96**

Client **UNC MINING AND MILLING**
Project **1996 RECLAMATION**
Location **CHURCH ROCK, NEW MEXICO**

Test Locations Designated By **CLIENT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**

Calibrated Volume of Sand Cone Apparatus **0.0384** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
9	0.0364	11.4	104.0	0.0	2	108.3	15.1	96		95	YES
10	0.0405	11.0	107.9	0.0	2	108.3	15.1	100		95	YES
11	0.0473	13.1	109.6	0.0	2	108.3	15.1	100 +		95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
9	CENTER OF BURIED GETTY	11.0	6933.5	STRUCTURE BACKFILL
10	30' WEST OF EAST END OF BURIED GETTY	12.0	6934.5	STRUCTURE BACKFILL
11	60' EAST OF WEST END OF BURIED GETTY	13.0	6935.5	STRUCTURE BACKFILL

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
2	31460177	SILTY SAND	LOWER CHANNEL	15.1	108.3	698-A

Comments: * DATUM 6942.2 = TOP OF BURIED GETTY

Distribution : CLIENT - (3)
FIELD FILE (2)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY A. NEELY

(SIGNED COPY ON FILE)



Western Technologies Inc.
The Quality People
Since 1955

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

PHYSICAL PROPERTIES OF AGGREGATES

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **01-30-97**
Job No. **3146JB025**
Event / Invoice No. **31460177** Lab No. **06G131**
Authorized By **ED MORALES** Date **06-06-96**
Sampled By **H. KUEBLER/WT** Date **06-06-96**
Submitted By **H. KUEBLER/WT** Date **06-06-96**

Project **1996 RECLAMATION**
Contractor
Type / Use of Material **SILTY CLAY**
Sample Source / Location **LOWER FLOW CHANNEL BERM**
Reference:
Special Instructions:

Location **CHURCH ROCK, NEW MEXICO**
Arch. / Engr.
Supplier / Source
Source / Location Desig. By
Date

TEST RESULTS

SIEVE ANALYSIS <input type="checkbox"/> ASTM C136 <input type="checkbox"/> AASHTO T27			LAB COMPACTION CHARACTERISTICS <input checked="" type="checkbox"/> ASTM D698 <input type="checkbox"/> AASHTO T99 <input type="checkbox"/> ASTM D1557 <input type="checkbox"/> AASHTO T180 METHOD A			
SIEVE SIZE	ACCUMULATIVE % PASSING	SPECIFICATION			SAMPLE PREPARATION: <input type="checkbox"/> WET <input checked="" type="checkbox"/> DRY RAMMER USED: <input checked="" type="checkbox"/> 2 IN. CIRCULAR FACE <input type="checkbox"/> OTHER <input type="checkbox"/> MECHANICAL <input checked="" type="checkbox"/> MANUAL	
					PERCENT OVERSIZE IN TOTAL SAMPLE: 0.0 ASSUMED SPECIFIC GRAVITY: 2.65 MAXIMUM DENSITY, LBF / FT ³ → 109.5 OPTIMUM MOISTURE CONTENT, % → 14.0	
FINER THAN NO. 200 <input type="checkbox"/> ASTM C117 <input type="checkbox"/> AASHTO T11						
LIQUID & PLASTIC PROPERTIES <input type="checkbox"/> ASTM D4318 <input type="checkbox"/> AASHTO T89 & T90 RESULT SPECIFICATION			SOIL CLASSIFICATION <input type="checkbox"/> ASTM D2487 <input type="checkbox"/> AASHTO M145 <input type="checkbox"/> ASTM D2488 VISUAL / MANUAL		RESISTANCE TO DEGRADATION BY L.A. MACHINE TEST RESULTS SPECIFICATION	
LIQUID LIMIT PLASTIC LIMIT PLASTICITY INDEX SAMPLE AIR DRIED: <input type="checkbox"/> YES <input type="checkbox"/> NO ESTIMATED % RETAINED ON NO. 40 METHOD <input type="checkbox"/> A <input type="checkbox"/> B			GROUP SYMBOL NAME		SMALL COARSE AGGREGATE 100 REV., % LOSS → <input type="checkbox"/> ASTM C131 <input type="checkbox"/> AASHTO T96 GRADING 500 REV., % LOSS → LARGE COARSE AGGREGATE 200 REV., % LOSS → <input type="checkbox"/> ASTM C535 GRADING 1000 REV., % LOSS →	

Comments: **REVISED 01/30/97**

Copies To: **CLIENT - (3)**
FIELD FILE (2)

422W095WTI
030696

LABORATORY TEST RESULTS REPORTED HEREIN APPLY ONLY TO THE SPECIFIC SAMPLE ON WHICH THE TEST WAS RUN. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESSED OR IMPLIED IS INCLUDED OR INTENDED.

REVIEWED BY _____



Western Technologies Inc.
The Quality People
Since 1955

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

**SOIL / AGGREGATE
FIELD UNIT WEIGHT TESTS
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **08-21-96**
Job No. **3146JB025** Page 1 of 1
Event/Invoice No. **31460177-3**
Authorized By **CLIENT** Date **06-10-96**
Tested By **H. KUEBLER /WT** Date **06-10-96**

Client **UNC MINING AND MILLING**
Project **1996 RECLAMATION**
Location **CHURCH ROCK, NEW MEXICO**
Test Locations Designated By **CLIENT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**
Calibrated Volume of Sand Cone Apparatus **0.0384** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
12	0.0396	12.2	112.4	0.0	3	109.5	14.0	100+		95	YES
13	0.0437	11.4	93.3	0.0	3	109.5	14.0	85		95	NO
14	0.0379	11.4	103.8	0.0	3	109.5	14.0	95		95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
12	30' EAST OF WEST END OF BURIED GETTY	14.0	6936.5	STRUCTURE BACKFILL
13	65' WEST OF EAST END OF BURIED GETTY	15.0	6937.5	STRUCTURE BACKFILL
14	RETEST OF TEST HOLE #13, SAME LOCATION	15.0	6937.5	STRUCTURE BACKFILL

LABORATORY DATA & COMPACTION CHARACTERISTICS						
LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
3	31460177	SILTY CLAYEY	LOWER FLOW CHANNEL/BERM	14.0	109.5	698-A

Comments: * DATUM 6942.2 = TOP OF BURIED GETTY

Distribution : CLIENT - (3)
FIELD FILE (2)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY A. NEELY
(SIGNED COPY ON FILE)



Western Technologies Inc.
The Quality People
Since 1955

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

**SOIL / AGGREGATE
FIELD UNIT WEIGHT TESTS
(FIELD DENSITY)**

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **08-21-96**
Job No. **3146JB025** Page 1 of 1
Event/Invoice No. **31460177-4**
Authorized By **CLIENT** Date **06-11-96**
Tested By **H. KUEBLER /WT** Date **06-11-96**

Client **UNC MINING AND MILLING**
Project **1996 RECLAMATION**
Location **CHURCH ROCK, NEW MEXICO**

Test Locations Designated By **CLIENT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**

Calibrated Volume of Sand Cone Apparatus **0.0384** cu. ft. Bulk Unit Weight of Sand **86.4** lbf/cu. ft.

TEST NO.	IN-PLACE CHARACTERISTICS				LAB CHARACTERISTICS			COMPACTION	REQUIREMENTS		
	Hole Volume cu. ft.	Moisture % of Dry Unit Weight	Dry Unit Weight lbf / cu. ft.	Oversize %	ID	Maximum Dry Unit Weight lbf / cu. ft.	Optimum Moisture %	% of Maximum Dry Unit Weight	Moisture %	Compaction %	CONFORMANCE INDICATED
15	0.0354	11.0	105.0	0.0	3	109.5	14.0	96		95	YES
16	0.0392	12.8	106.6	0.0	3	109.5	14.0	97		95	YES
17	0.0364	12.2	108.7	0.0	3	109.5	14.0	99		95	YES
18	0.0379	10.4	108.3	0.0	3	109.5	14.0	99		95	YES

TEST NO.	TEST LOCATION, HORIZONTAL	TEST LOCATION, VERTICAL		MATERIAL TESTED
		Approximate Fill Depth, ft.	Elevation *	
15	20' EAST OF WEST END OF BURIED GETTY	16.0	6938.5	STRUCTURE BACKFILL
16	30' WEST OF EAST END OF BURIED GETTY	17.0	6939.5	STRUCTURE BACKFILL
17	CENTER OF BURIED GETTY	18.0	6940.5	STRUCTURE BACKFILL
18	45' EAST OF WEST END OF BURIED GETTY	19.0	6942.0	STRUCTURE BACKFILL

LABORATORY DATA & COMPACTION CHARACTERISTICS

LAB ID.	EVENT/ INVOICE NO.	DESCRIPTION OF MATERIAL	SOURCE OF MATERIAL	OPTIMUM MOISTURE, %	MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft.	TEST METHOD
3	31460177	SILTY CLAYEY	LOWER FLOW CHANNEL/BERM	14.0	109.5	698-A

Comments: * DATUM 6942.2 = TOP OF BURIED GETTY

Distribution : CLIENT - (3)
FIELD FILE (2)

TESTS REPORTED HEREIN ARE INDICATIVE OF CONDITIONS FOUND AT THE EXACT LOCATION AND TIME OF TESTING ONLY. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED, IS INCLUDED OR INTENDED.

REVIEWED BY _____ **A. NEELY**

(SIGNED COPY ON FILE)



APPENDIX H

QC TESTING, RUNOFF CONTROL DITCH



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION (UNC)

WT Job No: 3146JB025

WEST CONTROL DITCH

A section of West Control Ditch, approximately 90 ft in length, was reconstructed after construction of Buried Getty. Compaction tests were performed during fill placement. Compaction requirements was 90% of ASTM 698A with no moisture specifications. D⁵⁰ - .02 Aggregate was placed over subgrade fill. Thickness requirements were minimum of 3 inches.

D⁵⁰ - 1.5 Aggregate was placed over D⁵⁰ - .02 Aggregate after D⁵⁰ - .02 met project thickness requirements. A minimum thickness of 3 inches was placed to meet project requirements.



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

WEST CONTROL DITCH D⁵⁰ .02 AGGREGATE

WT JOB NO. 3146JB025

DATE OF REPORT 08/22/96

Location	West Berm	Bottom	East Berm
Station 23 + 50	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 24 + 00	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 24 + 50	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

WEST CONTROL DITCH D⁵⁰ 1.5 AGGREGATE

WT JOB NO. 3146JB025

DATE OF REPORT 08/22/96

Location	West Berm	Bottom	East Berm
Station 23 + 50	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 24 + 00	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 24 + 50	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION (UNC)

WT Job No: 3146JB025

EXIT SECTION RUNOFF CONTROL DITCH INTO SOUTH CELL DRAINAGE CHANNEL

The very south end of the Runoff Control Ditch which exits into the South Drainage Channel was constructed as per the reclamation plan. Nielson Inc. placed D⁵⁰ - .02 Aggregate in required thickness of 3 inches to 3 1/2 inches. After thickness requirements were met D⁵⁰ - .35 Aggregate was placed over D⁵⁰ - .02 Aggregate. Nielson Inc. placed D⁵⁰ - .35 Aggregate to project thickness specifications of minimum 3 inches.

Ed Morales of UNC decided to substitute D⁵⁰ - 6 inch Aggregate for D⁵⁰ - 3 inch Aggregate since Hamilton Brothers had not manufactured D⁵⁰ - 3 inch. Thickness requirements for D⁵⁰ - 6 inch was minimum 6 inches.



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

WT JOB NO. 3146JB025

DATE OF REPORT 06-19-96

TEST SUMMARY

RUNOFF TO SOUTH CELL DRAINAGE CHANNEL

DATE	SAMPLE LOCATION	TYPE OF TEST	ELEV.	DENSITY PCF	MOIST. %	RELATIVE COMPATION	USCS SOIL CLASS	WITHIN SPEC.
06-19-96	South Control Channel	Proctor 698	-	107.1	17.0	-	SM	Yes
06-19-96	Swale Bottom Sta. 43+00	Sandcone	6903.4	107.2	15.0	100	SM	Yes
06-19-96	Station 43+00	Sandcone	6905.6	102.1	10.2	95	SM	Yes
06-19-96	Station 43+00	Sandcone	6907.4	109.6	11.4	100+	SM	Yes
		Thickness Measurement D ⁵⁰ .02 aggregate						
		Thickness Measurement D ⁵⁰ .35 aggregate						
		Thickness Measurement D ⁵⁰ 6" aggregate						



Western Technologies Inc.
The Quality People
Since 1955

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

PHYSICAL PROPERTIES OF AGGREGATES

Client **UNC MINING AND MILLING**
POST OFFICE BOX 3077
GALLUP, NM 87305

Date of Report **01-30-97**
Job No. **3146JB025**

Event / Invoice No. **31460177** Lab No. **2**
Authorized By **CLIENT** Date **06-19-96**
Sampled By **H. KUEBLER/WT** Date **06-20-96**
Submitted By **H. KUEBLER/WT** Date **06-20-96**

Project **1996 RECLAMATION**
Contractor **N/A**
Type / Use of Material **SILTY CLAY**
Sample Source / Location **SOUTH CONTROL CHANNEL**
Reference:
Special Instructions:

Location **CHURCH ROCK, NEW MEXICO**
Arch. / Engr. **N/A**
Supplier / Source
Source / Location Desig. By
Date

TEST RESULTS

SIEVE ANALYSIS <input type="checkbox"/> ASTM C136 <input type="checkbox"/> AASHTO T27		LAB COMPACTION CHARACTERISTICS <input checked="" type="checkbox"/> ASTM D698 <input type="checkbox"/> AASHTO T99 <input type="checkbox"/> ASTM D1557 <input type="checkbox"/> AASHTO T180 METHOD A			
SIEVE SIZE	ACCUMULATIVE % PASSING	SPECIFICATION	<p>DRY UNIT WEIGHT, LBF / FT³</p> <p>MOISTURE, % DRY WEIGHT</p>		SAMPLE PREPARATION: <input type="checkbox"/> WET <input checked="" type="checkbox"/> DRY RAMMER USED: <input checked="" type="checkbox"/> 2 IN. CIRCULAR FACE <input type="checkbox"/> OTHER <input type="checkbox"/> MECHANICAL <input checked="" type="checkbox"/> MANUAL
					PERCENT OVERSIZE IN TOTAL SAMPLE: 0.0 ASSUMED SPECIFIC GRAVITY: 2.65 MAXIMUM DENSITY, LBF / FT ³ → 107.1 OPTIMUM MOISTURE CONTENT, % → 17.0
FINER THAN NO. 200 <input type="checkbox"/> ASTM C117 <input type="checkbox"/> AASHTO T11			LIQUID & PLASTIC PROPERTIES <input type="checkbox"/> ASTM D4318 <input type="checkbox"/> AASHTO T89 & T90 RESULT SPECIFICATION		SOIL CLASSIFICATION <input type="checkbox"/> ASTM D2487 <input type="checkbox"/> AASHTO M145 <input type="checkbox"/> ASTM D2488 VISUAL / MANUAL GROUP SYMBOL NAME
LIQUID LIMIT PLASTIC LIMIT PLASTICITY INDEX SAMPLE AIR DRIED: <input type="checkbox"/> YES <input type="checkbox"/> NO ESTIMATED % RETAINED ON NO. 40 METHOD <input type="checkbox"/> A <input type="checkbox"/> B			RESISTANCE TO DEGRADATION BY L.A. MACHINE SMALL COARSE AGGREGATE 100 REV., % LOSS → <input type="checkbox"/> ASTM C131 <input type="checkbox"/> AASHTO T96 GRADING 500 REV., % LOSS → LARGE COARSE AGGREGATE 200 REV., % LOSS → <input type="checkbox"/> ASTM C535 GRADING 1000 REV., % LOSS →		TEST RESULTS SPECIFICATION

Comments: **REVISED 01-30-97**

Copies To: **CLIENT - (3)**
FIELD FILE (2)

LABORATORY TEST RESULTS REPORTED HEREIN APPLY ONLY TO THE SPECIFIC SAMPLE ON WHICH THE TEST WAS RUN. THE ABOVE SERVICES AND REPORT WERE PERFORMED PURSUANT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN WT AND CLIENT. WT WARRANTS THAT THIS WAS PERFORMED UNDER THE APPROPRIATE STANDARD OF CARE, INCLUDING THE SKILL AND JUDGMENT THAT IS REASONABLY EXPECTED FROM SIMILARLY SITUATED PROFESSIONALS. NO OTHER WARRANTY, GUARANTY, OR REPRESENTATION, EXPRESS OR IMPLIED IS INCLUDED OR INTENDED.

REVIEWED BY _____

422W095WT1
030696



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

EXIT RUNNOFF CONTROL DITCH TO SOUTH CELL DRAINAGE CHANNEL D⁵⁰ .02 AGGREGATE

WT JOB NO. 3146JB025

DATE OF REPORT 08/21/96

Location	South Berm	Bottom	North Berm
Station 43 + 00	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₄
Station 43 + 50	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂
Station 44 + 00	3 ¹ / ₂	3 ¹ / ₂	3 ¹ / ₂

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 judgment that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

REVIEWED BY _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

EXIT RUNNOFF CONTROL DITCH TO SOUTH CELL DRAINAGE CHANNEL D⁵⁰ .35 AGGREGATE

WT JOB NO. 3146JB025

DATE OF REPORT 08/21/96

Location	South Berm	Bottom	North Berm
Station 43 + 00	3 ¹ / ₂	4	3
Station 43 + 50	4	4	4 ¹ / ₂
Station 44 + 00	4	4	4 ¹ / ₂

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

**EXIT RUNNOFF CONTROL DITCH TO SOUTH CELL DRAINAGE CHANNEL
D⁵⁰ 6" AGGREGATE**

WT JOB NO. 3146JB025

DATE OF REPORT 08/21/96

Location	South Berm	Bottom	North Berm
Station 43 + 00	8 ¹ / ₂	8 ¹ / ₂	8 ¹ / ₂
Station 43 + 50	8 ¹ / ₂	8 ¹ / ₂	8 ¹ / ₂
Station 44 + 00	8	8 ¹ / ₂	9

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 _____



APPENDIX I

RIPRAP AND BEDDING MATERIAL
GRADATION TESTING



Western Technologies Inc.
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025

Lab/Inv. No. 31460163

Report Date: 5-28-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: D ⁵⁰ - .02 sand	Sampled By: H. Kuebler \WT	Date: 5-16-96	
Source: Hamilton Brothers Stockpile	Submitted By: H. Kuebler \WT	Date: 5-16-96	
	Authorized By: Client	Date: 5-16-96	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (Target Value)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	85-100
1/2"		
3/8"		
1/4"		
No. 4	100	65-100
8	99	
10	88	
16	78	
30	66	
40	60	23-70
50	50	
100	30	
200	21.9	15-30

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NA

Plasticity Index NA

Copies: Client (3), Billing (1), Field File (1)
16/RGO:UNC.025

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:



Western Technologies Inc.
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460226
Report Date: 07-16-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ - .02 Sand, Sample #1

Sampled By: H.K. /WT Date 07-09-96

Source: UNC Stockpile

Submitted By: H.K. /WT Date 07-09-96

Authorized By: Client Date 07-09-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
15"		
10"		
5"		
3"		
3/4"	100	85 - 100
1/2"		
3/8"		
1/4"		
No. 4	99	65 - 100
8	83	
10	79	
16	66	
30	53	
40	48	23 - 70
50	40	
100	27	
200	20.0	15 - 30

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NA
Plasticity Index NA

Copies: Client (3), Billing (1), Field File (1)
~9/RGO:UNC025

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 Harry Kuebler



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460226
Report Date: 07-16-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ - .02 Sand, Sample #2 Sampled By: H.K. /WT Date 07-09-96

Source: UNC Stockpile Submitted By: H.K. /WT Date 07-09-96

Authorized By: Client Date 07-09-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
15"		
10"		
5"		
3"		
3/4"	100	85 - 100
1/2"		
3/8"		
1/4"		
No. 4	100	65 - 100
8	88	
10	84	
16	72	
30	59	
40	53	23 - 70
50	44	
100	25	
200	19.8	15 - 30

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NA
Plasticity Index NA

Copies: Client (3), Billing (1), Field File (1)
91/RGO:UNC025

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 *Harry Kiebler*



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460177
Report Date: 06-10-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ - .35 Aggregate Sampled By: H.K. /WT Date 06-03-96

Source: Hamilton Brothers Submitted By: H.K. /WT Date 06-03-96

Authorized By: Client Date 06-03-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65 - 100
2"	100	
1-1/2"	87	
1"	65	
3/4"	55	43 - 80
1/2"	44	
3/8"	39	
1/4"		
No. 4	28	22 - 60
8	22	
10	21	15 - 38
16	18	
30	15	
40	14	5 - 12
50	12	
100	8	
200	7.2	0 - 10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NA

Plasticity Index NA

Copies: Client (3), Billing (1), Field File (1)
6-3/RGO:UNC025

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 Harry Kuebler



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460177
Report Date: 06-10-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ - .35 Aggregate Sampled By: Client Date 06-04-96

Source: Hamilton Brothers Submitted By: Client Date 06-04-96

Authorized By: Client Date 06-04-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65 - 100
2"	100	
1-1/2"	86	
1"	61	
3/4"	50	43 - 80
1/2"	38	
3/8"	34	
1/4"		
No. 4	24	22 - 60
8	19	
10	18	15 - 38
16	16	
30	14	
40	13	5 - 12
50	11	
100	8	
200	6.6	0 - 10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NA

Plasticity Index NA

Copies: Client (3), Billing (1), Field File (1)
6-4/RGO:UNC025

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 Henry Kuebler



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460226
Report Date: 08/23/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰ -.35 inch Sampled By: H.K./WT Date 06-06-96

Source: Hamilton Brothers Submitted By: H.K./WT Date 06-06-96

Authorized By: Client Date 06-07-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	65-100
2"	100	
1-1/2"	88	
1"	52	
3/4"	39	43-80
1/2"	29	
3/8"	24	
1/4"		
No. 4	16	22-60
8	12	
10	11	
16	9	
30	8	
40	7	5-12
50	6	
100	4	
200	3	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
6\ha:UNC.025

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 judgment that is reasonably expected from similarly situated professionals. No other warranty, guaranty, or representation, either expressed or implied is included or intended.

REVIEWED BY _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025

Lab/Inv. No. 31460226

Report Date: 08/23/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰ -.35 inch Sampled By: H.K./WT Date: 06-20-96

Source: UNC Stockpile Submitted By: H.K./WT Date: 06-20-96

Authorized By: Client Date: 06-20-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	60-100
2"	100	
1-1/2"	90	
1"	70	
3/4"	61	43-80
1/2"	54	
3/8"	49	
1/4"		
No. 4	38	22-60
8	30	
10	28	15-38
16	24	
30	19	
40	11	5-12
50	10	
100	9	
200	5.5	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

es: Client (3), Billing (1), Field File (1)
ha:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460226
Report Date: 08/23/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰ -.35 inch Sampled By: H.K./WT Date 06-14-96

Source: UNC Stockpile Submitted By: H.K./WT Date 06-14-96

Authorized By: Client Date 06-14-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	60-100
2"	100	
1-1/2"	87	
1"	72	
3/4"	65	43-80
1/2"	55	
3/8"	48	
1/4"		
No. 4	38	22-60
8	32	
10	31	15-38
16	27	
30	24	
40	22	5-12
50	19	
100	12	
200	9.9	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
4\ha:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460226
Report Date: 08/23/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰ -.35 inch Sampled By: H.K./WT Date: 06-20-96

Source: UNC Stockpile Submitted By: H.K./WT Date: 06-20-96

Authorized By: Client Date: 06-20-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	60-100
2"	100	
1-1/2"	90	
1"	70	
3/4"	61	43-80
1/2"	54	
3/8"	49	
1/4"		
No. 4	38	22-60
8	30	
10	28	15-38
16	24	
30	19	
40	16	5-12
50	14	
100	9	
200	7.5	0-10

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
520\ha:UNC.025

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 _____



Western Technologies Inc.
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460226
Report Date: 08/23/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D ⁵⁰ -.35 inch	Sampled By: H.K./WT	Date: 07-12-96
Source: Hamilton Brothers	Submitted By: H.K./WT	Date: 07-12-96
	Authorized By: Client	Date: 07-12-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"		
2"		
1-1/2"		
1"	72	
3/4"	62	
1/2"	30	
3/8"	23	
1/4"	14	
No. 4		
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	N/A
Optimum Moisture, %	N/A

Plasticity Index, ASTM D4318

Liquid Limit	N/A
Plasticity Index	N/A

Copies: Client (3), Billing (1), Field File (1)
12\ha:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

WT JOB NO. 3146JB025

DATE OF REPORT 07-16-96

TEST SUMMARY FOR D⁵⁰ - 1.5 AGGREGATE

DATE	SAMPLE LOCATION	% PASS 2" SPEC. 100%	% PASS 1" SPEC. 20-37%	%PASS #4 SPEC. 0-8%	WITHIN SPECS.
04-08-96	Hamilton Brothers	100	22	.4	Yes
04-09-96	Scoring				
04-09-96	Hamilton Brothers	100	21	.3	Yes
04-23-96	Hamilton Brothers	100	33	.7	Yes
04-23-96	Scoring				
07-12-96	Scoring				



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460096
Report Date: 04/08/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰, 1.5" Aggregate Sampled By: Hamilton Brothers Date 04/08/96

Source: Hamilton Brothers Submitted By: H. Kuebler /WT Date 04/08/96

Authorized By: Client Date 04/08/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1-1/2"	---	
1-1/8"	---	
1"	22	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 A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

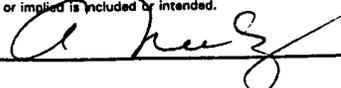
Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
4-8/dn:UNC.025

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 



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460096
Report Date: 04/16/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰, -1.5 Aggregate Sampled By: Hamilton Date: 04/09/96

Source: Hamilton Brothers Submitted By: Tom Krake /WT Date: 04/09/96

Authorized By: Client Date: 04/09/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"	100	100
1-1/2"	---	
1-1/8"	---	
1"	21	20 - 37
3/4"	---	
1/2"	---	
3/8"	---	
1/4"	---	
No. 4	0.3	0 - 8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf (ASTM D698 Method A)

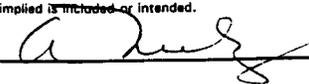
Maximum Dry Density, pcf N/A
Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A
Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
4-9/dn:UNC025-4.09

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 



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460096
Report Date: 04/29/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰ -1.5 Aggregate Sampled By: Client Date 04/23/96

Source: Hamilton Belt Sample Submitted By: H. Kuebler/ WT Date 04/23/96

Authorized By: Client Date 04/23/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
3"	100	100
1-1/2"		
1-1/8"		
1"	33	8 - 37
3/4"		
1/2"		
3/8"		
1/4"		
No. 4	0.7	0 - 8
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
4-23.1/dn:UNC.025

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



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

WT JOB NO. 3146JB025

DATE OF REPORT 07-16-96

TEST SUMMARY FOR D⁵⁰ - 6" AGGREGATE

DATE	SAMPLE LOCATION	% PASS 10" SPEC. 100%	% PASS 6" SPEC. 38-50%	%PASS 4" SPEC. 20-36%	%PASS 1" SPEC. 0-9%	WITHIN SPECS.
03-25-96	Hamilton Brothers	100	50	11	.5	No
03-26-96	Hamilton Brothers	100	33	8	.5	No
03-27-96	Hamilton Brothers	100	42	21	2	Yes
04-01-96	Scoring					
04-02-96	Hamilton Brothers	100	46	22	1.1	Yes
04-23-96	Hamilton Brothers	100	49	20	1.7	Yes
04-27-96	Scoring					
05-21-96	Scoring					



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Nuclear Corporation Attn: Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3146JB025
		Lab/Inv. No.	31460079
		Report Date:	4-2-96
Project:	1996 Reclamation		
Location:	Church Rock, NM		
Material:	D 50 6"	Sampled By:	T.K./WT Date 3-25-96
Source:	Hamilton Brothers	Submitted By:	T.K./WT Date 3-25-96
		Authorized By:	Client Date 3-25-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
10"	100	100
6"	50	38-50
4"	11	20-36
2"		
1 1/2"		
1 1/8"		
1"	.5	0-9
3/4"		
No. 4		
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

Liquid Limit	NA
Plasticity Index	NA

Copies: Client (3), Billing & Field File (2).
15ha:UNC025

The above services and report were performed pursuant to the terms and conditions of the contract 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 _____



Western Technologies Inc.

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Nuclear Corporation Attn: Ed Morales PO Box 3077 Gallup, NM 87305	Job No.	3146JB025
		Lab/Inv. No.	31460079
		Report Date:	4-1-96
Project:	1996 Reclamation		
Location:	Church Rock, NM		
Material:	D 50 6"	Sampled By:	T.K./WT
		Date	3-26-96
Source:	Hamilton Brothers	Submitted By:	T.K./WT
		Date	3-26-96
		Authorized By:	Client
		Date	3-26-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
10"	100	100
6"	33	38-50
4"	8	20-36
2"		
1 1/2"		
1 1/8"		
1"	.5	0-9
1/4"		
No. 4		
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	NA
Optimum Moisture, %	NA

Plasticity Index, ASTM D4318

Liquid Limit	NA
Plasticity Index	NA

Copies: Client (3), Billing & Field File (2).
26\ha:UNC025

The above services and report were performed pursuant to the terms and conditions of the contract 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



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Nuclear Corporation
Attn: Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460079
Report Date: 4-2-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: D 50 6" (Combined) Sampled By: H.K./WT Date 3-27-96

Source: Hamilton Brothers Submitted By: H.K./WT Date 3-27-96

Authorized By: Client Date 3-27-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
10"	100	100
6"	42	38-50
4"	21	20-36
2"		
1 1/2"		
1 1/8"		
1"	2	0-9
1/4"		
No. 4		
8		
10		
16		
30		
40		
50		
100		
200		

Moisture Density Relations, pcf (ASTM D698 Method A)

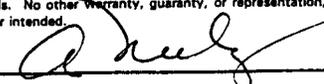
Maximum Dry Density, pcf NA
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NA
Plasticity Index NA

Copies: Client (3), Billing & Field File (2).
?/ha:UNC025

The above services and report were performed pursuant to the terms and conditions of the contract 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: 



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460096
Report Date: 04/11/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰, 6" (-10" combined with 23% screened waste) Sampled By: Tom Krake /WT Date: 04/02/96

Source: Hamilton Brothers Submitted By: Tom Krake /WT Date: 04/02/96

Authorized By: Client Date: 04/02/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
10"	100	100
6"	46	38 - 50
4"	22	20 - 36
1"	1.1	0 - 9
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 A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
4-2/dn:UNC.025

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 *[Signature]*



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460096
Report Date: 04/29/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰ - 6 inch

Sampled By: H. Kuebler /WT Date 04/23/96

Source: Hamilton Brothers

Submitted By: H. Kuebler/ WT Date 04/23/96

Authorized By: Client Date 04/23/96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
10"	100	100
6"	49	38 - 50
4"	20	20 - 36
1"	1.7	0 - 9
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 A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
4-23.2/dn:UNC.025

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



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

UNITED NUCLEAR CORPORATION 1996 RECLAMATION

WT JOB NO. 3146JB025

DATE OF REPORT 07-16-96

TEST SUMMARY FOR D⁵⁰ - 10" AGGREGATE

DATE	SAMPLE LOCATION	% PASS 15" SPEC. 100%	% PASS 10" SPEC. 45-55%	% PASS 5" SPEC. 7-30%	%PASS 3" SPEC. 0-20%	WITHIN SPECS.
05-30-96	Hamilton Brothers	100	54	12	10	Yes
06-07-96	Hamilton Brothers	100	52	11	10.1	Yes
06-07-96	Scoring					
06-17-96	Scoring					
07-08-96	Hamilton Brothers Stockpile	100	54	13	11	Yes
07-12-96	Scoring					



Western Technologies Inc.
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460163
Report Date: 06-05-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ - 10" Sampled By: T.K. /WT Date: 05-30-96

Source: Hamilton Brothers Submitted By: T.K. /WT Date: 05-30-96

Authorized By: Client Date: 05-30-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
15"	100	100
10"	54	45 - 58
5"	12	10 - 33
3"	10	0 - 23
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 A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

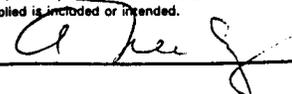
Plasticity Index, ASTM D4318

Liquid Limit NA

Plasticity Index NA

Copies: Client (3), Billing (1), Field File (1)
5-30/RGO:UNC025

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: 



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460177
Report Date: 06-18-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ - 10"

Sampled By: H.K. /WT Date 06-07-96

Source: Hamilton Brothers

Submitted By: H.K. /WT Date 06-07-96

Authorized By: Client Date 06-07-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
10"	52	45 - 58
5"	11	10 - 33
3"	10.1	0 - 23
1"		
3/4"		
1/2"		
3/8"		
1/4"		
No. 4		
8		
10		
16		
30		
40		
50		
100		
200		

Copies: Client (3), Billing (1), Field File (1)
6-7/RGO:UNC25

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 



Western Technologies Inc.
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460226
Report Date: 07-16-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ - 10" Aggregate

Sampled By: H.K. /WT Date 07-08-96

Source: Hamilton Brothers Stockpile

Submitted By: H.K. /WT Date 07-08-96

Authorized By: Client Date 07-08-96

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
15"	100	100
10"	54	45 - 58
5"	13	10 - 33
3"	11	0 - 23
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 A)

Maximum Dry Density, pcf NA
Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NA
Plasticity Index NA

Copies: Client (3), Billing (1), Field File (1)
7-8/RGO:UNC025

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: Harry Kuebler



APPENDIX J
ROCK QUALITY TESTING



ROCK QUALITY TESTING
.35-INCH AGGREGATE



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
P.O. Box 3077
Gallup, NM 87305
Attn: Mr. Ed Morales

Job No: 3146JB025
Lab/Invoice: 31460177
Date of Report: 06-28-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 06-07-96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 06-07-96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - .35"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.802	10	9	90
Absorption, %	0.99	5	2	10
L.A. Abrasion, 100 rev, %	5	8	1	8
Sodium Soundness Loss, %	3.11	9	11	99

Total = 214.5, Rock Quality Score = 207/230 x 100 = 90



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460177
Report Date: 07-05-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: Coarse Aggregate **Sampled By:** H.K. **Date** 06-07-96

Source: Pit **Submitted By:** H.K **Date** 06-07-96

Authorized By: Client **Date** 06-07-96

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.774</u>
Bulk Specific Gravity (SSD)	<u>2.802</u>
Apparent Specific Gravity	<u>2.853</u>
Absorption, Percent	<u>0.99</u>

Copies: Client (3), Billing (1), Field File (1)
6-7/RGO:UNC25

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 *[Signature]*



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No.	3146JB025
Lab/Inv. No.	31460177
Report Date:	07/05/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D ⁵⁰ -.35 inch	Sampled By: R.D./WT	Date: 06-07-96
Source: Hamilton Brothers	Submitted By: R.D./WT	Date: 06-07-96
Supplier: Hamilton Brothers	Authorized By: Client	Date: 06-07-96

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 5

Copies to: Addressee (3), Billing (1), Field File (1)
671a/dn:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	<u>3146JB025</u>
		Lab/Inv. No.	<u>31460177</u>
		Report Date:	<u>07/05/96</u>
Project:	<u>1996 Reclamation</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>D⁵⁰ - .35"</u>	Sampled By:	<u>R.D./WT</u> Date <u>06/07/96</u>
Source:	<u>Hamilton Brothers Pit</u>	Submitted By:	<u>R.D./WT</u> Date <u>06/07/96</u>
Procedure:	<u>ASTM C88</u>	Authorized By:	<u>Client</u> Date <u>06/07/96</u>
		Solution:	<u>Sodium Sulfate (Used)</u>

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"				
1-1/2" to 1" 1" to 3/4"	47 29	1018.1 500.5	2.04	1.55
3/4" to 1/2" 1/2" to 3/8"	15 9	670.7 331.0	6.51	1.56
3/8" to No. 4 Minus No. 4	1	301.3		
Totals				3.11

*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)
ss67/ha:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
P.O. Box 3077
Gallup, NM 87305
Attn: Mr. Ed Morales

Job No: 3146JB025
Lab/Invoice: 31460226
Date of Report: 08-20-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 07/12/96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 07/10/96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - .35"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.814	10	9	90
Absorption, %	1.233	4.5	2	9
L.A. Abrasion, 100 rev, %	3.0	9.0	1	9
Sodium Soundness Loss, %	2.42	9.2	11	101.2

Total = 214.5, Rock Quality Score = 209.2/230 x 100 = 91



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	3146JB025
		Lab/Inv. No.	31460226
		Report Date:	08/20/96
Project:	1996 Reclamation		
Location:	Church Rock, New Mexico		
Material:	D ⁵⁰ - .35 inch	Sampled By:	H. Kuebler /WT
		Date	07/12/96
Source:	Hamilton Brothers	Submitted By:	H. Kuebler /WT
		Date	07/12/96
Procedure:	ASTM C88	Authorized By:	Client
		Date	07/10/96
	Solution:	Sodium Sulfate (Used)	

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"				
1-1/2" to 1" 1" to 3/4"	28 10	588.5 151.3	.289 .466	.08 .05
3/4" to 1/2" 1/2" to 3/8"	32 7	673.0 331.5	2.90 6.52	.93 .46
3/8" to No. 4 Minus No. 4	23	300.2	3.90	.90
Totals				2.42

*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)
ss1/dn:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077		Job No.	<u>3146JB025</u>
			Lab/Inv. No.	<u>31460</u>
			Report Date:	<u>08/20/96</u>
Project:	<u>1996 Reclamation</u>			
Location:	<u>Church Rock, New Mexico</u>			
Material:	<u>D⁵⁰ - .35 inch</u>	Sampled By:	<u>H. Kuebler /Wt</u>	Date <u>07/12/96</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler /WT</u>	Date <u>07/12/96</u>
		Authorized By:	<u>Client</u>	Date <u>07/10/96</u>

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.779</u>
Bulk Specific Gravity (SSD)	<u>2.814</u>
Apparent Specific Gravity	<u>2.878</u>
Absorption, Percent	<u>1.233</u>

Copies to:
sg1/dn:UNC.025

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

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No.	3146JB025
Lab/Inv. No.	31460226
Report Date:	08/20/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: <u>D⁵⁰ -.35 inch</u>	Sampled By: <u>H. Kuebler /WT</u>	Date: <u>07/12/96</u>
Source: <u>Hamilton Brothers Stockpile</u>	Submitted By: <u>H. Kuebler /WT</u>	Date: <u>07/12/96</u>
Supplier: <u>Hamilton Brothers</u>	Authorized By: <u>Client</u>	Date: <u>07/10/96</u>

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 3.0

Copies to: Addressee (3), Billing (1), Field File (1)
la1/dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No: 3146JB025
Lab/Invoice: 31460226
Date of Report: 08/20/96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 07/12/96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 07/10/96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - .35 inch

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.798	10	9	90
Absorption, %	1.608	4	2	8
L.A. Abrasion, 100 rev, %	4.0	8.5	1	8.5
Sodium Soundness Loss, %	4.82	8	11	88

Total = 214.5 , Rock Quality Score = 194.5 / 230 x 100 = 84



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	3146JB025
		Lab/Inv. No.	31460226
		Report Date:	08/20/96
Project:	1996 Reclamation		
Location:	Church Rock, New Mexico		
Material:	D ⁵⁰ - .35 inch	Sampled By:	H. Kuebler /WT Date 07/12/96
Source:	Hamilton Brothers Yard	Submitted By:	H. Kuebler /WT Date 07/12/96
Procedure:	ASTM C88	Authorized By:	Client Date 07/10/96
		Solution:	Sodium Sulfate (Used)

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"				
1-1/2" to 1" 1" to 3/4"	4 11	1002.0 508.6	3.34 .570	.13 .06
3/4" to 1/2" 1/2" to 3/8"	28 8	671.3 330.8	3.53 8.00	.99 .64
3/8" to No. 4 Minus No. 4	49	300.1	6.13	3.00
Totals				4.82

*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)
ss3/dn:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No. 3146JB025
Lab/Inv. No. 31460226
Report Date: 08/20/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰ - .35 inch Sampled By: H. Kuebler /WT Date 07/12/96

Source: Hamilton Brothers Submitted By: H. Kuebler /WT Date 07/12/96

Authorized By: Client Date 07/10/96

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.754
Bulk Specific Gravity (SSD)	2.798
Apparent Specific Gravity	2.882
Absorption, Percent	1.608

Copies to:
sg3/dn:UNC.025

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

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No.	3146JB025
Lab/Inv. No.	31460226
Report Date:	08/20/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D ⁵⁰ - .35 inch	Sampled By: H. Kuebler /WT	Date	07/12/96
Source: Hamilton Brothers Yard	Submitted By: H. Kuebler /WT	Date	07/12/96
Supplier: Hamilton Brothers	Authorized By: Client	Date	07/10/96

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 4.0

Copies to: Addressee (3), Billing (1), Field File (1)
la3/dn:UNC.025

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 _____



ROCK QUALITY TESTING
1.5-INCH AGGREGATE



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
P.O. Box 3077
Gallup, NM 87305
Attn: Mr. Ed Morales

Job No: 3146JB025

Lab/Invoice: 31460096

Date of Report: 06-28-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 04-09-96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 04-09-96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - 1.5"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.710	9.1	9	81.9
Absorption, %	1.3	4.5	2	9
L.A. Abrasion, 100 rev, %	4	8.5	1	8.5
Sodium Soundness Loss, %	3.83	8.6	11	94.6

Total = 214.5, Rock Quality Score = 194/230 x 100 = 84



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	<u>3146JB025</u>
		Lab/Inv. No.	<u>31460096</u>
		Report Date:	<u>07/05/96</u>
Project:	<u>1996 Reclamation</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>Coarse Aggregate, D⁵⁰ - 1.5"</u>	Sampled By:	<u>T.K./WT</u> Date <u>04/09/96</u>
Source:	<u>Hamilton Brothers Pit</u>	Submitted By:	<u>T.K./WT</u> Date <u>04/09/96</u>
		Authorized By:	<u>Client</u> Date <u>04/09/96</u>

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.676</u>
Bulk Specific Gravity (SSD)	<u>2.710</u>
Apparent Specific Gravity	<u>2.770</u>
Absorption, Percent	<u>1.3</u>

Copies to: Addressee (3), Billing (1), Field File (1)
sg49\dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No.	3146JB025
Lab/Inv. No.	31460096
Report Date:	07/05/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material:	Coarse Aggregate, D ⁵⁰ -1.5"	Sampled By:	T.K./WT	Date	04-09-96
Source:	Hamilton Brothers Pit	Submitted By:	T.K./WT	Date	04-09-96
Supplier:	Hamilton Brothers	Authorized By:	Client	Date	04-09-96

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 4.0

Copies to: Addressee (3), Billing (1), Field File (1)
49la/dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	<u>3146JB025</u>
		Lab/Inv. No.	<u>31460096</u>
		Report Date:	<u>07/05/96</u>
Project:	<u>1996 Reclamation</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>D⁵⁰ - 1.5 inch</u>	Sampled By:	<u>T.K./WT</u> Date <u>04/09/96</u>
Source:	<u>Hamilton Brothers Pit</u>	Submitted By:	<u>T.K./WT</u> Date <u>04/09/96</u>
Procedure:		Authorized By:	<u>Client</u> Date <u>04/09/96</u>
		Solution:	<u>Sodium Sulfate (Used)</u>

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"	10	2028.2	0.4	0.04
1-1/2" to 1" 1" to 3/4"	22	1000.5 500.7	4.28	.94
3/4" to 1/2" 1/2" to 3/8"	48	671.7 330.6	4.75	2.28
3/8" to No. 4 Minus No. 4	20	300.1	2.87	0.57
Totals				3.83

*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)
ss9/ha:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
P.O. Box 3077
Gallup, NM 87305
Attn: Mr. Ed Morales

Job No: 3146JB025

Lab/Invoice: 31460096

Date of Report: 06-28-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 04-23-96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 04-23-96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - 1.5"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.798	10	9	90
Absorption, %	1.1	4.8	2	9.6
L.A. Abrasion, 100 rev, %	4	8.5	1	8.5
Sodium Soundness Loss, %	2.37	9.3	11	102.3

Total = 214.5 , Rock Quality Score = 210.4/230 x 100 = 91



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460096
Report Date: 07-05-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: <u>Coarse Aggregate, D⁵⁰ - 1.5"</u>	Sampled By: <u>Client</u>	Date <u>04-26-96</u>
Source: <u>UNC</u>	Submitted By: <u>Client</u>	Date <u>04-26-96</u>
	Authorized By: <u>Client</u>	Date <u>04-26-96</u>

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.769</u>
Bulk Specific Gravity (SSD)	<u>2.798</u>
Apparent Specific Gravity	<u>2.853</u>
Absorption, Percent	<u>1.1</u>

Copies: Client (3), Billing (1), Field File (1)
4-26/RGO:UNC25

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 *Harry Kuebler*



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No.	3146JB025
Lab/Inv. No.	31460096
Report Date:	07/05/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: Coarse Aggregate, D ⁵⁰ -1.5"	Sampled By: Client	Date: 04-26-96
Source: Hamilton Brothers Pit	Submitted By: Client	Date: 04-26-96
Supplier: Hamilton Brothers	Authorized By: Client	Date: 04-26-96

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 4.0

Copies to: Addressee (3), Billing (1), Field File (1)
4261a/dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	<u>3146JB025</u>
		Lab/Inv. No.	<u>31460096</u>
		Report Date:	<u>07/05/96</u>
Project:	<u>1996 Reclamation</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>Coarse Aggregate, D⁵⁰ - 1.5"</u>	Sampled By:	<u>Client</u> Date <u>04/26/96</u>
Source:	<u>Church Rock</u>	Submitted By:	<u>Client</u> Date <u>04/26/96</u>
Procedure:	<u>ASTM C88, 5 Cycles</u>	Authorized By:	<u>Client</u> Date <u>04/26/96</u>
		Solution:	<u>Sodium Sulfate (Used)</u>

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" 1" to 3/4"	33	1001.5 506.1	1.9	.63
3/4" to 1/2" 1/2" to 3/8"	48	670.6 332.1	1.78	.85
3/8" to No. 4 Minus No. 4	20	301.2	4.48	.89
Totals				2.37

*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)
ss426/ha:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No: 3146JB025
Lab/Invoice: 31460226
Date of Report: 08/20/96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 07/12/96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 07/10/96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - 1.5 inch

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.815	10	9	90
Absorption, %	1.083	5	2	10
L.A. Abrasion, 100 rev, %	4.0	8.5	1	8.5
Sodium Soundness Loss, %	6.12	7.4	11	81.4

Total = 214.5, Rock Quality Score = 189.9 /230 x 100 = 83



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	<u>3146JB025</u>
		Lab/Inv. No.	<u>31460226</u>
		Report Date:	<u>08/20/96</u>
Project:	<u>1996 Reclamation</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>D⁵⁰ - 1.5 inch</u>	Sampled By:	<u>H. Kuebler /WT</u> Date <u>07/12/96</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler /WT</u> Date <u>07/12/96</u>
Procedure:	<u>ASTM C88</u>	Authorized By:	<u>Client</u> Date <u>07/10/96</u>
		Solution:	<u>Sodium Sulfate (Used)</u>

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"				
1-1/2" to 1" 1" to 3/4"	5 18	738.3 508.5	.555 8.35	.28 1.50
3/4" to 1/2" 1/2" to 3/8"	39 10	671.5 330.0	5.39 8.45	2.10 .85
3/8" to No. 4 Minus No. 4	28	300.9	4.95	1.39
Totals	100			6.12

*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)
ss4/dn:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	<u>3146JB025</u>
		Lab/Inv. No.	<u>31460226</u>
		Report Date:	<u>08/20/96</u>
Project:	<u>1996 Reclamation</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>D⁵⁰ - 1.5 inch</u>	Sampled By:	<u>H. Kuebler /WT</u> Date <u>07/12/96</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler /wt</u> Date <u>07/12/96</u>
		Authorized By:	<u>Client</u> Date <u>07/10/96</u>

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.784</u>
Bulk Specific Gravity (SSD)	<u>2.815</u>
Apparent Specific Gravity	<u>2.871</u>
Absorption, Percent	<u>1.083</u>

Copies to:
sg4/dn:UNC.025

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

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	3146JB025
		Lab/Inv. No.	31460226
		Report Date:	08/20/96
<hr/>			
Project:	1996 Reclamation		
<hr/>			
Location:	Church Rock, New Mexico		
<hr/>			
Material:	D ⁵⁰ - 1.5 inch	Sampled By:	H. Kuebler /WT Date 07/12/96
Source:	Hamilton Brothers Yard	Submitted By:	H. Kuebler /WT Date 07/12/96
Supplier:	Hamilton Brothers	Authorized By:	Client Date 07/10/96

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 4.0

Copies to: Addressee (3), Billing (1), Field File (1)
la4/dn:UNC.025

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 _____



ROCK QUALITY TESTING
6-INCH AGGREGATE



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
P.O. Box 3077
Gallup, NM 87305
Attn: Mr. Ed Morales

Job No: 3146JB025

Lab/Invoice: 31460096

Date of Report: 06-28-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 04-01-96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 04-01-96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - 6"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.715	9.2	9	82.8
Absorption, %	2	3	2	6
L.A. Abrasion, 100 rev, %	5	8	1	8
Sodium Soundness Loss, %	4.15	8.4	11	92.4

Total = 214.5, Rock Quality Score = 189.2/230 x 100 = 82



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460096
Report Date: 07-05-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: Coarse Aggregate, D⁵⁰ - 6" **Sampled By:** Client **Date** 04-01-96

Source: Hamilton Brothers Pit **Submitted By:** Client **Date** 04-01-96

Authorized By: Client **Date** 04-01-96

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.661</u>
Bulk Specific Gravity (SSD)	<u>2.715</u>
Apparent Specific Gravity	<u>2.814</u>
Absorption, Percent	<u>2.00</u>

Copies: Client (3), Billing (1), Field File (1)
4-1/RGO:UNC25

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 Harvey Kuebler



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No. 3146JB025
Lab/Inv. No. 31460096
Report Date: 07/05/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: <u>Coarse Aggregate, D⁵⁰ - 6"</u>	Sampled By: <u>Client</u>	Date: <u>04-01-96</u>
Source: <u>Hamilton Brothers, Stockpile</u>	Submitted By: <u>Client</u>	Date: <u>04-01-96</u>
Supplier: <u>Hamilton Brothers</u>	Authorized By: <u>Client</u>	Date: <u>04-01-96</u>

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 5.0

Copies to: Addressee (3), Billing (1), Field File (1)
411a/dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	<u>3146JB025</u>
		Lab/Inv. No.	<u>31460096</u>
		Report Date:	<u>07/05/96</u>
Project:	<u>1996 Reclamation</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>D⁵⁰ - 6"</u>	Sampled By:	<u>H.K./WT</u> Date <u>04/01/96</u>
Source:	<u>Hamilton Brothers Pit</u>	Submitted By:	<u>H.K./WT</u> Date <u>04/01/96</u>
Procedure:	<u>ASTM C88</u>	Authorized By:	<u>Client</u> Date <u>04/01/96</u>
		Solution:	<u>Sodium Sulfate (Used)</u>

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"	67			
1-1/2" to 1" 1" to 3/4"	30	505.3	8.2	2.46
3/4" to 1/2" 1/2" to 3/8"	2	669.2 299.9	5.8	1.16
3/8" to No. 4 Minus No. 4	1	300.1	5.3	.53
Totals				4.15

*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)
ss01/ha:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
P.O. Box 3077
Gallup, NM 87305
Attn: Mr. Ed Morales

Job No: 3146JB025

Lab/Invoice: 31460096

Date of Report: 06-28-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 04-27-96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 04-27-96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - 6"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.751	10	9	90
Absorption, %	2.2	2.5	2	6
L.A. Abrasion, 100 rev, %	5	8	1	8
Sodium Soundness Loss, %	2.95	9	11	99

Total = 214.5, Rock Quality Score = 203/230 x 100 = 88



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460096
Report Date: 07-05-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: Coarse Aggregate, D⁵⁰ - 6" **Sampled By:** Client **Date** 04-27-96

Source: Church Rock **Submitted By:** Client **Date** 04-27-96

Authorized By: Client **Date** 04-27-96

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>3.0</u>
Bulk Specific Gravity (SSD)	<u>3.0</u>
Apparent Specific Gravity	<u>3.0</u>
Absorption, Percent	<u>2.2</u>

Copies: Client (3), Billing (1), Field File (1)
4-27/RGO:UNC25

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 *Harvey Hepler*



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No.	3146JB025
Lab/Inv. No.	31460096
Report Date:	07/05/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material:	Coarse Aggregate, D ⁵⁰ - 6"	Sampled By:	Client	Date	04-27-96
Source:	Hamilton Brothers	Submitted By:	Client	Date	04-27-96
Supplier:	Hamilton Brothers	Authorized By:	Client	Date	04-27-96

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 5.0

Copies to: Addressee (3), Billing (1), Field File (1)
4271a/dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	<u>3146JB025</u>
		Lab/Inv. No.	<u>31460096</u>
		Report Date:	<u>07/05/96</u>
<hr/>			
Project:	<u>1996 Reclamation</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>Coarse, D⁵⁰ - 6"</u>	Sampled By:	<u>H.K./WT</u> Date <u>04/27/96</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H.K./WT</u> Date <u>04/27/96</u>
Procedure:	<u>ASTM C88, 5 Cycles</u>	Authorized By:	<u>Client</u> Date <u>04/27/96</u>
		Solution:	<u>Sodium Sulfate (Used)</u>

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"	67	2051.2	1.243	.83
1-1/2" to 1" 1" to 3/4"	30	1014.6 503.4	2.6	.78
3/4" to 1/2" 1/2" to 3/8"	2	674.9 330.2	4.94	.99
3/8" to No. 4 Minus No. 4	1	300.4	3.53	.35
Totals				2.95

*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)
ss27/ha:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
P.O. Box 3077
Gallup, NM 87305
Attn: Mr. Ed Morales

Job No: 3146JB025
Lab/Invoice: 31460163
Date of Report: 06-28-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 05-21-96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 05-21-96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - 6"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.827	10	9	90
Absorption, %	0.9	5.4	2	10.8
L.A. Abrasion, 100 rev, %	4.2	8.4	1	8.4
Sodium Soundness Loss, %	1.25	9.9	11	108.9

Total = 214.5 , Rock Quality Score = 218.1/230 x 100 = 95



Western Technologies Inc.
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460163
Report Date: 07-05-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: Coarse Aggregate **Sampled By:** Client **Date** 05-21-96

Source: UNC **Submitted By:** H.K **Date** 05-21-96

Authorized By: Client **Date** 05-21-96

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.802</u>
Bulk Specific Gravity (SSD)	<u>2.827</u>
Apparent Specific Gravity	<u>2.873</u>
Absorption, Percent	<u>0.882</u>

Copies: Client (3), Billing (1), Field File (1)
5-21/RGO:UNC25

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: *Henry Hebler*



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	3146JB025
		Lab/Inv. No.	31460163
		Report Date:	07/05/96
Project: 1996 Reclamation			
Location: Church Rock, New Mexico			
Material:	D ⁵⁰ - 6"	Sampled By:	H.K./WT Date 05-21-96
Source:	Hamilton Brothers	Submitted By:	H.K./WT Date 05-21-96
Supplier:	Hamilton Brothers	Authorized By:	Client Date 05-21-96

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 4.2

Copies to: Addressee (3), Billing (1), Field File (1)
5211a/dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No. 3146JB025
Lab/Inv. No. 31460163
Report Date: 07/05/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D⁵⁰ - 6" Sampled By: L.S./WT Date 05/21/96

Source: Hamilton Brothers Submitted By: L.S./WT Date 05/21/96

Procedure: ASTM C88 Authorized By: Client Date 05/21/96

Solution: Sodium Sulfate (Used)

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" 1" to 3/4"	35	1004.6 501.8	.66	.23
3/4" to 1/2" 1/2" to 3/8"	45	670.3 330.6	1.48	.67
3/8" to No. 4 Minus No. 4	20	300.8	1.73	.35
Totals				1.25

*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)
ss521/ha:UNC.025

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 _____



ROCK QUALITY TESTING
10-INCH AGGREGATE



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
P.O. Box 3077
Gallup, NM 87305
Attn: Mr. Ed Morales

Job No: 3146JB025

Lab/Invoice: 31460177

Date of Report: 06-28-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 06-07-96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 06-07-96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - 10"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.807	10	9	90
Absorption, %	1.3	4.4	2	8.8
L.A. Abrasion, 100 rev, %	4	8.5	1	8.5
Sodium Soundness Loss, %	3.06	9	11	99

Total = 214.5, Rock Quality Score = $\frac{206.3}{230} \times 100 = \underline{90}$



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460177
Report Date: 07-05-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material: Coarse Aggregate **Sampled By:** H.K. **Date** 06-07-96

Source: Hamilton Brothers Pit **Submitted By:** H.K **Date** 06-07-96

Authorized By: Client **Date** 06-07-96

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.771</u>
Bulk Specific Gravity (SSD)	<u>2.807</u>
Apparent Specific Gravity	<u>2.875</u>
Absorption, Percent	<u>1.3</u>

Copies: Client (3), Billing (1), Field File (1)
6-71/RGO:UNC25

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No.	3146JB025
Lab/Inv. No.	31460177
Report Date:	07/05/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: <u>D⁵⁰ - 10"</u>	Sampled By: <u>M.G./WT</u>	Date	<u>06-07-96</u>
Source: <u>Hamilton Brothers, Stockpile</u>	Submitted By: <u>M.G./WT</u>	Date	<u>06-07-96</u>
Supplier: <u>Hamilton Brothers</u>	Authorized By: <u>Client</u>	Date	<u>06-07-96</u>

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 4

Copies to: Addressee (3), Billing (1), Field File (1)
67.11a/dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	<u>3146JB025</u>
		Lab/Inv. No.	<u>31460177</u>
		Report Date:	<u>07/05/96</u>
Project:	<u>1996 Reclamation</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>D⁵⁰ - 10"</u>	Sampled By:	<u>A.B./WT</u> Date <u>06/07/96</u>
Source:	<u>Hamilton Brothers, Stockpile</u>	Submitted By:	<u>A.B./WT</u> Date <u>06/07/96</u>
Procedure:	<u>ASTM C88</u>	Authorized By:	<u>Client</u> Date <u>06/07/96</u>
		Solution:	<u>Sodium Sulfate (Used)</u>

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"				
1-1/2" to 1" 1" to 3/4"	27	1513.9	3.02	.82
3/4" to 1/2" 1/2" to 3/8"	40	996.3	4.01	1.60
3/8" to No. 4 Minus No. 4	14	293.1	4.57	.64
Totals	81		11.6	3.06

*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)
ss67.1/ha:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
P.O. Box 3077
Gallup, NM 87305
Attn: Mr. Ed Morales

Job No: 3146JB025

Lab/Invoice: 31460177

Date of Report: 06-28-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 06-17-96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 06-17-96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - 10"

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.818	10	9	90
Absorption, %	1.2	4.7	2	9.4
L.A. Abrasion, 100 rev, %	4	8.5	1	8.5
Sodium Soundness Loss, %	4.03	8.5	11	93.5

Total = 214.5 , Rock Quality Score = 201.4/230 x 100 = 88



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3146JB025
Lab/Inv. No. 31460177
Report Date: 07-05-96

Project: 1996 Reclamation

Location: Church Rock, NM

Material:	Sampled By:	<u>Client</u>	Date	<u>06-17-96</u>
Source:	Submitted By:	<u>H.K</u>	Date	<u>06-17-96</u>
	Authorized By:	<u>Client</u>	Date	<u>06-17-96</u>

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.785</u>
Bulk Specific Gravity (SSD)	<u>2.818</u>
Apparent Specific Gravity	<u>2.881</u>
Absorption, Percent	<u>1.199</u>

Copies: Client (3), Billing (1), Field File (1)
6-17/RGO:UNC25

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 Harry Keuber



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No.	3146JB025
Lab/Inv. No.	31460177
Report Date:	07/05/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: D ⁵⁰ - 10"	Sampled By: R.D./WT	Date	06-17-96
Source: Hamilton Brothers	Submitted By: R.D./WT	Date	06-17-96
Supplier: Hamilton Brothers	Authorized By: Client	Date	06-17-96

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 4

Copies to: Addressee (3), Billing (1), Field File (1)
6171a/dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	3146JB025
		Lab/Inv. No.	31460177
		Report Date:	07/05/96
Project:	1996 Reclamation		
Location:	Church Rock, New Mexico		
Material:	D ⁵⁰ - 10"	Sampled By:	R.D./WT Date 06/17/96
Source:	Hamilton Brothers	Submitted By:	R.D./WT Date 06/17/96
Procedure:	ASTM C88	Authorized By:	Client Date 06/17/96
		Solution:	Sodium Sulfate (Used)

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"				
1-1/2" to 1" 1" to 3/4"	2 70	1007.8 528.1	3.85	2.77
3/4" to 1/2" 1/2" to 3/8"	33 20 2	672.2 330.9	2.20	1.77
3/8" to No. 4 Minus No. 4		302.0	.50	.09
Totals			18.93	4.03

*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)
ss617/ha:UNC.025

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 _____



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

ROCK QUALITY DETERMINATION

Client: United Nuclear Corporation (UNC)
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No: 3146JB025

Lab/Invoice: 31460226

Date of Report: 08-20-96

Project: 1996 Reclamation

Location: Church Rock, NM **Sampled By:** H.K. /WT **Date:** 07/12/96

Material Source: Hamilton Brothers **Authorized By:** E.M. /Client **Date:** 07/10/96

Material Type: Crushed Basalt **Intended Use:** D⁵⁰ - 10 inch

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.829	10	9	90
Absorption, %	1.006	5	2	10
L.A. Abrasion, 100 rev, %	4.0	8.5	1	8.5
Sodium Soundness Loss, %	3.76	8.5	11	93.5

Total = 214.5 , Rock Quality Score = 202.0 / 230 x 100 = 88



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No. 3146JB025
Lab/Inv. No. 31460226
Report Date: 08/20/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material: <u>D⁵⁰ - 10 inch</u>	Sampled By: <u>H. Kuebler /WT</u>	Date: <u>07/12/96</u>
Source: <u>Hamilton Borthers Yard</u>	Submitted By: <u>H. Kuebler /WT</u>	Date: <u>07/12/96</u>
Procedure: <u>ASTM C88</u>	Authorized By: <u>Client</u>	Date: <u>07/10/96</u>
	Solution: <u>Sodium Sulfate (Used)</u>	

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"				
1-1/2" to 1" 1" to 3/4"	7 22	1000.4 500.5	.830 4.96	.06 1.09
3/4" to 1/2" 1/2" to 3/8"	40 9	670.1 330.6	1.76 6.08	.70 .55
3/8" to No. 4 Minus No. 4	22	300.4	6.19	1.36
Totals				3.76

*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)
ss2/dn:UNC.025

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305-3077	Job No.	3146JB025
		Lab/Inv. No.	31460226
		Report Date:	08/20/96
Project:	1996 Reclamation		
Location:	Church Rock, New Mexico		
Material:	D ⁵⁰ - 10 inch	Sampled By:	H. Kuebler /WT Date 07/12/96
Source:	Hamilton Brothers	Submitted By:	H. Kuebler /WT Date 07/12/96
		Authorized By:	Client Date 07/10/96

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.801
Bulk Specific Gravity (SSD)	2.829
Apparent Specific Gravity	2.882
Absorption, Percent	1.006

Copies to:
sg2/dn:UNC.025

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

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 _____



**Western
Technologies
Inc.**
The Quality People
Since 1955

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

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305-3077

Job No.	3146JB025
Lab/Inv. No.	31460226
Report Date:	08/20/96

Project: 1996 Reclamation

Location: Church Rock, New Mexico

Material:	D ⁵⁰ - 10 inch	Sampled By:	H. Kuebler /WT	Date	07/12/96
Source:	Hamilton Brothers Yard	Submitted By:	H. Kuebler /WT	Date	07/12/96
Supplier:	Hamilton Brothers	Authorized By:	Client	Date	07/10/96

L.A. Abrasion, ASTM C535, Grading B

% Loss at 100 Revs. 4.0

Copies to: Addressee (3), Billing (1), Field File (1)
la2/dn:UNC.025

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 _____