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June 1995

**Canonie**Environmental

**As-Built Report**

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# **Central Cell Final Reclamation**

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Church Rock Site  
Gallup, New Mexico

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Prepared For:

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

**As-Built Report**

# **Central Cell Final Reclamation**

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## AS-BUILT REPORT

### CENTRAL CELL FINAL RECLAMATION UNITED NUCLEAR CORPORATION CHURCH ROCK FACILITY GALLUP, NEW MEXICO

#### 1.0 INTRODUCTION

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This report describes the construction of the final reclamation cover for the Central Cell of the uranium tailings disposal area at United Nuclear Corporation's (United Nuclear's) Church Rock facility. The site is located northeast of Gallup, New Mexico, along State Highway 566, as shown on Sheet 1. United Nuclear is continuing reclamation of the site as scheduled, in accordance with the "Tailings Reclamation Plan as Approved by the NRC March 1, 1991, License Number SUA-1475" (Reclamation Plan) [Canonie Environmental Services Corp. (Canonie), 1991].

Final reclamation of the Central Cell consisted of completing the radon attenuation soil cover, placing the erosion protection cover and constructing drainage swales over the reclaimed surface. The reclamation was performed from May to October 1994 and encompassed approximately 40 acres of the Central Cell and surrounding areas. Work also continued on the upper reach of the Runoff Control Ditch located west of the tailings disposal area.

Construction of the final cover for the Central Cell represents the second stage of final reclamation for the tailings disposal area. Final reclamation of the North Cell was previously completed in 1993 as documented in the "As-Built Report, North Cell Final Reclamation" (Canonie, 1994). Interim stabilization of the entire tailings disposal area was previously completed from 1989 to 1991 and consisted of regrading the tailings and placing the interim soil cover. As-built reports for interim stabilization include the North Cell (Canonie, 1990), Central Cell [Western Technologies, Inc. (WT), 1991], South Cell (Canonie, 1992a) and Central Cell Addendum (Canonie, 1992b).

Sheet 2 shows the design plan view and Sheet 3 shows the design details and cross sections for the installation of the final cover over the Central Cell. Construction activities for this phase of the reclamation included:

1. Grubbing of the Central Cell area to remove vegetation from the interim soil cover
2. Placing and compacting 12 inches of soil to complete the radon attenuation barrier
3. Covering the radon attenuation barrier with a minimum of 3 inches of rock
4. Placing and compacting soil over the rock cover
5. Constructing drainage swales and channels to control surface water runoff

These construction activities were performed in accordance with the design drawings (Sheets 2 and 3) and the specifications provided in Appendix B of the Reclamation Plan. A minor modification to the soil cover design was developed by Canonie in accordance with Nuclear Regulatory Commission (NRC) guidelines and is documented in this report. This modification consisted of the placement of an additional 3 inches of radon attenuation cover.

Sheet 4 shows the as-built plan view of the final cover, surface water controls for the Central Cell and the section of the Runoff Control Ditch constructed in 1994. Backfilling of Borrow Pit No. 2, located east of the Central Cell, was also completed during the 1994 construction season. Final reclamation of the borrow pit, including completion of Branch Swales A, B and C, will be completed in the future.

Construction services for the reclamation activities were provided to United Nuclear by Nielson's General Contractors (Nielson's). Table 1 lists the equipment used by Nielson's during construction. The crushed rock for the erosion protection cover and the riprap and bedding material for the drainage swales and channels were provided by Hamilton Brothers, Inc. (Hamilton). WT provided geotechnical sampling and testing services.

Appendix A provides WT's field reports of daily construction activities and a summary of the geotechnical tests performed for the project.

The following sections of this document describe the construction activities and quality control procedures implemented during construction of the radon attenuation layer, erosion protection cover and surface water controls. Copies of the geotechnical test results and design evaluations for minor field modifications are provided in the appendices.

## 2.0 RADON ATTENUATION LAYER

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The radon attenuation layer over the Central Cell consists of 21 inches of compacted soil and is designed to reduce the long-term radon flux from the underlying tailings to 20 picoCuries per square meter per second (pCi/m<sup>2</sup>/sec). The 21-inch layer consists of the soil cover placed during interim stabilization activities in 1990 and 1991 (WT, 1991, and Canonie, 1992b) plus the final lift of soil added during this phase of reclamation activities.

The Reclamation Plan (Canonie, 1991) design specified only 18 inches of compacted soil for the radon attenuation layer. However, radon exit flux measurements conducted after completion of interim stabilization indicated that some areas of the Central Cell had higher than anticipated radon flux values. To compensate for these higher flux values, the thickness of the radon attenuation layer was increased from 18 to 21 inches in the Central Cell. Section 2.2.1 and Appendix B provide the details of the soil radon barrier evaluation performed in making this field modification.

The soil radon attenuation layer constructed during final reclamation activities was placed, compacted and tested as described below.

### 2.1 Construction Methods and Materials

Prior to placement of the final lift of the radon attenuation cover, the Central Cell interim soil cover was grubbed of vegetation using scrapers and a motor grader. The grubbing removed an average of approximately 3 inches of soil from the top of the existing 12-inch interim cover, leaving an average of 9 inches of compacted soil cover in place. The top of the remaining interim cover was then scarified and moisture conditioned prior to placing the final soil cover to provide for adequate bonding between the interim and final soil covers. The thickness of the final cover averaged 12 inches, thereby bringing the total thickness of the radon attenuation cover to 21 inches.

The soil used to construct the final lift of the radon attenuation cover was obtained from the Borrow Pit No. 2 soil stockpile (Sheet 4), which is located immediately south of the backfilled borrow pit. The soil within the stockpile ranges from a silty clay to a sandy lean clay and meets the soil classification requirements specified on Figure B-1 of the technical specifications presented in the Reclamation Plan. The soil was excavated and transported to the Central Cell area using scrapers. Fine grading of the soil cover was performed using a motor grader. This grading is called "blue topping" in the field reports (Appendix A) in reference to the blue grade stakes used to designate final cover elevations.

The soil cover was conditioned to meet construction specifications by adding water and compacting. This process consisted of scarifying the soil with a roame plow and/or motor grader and spraying water on top of the soil using a water wagon. A sheepsfoot compactor was used to obtain primary compaction. Afterwards the top of the soil layer was sealed using a smooth-drum roller.

The total volume radon attenuation cover placed over the Central Cell, excluding swale areas, was approximately 54,000 cubic yards (cy). This estimate is based on 33.4 acres of Central Cell tailings area and an average final soil cover of 12 inches. The radon attenuation cover placed in the swale areas (3.2 acres) was inspected and tested separately as described in Section 4.0 of this report. The 54,000 cy of soil cover was placed, moisture conditioned and compacted in 20 work days between June 21 and July 31, 1994, at an average rate of 2,700 cy per work day.

## 2.2 Specifications and Testing

Construction specifications for placement of the radon attenuation cover as stipulated in the Reclamation Plan are listed below. Adherence to these specifications was maintained through strict survey control and geotechnical testing of soil properties and field density.

1. A total of 18 inches of soil cover shall be placed over the regraded tailings.
2. Soil used for the cover shall be clays, silts and fine-grained sands which fall within the gradation envelope shown on Figure B-1 of Appendix B.
3. The soil cover over the tailings is to be compacted to a minimum of 95 percent of the maximum dry density at a moisture content of within 2 percent above the optimum moisture content as determined by the Standard Proctor Compaction Method [American Society for Testing and Materials (ASTM) D 698].
4. The areas surrounding the tailings that are incorporated into the reclamation work, such as drainage swales in native soils, will be excavated and regraded in accordance with the construction drawings, and compacted to a minimum of 90 percent of the maximum dry density as determined by the Standard Proctor Compaction Method (ASTM D 698).

A field modification consisting of increasing the total soil cover thickness from 18 to 21 inches was also implemented. This modification was based on evaluations of as-built parameters for the interim cover using the NRC-approved RAECOM radon attenuation model as described in Section 2.2.1 below. Subsequent sections discuss the survey control and geotechnical testing performed to verify that the radon attenuation cover was constructed in accordance with specifications.

### **2.2.1 Field Modification**

Radon exit flux measurements conducted after completion of interim stabilization indicated that some areas of the Central Cell had higher than anticipated radon flux values. To identify the source of the elevated radon flux, samples of the regraded coarse tailings and interim cover were collected to a depth of 7 feet and tested for radium-226, emanation coefficients, diffusion coefficients and physical parameters. The results, presented in Appendix B, indicated that fine tailings with higher radium-226 activity levels had been mixed in with the coarse tailings during regrading in portions of the Central Cell.

The soil radon barrier and the exit flux were reevaluated by inputting the data from the sampling program into the RAECOM model. The modeling results indicated that the average radon flux for the entire tailings disposal area would remain below 20 pCi/m<sup>2</sup>/sec without modifying the radon attenuation layer design thickness of 18 inches of soil (i.e., 1 foot of interim cover plus an additional 6 inches of final cover). To provide an additional margin of safety however, the soil cover was increased by 3 inches to a total of 21 inches. This resulted in an average calculated exit flux of 17.6 pCi/m<sup>2</sup>/sec in the RAECOM model.

### **2.2.2 Survey Control**

During previous reclamation activities in 1990, the top of the Central Cell tailings was graded to the design slope and 12 inches of interim soil cover (i.e., the initial lift of the radon attenuation cover) were placed and compacted in accordance with the construction drawings and specifications (WT, 1991). To insure that the final lift of soil cover was applied uniformly and that the required total cover thickness of 21 inches was achieved, the Central Cell was surveyed on a 100-foot by 100-foot grid system both prior to and after grubbing of vegetation. Subtraction of the second set of surveyed elevations from the initial set of elevations determined the thickness of soil removed by grubbing. The thickness of the soil removed averaged 3 inches. A final lift of soil cover averaging 12 inches was then added to the remaining 9-inch interim cover, thereby bringing the total thickness of the radon attenuation cover to 21 inches.

Elevations for the final lift were established in the field by placing wooden stakes at each grid location with the top-of-grade marked by a blue ribbon. These top-of-grade stakes were checked frequently and reestablished as necessary during placement of the final soil cover.

### **2.2.3 Soil Properties**

The suitability of the borrow soil for use in the radon attenuation cover was verified by performing gradation and Atterberg tests at 67 locations distributed uniformly over the radon attenuation cover as the soil was placed. All of the tests indicated that the soil

was within the specified gradation limits and met soil classification requirements. The testing frequency of 1 gradation test for every 800 cy of soil (i.e., 54,000 cy/67 gradation tests) exceeded the specified test rate of 1 test for every 1,000 cy placed. The laboratory reports documenting the results of the gradation and Atterberg tests for the radon attenuation layer are presented in Appendix C.

#### **2.2.4 Field Density**

In-place field moisture-density testing of the soil cover was conducted using the sand-cone method (ASTM D 1556). A total of 138 locations distributed uniformly over the tailings soil cover were tested, of which 134 met the required density and moisture specifications on the initial test. The remaining four locations were recompacted until additional testing confirmed that required minimum moisture-density standards were met. The test frequency of one moisture-density test for every 390 cy of soil (i.e., 54,000 cy/138 moisture-density tests) exceeded the specified test rate of one test for every 500 cy placed. The laboratory reports documenting the results of the sand cone testing are presented in Appendix D.

The average dry density and moisture content of the 138 passing tests were 116.4 pounds per cubic foot (pcf) and 14.7 percent, respectively. This average dry density and in-situ moisture content are higher than the values used in the Reclamation Plan design of 108.0 pcf and 12.9 percent, respectively. The average values from the testing correspond to an in-situ porosity of 0.28 and a saturation of 98 percent, as compared to the design values of 0.33 and 68 percent for porosity and saturation, respectively. The higher density and degree of saturation of the radon attenuation layer will provide improved radon attenuating properties as compared to the cover modeled in the Reclamation Plan.

#### **2.2.5 Proctor Tests**

A total of 22 Standard Proctor tests and 28 One-Point Proctor tests were conducted during completion of the radon attenuation cover over the Central Cell. The results of these tests are presented in Appendix E. The Standard Proctor tests were performed in

accordance with ASTM D 698A to determine the relationship between moisture and density in the soil over a range of moisture and density values. The One-Point Proctor tests were performed in accordance with testing procedures in ASTM D 698 and were performed to verify a moisture-density relationship at a specific moisture content. When a moisture-density curve was found for which the One-Point Proctor could be plotted on or near the curve, that moisture-density curve was considered to be representative of the soil tested.

The Reclamation Plan specifies that Standard Proctor tests be conducted for every 15 field density tests, and One-Point Proctor tests be performed for every 5 field density tests. Based on 138 test locations, this specification was adequately met with 1 Standard Proctor test performed for every 6.3 field density tests, and 1 One-Point Proctor test performed for every 4.9 field density tests.

### 3.0 EROSION-PROTECTION COVER

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The erosion-protection cover consists of 6 inches or more of a soil/rock matrix placed on top of the radon attenuation soil cover. The soil/rock matrix is designed to promote surface water runoff and protect the underlying radon attenuation soil layer from wind and water erosion. The erosion-protection cover was constructed over the entire area of the Central Cell except for the drainage swales which were riprapped in accordance with the Reclamation Plan (refer to Section 4.0 for drainage swale construction). Construction methods, materials and testing for the erosion-protection cover are described below.

#### 3.1 Construction Methods and Materials

The soil/rock matrix was constructed by placing a minimum of 3 inches of rock mulch over the completed radon attenuation soil cover, then placing a 4- to 6-inch layer of random soil material over the rock mulch. The soil was then forced into the rock mulch voids to form the soil/rock matrix.

The rock mulch consisted of a basaltic aggregate with a  $D_{50}$  of 1.5 inches. This same rock was also used as riprap in the Runoff Control Ditch and portions of the drainage swales described in Section 4.0. Construction of the rock mulch layer consisted of dumping the rock directly from haul trucks and scrapers onto the top of the completed radon attenuation cover in a series of wind rows. A motor grader was then used to spread the rock to the required thickness of 3 inches or greater.

The 4 to 6 inches of soil placed on top of the rock mulch were obtained from the Borrow Pit No. 2 stockpile. This soil was excavated, transported and placed using scrapers. Afterwards, a pneumatic compactor was used to force the soil into the underlying rock mulch, thereby creating the required soil/rock matrix. Finish grading of the top of the completed cover was performed using a motor grader.

### 3.2 Specifications and Testing

Construction specifications for construction of the erosion protection cover as stipulated in the Reclamation Plan include:

1. The rock mulch is to be dense limestone or other suitable rock and is to meet the following criteria: specific gravity = 2.6 or greater; absorption = 1.8 percent or less; and sodium sulfate loss = 10 percent or less. Alternatively, the rock source shall have a minimum score of 50 using the scoring criteria shown in Table D1 of the August 1990 Staff Technical Position (STP), "Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites" or equivalent, and shall be oversized, if needed, in accordance with the procedures provided in Appendix D of the August 1990 STP.
2. The rock mulch is to be placed a minimum of 3 inches thick and have a nominal  $D_{50}$  of 1.5 inches with the following size gradations: 100 percent passing a 3-inch screen; 8 to 37 percent passing a 1-inch screen; and, 0 to 8 percent passing a No. 4 screen.
3. The soil for the soil/rock matrix is to be a clayey sand to sandy clay with no more than 25 percent of the soil greater than 1/2-inch in diameter. The soil is to be placed in a 4- to 6-inch lift over the rock mulch and compacted a minimum of 2 inches into the rock mulch. After compaction, the top of the soil layer is to be a minimum of 3 inches and a maximum of 4.5 inches above the rock mulch.

Adherence to the specifications was maintained through geotechnical testing of the rock mulch and by measuring the rock mulch thickness, soil layer thickness, and the depth of soil penetration into the rock mulch as described below.

#### 3.2.1 *Rock Mulch Quality*

The rock used to construct the rock mulch was a dense basaltic rock with durability characteristics superior to the criteria stipulated in the technical specifications. A total

of 3 tests were performed to verify the rock's quality. The test results are presented in Appendix F. The average test values for the rock included a specific gravity of 2.75, an absorption of 1.8 percent, a sodium sulfate loss of 2.1 percent, and an L.A. Abrasion percentage of 4.58. The rock quality score for the 3 tests, using the scoring criteria provided in the August 1990 STP, ranged from 82 to 92 with an average score of 86.

The specifications require that a series of rock durability tests be performed initially and for each additional 10,000 cy of rock placed. More frequent testing is also required if the rock characteristics in the rock borrow source vary significantly from the rock that was previously tested. United Nuclear records show that a total of 19,220 cy of rock was placed as rock mulch and riprap during final reclamation of the Central Cell. No change in rock characteristics was noted by the quality control technician. Therefore, the rock quality testing rate of 1 series of tests per 6,400 cy of rock placed (i.e., 19,220 cy/3 tests) exceeded the test rate required by the specifications.

### **3.2.2 Rock Mulch Thickness and Size Gradation**

The basaltic rock with a  $D_{50}$  of 1.5 inches that was used to construct the rock mulch and to riprap the surface water control structures was subjected to sieve analyses to determine if gradation requirements were being met. A total of 7 samples were tested at the quarry and 2 at the site prior to spreading. The 4 initial samples collected and tested at the quarry did not meet gradation specifications and this material was not used. The final 3 tests at the quarry and the 2 samples collected and tested at the site all met the gradation requirements. The results of the sieve analysis testing are presented in Appendix G.

The thickness of the rock mulch was checked and recorded on 50-foot centers over the entire extent of the Central Cell tailings area. Areas having a measured thickness of less than 3 inches or greater than 5 inches were regraded by Nielson's and then rechecked to verify that a rock mulch thickness between 3 and 5 inches had been achieved. The recorded measurements are presented in Appendix H.

### 3.2.3 *Soil Thickness and Penetration*

The soil used to construct the soil/rock matrix was obtained from the Borrow Pit No. 2 soil stockpile. Gradation analyses performed for constructing the radon attenuation barrier (see Appendix C) indicates that this soil ranges from silty clay to sandy lean clay with an average of only 1 to 2 percent of the material greater than 1/2-inch in diameter. This soil is slightly finer than the clayey sand to sandy clay called for in the specifications. Use of the finer soil is an improvement on the design specification because it allows for greater penetration of the soil into the rock mulch and increases the cohesion of the soil/rock matrix.

The thickness of the soil layer and the depth of penetration of the soil into the rock mulch was checked on a uniform basis over the entire extent of the soil/rock matrix cover. The measurements were performed on staggered 100-foot centers. The results of the measurements are presented in Appendix I and show that the soil layer above the rock mulch was a minimum of 3 inches in all areas, and a maximum of 4.5 inches in most areas. In some areas adjacent to the branch swales, the soil layer thickness was increased above 4.5 inches to provide adequate surface drainage. The depth of soil penetration into the rock mulch exceeded 2 inches in all areas.

## 4.0 SURFACE WATER CONTROL STRUCTURES

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Surface water control structures associated with the Central Cell include:

1. Branch Swales A, B, C, D and H
2. Runoff Control Ditch

Sheets 2 and 3 show the design details for these structures. Sheet 4 shows the as-built conditions for those portions completed during Central Cell reclamation in 1994.

Branch Swales A, B, C, D and H are shallow, riprapped ditches located on top of the Central Cell designed to convey runoff from the reclaimed tailings area. The North Cell Drainage Channel, constructed in 1993, is located along the east side of the North Cell (see Sheet 2) and is designed to carry the runoff from North Cell Branch Swales E, F and G and Central Cell Branch Swales A, B, C and D. Swale H is designed to carry runoff to the South Cell Drainage Channel, which will be constructed in the future.

In conjunction with Central Cell reclamation activities, work also continued on the upper reach of the Runoff Control Ditch (see Sheet 4), located west of the tailings area. This ditch is designed to intercept runoff from the west embankment of the North and Central Cells. The lower reach (i.e., southern portion) of the Runoff Control Ditch is scheduled to be completed in subsequent years.

### 4.1 Branch Swales A, B, C, D and H

Branch Swales A, B, C, D and H were constructed on top of the Central Cell at the locations shown on Sheet 4. These swales are designed to collect surface water runoff while minimizing erosion on the rock mulch cover. As shown on Sheet 3, the swales consist of shallow, trapezoidal ditches with 3H/1V sideslopes. Both the bottom and sideslopes of the swales are armored with riprap.

Sheet 4 presents the extent of swale completion at the end of 1994 construction activities. Swale D was completed in 1994 while Swales A, B, C and H were partially completed. Swales A, B and C are designed to extend further to the east and north across reclaimed Borrow Pit No. 2, and Swale H will extend to the south toward the present location of the evaporation ponds.

#### **4.1.1 Construction Methods and Materials**

The initial step in swale construction was to excavate down to the required subgrade elevation. Swale excavation was performed using scrapers and included removal of the underlying material along the length of each swale. The swales were excavated to a designed bottom width of 10 or 20 feet with 3H/1V sideslopes. A motor grader was used for fine grading to achieve the required final subgrade elevations. During excavation of the swales, the following 3 types of subgrade material were found below the interim cover:

1. Fill soil which had been placed during interim reclamation activities to achieve the design grade for the base of the interim soil cover.
2. Native soils located along the southern edge of the Central Cell (i.e., Swales A and B located beyond the extent of the tailings area).
3. Coarse tailings sands which were used as the initial cover over the fine tailings sands. These coarse tailings, when encountered, were overexcavated and replaced with fill soil from the Borrow Pit No. 2 soil stockpile. The excavated tailings were disposed of in Borrow Pit No. 2 in compacted lifts as specified in the Reclamation Plan.

The soil comprising the subgrade was tested to verify its in-place density. Any areas not meeting density requirements were subjected to additional compaction until the required density was achieved. After completion of the subgrade, the radon attenuation layer was placed in 2 lifts over the bottom and sideslopes of Swales C, D and H. The total thickness of the radon attenuation layer in these swales, including the interim cover,

measures 21 inches. Each lift of the radon attenuation layer was conditioned by adding water and compacted with a sheepsfoot compactor followed by a smooth-drum pneumatic roller. Placement of a radon attenuation layer was not required in Swales A and B because they were constructed in native soils and bedrock south of the tailings area.

Prior to installation of the riprap, a 3-inch-thick bedding layer having a  $D_{50}$  of 0.02 inch was placed in the swales. This bedding layer or filter blanket is designed to prevent undercutting and piping beneath the riprap during surface runoff events. An additional 3-inch bedding layer having a  $D_{50}$  of 0.35 inch was placed in Swale H in accordance with the design specifications. All bedding layers were placed using a front-end loader and spread to a uniform thickness using hand rakes. A minimum of 3 inches of riprap was then placed on top of the bedding material in Swales A, B, C and D. A minimum of 6 inches of riprap was placed in Swale H. The riprap was placed using a front-end loader and hand rakes.

#### **4.1.2 Specifications and Testing**

Construction specifications for construction of the branch swales as stipulated in the Reclamation Plan include:

1. The swales are to be constructed as shown on Sheets 2 and 3 and in accordance with the design parameters listed in Table 2.
2. The subgrade is to be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 698.
3. A total of 18 inches of soil cover shall be placed over the subgrade within the tailings area. This soil cover is to have gradation characteristics within the gradation envelope shown on Figure B-1 (see Appendix B) and compacted to a minimum of 95 percent of the maximum dry density at a moisture content of within 2 percent above the optimum moisture content as determined by ASTM D 698.

4. A minimum 3-inch-thick bedding layer consisting of well-graded crushed rock with a  $D_{50}$  of 0.02 inch is to be placed on the bottom and sideslopes of each swale.
5. A second bedding layer consisting of a minimum 3-inch thickness of well-graded crushed rock with a  $D_{50}$  of 0.35 inch is to be placed on the bottom and sideslopes of Swale H.
6. A minimum of 3 inches of riprap consisting of durable rock with a  $D_{50}$  of 1.5 inches is to be placed on top of the bedding layer in Swales A, B, C and D.
7. A minimum of 6 inches of riprap consisting of durable rock with a  $D_{50}$  of 3 inches is to be placed on top of the bedding layer in Swale H.

Adherence to the specifications was maintained through strict survey control, geotechnical testing of soil and rock properties, and measuring of in-place densities and depths of cover. As discussed in Section 2.2, a field modification consisting of increasing the total soil cover from 18 to 21 inches was also implemented for the Central Cell of the tailings area and associated branch swales.

#### **4.1.2.1 Survey Control**

Survey control for construction of the branch swales consisted of installing grade stakes through the middle of each swale and at 10-foot offsets on each side of the swale. Grade stakes were installed on 100-foot centers and cuts and fills were determined by subtracting the thickness of the radon attenuation layer (where appropriate), bedding layer and riprap from the final required elevation. Surveying was performed within a precision level of plus or minus 0.05 foot.

After the initial excavation was completed, each swale was resurveyed and blue grade stakes were installed indicating the cuts and fills required to achieve final grade elevations. Installation of these "blue topped" finish grade stakes were necessary because the swales slopes are extremely flat having average grades of less than 1

percent. After the finish-grading was completed, the elevations of the subgrade were checked at each survey station to verify that positive drainage was being maintained.

Swales C, D and H were again surveyed after placement of the radon attenuation layer. This survey served two purposes: it verified that a minimum of 21 inches of radon attenuation soil cover had been placed, and that positive drainage was being maintained in each swale. Surveying of the bedding layer and riprap in each swale was not necessary because the thickness of these components was verified by measurements made on 100-foot centers as described in Sections 4.1.2.4 and 4.1.2.5.

#### **4.1.2.2 Subgrade Density Testing**

In-place field density testing of the swale subgrade was conducted using the sand cone method (ASTM D 1556). The subgrade consisted of both fill soils and native soils. A total of 32 locations spaced uniformly over the 5 swales were tested, of which 31 met the required density of 90 percent of the maximum dry density as determined by ASTM D 698 on the initial test. The remaining location was subjected to additional compaction and met density requirements on the retest.

The Reclamation Plan specifies that Standard Proctor tests be conducted for every 15 field density tests, and One-Point Proctor tests be performed for every 5 field density tests. A total of 10 Standard Proctor tests were performed on the subgrade material resulting in a testing frequency of 1 Standard Proctor test performed for every 3.3 field density tests. No One-Point Proctor tests were performed. The increased frequency of the Standard Proctor tests more than compensates for the lack of One-Point Proctor testing because the Standard Proctor tests are more valuable in monitoring soil compaction characteristics compared to One-Point Proctor testing.

The results of the Standard Proctor and field density tests for the subgrade material are presented in Appendix J.

#### **4.1.2.3 Radon Attenuation Layer Testing**

As required in the Reclamation Plan, the radon attenuation layer was placed over Swales C, D and H. Swales A and B did not require a radon attenuation layer because of their location beyond the limits of tailings. Construction of the radon attenuation layer over Swales C, D and H required the placement and compaction of approximately 9,000 cy of soil from the Borrow Pit No. 2 soil stockpile. The volume of soil used in constructing the radon attenuation layer in these swales was estimated by multiplying the area of Swales C, D and H (3.2 acres) by the depth of the compacted soil cover (21 inches). After soil placement and compaction, the radon attenuation layer was tested to verify that the soil met gradation requirements and that density and moisture specifications were also being met. These test results are summarized below and presented in detail in Appendix J.

A total of 14 gradation tests were performed on the soils, all of which were within the gradation requirements illustrated on Figure B-1 in Appendix B of the Reclamation Plan. The test frequency of 1 test per 640 cy of soil placed (i.e., 9,000 cy/14 tests) exceeded the specified test frequency of 1 test per 1,000 cy of soil placed.

Thirty-seven in-place field moisture-density tests of the soil cover in Swales C, D and H were performed using the sand cone method (ASTM D 1556). These tests were spaced uniformly over the swales and, based on the Standard Proctor results, 26 of the tests met the requirement for a minimum of 95 percent of the maximum dry density at a moisture content of within 2 percent above the optimum moisture content. The remaining 11 locations were subjected to additional compaction and conditioning, and met the density/moisture requirements on the retest. The test frequency of 1 test for every 243 cy of soil (i.e., 9,000 cy/37 tests) exceeded the specified test frequency of one test for every 500 cy of soil.

A total of 9 Standard Proctor tests and 1 One-Point Proctor test were conducted during completion of the radon attenuation cover over Swales C, D and H. The test frequency of 1 Standard Proctor test per 4.1 field density tests exceeded the specified frequency of 1 Standard Proctor test for every 15 field density tests. The 1 One-Point Proctor test

was less than the specified frequency of 1 test for every 5 field density tests but the higher frequency for the Standard Proctor tests made such testing redundant.

#### **4.1.2.4 Bedding Layer Testing**

Bedding material was placed at a minimum thickness of 3 inches on the bottom and sides of all the swales. The bedding material consisted of crusher fines from Hamilton's stockpile and had a nominal  $D_{50}$  of 0.02 inch. The bedding layer thickness was verified in the field by measuring the depth of the bedding layer on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix J and show that the bedding layer ranged from 3 to 3.5 inches thick in all 5 swales.

In accordance with the Reclamation Plan, a second bedding layer was placed on top of the  $D_{50}$  0.02-inch bedding layer in Swale H. The second layer of bedding material consisted of crushed basaltic aggregate from Hamilton's pit and had a nominal  $D_{50}$  of 0.35 inch. A minimum of 6 inches total of bedding material in Swale H was verified in the field by measuring the total depth of both bedding layers on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix J and show that the total depth of the bedding layers ranged from 6 to 7.5 inches thick in Swale H.

Four sieve analyses were performed to determine the gradation characteristics of the  $D_{50}$  0.02-inch bedding material used in constructing the branch swales and the upper reach of the Runoff Control Channel. The results of the sieve analyses are presented in Appendix K and confirm that the bedding material met the gradation specifications of 100 percent passing a 3-inch screen, 85 to 100 percent passing a 3/4-inch screen, 65 to 100 percent passing a No. 4 screen, 47 to 94 percent passing a No. 10 screen, 23 to 70 percent passing a No. 40 screen, and 15 to 30 percent passing a No. 200 screen.

Five sieve analyses were performed to determine the gradation characteristics of the  $D_{50}$  0.35-inch bedding material used in constructing Branch Swale H. The results of the sieve analyses are presented in Appendix K and the blended values confirm that the bedding material met the gradation specifications of 65 to 100 percent passing a 3-inch

screen, 43 to 80 percent passing a 3/4-inch screen, 22 to 60 percent passing a No. 4 screen, 15 to 38 percent passing a No. 10 screen, 5 to 12 percent passing a No. 40 screen, and 0 to 10 percent passing a No. 200 screen.

#### **4.1.2.5 Riprap Testing**

Two sizes of riprap were used during construction of the branch swales associated with the Central Cell. In accordance with the reclamation plan, riprap with a  $D_{50}$  of 1.5 inches was used in Branch Swales A, B, C and D, and a riprap with a  $D_{50}$  of 3 inches was used in branch Swale H.

##### 1.5-Inch Riprap

Riprap consisting of a basaltic rock with a  $D_{50}$  of 1.5 inches was placed at a minimum thickness of 3 inches on the bottom and sides of Swales A, B, C, and D. Riprap thickness was verified by measuring the depth of the riprap on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix J and show that all measurement were in excess of the 3-inch minimum.

The rock used for the riprap was the same basaltic rock used to construct the rock mulch. As discussed in Section 3.2.1, this rock has superior durability characteristics with an average rock quality score of 86. Sieve analyses of this rock were also performed as discussed in Section 3.2.2, to maintain the size gradation in conformance with the specifications. Rock quality and gradation test results for the riprap are provided in Appendices F and G, respectively.

### Three-Inch Riprap

In accordance with the specifications of the reclamation plan, riprap consisting of a basaltic rock with a  $D_{50}$  of 3 inches was placed at a minimum thickness of 6 inches on the bottom and sides of Swale H. Riprap thickness was verified by measuring the depth of the riprap on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix J and show that all measurements met or exceeded the 6-inch minimum.

The rock used as riprap in Swale H was a dense basaltic rock with durability characteristics superior to the criteria stipulated in the technical specifications. The specifications for rock quality characteristics of the  $D_{50}$  3-inch rock are identical to those for the  $D_{50}$  1.5-inch rock outlined in Section 3.2. One test was performed to verify the rock's quality. The test results are presented in Appendix F. The test values for the rock included a specific gravity of 2.73, an absorption of 1.48 percent, a sodium sulfate loss of 0.3 percent, and an L.A. Abrasion percentage of 4.72. The rock quality score for the test, using the scoring criteria provided in the August 1990 STP, was 92.

The specifications require that a series of rock durability tests be performed initially and for each additional 10,000 cy of rock placed. More frequent testing is also required if the rock characteristics in the rock borrow source vary significantly from the rock that was previously tested. United Nuclear records show that a total of 630 cy of rock have been placed as riprap in Swale H. No change in rock characteristics was noted by the quality control technician. Therefore, the rock quality testing rate meets the test rate required by the specifications.

The basaltic rock with a  $D_{50}$  of 3 inches that was used to riprap Swale H was also subjected to a sieve analysis to determine if gradation requirements were being met. One sample was tested and met the following size gradations: 100 percent passing a 6-inch screen; 45-80 percent passing a 4-inch screen; and 0-22 percent passing a 1-inch screen. The results of the sieve analysis testing are presented in Appendix G.

## 4.2 Upper Reach of Runoff Control Ditch

The Runoff Control Ditch is located immediately west of the tailings disposal area as shown on Sheet 4. During 1994, construction of the upper reach of the Runoff Control Ditch continued in a southerly direction from Stations 12+00 to 22+75. The upper reach of the Runoff Control Ditch from Stations -2+87 to 12+00 was completed in 1993 as part of the North Cell Final Reclamation. The ditch is designed to collect surface water runoff from the west embankment of the tailings area. As shown on Sheet 3, the Runoff Control Ditch is 2 feet deep with a 10-foot-wide bottom and 3H/1V sideslopes.

### 4.2.1 Construction Methods and Materials

The Runoff Control Ditch was excavated down to the required subgrade elevation using scrapers and dozers. A motor grader was used for fine grading to achieve the required final subgrade elevations. The native soils at the bottom and sides of the ditch were then compacted as necessary with a sheepsfoot compactor and a smooth drum roller to achieve the required soil density.

After the subgrade met the in-place density specifications, a minimum of 3 inches of bedding material having a  $D_{50}$  of 0.02 inch was placed in the ditch using a front-end loader. The bedding material was spread using hand rakes. A minimum of 3 inches of riprap was then placed on top of the bedding layer using the same methods.

### 4.2.2 Specifications and Testing

The specifications for construction of the upper reach of the Runoff Control Ditch as stipulated in the Reclamation Plan include:

1. The ditch is to be constructed as shown on Sheets 2 and 3.
2. The subgrade is to be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 698.

3. A minimum 3-inch-thick bedding layer consisting of well-graded crushed rock with a  $D_{50}$  of 0.02 inch is to be placed on the bottom and sideslopes.
4. A minimum of 3 inches of riprap consisting of durable rock with a  $D_{50}$  of 1.5 inches is to be placed on top of the bedding layer.

Adherence to the specifications was maintained through strict survey control, geotechnical testing of soil and rock properties, and measuring of in-place densities and depths of cover.

#### **4.2.2.1 Survey Control**

Survey control for construction of the upper reach of the Runoff Control Ditch from Station 12 + 0 to Station 22 + 75 consisted of installing grade stakes through the middle of the ditch and at 10-foot offsets on each side of the ditch. The grade stakes were installed on 100-foot centers and cuts and fills for the ditch bottom were determined by subtracting the profile elevations shown on Sheet 3 from the existing elevations. Cuts and fills to achieve the 3H/1V sideslopes of the ditch and 5H/1V slope of the protective bench were also marked at each station. Surveying was performed within a precision level of plus or minus 0.05 foot.

After the excavation was completed to the subgrade, the ditch was surveyed again to verify that the required grades had been achieved. Surveying of the bedding layer and riprap was not necessary because the thickness of these components were verified by measurements made on 100-foot centers as described in Sections 4.2.2.3 and 4.2.2.4.

#### **4.2.2.2 Subgrade Density Testing**

In-place field density testing of the ditch subgrade was conducted using the sand cone method (ASTM D 1556). A total of 6 locations spaced uniformly over the ditch bottom and east and west berms were tested, all of which met the required density of 90 percent of the maximum dry density as determined by ASTM D 698.

The Reclamation Plan specifies that Standard Proctor tests be conducted for every 15 field density tests, and One-Point Proctor tests be performed every 5 field density tests. A total of 2 Standard Proctor tests were performed on the subgrade material resulting in a testing frequency of one Standard Proctor test performed for every 3 field density tests. No One-Point Proctor tests were performed because the higher frequency for the Standard Proctor tests made such testing redundant.

The results of the Standard Proctor and field density tests for the subgrade material are presented in Appendix L.

#### **4.2.2.3 Bedding Layer Testing**

Bedding material was placed at a minimum thickness of 3 inches on the bottom and sides of the ditch prior to installation of riprap. The bedding material consisted of crusher fines from Hamilton's stockpile and had a nominal  $D_{50}$  of 0.02 inch. The bedding layer thickness was verified in the field by measuring the depth of the bedding layer on the swale bottom and sides every 100 feet. The results of these measurements are presented in Appendix L and show that the bedding layer ranged from 3 to 4 inches thick over the entire length of the ditch.

Four sieve analyses were performed to determine the gradation characteristics of the bedding material used in constructing the branch swales and the upper reach of the Runoff Control Channel from Station 12+00 to Station 22+75. The results of the sieve analyses are presented in Appendix K and confirm that the bedding material met the gradation specifications of 100 percent passing a 3-inch screen, 85 to 100 percent passing a 3/4-inch screen, 65 to 100 percent passing a No. 4 screen, 47 to 94 percent passing a No. 10 screen, 23 to 70 percent passing a No. 40 screen, and 15 to 30 percent passing a No. 200 screen.

#### **4.2.2.4 Riprap Testing**

Riprap consisting of a basaltic rock with a  $D_{50}$  of 1.5 inches was placed at a minimum thickness of 3 inches on the bottom and sides of the ditch. Riprap thickness was

verified by measuring the depth of the riprap every 100 feet. The results of these measurements are presented in Appendix L and show that all measurements were in excess of the 3-inch minimum.

The rock used for the riprap was the same basaltic rock used to construct the rock mulch. As discussed in Section 3.2.1, Rock Mulch Quality, this rock has superior durability characteristics with an average rock quality score of 86. Sieve analyses of this rock were also performed as discussed in Section 3.2.2, Mulch Rock Thickness and Size Gradation, to maintain the size gradation in conformance with the specifications. Rock quality and gradation test results for the riprap are provided in Appendices F and G, respectively.

## 5.0 CLOSING REMARKS

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The Central Cell of the tailings disposal facility has been reclaimed in accordance with the specifications and construction drawings contained in the Reclamation Plan (Canonie, 1991). This reclamation included construction of the radon attenuation layer, erosion protection cover and surface water controls.

Canonie/Smith Environmental Technologies Corporation appreciates this opportunity to provide engineering services in summarizing information regarding work conducted during 1994 in the Central Cell Tailings Disposal Area at the Church Rock Facility. If you have any questions, please contact me at (303) 790-1747.

Respectfully submitted,



Frank J. Filas, P.E.  
Project Engineer

FJF/ca

## REFERENCES

## REFERENCES

## REFERENCES

Canonie Environmental Services Corp., 1990, "As-Built Construction Report, North Cell Interim Stabilization", prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

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

Canonie Environmental Services Corp., 1992a, "As-Built Report, South Cell Interim Stabilization", prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

Canonie Environmental Services Corp., 1992b, "As-Built Report Addendum, Central Cell Interim Stabilization", prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

Canonie Environmental Services Corp., 1994, "As-Built Report, North Cell Final Reclamation", prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

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

TABLES

## TABLES

**TABLE 1**  
**EARTHMOVING EQUIPMENT**

Equipment Type	Number
Caterpillar 633D Scrapers	3
Caterpillar 815B Sheepsfoot Compactor	1
Caterpillar D-8 Dozer	1
Caterpillar D-6 Dozers	2
Caterpillar Road Graders	2
Caterpillar 950B Front-End Loaders	2
Water Wagons	2
Euclid Pneumatic Roller Compactor	1
Caterpillar 825B Drumroller Compactors	2
Rock Haul-Trucks	3

**TABLE 2**  
**SWALES A, B, C, D AND H**  
**DESIGN PARAMETERS**

Parameter	Swale A	Swale B	Swale C	Swale D	Swale H
Total Length (ft)	2,600	3,600	3,400	3,200	2,550
Length Completed in 1994 (ft)	900	1,250	1,600	3,200	1,000
Slope (ft/ft)	0.0038	0.0083	0.0050	0.0028	0.0085
Bottom Width (ft)	10	20	10	10	20
Minimum Depth (ft)	2.0	2.0	2.0	2.0	2.5
Bedding Layer D <sub>50</sub> (in)	0.02	0.02	0.02	0.02	0.02 (Layer 1) 0.35 (Layer 2)
Bedding Layer Thickness (in)	3	3	3	3	3 (Layer 1) 3 (Layer 2)
Riprap D <sub>50</sub> (in)	1.5	1.5	1.5	1.5	3.0
Riprap Thickness (in)	3	3	3	3	6

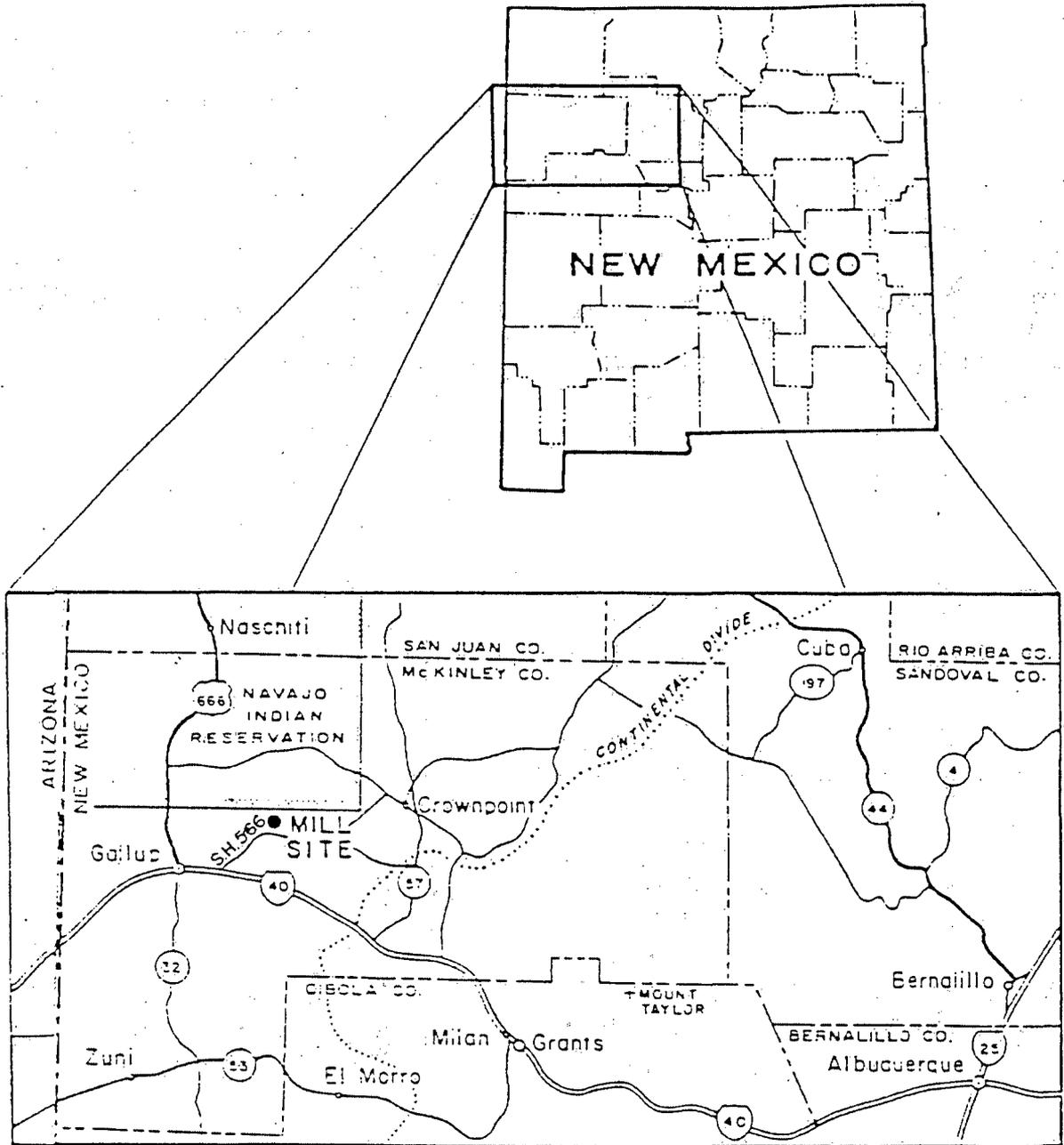
**Note:**

1. The sides of the swales are to be installed at a slope of 3H/1V.

## FIGURES

FIGURES

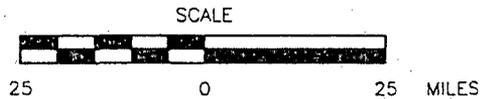
DRAWING NUMBER 86-060-A931



**NOTES:**

1. AFTER DRAWING No. RM86-060-A24 (FIGURE) 1-1 IN THE 1987 RECLAMATION PLAN (CANONIE, 1987b).

REFERENCE:  
URANIUM MILL LICENSE RENEWAL APPLICATION- ENVIRONMENTAL REPORT LICENSE No. NM-UNC-ML. UNC 1981.



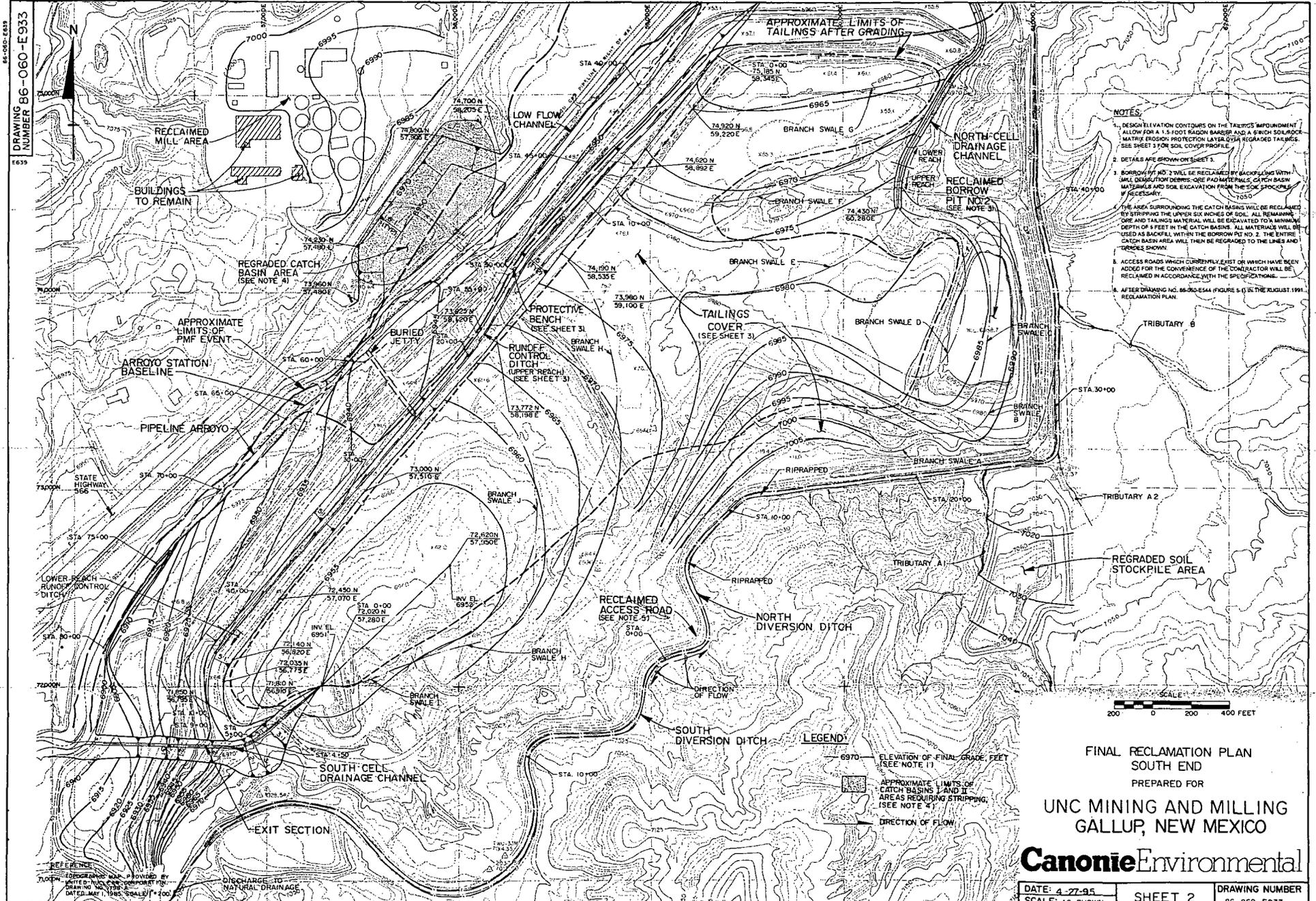
SITE VICINITY MAP  
PREPARED FOR  
UNC MINING AND MILLING  
GALLUP, NEW MEXICO

**Canonie** Environmental

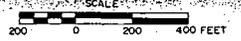
No.	8-30-95	ISSUED FOR AS-BUILT CONSTRUCTION REPORT CENTRAL CELL RECLAMATION	D.S.	<i>[Signature]</i>	DATE: 4-24-95	SHEET 1	DRAWING NUMBER 86-060-A931
	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY		

DRAWING NUMBER 86-060-E933

1839



- NOTES:**
- DESIGN ELEVATION CONTOURS ON THE TAILINGS IMPOUNDMENT SHALL ALLOW FOR A 1.5 FOOT MASON BARRIER AND A SWICH SOLARISE MATRIX EROSION PROTECTION LAYER OVER REGRADED TAILINGS. SEE SHEET 3 FOR SOIL COVER PROFILE.
  - DETAILS ARE SHOWN ON SHEET 5.
  - BORROW PIT NO. 2 WILL BE RECLAIMED BY BACKFILLING WITH WASTE DEBRIS FROM THE CATCH BASIN MATRICES, CATCH BASIN MATRICES AND SOIL EXCAVATION FROM THE SOIL STOCKPILE, IF NECESSARY.
  - THE AREA SURROUNDING THE CATCH BASINS WILL BE RECLAIMED BY STRIPPING THE LOWER SIX INCHES OF SOIL. ALL REMAINING SOIL AND TAILINGS MATERIAL WILL BE EXCAVATED TO A MINIMUM DEPTH OF 4 FEET IN THE CATCH BASIN. ALL MATERIAL WILL BE USED AS BACKFILL WITHIN THE BORROW PIT NO. 2. THE ENTIRE CATCH BASIN AREA WILL THEN BE REGRADED TO THE LINES AND DENSES 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-E544 (FIGURE 5-0) IN THE AUGUST 1991 RECLAMATION PLAN.

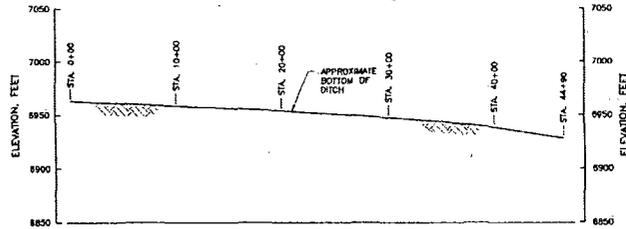


FINAL RECLAMATION PLAN  
SOUTH END  
PREPARED FOR  
UNC MINING AND MILLING  
GALLUP, NEW MEXICO

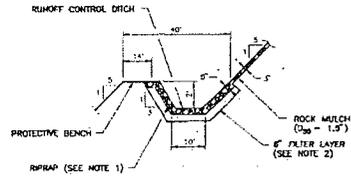
**Canonie**Environmental

DATE: 4-27-95	SHEET 2	DRAWING NUMBER 86-060-E933
SCALE: AS SHOWN		86-060-E939

REFERENCE:  
TOPOGRAPHIC MAP PROVIDED BY  
WHITE & HULL ENGINEERING CORPORATION  
DRAWING NO. 1785  
DATED MAY 1, 1985 (SCALE) 1" = 200'



PROFILE  
RUNOFF CONTROL DITCH

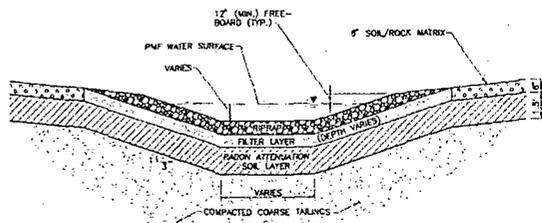


NOTES:

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.

TYPICAL SECTION  
RUNOFF CONTROL DITCH

(LOOKING NORTHEAST)  
NOT TO SCALE

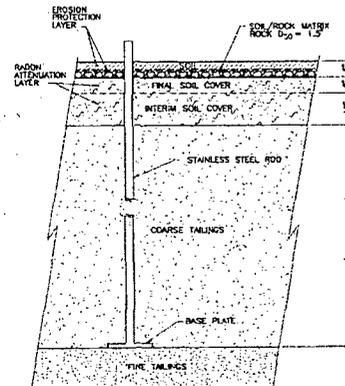


TYPICAL BRANCH SWALE

NOT TO SCALE

NOTE:

1. BRANCH SWALE DIMENSIONS AND RIPRAP SIZES PROVIDED IN TABLE 2.



SOIL COVER PROFILE

NOT TO SCALE

NOTES:

1. AFTER DRAWINGS 86-060-E588 (FIGURE 5-3) AND 86-060-E585 (FIGURE 5-4) IN THE AUGUST, 1991 RECLAMATION PLAN.
2. THE FINAL SOIL COVER WAS INCREASED FROM 6 INCHES TO 9 INCHES OVER THE CENTRAL CELL. THIS MINOR MODIFICATION TO THE PLAN WAS IMPLEMENTED AS A FIELD CHANGE.

SOIL COVER AND  
SURFACE WATER CONTROL DETAILS  
PREPARED FOR

UNC MINING AND MILLING  
GALLUP, NEW MEXICO

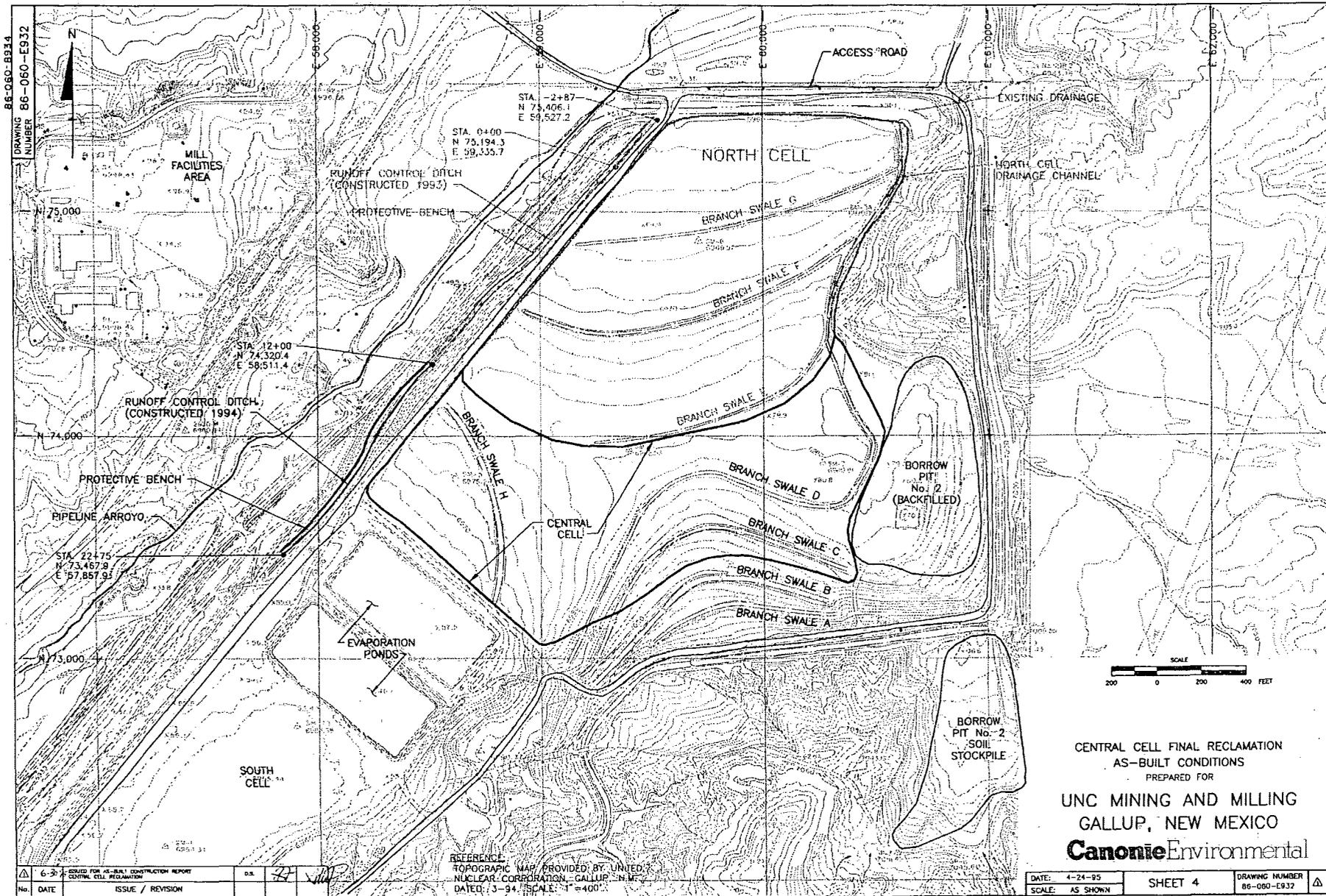
Canome Environmental

NO.	DATE	ISSUE / REVISION	DNW. BY	CRD. BY	AP'D. BY
1	4-24-95	REVISED FOR AS-BUILT CONSTRUCTION BEFORE RESUMING FULL SCALE RECLAMATION			

DATE	4-24-95	SHEET	3	DRAWING NUMBER	86-060-E930
SCALE	AS SHOWN				

86-060-B934

DRAWING NUMBER 86-060-E932



CENTRAL CELL FINAL RECLAMATION  
AS-BUILT CONDITIONS  
PREPARED FOR

UNC MINING AND MILLING  
GALLUP, NEW MEXICO

**Canonic** Environmental

6-2	ISSUED FOR AS-BUILT CONSTRUCTION REPORT	D.S.	2/2
No.	DATE	ISSUE / REVISION	

REFERENCE:  
TOPOGRAPHIC MAP PROVIDED BY UNITED  
NUCLEAR CORPORATION, GALLUP, N.M.  
DATED: 3-94, SCALE: 1"=400'

DATE: 4-24-95	SHEET 4	DRAWING NUMBER 86-060-E932
SCALE: AS SHOWN		

86-060-B934



APPENDIX A  
FIELD REPORTS AND SUMMARY OF GEOTECHNICAL TESTS

REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
Mill Tailing Reclamation Lab/Invoice No. 31440135  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 05/31/94 Reviewed By M.B. Date 05/31/94

Prime Contractor Nielson, Inc. Superintendent H. Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson, Inc. began excavating for swale H from station 31+00 to 21+00.

Unexpected site conditions: None

Sampling and/or testing performed: Observation and discussion.

Conformance of materials, operations and/or test results to project requirements: None

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received / from: Discussion with Ed Morales, UNC. concerning testing of central cell. Testing will be done on each 6" lift. The following will be done for the 1994 season. 235 compaction tests, 118 graduation and atterberg, 16 proctor curve and 47 - 1pt proctor points.

Weather: Clear

Technician / Engineer time on project today: 8

Number of visits today: 1 Time and date for next visit: 06/01/94

Client (5), Billing (1), Field file (1)

273 (10/2 sp0)

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
Mill Tailing Reclamation Lab/Invoice No. 31440184  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_  
Report By H. Kuebler/WT Date 06/01/94 Reviewed By M. Ben Date 04/01/94  
Prime Contractor Nielson, Inc. Superintendent H. Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson, Inc. continued excavating swale H.

Unexpected site conditions: None

Sampling and/or testing performed: Two proctor curves, three compaction tests on swale "H" native subgrade.

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

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received / from: None

Weather: Clear

Technician / Engineer time on project today: 8

Number of visits today: 1 Time and date for next visit: 06/02/94

Client (5), Billing (1), Field file (1)

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
Mill Tailing Reclamation Lab/Invoice No. 31440184  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 06/02/94 Reviewed By [Signature] Date 06/02/94

Prime Contractor Nielson, Inc. Superintendent H. Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson, Inc. completed excavating to native subgrade in swale "H" from station 21+00 to station 31+00.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction tests and visual observation.

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

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received / from: None

Weather: Clear

Technician / Engineer time on project today: 8

Number of visits today: 1 Time and date for next visit: 06/03/94

Client (5), Billing (1), Field file (1)

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

Mill Tailing Reclamation Lab/Invoice No. 31440184

Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 06/03/94 Reviewed By M. Ben Date 04/03/94

Prime Contractor Nielson, Inc. Superintendent H. Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson, Inc. began to place radon attenuation cover in swale "H".

Unexpected site conditions: None

Sampling and/or testing performed: Visual observation, laboratory testing.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: I traveled to Hamilton Brothers yard and obtained a gradation sample for .35 aggregate.

Weather: Clear

Technician / Engineer time on project today: 8

Number of visits today: 1 Time and date for next visit: 06/06/94

Client (5), Billing (1), Field file (1)

# REVIEW OF CONSTRUCTION

Project UNITED NUCLEAR CORPORATION Job No. 3144JK050  
CHURCH ROCK URANIUM MILL TAILING RECLAMATION Lab/Invoice No. 31440184  
CHURCH ROCK, NM Report No. \_\_\_\_\_ Date 06/06/94  
Report By H. KUEBLER/WT Date 06/06/94 Reviewed By M. B. Date 06/15/94  
Prime Contractor NEILSON Superintendent H. HAMPSON  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Neilson Inc. began to excavate swale "D" to constructi.  
subgrade elevation.

Unexpected site conditions: N/A

Sampling and/or testing performed: Visual observation and proctors values.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: H. Hampson stated he would need compaction tests for swale "D"  
on 06/07/94. He would not need compaction testing on swale "H" until later this week

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 06/07/94

CLIENT (5), BILLING (1), FIELD FILE (1).

REVIEW OF CONSTRUCTION

Project UNITED NUCLEAR CORPORATION Job No. 3144JK050  
CHURCH ROCK URANIUM MILL TAILING RECLAMATION Lab/Invoice No. 31440184  
CHURCH ROCK, NM Report No. Date 06/07/94  
Report By H. KUEBLER/WT Date 06/07/94 Reviewed By *[Signature]* Date 06/15/94  
Prime Contractor NEILSON Superintendent H. HAMPSON

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson, Inc. continued to excavated swale "D" to  
construction subgrade elevation.

Unexpected site conditions: N/A

Sampling and/or testing performed: Visual observation and compaction testing, proctor values.

Conformance of materials, operations and/or test results to project requirements: Compaction test met project requiremen

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received / from: Ed Morales, UNC stated field and laboratory testing shall be  
done on top of interm cover on swales and cell site. This will double testing.

Weather: Clear

Technician / Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 06/08/94

CLIENT (5), BILLING (1), FIELD FILE (1).

REVIEW OF CONSTRUCTION

Project UNITED NUCLEAR CORPORATION Job No. 3144JK050
CHURCH ROCK URANIUM MILL TAILING RECLAMATION Lab/Invoice No. 31440184
CHURCH ROCK, NM Report No. Date 06/08/94
Report By H. KUEBLER/WT Date 06/08/94 Reviewed By M. L. Date 06/15/94
Prime Contractor NEILSON Superintendent H. HAMPSON
Subcontractor Superintendent

Work in progress and/or completed since last report: Nielson, Inc. completed swale "D" to construction grade and began to place interm cover.

Unexpected site conditions: N/A

Sampling and/or testing performed: Compaction tests on construction subgrade material.

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

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received / from: N/A

Weather: Clear

Technician / Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 06/09/94

CLIENT (5), BILLING (1), FIELD FILE (1).

REVIEW OF CONSTRUCTION

Project UNITED NUCLEAR CORPORATION Job No. 3144JK050  
CHURCH ROCK URANIUM MILL TAILING RECLAMATION Lab/Invoice No. 31440184  
CHURCH ROCK, NM Report No. \_\_\_\_\_ Date 06/09/94

Report By H. KUEBLER/WT Date 06/09/94 Reviewed By M. Deane Date 06/15/94

Prime Contractor NEILSON Superintendent H. HAMPSON

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson, INc. completed placement of interm cover for swale "D".

Unexpected site conditions: N/A

Sampling and/or testing performed: Visual observation and laboratory testin.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received / from: Nielson, INc. finished compactive effort for swale "D" interm cover late in the afternoon. Herschel Hampson requested WT to do compaction resting on 06/10/94

Weather: Clear

Technician / Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 06/10/94

CLIENT (5), BILLING (1), FIELD FILE (1).

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440184  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_  
Report By H. Kuebler/WT Date 06/10/94 Reviewed By [Signature] Date 06/29/94  
Prime Contractor U.N.C. Superintendent \_\_\_\_\_  
Subcontractor Nielson's, INC. Superintendent H. Hampson  
Work in progress and/or completed since last report: Nielson, Inc. did not work today.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction tests on interm cover of Swales "H" and "D".

Conformance of materials, operations and/or test results to project requirements: Compaction tests indicated Swale "D" and "H" needed to be recompactd in most areas.

Person/persons notified of nonconformance to project requirements: Nielson's Inc. will be notified.

Nonconformance corrected: N/A

Instructions or information received/from: Stations 0+00 to 6+00 and 26+00 to 28+00 of Swale "D" native construction grade consisted of Bedrock. No compaction testing could be done.

Weather: \_\_\_\_\_

Technician/Engineer time on project today: 8 hrs.

Number of visits today: \_\_\_\_\_ Time and date for next visit: \_\_\_\_\_

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440184

Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By R. Davis/WT Date 06/14/94 Reviewed By [Signature] Date 06/29/94

Prime Contractor U.N.C. Superintendent \_\_\_\_\_

Subcontractor Nielson's, Inc. Superintendent H. Hampson

Work in progress and/or completed since last report: Field Densities in Swale "C", contractor began backfilling in Swale "C" from Station 6+00 to 18+00.

Unexpected site conditions: Bedrock from Station 2+00 to 6+00. I was not able to test this area.

Sampling and/or testing performed: Sandcone Field Density Tests (7).

Conformance of materials, operations and/or test results to project requirements: Materials, operations and test results appear to conform to project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Hershall Hampson w/ Nielson's - Start Sandcone Densities on Sale "D" in the morning on 6-15-94.

Weather: Windy

Technician/Engineer time on project today: 8 hrs.

Number of visits today: 1 Time and date for next visit: 06/15/94 @ 8:00 am

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440184  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_  
Report By R. Davis/WT Date 06/15/94 Reviewed By [Signature] Date 06/29/94  
Prime Contractor U.N.C. Superintendent \_\_\_\_\_  
Subcontractor Nielson's, Inc. Superintendent H. Hampson  
Work in progress and/or completed since last report: Nielson's, Inc. began excavating Swales A & B.

Unexpected site conditions: None

Sampling and/or testing performed: Sandcone Field Density Tests (10).

Conformance of materials, operations and/or test results to project requirements: Materials, operations and test results appear to conform to project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Hershall Hampson w/ Nielson's - Start Sandcone Densities on Swale "H" in the morning on 6-16-94.

Weather: Windy

Technician/Engineer time on project today: 9 hrs.

Number of visits today: 1 Time and date for next visit: 06/16/94 @ 8:00 am

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440184  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_  
Report By H. Kuebler/WT Date 06/16/94 Reviewed By [Signature] Date 06/29/94  
Prime Contractor U.N.C. Superintendent \_\_\_\_\_  
Subcontractor Nielson's, Inc. Superintendent H. Hampson  
Work in progress and/or completed since last report: Nielson's, Inc. continued to excavate Swales A & B.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction Tests on Swale "H" interm cover.

Conformance of materials, operations and/or test results to project requirements: Compactions tests met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: \_\_\_\_\_

Technician/Engineer time on project today: 8 hrs. plus 8 hrs additional Technician

Number of visits today: 1 Time and date for next visit: \_\_\_\_\_

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440184  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_  
Report By H. Kuebler/WT Date 06/17/94 Reviewed By MB Date 06/29/94  
Prime Contractor U.N.C. Superintendent \_\_\_\_\_  
Subcontractor Nielson's, Inc. Superintendent H. Hampson  
Work in progress and/or completed since last report: Nielson's, Inc. did not work today.

Unexpected site conditions: None

Sampling and/or testing performed: Laboratory Tests

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Clear

Technician/Engineer time on project today: 8 hrs. plus 8 hrs additional Technician

Number of visits today: 1 Time and date for next visit: \_\_\_\_\_

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440184

Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 06/20/94 Reviewed By [Signature] Date 06/29/94

Prime Contractor U.N.C. Superintendent \_\_\_\_\_

Subcontractor Nielson's, Inc. Superintendent H. Hampson

Work in progress and/or completed since last report: Nielson's, Inc. placed and blue topped radon attenuation cover for Swale "H".

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Unexpected site conditions: None

Sampling and/or testing performed: Laboratory Tests

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Ed Morales informed me Swales A & B Native subgrade are to be compacted to 90% with no moisture specifications. Bedding material will be placed on Native subgrade.

Weather: Clear

Technician/Engineer time on project today: 8 hrs. plus 8 hrs additional Technician

Number of visits today: 1 Time and date for next visit: 06/21/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440184

Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 06/21/94 Reviewed By [Signature] Date 06/29/94

Prime Contractor U.N.C. Superintendent \_\_\_\_\_

Subcontractor Nielson's, Inc. Superintendent H. Hampson

Work in progress and/or completed since last report: Nielson's, Inc. began to place radon attenuation cover along the south end of central cell.

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Unexpected site conditions: Afternoon rain showers.

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Sampling and/or testing performed: Compaction tests on radon attenuation cover of Swale "H".

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

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Person/persons notified of nonconformance to project requirements: N/A

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Nonconformance corrected: N/A

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Instructions or information received/from: \_\_\_\_\_

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Weather: \_\_\_\_\_

Technician/Engineer time on project today: 8 hrs. plus 8 hrs additional Technician

Number of visits today: 1 Time and date for next visit: \_\_\_\_\_

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440184  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 06/22/94 Reviewed By [Signature] Date 06/29/94

Prime Contractor U.N.C. Superintendent \_\_\_\_\_

Subcontractor Nielson's, Inc. Superintendent H. Hampson

Work in progress and/or completed since last report: Nielson's, Inc. placed interm radon attenuation cover south of Swale "H".

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Unexpected site conditions: None

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Sampling and/or testing performed: Laboratory Tests

Conformance of materials, operations and/or test results to project requirements: N/A

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: Ed Morales and I discussed testing frequency on Radon Attenuation cover on swales. Compaction tests shall be every 500 c. yds. and Sieve Analysis Plastic Index every 1000 yds.

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Weather: Clear

Technician/Engineer time on project today: 8 hrs.

Number of visits today: 1 Time and date for next visit: 06/23/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.





# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440184

Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 06/27/94 Reviewed By *m. [signature]* Date 07/06/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to scarify and recompact Radon Attenuation Cover between grid line 20 to 15.

Unexpected site conditions: None

Sampling and/or testing performed: Visual observation and Laboratory Testing.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Clear - temperatures in 90°F

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 06/28/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440184  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 06/28/94 Reviewed By M. Deane Date 07/06/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place Radon Attenuation Cover in central cell.

Unexpected site conditions: None

Sampling and/or testing performed: Visual observation and Laboratory Testing.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: Nielson's Inc. was notified RAC layer between grid line 20 + 16 did not meet moisture specifications.

Nonconformance corrected: Nielson's Inc. will rework area.

Instructions or information received/from: N/A

Weather: Clear - temperatures in 90°F

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 06/29/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440184

Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 06/29/94 Reviewed By M. B. [Signature] Date 07/06/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place Radon Attenuation Cover in central cell.

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Unexpected site conditions: None

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Sampling and/or testing performed: Thickness monitoring on Swale H, visual observation and laboratory testing.

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Conformance of materials, operations and/or test results to project requirements: Thickness met project specifications.

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Person/persons notified of nonconformance to project requirements: N/A

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Nonconformance corrected: N/A

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Instructions or information received/from: Grid lines 20 to 15 still drying out.

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Weather: Clear - temperatures in 90°F

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 06/30/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440184

Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 06/30/94 Reviewed By H. Kuebler Date 07/06/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. bluetopped swale D from Station 9+50, to 20+00, and continued to place Radon Attenuation Cover on central cell.

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Unexpected site conditions: None

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Sampling and/or testing performed: Visual Observation

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Conformance of materials, operations and/or test results to project requirements: N/A

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Person/persons notified of nonconformance to project requirements: Moisture contents in RAC material is sporadic between grid line 20 to 16.

Nonconformance corrected: Nielson's Inc. will discuss with Ed Morales.

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Instructions or information received/from: Herschel Hampson, Neilson's Inc., informed me that a rom plow will be brought to site on Tuesday 7-5-94. Mr. Hampson stated rom plow would cut approximately 12" to 14" into grade. Mr. Hampson is concerned about contaminating site with underlying tailings. He wants to place material to final RAC elevation and excavate test pits for compaction tests.

Weather: Clear - temperatures in 90°F

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/01/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.



# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440235  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_  
Report By H. Kuebler/WT Date 07/05/94 Reviewed By *M. Deen* Date 07/12/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. reworked between line 20 and line 19.

Unexpected site conditions: None

Sampling and/or testing performed: Moisture contents, laboratory testing.

Conformance of materials, operations and/or test results to project requirements: Moisture contents are below specifications.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: Nielson's Inc. will rework.

Instructions or information received/from: N/A

Weather: Clear

Technician/Engineer time on project today: 8 hrs + 8 hrs

Number of visits today: 1 Time and date for next visit: 07/06/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.



# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440235  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_  
Report By H. Kuebler/WT Date 07/07/94 Reviewed By M. Lee Date 07/12/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. remoisturized between line 20 to 18.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction test on North of Swale H and Laboratory Tests.

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

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Nielson's Inc. requested compaction tests be performed between line 20 to 18.

Weather: Clear

Technician/Engineer time on project today: 8 hrs + 5 hrs

Number of visits today: 1 Time and date for next visit: 07/08/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440235  
Church Rock, NM Report No. \_\_\_\_\_ Date \_\_\_\_\_

Report By H. Kuebler/WT Date 07/08/94 Reviewed By [Signature] Date 07/12/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. processed Radon Attenuation Cover west of Swale H.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction tests.

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

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Nielson's Inc. worked 1/2 a day due to some plow break down.

Weather: Clear

Technician/Engineer time on project today: 5 hrs

Number of visits today: 1 Time and date for next visit: 07/11/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440235

Church Rock, NM Report No. \_\_\_\_\_ Date 7/18/94

Report By H. Kuebler/WT Date 07/11/94 Reviewed By [Signature] Date 07/18/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. placed D-1.5 aggregate in Swale D between station 2+00 to 8+00.

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Unexpected site conditions: None

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Sampling and/or testing performed: Compaction tests.

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Conformance of materials, operations and/or test results to project requirements: Compaction tests on line 18 and 17.

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Person/persons notified of nonconformance to project requirements: Nielson's Inc. was informed of failing compaction test at D-17, to F-17 and G-18.

Nonconformance corrected: Nielson's Inc. will rework failing areas.

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Instructions or information received/from: Ed Morales stated compaction tests will be in every 400 cubic yards of Radon Attenuation Cover.

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Weather: \_\_\_\_\_

Technician/Engineer time on project today: \_\_\_\_\_

Number of visits today: 1 Time and date for next visit: \_\_\_\_\_

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440235  
Church Rock, NM Report No. \_\_\_\_\_ Date 7/18/94

Report By H. Kuebler/WT Date 07/12/94 Reviewed By M.P. Date 07/18/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. compacted Radon Attenuation Cover between station 20+00 to 28+00 in Swale D and placed D-1.5 aggregate from station 2+00 to 8+00 in Swale D. Nielson's Inc. began to recontour west drainage channel.

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Unexpected site conditions: None

Sampling and/or testing performed: Compaction test between station 20+00 to 28+00.

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

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: Ed Morales stated combined thickness of bedding material and .35 material shall be a minimum 6" and a maximum of 7 1/2" in Swale H. Total maximum thickness of bedding, .35 material and 3" materials shall be 14".

Weather: \_\_\_\_\_

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: \_\_\_\_\_

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440235  
Church Rock, NM Report No. \_\_\_\_\_ Date 7/18/94

Report By H. Kuebler/WT Date 07/13/94 Reviewed By [Signature] Date 07/18/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. placed bedding sand between station 12 + 00 to 16 + 00, Swale D.

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Unexpected site conditions: None

Sampling and/or testing performed: Laboratory tests and thickness measurements on Swale H for .35 Aggregate.

Conformance of materials, operations and/or test results to project requirements: .35 Aggregate thickness met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 7/14/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440235

Church Rock, NM Report No. \_\_\_\_\_ Date 7/18/94

Report By H. Kuebler/WT Date 07/14/94 Reviewed By M. Rao Date 07/18/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to excavate for west control channel and placed fill on exterior slope of the west control channel berm.

Unexpected site conditions: None

Sampling and/or testing performed: Observation, laboratory testing.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: Nielson's Inc. will rework.

Instructions or information received/from: Herschel Hampson requested thickness measurements be done on Swale D.

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/15/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440235

Church Rock, NM Report No. \_\_\_\_\_ Date 7/18/94

Report By H. Kuebler/WT Date 07/15/94 Reviewed By M. Lee Date 07/18/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. didn't work today.

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Unexpected site conditions: None

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Sampling and/or testing performed: Thickness measurements and report preparation.

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Conformance of materials, operations and/or test results to project requirements: N/A

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Person/persons notified of nonconformance to project requirements: Nielson's Inc. will be notified of thickness on Swale D between stations 12+00 to 18+00 on bedding sand to be adjusted.

Nonconformance corrected: N/A

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Instructions or information received/from: N/A

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Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/18/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440235

Church Rock, NM Report No. \_\_\_\_\_ Date 7/18/94

Report By H. Kuebler/WT Date 07/18/94 Reviewed By N Date 08/01/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. completed placement of Radon Attenuation Cover north of Swale H to Grid line 14.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction Testing

Conformance of materials, operations and/or test results to project requirements: Compactions tests appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Herschel Hampson w/ Nielson's Inc. requested compaction tests from Grid line 14 to 12 tomorrow afternoon.

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/19/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.



# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440235

Church Rock, NM Report No. \_\_\_\_\_ Date 7/20/94

Report By H. Kuebler/WT Date 07/20/94 Reviewed By [Signature] Date 08/01/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. completed placement of Radon Attenuation Cover on Grid line 11.

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Unexpected site conditions: None

Sampling and/or testing performed: Compaction Testing

Conformance of materials, operations and/or test results to project requirements: Compactions tests appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/21/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440235  
Church Rock, NM Report No. \_\_\_\_\_ Date 7/21/94  
Report By H. Kuebler/WT Date 07/21/94 Reviewed By N Date 08/01/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. completed placement of Radon Attenuation  
Cover on Grid point 12 to Grid point 2 along Swale E extending to Swale D.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction Testing

Conformance of materials, operations and/or test results to project requirements: Compactions tests appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: WTI has been working extra hours to compensate for not working on project site on Friday 7/22/94. WTI will Invoice extra hours as regular hours for Friday 7/22/94.

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/26/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440235  
Church Rock, NM Report No. \_\_\_\_\_ Date 7/22/94  
Report By H. Kuebler/WT Date 07/22/94 Reviewed By WT Date 08/01/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. did not work today.

Unexpected site conditions: N/A

Sampling and/or testing performed: N/A

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: \_\_\_\_\_

Technician/Engineer time on project today: \_\_\_\_\_

Number of visits today: \_\_\_\_\_ Time and date for next visit: \_\_\_\_\_

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440235

Church Rock, NM Report No. \_\_\_\_\_ Date 7/25/94

Report By H. Kuebler/WT Date 07/25/94 Reviewed By [Signature] Date 08/04/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to process Radon Attenuation cover in the northern section between Swale D & E.

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Unexpected site conditions: None

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Sampling and/or testing performed: Compaction Testing

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Conformance of materials, operations and/or test results to project requirements: Compactions tests appeared to have met project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

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Nonconformance corrected: N/A

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Instructions or information received/from: N/A

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Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/26/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440235

Church Rock, NM Report No. \_\_\_\_\_ Date 7/26/94

Report By H. Kuebler/WT Date 07/26/94 Reviewed By N Date 08/04/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. processed Radon Attenuation Cover in the north section between Swale D & E.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction Testing

Conformance of materials, operations and/or test results to project requirements: Compactions tests appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/27/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440235  
Church Rock, NM Report No. \_\_\_\_\_ Date 7/27/94

Report By H. Kuebler/WT Date 07/27/94 Reviewed By [Signature] Date 08/04/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to compact Radon Attenuation Cover in an area between Swale D & C.

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Unexpected site conditions: None

Sampling and/or testing performed: Compaction Testing

Conformance of materials, operations and/or test results to project requirements: Compactions tests appeared to have met project specifications.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Moisture samples indicated radon Attenuation cover between Swales D & C were below optimum moisture conditions. Nielson's Inc. was notified and reprocessing began.

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/28/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440235

Church Rock, NM Report No. \_\_\_\_\_ Date 7/28/94

Report By H. Kuebler/WT Date 07/28/94 Reviewed By N Date 08/04/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. reprocessed Radon Attenuation Cover between Swales D & C. Nielson's Inc. placed Radon Attenuation Cover in Swale C.

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Unexpected site conditions: None

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Sampling and/or testing performed: Compaction Testing

Conformance of materials, operations and/or test results to project requirements: Compactions tests appeared to have met project specifications.

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: Herschel Hampson with Nielson's Inc. requested compaction tests be performed on Swale C.

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Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 07/29/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440235  
Church Rock, NM Report No. \_\_\_\_\_ Date 7/29/94  
Report By H. Kuebler/WT Date 07/29/94 Reviewed By [Signature] Date 08/04/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. did not work today. UNC surveyed the top of the Radon Attenuation Cover on Swale C.

Unexpected site conditions: N/A

Sampling and/or testing performed: Compaction Tests

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Jim Fletcher with UNC informed me the survey on Swale C Radon Attenuation Cover was not at correct elevations. I was to stop compaction testing until further notice.

Weather: \_\_\_\_\_

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 08/01/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/01/94

Report By H. Kuebler/WT Date 08/01/94 Reviewed By [Signature] Date 08/10/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hambson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. placed additional fill between station 4+00 to station 10+00 in Swale C. Nielson's Inc. continued D<sup>50</sup> - 1.5 aggregate placement west of Swale H.

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Unexpected site conditions: None

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Sampling and/or testing performed: Compaction Testing

Conformance of materials, operations and/or test results to project requirements: Compaction tests appeared to indicate conformance to project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: Ed Morales stated D<sup>50</sup> - 1.5 aggregate thickness between 3" to 4".

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Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/02/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/02/94

Report By H. Kuebler/WT Date 08/02/94 Reviewed By N Date 08/10/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. blue topped Radon Attenuation Cover between Swale E & D and continued D<sup>50</sup> - 1.5 aggregate.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction Testing

Conformance of materials, operations and/or test results to project requirements: Compaction tests appeared to indicate conformance to project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/03/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/03/94

Report By H. Kuebler/WT Date 08/03/94 Reviewed By [Signature] Date 08/10/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued D<sup>50</sup> - 1.5 aggregate west of Swale H.

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Unexpected site conditions: None

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Sampling and/or testing performed: Compaction Testing

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Conformance of materials, operations and/or test results to project requirements: Compaction tests appeared to indicate conformance to project specifications.

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Person/persons notified of nonconformance to project requirements: Herschell Hampson was notified of D50 1.5 aggregate failure to meet thickness requirements.

Nonconformance corrected: Nielson's Inc. will rework area.

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Instructions or information received/from: \_\_\_\_\_

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Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/04/94

Copies: Client (3), Billing (1), Field File (1).

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440279  
Church Rock, NM Report No. \_\_\_\_\_ Date 08/04/94  
Report By H. Kuebler/WT Date 08/04/94 Reviewed By [Signature] Date 08/10/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. reworked Grid Line 20 + 19 to obtain correct D<sup>50</sup> - 1.5 aggregate thickness. Nielson's Inc. blue topped Radon Attenuation Cover in Swale C.

Unexpected site conditions: None

Sampling and/or testing performed: Compaction Testing on Swale C.

Conformance of materials, operations and/or test results to project requirements: Compactions tests appeared indicate conformance to project specifications.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Herschel Hampson requested thickness measurements be performed between Grid Lines 20 to 19.

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/05/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.



# 'REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/08/94

Report By H. Kuebler/WT Date 08/08/94 Reviewed By [Signature] Date 08/26/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place D<sup>50</sup> 1.5 aggregate north of Swale H.

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Unexpected site conditions: None

Sampling and/or testing performed: Visual observation of D<sup>50</sup> - 1.5 aggregate and laboratory testing.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: \_\_\_\_\_

Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/09/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440279  
Church Rock, NM Report No. \_\_\_\_\_ Date 08/09/94

Report By H. Kuebler/WT Date 08/09/94 Reviewed By N Date 08/26/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place D<sup>50</sup> - 1.5 aggregate north of swale H. Nielson's Inc. and Western Technologies checked thickness of D<sup>50</sup> - 1.5 aggregate between line 20 & 19.

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Unexpected site conditions: None

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Sampling and/or testing performed: Laboratory tests and thickness requirements.

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Conformance of materials, operations and/or test results to project requirements: Thickness measurements conformed to project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

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Nonconformance corrected: N/A

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Instructions or information received/from: N/A

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Weather: Clear - partly cloudy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/10/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440279  
Church Rock, NM Report No. \_\_\_\_\_ Date 08/10/94

Report By H. Kuebler/WT Date 08/10/94 Reviewed By [Signature] Date 08/26/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued D<sup>50</sup> - 1.5 aggregate north of Swale  
H. Nielson's Inc. blue topped D<sup>50</sup> - 1.5 aggregate between line 19 to 15, south of Swale H.

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Unexpected site conditions: None

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Sampling and/or testing performed: Visual observation and thickness checks.

Conformance of materials, operations and/or test results to project requirements: N/A

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Person/persons notified of nonconformance to project requirements: Nielson's Inc. was notified of failing areas  
for thickness of D50 - 1.5 aggregate between 19 to 15.

Nonconformance corrected: Nielson's Inc. will correct failing areas.

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Instructions or information received/from: \_\_\_\_\_

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Weather: Partly cloudy to cloudy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/11/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/11/94

Report By H. Kuebler/WT Date 08/11/94 Reviewed By [Signature] Date 08/26/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. corrected areas for D<sup>50</sup> - 1.5 aggregate between lines 19 to 15 south of Swale H.

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Unexpected site conditions: None

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Sampling and/or testing performed: Laboratory tests and thickness measurements.

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Conformance of materials, operations and/or test results to project requirements: Thickness measurements conformed to project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: N/A

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Weather: Cloudy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/12/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440279  
Church Rock, NM Report No. \_\_\_\_\_ Date 08/12/94  
Report By H. Kuebler/WT Date 08/12/94 Reviewed By [Signature] Date 08/26/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. did not work today.

Unexpected site conditions: N/A

Sampling and/or testing performed: Laboratory work and Swale C bedding thickness

Conformance of materials, operations and/or test results to project requirements: Bedding sand between 10 + 00 to 6 + 50 appeared to conform to project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Partly Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 08/16/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440279  
Church Rock, NM Report No. \_\_\_\_\_ Date 08/16/94  
Report By H. Kuebler/WT Date 08/16/94 Reviewed By N Date 08/26/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place D<sup>50</sup> - 1.5 aggregate between Swale E & D of central cell. Nielson's Inc. began to blue top Swale B native material.

Unexpected site conditions: None

Sampling and/or testing performed: Thickness requirements.

Conformance of materials, operations and/or test results to project requirements: Thickness requirements appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Ed Morales, UNC, stated Swale B compaction requirements for native subgrade shall be 90% and no moisture requirements. Bedding sand will be placed on native subgrade since no tailing was found.

Weather: Partly Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 08/17/94 @ 8:00 am

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440279  
Church Rock, NM Report No. \_\_\_\_\_ Date 08/17/94

Report By H. Kuebler/WT Date 08/17/94 Reviewed By [Signature] Date 08/26/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place D<sup>50</sup> - 1.5 aggregate between Swale E & D of central cell. Nielson's Inc. began to blue top Swale B.

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Unexpected site conditions: None

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Sampling and/or testing performed: Thickness requirements on D<sup>50</sup> - 1.5 aggregate.

Conformance of materials, operations and/or test results to project requirements: N/A

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Person/persons notified of nonconformance to project requirements: Nielson's Inc. was informed of failing areas.

Nonconformance corrected: Nielson's Inc. will repair failing areas.

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Instructions or information received/from: None

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Weather: Partly Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 08/18/94 @ 8:00am

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/18/94

Report By H. Kuebler/WT Date 08/18/94 Reviewed By [Signature] Date 08/26/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. repaired areas where D<sup>50</sup> - 1.5 aggregate did not meet project requirements. Nielson's Inc. continued D<sup>50</sup> - 1.5 aggregate placement between Swale E and D.

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Unexpected site conditions: None

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Sampling and/or testing performed: Thickness requirements and compaction tests on Swale B.

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Conformance of materials, operations and/or test results to project requirements: Compaction tests and thickness requirements appeared to have met project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: None

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Weather: Partly Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 08/19/94 @ 8:00am

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440279  
Church Rock, NM Report No. \_\_\_\_\_ Date 08/19/94  
Report By H. Kuebler/WT Date 08/19/94 Reviewed By [Signature] Date 08/29/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. did not work today.

Unexpected site conditions: None

Sampling and/or testing performed: Thickness requirements on bedding sand for Swale C and Laboratory testing.

Conformance of materials, operations and/or test results to project requirements: Thickness requirements appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: None

Weather: Partly Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 08/22/94 @ 8:00am

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

**'REVIEW OF CONSTRUCTION**

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/22/94

Report By H. Kuebler/WT Date 08/22/94 Reviewed By \_\_\_\_\_ Date 09/01/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place D<sup>50</sup> 1.5 aggregate in north section between Swale E and D.

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Unexpected site conditions: None

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Sampling and/or testing performed: D<sup>50</sup> - 1.5 aggregate thickness K + 18.5 to E + 12.5, K + 17 to G + 12.

Conformance of materials, operations and/or test results to project requirements: D<sup>50</sup> - 1.5 aggregate thickness appeared to have met project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: \_\_\_\_\_

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Weather: Partly Cloudy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/23/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/23/94

Report By H. Kuebler/WT Date 08/23/94 Reviewed By [Signature] Date 09/01/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued D<sup>50</sup> - 1.5 aggregate placement and bedding placement in Swale B.

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Unexpected site conditions: None

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Sampling and/or testing performed: D<sup>50</sup> - 1.5 aggregate thickness tests.

Conformance of materials, operations and/or test results to project requirements: N/A

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Person/persons notified of nonconformance to project requirements: Nielson's Inc. will repair areas north of Grid Pint G + 12 to K + 17, L + 6 to M + 9 tomorrow.

Nonconformance corrected: N/A

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Instructions or information received/from: N/A

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Weather: Partly cloudy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: \_\_\_\_\_

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/24/94

Report By H. Kuebler/WT Date 08/24/94 Reviewed By [Signature] Date 09/01/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. repaired failing areas of D<sup>50</sup> - 1.5 aggregate between Grid Point G+12 to K+17, L+6 to M+9.

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Unexpected site conditions: None

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Sampling and/or testing performed: \_\_\_\_\_

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Conformance of materials, operations and/or test results to project requirements: D50 - 1.5 aggregate thickness to Grid Point L+6 to M+9 appeared to have met thickness requirements.

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Person/persons notified of nonconformance to project requirements: N/A

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Nonconformance corrected: N/A

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Instructions or information received/from: N/A

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Weather: Partly cloudy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/25/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/25/94

Report By H. Kuebler/WT Date 08/25/94 Reviewed By [Signature] Date 09/01/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. placed D<sup>50</sup> - 1.5 aggregate between Swales D & C and placed soil on D<sup>50</sup> - 1.5 aggregate 200' north of Swale H.

Unexpected site conditions: None

Sampling and/or testing performed: Laboratory testing and thickness on soil cover at Grid Line #20.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: I informed H. Hampson soil above D<sup>50</sup> - 1.5 aggregate needed to be 3" to 4" thick.

Nonconformance corrected: Mr. Hampson stated he would check thickness between Grid line 20 and 15.

Instructions or information received/from: Ed Morales stated soil cover above D<sup>50</sup> - 1.5 aggregate to be 3" to 4" and penetrate at least 2" into D<sup>50</sup> - 1.5 aggregate.

Weather: Partly cloudy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 08/26/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440279  
Church Rock, NM Report No. \_\_\_\_\_ Date 08/26/94  
Report By H. Kuebler/WT Date 08/26/94 Reviewed By [Signature] Date 09/01/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. didn't work today.

Unexpected site conditions: N/A

Sampling and/or testing performed: Paperwork and bedding sand thickness on Swale B.

Conformance of materials, operations and/or test results to project requirements: Thickness appears to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Clear

Technician/Engineer time on project today: 5.0 hrs

Number of visits today: 1 Time and date for next visit: 08/29/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/29/94

Report By H. Kuebler/WT Date 08/29/94 Reviewed By [Signature] Date 09/01/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place soil upon D<sup>50</sup> - 1.5 aggregate north of Swale D.

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Unexpected site conditions: None

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Sampling and/or testing performed: Thickness measurements on D<sup>50</sup> - 1.5 aggregate.

Conformance of materials, operations and/or test results to project requirements: Thickness measurements of D<sup>50</sup> - 1.5 aggregate appeared to have met project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

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Nonconformance corrected: N/A

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Instructions or information received/from: N/A

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Weather: Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 08/30/94 @ 8:00 am

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Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/30/94

Report By H. Kuebler/WT Date 08/30/94 Reviewed By [Signature] Date 09/01/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. completed west control channel and continued to place soil upon D<sup>50</sup> - 1.5 aggregate north of Swale H.

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Unexpected site conditions: None

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Sampling and/or testing performed: Compaction tests on west control channel.

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Conformance of materials, operations and/or test results to project requirements: Compaction tests appear to indicate conformance to project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

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Nonconformance corrected: N/A

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Instructions or information received/from: None

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Weather: Partly Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 08/31/94 @ 8:00am

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440279

Church Rock, NM Report No. \_\_\_\_\_ Date 08/31/94

Report By H. Kuebler/WT Date 08/31/94 Reviewed By [Signature] Date 09/01/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place soil upon D<sup>50</sup> - 1.5 aggregate north of Swale H and Grid Point G+9 and K+9.

Unexpected site conditions: None

Sampling and/or testing performed: Measurement thickness on D<sup>50</sup> - 1.5 aggregate between Swale C & B. Bedding sand thickness in Swale A.

Conformance of materials, operations and/or test results to project requirements: Bedding and sand thickness in Swale A appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: D<sup>50</sup> - 1.5 aggregate thickness indicated area between Swale C & B needed to be reworked.

Nonconformance corrected: Nielson's Inc. will rework on later date.

Instructions or information received/from: None

Weather: Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 09/01/94 @ 8:00am

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

**'REVIEW OF CONSTRUCTION**

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440336  
Church Rock, NM Report No. \_\_\_\_\_ Date 09/06/94  
Report By H. Kuebler/WT Date 09/07/94 Reviewed By [Signature] Date 09/13/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. continued to place soil upon D<sup>50</sup> 1.5 aggregate in north section between Swale E and D.

Unexpected site conditions: None

Sampling and/or testing performed: Thickness measurements on soil on D<sup>50</sup> - 1.5 aggregate south of swale H.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: Herschel hampson was notified of failing areas.

Nonconformance corrected: Nielson's Inc. will repair at later date.

Instructions or information received/from: \_\_\_\_\_

Weather: \_\_\_\_\_

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 09/06/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440336  
Church Rock, NM Report No. \_\_\_\_\_ Date 09/06/94  
Report By H. Kuebler/WT Date 09/06/94 Reviewed By \_\_\_\_\_ Date 09/13/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. regraded soil on rock mulch north of Swale H.

Unexpected site conditions: Rain in late afternoon (4:45 pm) shut down project.

Sampling and/or testing performed: Thickness measurements on D<sup>50</sup> - 1.5 aggregate between Swale C and B.

Conformance of materials, operations and/or test results to project requirements: Thickness measurement appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: None

Nonconformance corrected: N/A

Instructions or information received/from: Ed Morales requested me to discuss with Hamilton Brothers D<sup>50</sup> - 1.5 aggregate crushing schedule.

Weather: Cloudy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 9/7/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ Date 09/07/94

Report By H. Kuebler/WT Date 09/07/94 Reviewed By [Signature] Date 09/13/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's drained free standing water from Swales and maintained site roads. Nielson's Inc. began to fill borrow pit #2

Unexpected site conditions: Rain shut down soil placement on rock mulch.

Sampling and/or testing performed: Visual observation and paperwork.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Hamilton Brothers informed me they would phone Ed Morales to discuss D<sup>50</sup> - 1.5 aggregate crushing scheduling latter in the day. Herschel Hampson and I discussed with Ed Morales thickness of soil on rock mulch. It was agreed among the parties that in some areas the thickness would be more than four inches for adequate drainage. However, thickness will not be greater than seven inches. UNC would prefer thickness between 3 inches to 4 inches over the site.

Weather: \_\_\_\_\_

Technician/Engineer time on project today: \_\_\_\_\_

Number of visits today: \_\_\_\_\_ Time and date for next visit: \_\_\_\_\_

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ Date 09/08/94

Report By H. Kuebler/WT Date 09/08/94 Reviewed By [Signature] Date 09/13/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. began to place bedding sand in west control ditch. Nielson's Inc. continued to place fill from abandoned electrical station site to Borrow Pit #2

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Unexpected site conditions: None

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Sampling and/or testing performed: Thickness measurement in Swale A & B on D<sup>50</sup> - 1.5 aggregate.

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Conformance of materials, operations and/or test results to project requirements: Thickness measurements appeared to have met project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: N/A

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Weather: Clear

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 09/10/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ / Date 09/09/94

Report By H. Kuebler/WT Date 09/09/94 Reviewed By [Signature] Date 09/13/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. was placing bedding sand in west control ditch. Hamilton Brothers was hauling D<sup>50</sup> - 1.5 aggregate.

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Unexpected site conditions: N/A

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Sampling and/or testing performed: \_\_\_\_\_

Conformance of materials, operations and/or test results to project requirements: \_\_\_\_\_

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: N/A

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Weather: \_\_\_\_\_

Technician/Engineer time on project today: 4.0 hrs

Number of visits today: 1 Time and date for next visit: 09/12/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ Date 09/12/94

Report By H. Kuebler/WT Date 09/12/94 Reviewed By [Signature] Date 09/15/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place bedding sand in west control channel. Nielson's Inc. continued to fill Borrow Pit #2.

Unexpected site conditions: N/A

Sampling and/or testing performed: Check thickness of soil on D50 - 1.5 aggregate.

Conformance of materials, operations and/or test results to project requirements: Measurements indicated soil thickness appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: \_\_\_\_\_

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 09/13/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ Date 09/13/94

Report By H. Kuebler/WT Date 09/13/94 Reviewed By [Signature] Date 09/22/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. continued to place bedding sand in west control ditch. Hamilton Brothers continued to haul D<sup>50</sup> - 1.5 aggregate to site. Nielson's Inc. continued to place soil on D<sup>50</sup> - 1.5 aggregate between Swale C & B.

Unexpected site conditions: N/A

Sampling and/or testing performed: Measurement thickness on bedding sand in west control ditch.

Conformance of materials, operations and/or test results to project requirements: Bedding Sand appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Partly Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 09/13/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ Date 09/14/94

Report By H. Kuebler/WT Date 09/14/94 Reviewed By [Signature] Date 09/22/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. began to place D<sup>50</sup> - 1.5 in west control ditch.

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Unexpected site conditions: N/A

Sampling and/or testing performed: Thickness measurement on soil on D50 - 1.5 aggregate between Swale C & B.

Conformance of materials, operations and/or test results to project requirements: Thickness measurement appeared to have met project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

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Weather: Partly Cloudy

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 09/15/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440336  
Church Rock, NM Report No. \_\_\_\_\_ Date 09/15/94  
Report By H. Kuebler/WT Date 09/15/94 Reviewed By [Signature] Date 09/22/94  
Prime Contractor Nielson's Inc. Superintendent Herschel Hampton  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson's Inc. placed fill in Borrow Pit #2.

Unexpected site conditions: N/A

Sampling and/or testing performed: D<sup>50</sup> - 1.5 aggregate thickness measurement in west control ditch.

Conformance of materials, operations and/or test results to project requirements: Thickness measurement appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: I Discussed with Jim Fletcher UNC schedule for 9/16/94. I will be working in Farmington office on UNC Project.

Weather: \_\_\_\_\_

Technician/Engineer time on project today: 8.0 hrs

Number of visits today: 1 Time and date for next visit: 09/19/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ Date 09/19/94

Report By H. Kuebler/WT Date 09/19/94 Reviewed By [Signature] Date 09/27/94

Prime Contractor Nielson's Inc Superintendent H. Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson, Inc. placed fill in Borrow Pit #2 and blue topped soil on D<sup>50</sup> - 1.5 aggregate on northeast section between Swale E & D.

Unexpected site conditions: None

Sampling and/or testing performed: Thickness measurements in northeast section between Swale E & D.

Conformance of materials, operations and/or test results to project requirements: Thickness measurements did not indicate conformance to project requirements in some areas.

Person/persons notified of nonconformance to project requirements: Nielson's Inc. was notified of failing areas.

Nonconformance corrected: Nielson's Inc will repair failing area.

Instructions or information received/from: \_\_\_\_\_

Weather: Partly Cloudy

Technician/Engineer time on project today: 8 hrs.

Number of visits today: 1 Time and date for next visit: 09/20/94

Copies: Client (5), Billing (1), Field File (1).

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ Date 09/20/94

Report By H. Kuebler/WT Date 09/20/94 Reviewed By [Signature] Date 09/27/94

Prime Contractor Nielson's Inc Superintendent H. Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson, Inc. repaired failing areas for soil cover in northeast section between Swale E & D.

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Unexpected site conditions: None

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Sampling and/or testing performed: Thickness measurement

Conformance of materials, operations and/or test results to project requirements: Thickness measurements appeared to indicate conformance to project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: \_\_\_\_\_

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Weather: Partly Cloudy

Technician/Engineer time on project today: 8 hrs.

Number of visits today: 1 Time and date for next visit: 09/21/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440336  
Church Rock, NM Report No. \_\_\_\_\_ Date 09/21/94  
Report By H. Kuebler/WT Date 09/21/94 Reviewed By [Signature] Date 09/27/94  
Prime Contractor Nielson's Inc Superintendent H. Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson, Inc. continued to place fill in Borrow Pit #2.

Unexpected site conditions: None

Sampling and/or testing performed: Laboratory testing.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: \_\_\_\_\_

Weather: Clear

Technician/Engineer time on project today: 8 hrs.

Number of visits today: 1 Time and date for next visit: 09/22/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ Date 09/22/94

Report By H. Kuebler/WT Date 09/22/94 Reviewed By [Signature] Date 09/27/94

Prime Contractor Nielson's Inc Superintendent H. Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson, Inc. continued to place fill in Borrow Pit #2.

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Unexpected site conditions: None

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Sampling and/or testing performed: Laboratory testing.

Conformance of materials, operations and/or test results to project requirements: N/A

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: Will work on UNC report in Farmington office.

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Weather: Clear

Technician/Engineer time on project today: 8 hrs.

Number of visits today: 1 Time and date for next visit: 09/26/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050  
1994 Reclamation Lab/ Invoice No. 31440336  
Church Rock, NM Report No. \_\_\_\_\_ Date 09/26/94  
Report By H. Kuebler/WT Date 09/26/94 Reviewed By [Signature] Date 10/03/94  
Prime Contractor Nielson's Inc Superintendent H. Hampson  
Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_  
Work in progress and/or completed since last report: Nielson, Inc. continued to place fill in Borrow Pit #2.  
Hamilton Brothers hauled D<sup>50</sup> - 1.5 aggregate to site.

Unexpected site conditions: None

Sampling and/or testing performed: Laboratory testing and paperwork.

Conformance of materials, operations and/or test results to project requirements: N/A

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Clear

Technician/Engineer time on project today: 8 hrs.

Number of visits today: 1 Time and date for next visit: 09/27/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.



# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440336

Church Rock, NM Report No. \_\_\_\_\_ Date 09/28/94

Report By H. Kuebler/WT Date 09/28/94 Reviewed By [Signature] Date 10/03/94

Prime Contractor Nielson's Inc Superintendent H. Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's, Inc. placed D<sup>50</sup> - 1.5 aggregate in north end of section between D & C. and continued to place fill in Borrow Pit #2. Hamilton Brothers hauled D<sup>50</sup> - 1.5 aggregate to site.

Unexpected site conditions: None

Sampling and/or testing performed: Thickness measurement on D<sup>50</sup> - 1.5 aggregate.

Conformance of materials, operations and/or test results to project requirements: Thickness measurements appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: N/A

Weather: Clear

Technician/Engineer time on project today: 8 hrs.

Number of visits today: 1 Time and date for next visit: 09/29/94

Copies: Client (5), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.



# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440381

Church Rock, NM Report No.          Date 10/04/94

Report By H. Kuebler/WT Date 10/04/94 Reviewed By          Date 10/11/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor          Superintendent         

Work in progress and/or completed since last report: Nielson's Inc. completed soil cover placement on D<sup>50</sup> 1.5 rock mulch between Swale D and C.

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Unexpected site conditions: None

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Sampling and/or testing performed: Thickness measurements on soil cover.

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Conformance of materials, operations and/or test results to project requirements: Measurements indicated soil cover appeared to have met project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

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Nonconformance corrected: N/A

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Instructions or information received/from: \_\_\_\_\_

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Weather: Partly cloudy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 10/05/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440381

Church Rock, NM Report No. \_\_\_\_\_ Date 10/05/94

Report By H. Kuebler/WT Date 10/05/94 Reviewed By [Signature] Date 10/11/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hampson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. completed soil placement on D<sup>50</sup> 1.5 aggregate north of Swale D.

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Unexpected site conditions: None

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Sampling and/or testing performed: Thickness measurement.

Conformance of materials, operations and/or test results to project requirements: Measurement indicated soil placement appeared to have met project requirements.

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Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

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Instructions or information received/from: \_\_\_\_\_

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Weather: Windy

Technician/Engineer time on project today: 8 hrs

Number of visits today: 1 Time and date for next visit: 10/06/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

# REVIEW OF CONSTRUCTION

Project United Nuclear Corporation Job No. 3144JK050

1994 Reclamation Lab/ Invoice No. 31440381

Church Rock, NM Report No. \_\_\_\_\_ Date 10/06/94

Report By H. Kuebler/WT Date 10/06/94 Reviewed By [Signature] Date 10/11/94

Prime Contractor Nielson's Inc. Superintendent Herschel Hamson

Subcontractor \_\_\_\_\_ Superintendent \_\_\_\_\_

Work in progress and/or completed since last report: Nielson's Inc. completed D<sup>50</sup> 1.5 aggregate placement on east berm slope in west control channel.

Unexpected site conditions: None

Sampling and/or testing performed: Thickness measurements on D<sup>50</sup> - 1.5 aggregate.

Conformance of materials, operations and/or test results to project requirements: Measurement indicated D<sup>50</sup> - 1.5 aggregate appeared to have met project requirements.

Person/persons notified of nonconformance to project requirements: N/A

Nonconformance corrected: N/A

Instructions or information received/from: Ed Morales requested compaction tests in Borrow Pit #2.

Weather: \_\_\_\_\_

Technician/Engineer time on project today: 4 hrs

Number of visits today: 1 Time and date for next visit: 10/10/94

Copies: Client (3), Billing (1), Field File (1).

WESTERN TECHNOLOGIES INC.

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY

DATE OF REPORT 07/18/94

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/15/94	Sandcone	Swale D	Sta. 28+00	---	6978.1	Intern. Cover	112.8	18.1	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 26+00	---	6978.1	Intern. Cover	121.8	18.1	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 24+00	---	6977.4	Intern. Cover	117.3	17.1	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 22+00	---	6979.0	Intern. Cover	119.6	17.6	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 20+00	---	6978.6	Intern. Cover	121.4	17.7	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 18+00	---	6979.1	Intern. Cover	119.3	18.3	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 16+00	---	6980.1	Intern. Cover	119.3	17.6	100	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 14+00	---	6979.1	Intern. Cover	116.4	16.8	100	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 12+00	---	6979.8	Intern. Cover	122.4	17.4	100	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 10+00	---	6980.4	Intern. Cover	110.7	17.4	100	CL	Yes
06/16/94	Sieve, Pl	Swale D	Sta. 16+00	---	6979.1	Intern. Cover	---	---	---	---	Yes

RAC=Radon Attenuation Cover

UNC.K05/cb

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

**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK05

**TEST SUMMARY**

DATE OF REPORT 07/18/94

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/15/94	Sandcone	Swale D	Sta. 28+00	---	6978.1	Intern. Cover	112.8	18.1	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 26+00	---	6978.1	Intern. Cover	121.8	18.1	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 24+00	---	6977.4	Intern. Cover	117.3	17.1	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 22+00	---	6979.0	Intern. Cover	119.6	17.6	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 20+00	---	6978.6	Intern. Cover	121.4	17.7	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 18+00	---	6979.1	Intern. Cover	119.3	18.3	100+	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 16+00	---	6980.1	Intern. Cover	119.3	17.6	100	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 14+00	---	6979.1	Intern. Cover	116.4	16.8	100	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 12+00	---	6979.8	Intern. Cover	122.4	17.4	100	CL	Yes
06/15/94	Sandcone	Swale D	Sta. 10+00	---	6980.4	Intern. Cover	110.7	17.4	100	CL	Yes
06/16/94	Sieve, PI	Swale D	Sta. 16+00	---	6979.1	Intern. Cover	---	---	---	---	Yes

RAC = Radon Attenuation Cover

UNC.K05/cb

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

**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK01

**TEST SUMMARY**

DATE OF REPORT 07/18/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/20/94	Proctor	Swale H	Sta. 24 +00	---	6968.0	RAC	110.4	15.8	---	CL	---
06/20/94	Proctor	Swale B	Sta. 8 +00	---	6998.6	Native	114.9	13.8	---	CL	---
06/21/94	Proctor	Swale D	Sta. 5 +00	---	6983.0	RAC	113.0	13.6	---	CL	---
06/21/94	Proctor	Swale D	Sta. 20 +00	---	6978.2	RAC	113.0	13.4	---	CL	---
06/21/94	Sandcone	Swale H	Sta. 30 +00	---	6973.3	RAC	108.8	15.8	---	CL	Yes
06/21/94	Sandcone	Swale H	Sta. 26 +00	---	6972.5	RAC	107.9	16.2	---	CL	Yes
06/21/94	Sandcone	Swale H	Sta. 23 +00	---	6969.9	RAC	107.4	16.3	---	CL	Yes
08/24/94	Sieve	---	---	---	---	.35 Agg.	---	---	---	---	Yes
06/27/94	Proctor	Swale D	Sta. 26 +00	---	6977.1	RAC	111.4	14.8	---	CL	---
06/28/94	Sandcone	Swale D	Sta. 4 +00	---	6983.3	RAC	108.0	15.5	---	CL	Yes
06/28/94	Sandcone	Swale D	Sta. 8 +00	---	6982.2	RAC	112.9	15.6	---	CL	Yes
06/28/94	Proctor	Swale B	Sta. 14 +00	---	6993.6	Native	113.7	14.0	---	CL	---

RAC = Radon Attenuation Cover

UNC.K05/cb

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

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY

DATE OF REPORT 07/18/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/20/94	Proctor	Swale H	Sta. 24+00	---	6968.0	RAC	110.4	15.8	---	CL	---
06/20/94	Proctor	Swale B	Sta. 8+00	---	6998.6	Native	114.9	13.8	---	CL	---
06/21/94	Proctor	Swale D	Sta. 5+00	---	6983.0	RAC	113.0	13.6	---	CL	---
06/21/94	Proctor	Swale D	Sta. 20+00	---	6978.2	RAC	113.0	13.4	---	CL	---
06/21/94	Sandcone	Swale H	Sta. 30+00	---	6973.3	RAC	108.8	15.8	---	CL	Yes
06/21/94	Sandcone	Swale H	Sta. 26+00	---	6972.6	RAC	107.9	16.2	---	CL	Yes
06/21/94	Sandcone	Swale H	Sta. 23+00	---	6969.9	RAC	107.4	16.3	---	CL	Yes
06/24/94	Sieve	---	---	---	---	.35 Agg.	---	---	---	---	Yes
06/27/94	Proctor	Swale D	Sta. 26+00	---	6977.1	RAC	111.4	14.8	---	CL	---
06/28/94	Sandcone	Swale D	Sta. 4+00	---	6983.3	RAC	108.0	15.5	---	CL	Yes
06/28/94	Sandcone	Swale D	Sta. 8+00	---	6982.2	RAC	112.9	15.6	---	CL	Yes
06/28/94	Proctor	Swale B	Sta. 14+00	---	6993.6	Native	113.7	14.0	---	CL	---

RAC=Radon Attenuation Cover

UNC.K05/cb

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





UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK

TEST SUMMARY

DATE OF REPORT 10/12/

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
07/06/94	Proctor	I+19	73300	58870	6969.0	RAC	112.5	12.9	---	CL	Yes
07/06/94	Proctor	K+16	73400	59220	6980.75	RAC	110.5	15.8	---	CL	Yes
07/06/94	Proctor	J+19	73220	58950	6971.4	RAC	113.0	12.6	---	CL	Yes
07/06/94	Sieve & Pl	B+20	73660	58270	6952.2	RAC	---	---	---	CL	Yes
07/06/94	Sieve & Pl	C+19	73670	58410	6964.6	RAC	---	---	---	CL	Yes
07/06/94	Sieve & Pl	G+20	73340	58660	6963.7	RAC	---	---	---	CL	Yes
07/06/94	Sieve & Pl - Swale H	Sta. 26+00	---	---	6972.5	RAC	---	---	---	CL	Yes
07/06/94	Sieve & Pl - Swale D	Sta. 12+00	---	---	6981.0	RAC	---	---	---	CL	Yes
07/06/94	Sieve & Pl - Swale D	Sta. 20+00	---	---	6978.6	RAC	---	---	---	CL	Yes
07/07/94	Proctor	E+14	73930	58870	6976.2	RAC	114.8	13.8	---	CL	Yes
07/07/94	Proctor	F+14	73710	58820	6973.6	RAC	116.8	14.4	---	CL	Yes
07/07/94	Sandcone	B+20	73660	58270	6965.2	RAC	116.0	12.7	---	CL	Yes



RAC-Radon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK

TEST SUMMARY

DATE OF REPORT 10/12/

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/06/94	Proctor	I + 19	73300	58870	6969.0	RAC	112.5	12.9	---	CL	Yes
07/06/94	Proctor	K + 16	73400	59220	6980.75	RAC	110.5	15.8	---	CL	Yes
07/06/94	Proctor	J + 19	73220	58950	6971.4	RAC	113.0	12.6	---	CL	Yes
07/06/94	Sieve & PI	B + 20	73660	58270	6952.2	RAC	---	---	---	CL	Yes
07/06/94	Sieve & PI	C + 19	73670	58410	6964.6	RAC	---	---	---	CL	Yes
07/06/94	Sieve & PI	G + 20	73340	58660	6963.7	RAC	---	---	---	CL	Yes
07/06/94	Sieve & PI - Swale H	Sta. 26 + 00	---	---	6972.5	RAC	---	---	---	CL	Yes
07/06/94	Sieve & PI - Swale D	Sta. 12 + 00	---	---	6981.0	RAC	---	---	---	CL	Yes
07/06/94	Sieve & PI - Swale D	Sta. 20 + 00	---	---	6978.6	RAC	---	---	---	CL	Yes
07/07/94	Proctor	E + 14	73930	58870	6976.2	RAC	114.8	13.8	---	CL	Yes
07/07/94	Proctor	F + 14	73710	58820	6973.6	RAC	116.8	14.4	---	CL	Yes
07/07/94	Sandcone	B + 20	73660	58270	6965.2	RAC	116.0	12.7	---	CL	Yes



RAC-Redon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY

DATE OF REPORT 10/12/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/08/94	Sandcone	F + 16	73710	58820	6973.6	RAC	115.4	15.6	99	CL	Yes
07/08/94	Sandcone	G + 16	73650	58820	6978.8	RAC	118.0	16.1	100	CL	Yes
07/08/94	Sandcone	I + 18	73360	58930	6971.6	RAC	111.0	14.3	99	CL	Yes
07/08/94	Sandcone	J + 19	73220	58870	6971.4	RAC	118.2	13.6	100	CL	Yes
07/08/94	Sandcone	H + 18	73300	59010	6972.9	RAC	116.7	14.6	100	CL	Yes
07/08/94	Sandcone	F + 14	73880	58950	6976.6	RAC	112.9	15.8	96	CL	Yes
07/08/94	Sandcone	G + 16	73650	58910	6973.4	RAC	111.3	16.2	95	CL	Yes
07/08/94	Sieve .35 Aggregate	Windrow	---	---	---	---	---	---	---	---	Yes
07/11/94	Sandcone - Swale D	Sta. 20 +00	Right Berm	---	6980.9	RAC	108.3	15.2	96	CL	Yes
07/11/94	Sandcone - Swale D	Sta. 25 +00	Swale Bottom	---	6977.7	RAC	115.3	14.7	100	CL	Yes
07/11/94	Sandcone - Swale D	Sta. 27 +00	Left Berm	---	6978.9	RAC	117.3	14.9	100	CL	Yes
07/11/94	Bedding Sand Thickness Measurement	Swale D	---	---	---	---	---	---	---	---	Yes

 RAC-Radon Attenuation Cover

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY

DATE OF REPORT 10/12/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/08/94	Sandcone	F + 16	73710	58820	6973.6	RAC	115.4	15.6	99	CL	Yes
07/08/94	Sandcone	G + 16	73650	58820	6978.8	RAC	118.0	16.1	100	CL	Yes
07/08/94	Sandcone	I + 16	73360	58930	6971.6	RAC	111.0	14.3	99	CL	Yes
07/08/94	Sandcone	J + 19	73220	58870	6971.4	RAC	118.2	13.6	100	CL	Yes
07/08/94	Sandcone	H + 18	73300	59010	6972.9	RAC	116.7	14.6	100	CL	Yes
07/08/94	Sandcone	F + 14	73880	58950	6976.6	RAC	112.9	15.9	96	CL	Yes
07/08/94	Sandcone	G + 16	73650	58910	6973.4	RAC	111.3	16.2	95	CL	Yes
07/08/94	Sieve .35 Aggregate	Windrow	---	---	---	---	---	---	---	---	Yes
07/11/94	Sandcone - Swale D	Sta. 20 + 00	Right Berm	---	6980.9	RAC	108.3	15.2	96	CL	Yes
07/11/94	Sandcone - Swale D	Sta. 25 + 00	Swale Bottom	---	6977.7	RAC	115.3	14.7	100	CL	Yes
07/11/94	Sandcone - Swale D	Sta. 27 + 00	Left Berm	---	6978.9	RAC	117.3	14.9	100	CL	Yes
07/11/94	Bedding Sand Thickness Measurement	Swale D	---	---	---	---	---	---	---	---	Yes

 RAC-Radon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY

DATE OF REPORT 10/12/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/18/94	Proctor - West Control Ditch	Sta. 19 +50	----	---	6957.1	Native	120.1	11.2	---	CL	Yes
07/18/94	Sandcone	E +17	73690	58690	6970.6	RAC	122.5	13.8	100	CL	Yes
07/18/94	Sandcone	D +17 Retest	73770	59610	6974.5	RAC	124.9	14.1	100	CL	Yes
07/18/94	Sandcone	G +18 Retest	73500	59780	6970.1	RAC	113.4	14.6	98	CL	Yes
07/19/94	Proctor	J +13	73700	59340	6980.2	RAC	114.7	14.1	---	CL	Yes
07/19/94	Sieve & Pl	F +17	73630	58770	6971.7	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	H +18	73300	59010	6972.9	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	E +18	73620	58620	6969.8	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	F +16	73710	58830	6973.7	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	G +14	73800	59030	6977.3	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	C +18	73950	58480	6969.7	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	A +18	73860	58340	6970.2	RAC	---	---	---	CL	Yes

RAC-Radon Attenuation Cover

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY

DATE OF REPORT 10/12/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/18/94	Proctor - West Control Ditch	Sta. 19+50	---	---	6957.1	Native	120.1	11.2	---	CL	Yes
07/18/94	Sandcone	E+17	73690	58690	6970.6	RAC	122.6	13.8	100	CL	Yes
07/18/94	Sandcone	D+17 Retest	73770	59610	6974.5	RAC	124.9	14.1	100	CL	Yes
07/18/94	Sandcone	G+18 Retest	73500	59780	6970.1	RAC	113.4	14.6	98	CL	Yes
07/19/94	Proctor	J+13	73700	59340	6980.2	RAC	114.7	14.1	---	CL	Yes
07/19/94	Sieve & Pl	F+17	73630	58770	6971.7	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	H+18	73300	59010	6972.9	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	E+18	73620	58620	6969.8	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	F+16	73710	58830	6973.7	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	G+14	73800	59030	6977.3	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	C+18	73950	58480	6969.7	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	A+18	73860	58340	6970.2	RAC	---	---	---	CL	Yes

RAC-Radon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO!

TEST SUMMARY

DATE OF REPORT 10/13/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/19/94	Sieve & Pl	C+17	73820	58530	6977.0	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	F.5+13.5	73950	58950	6977.7	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	J+13	73730	59340	6980.4	RAC	---	---	---	CL	Yes
07/19/94	Sieve & Pl	J+17	73380	59080	6975.2	RAC	---	---	---	CL	Yes
07/19/94	Sandcone	A+14.5	74150	58540	6975.6	RAC	114.1	15.4	98	CL	Yes
07/19/94	Sandcone	B+14.5	74120	58630	6977.4	RAC	112.3	15.8	100	CL	Yes
07/19/94	Sandcone	C+15	73990	58660	6975.2	RAC	110.4	15.6	98	CL	Yes
07/20/94	Proctor	B+13	73260	58650	6977.2	RAC	116.1	13.4	---	CL	Yes
07/20/94	Proctor Point	D+18	73590	58550	6970.1	RAC	114.8	13.8	---	CL	Yes
07/20/94	Proctor Point	K+18	73250	59080	6973.3	RAC	114.6	14.6	---	CL	Yes
07/20/94	Proctor Point	C+13.5	74090	58750	6976.5	RAC	114.7	14.1	---	CL	Yes
07/21/94	Proctor Point	H+15	73670	59050	6976.5	RAC	114.8	13.8	---	CL	Yes
07/20/94	Sandcone	B+13	74180	58700	6977.2	RAC	89.3	15.1	77	CL	No
07/20/94	Sandcone	B+13 Retest 07/20/94	74180	58700	6977.2	RAC	87.6	15.1	75	CL	No
07/20/94	Sandcone	C+13.5	74090	58750	6976.5	RAC	120.6	14.3	100	CL	Yes
07/20/94	Sandcone	A+13	74320	58620	6975.5	RAC	119.3	14.7	100	CL	Yes
07/20/94	Sandcone	A+14	74180	58570	6975.6	RAC	117.0	13.9	100	CL	Yes
07/20/94	Sandcone	C+14.5	74010	58700	6976.3	RAC	109.9	15.3	96	CL	Yes
07/20/94	Sandcone	D+15	73910	58750	6975.3	RAC	114.5	15.1	100	CL	Yes
07/20/94	Sandcone	E+15	73800	58820	6975.2	RAC	117.6	14.6	100	CL	Yes
07/20/94	Sandcone	D+14	74000	58800	6976.5	RAC	121.4	14.3	100	CL	Yes

RAC-Radon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY

DATE OF REPORT 10/13/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/19/94	Sieve & PI	C + 17	73820	58530	6977.0	RAC	---	---	---	CL	Yes
07/19/94	Sieve & PI	F.5 + 13.5	73950	58950	6977.7	RAC	---	---	---	CL	Yes
07/19/94	Sieve & PI	J + 13	73730	59340	6980.4	RAC	---	---	---	CL	Yes
07/19/94	Sieve & PI	J + 17	73380	59080	6975.2	RAC	---	---	---	CL	Yes
07/19/94	Sandcone	A + 14.5	74150	58540	6975.6	RAC	114.1	15.4	98	CL	Yes
07/19/94	Sandcone	B + 14.5	74120	58630	6977.4	RAC	112.3	15.8	100	CL	Yes
07/19/94	Sandcone	C + 15	73990	58660	6975.2	RAC	110.4	15.6	98	CL	Yes
07/20/94	Proctor	B + 13	73260	58650	6977.2	RAC	116.1	13.4	---	CL	Yes
07/20/94	Proctor Point	D + 18	73590	58550	6970.1	RAC	114.8	13.8	---	CL	Yes
07/20/94	Proctor Point	K + 18	73250	59080	6973.3	RAC	114.6	14.6	---	CL	Yes
07/20/94	Proctor Point	C + 13.5	74090	58750	6976.5	RAC	114.7	14.1	---	CL	Yes
07/21/94	Proctor Point	H + 15	73670	59050	6976.5	RAC	114.8	13.8	---	CL	Yes
07/20/94	Sandcone	B + 13	74180	58700	6977.2	RAC	89.3	15.1	77	CL	No
07/20/94	Sandcone	B + 13 Retest 07/20/94	74180	58700	6977.2	RAC	87.6	15.1	75	CL	No
07/20/94	Sandcone	C + 13.5	74090	58750	6976.5	RAC	120.6	14.3	100	CL	Yes
07/20/94	Sandcone	A + 13	74320	58620	6975.5	RAC	119.3	14.7	100	CL	Yes
07/20/94	Sandcone	A + 14	74180	58570	6975.6	RAC	117.0	13.9	100	CL	Yes
07/20/94	Sandcone	C + 14.5	74010	58700	6976.3	RAC	109.9	15.3	96	CL	Yes
07/20/94	Sandcone	D + 15	73910	58750	6975.3	RAC	114.5	15.1	100	CL	Yes
07/20/94	Sandcone	E + 15	73800	58820	6975.2	RAC	117.6	14.6	100	CL	Yes
07/20/94	Sandcone	D + 14	74000	58800	6976.5	RAC	121.4	14.3	100	CL	Yes

RAC-Radon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY

DATE OF REPORT 10/13/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/21/94	Sandcone	G + 14.5	73780	59000	6978.1	RAC	121.5	15.1	100	CL	Yes
07/21/94	Sandcone	G + 14	73800	59030	6977.3	RAC	112.7	14.8	97	CL	Yes
07/21/94	Sandcone	F + 13	73950	59030	6977.7	RAC	112.1	15.1	99	CL	Yes
07/21/94	Sandcone	F + 12.5	73980	59030	6977.7	RAC	114.5	15.1	100	CL	Yes
07/21/94	Sandcone	G + 13	73890	59100	6978.4	RAC	111.2	16.0	97	CL	Yes
07/21/94	Sandcone	H + 14	73730	59110	6977.6	RAC	113.6	16.2	97	CL	Yes
07/21/94	Sandcone	I + 15	73600	59120	6977.1	RAC	110.6	14.6	98	CL	Yes
07/21/94	Sandcone	J + 16	73460	59140	6977.4	RAC	110.9	15.7	98	CL	Yes
07/21/94	Sandcone	K + 17	73320	59170	6978.3	RAC	108.7	16.1	98	CL	Yes
07/22/94	Sandcone	L + 17	73250	59220	6983.9	RAC	121.4	13.9	100	CL	Yes
07/22/94	Sandcone	K + 16.5	73360	59200	6979.0	RAC	116.0	15.9	100	CL	Yes
07/22/94	Sandcone	K + 16	73380	59210	6980.7	RAC	121.0	14.2	100	CL	Yes



RAC-Redon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY

DATE OF REPORT 10/13/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/21/94	Sandcone	G + 14.5	73780	59000	6978.1	RAC	121.5	15.1	100	CL	Yes
07/21/94	Sandcone	G + 14	73800	59030	6977.3	RAC	112.7	14.8	97	CL	Yes
07/21/94	Sandcone	F + 13	73950	59030	6977.7	RAC	112.1	15.1	99	CL	Yes
07/21/94	Sandcone	F + 12.5	73980	59030	6977.7	RAC	114.5	15.1	100	CL	Yes
07/21/94	Sandcone	G + 13	73890	59100	6978.4	RAC	111.2	16.0	97	CL	Yes
07/21/94	Sandcone	H + 14	73730	59110	6977.6	RAC	113.6	16.2	97	CL	Yes
07/21/94	Sandcone	I + 15	73600	59120	6977.1	RAC	110.6	14.6	98	CL	Yes
07/21/94	Sandcone	J + 16	73460	59140	6977.4	RAC	110.9	15.7	98	CL	Yes
07/21/94	Sandcone	K + 17	73320	59170	6978.3	RAC	108.7	16.1	98	CL	Yes
07/22/94	Sandcone	L + 17	73250	59220	6983.9	RAC	121.4	13.9	100	CL	Yes
07/22/94	Sandcone	K + 16.5	73360	59200	6979.0	RAC	116.0	15.9	100	CL	Yes
07/22/94	Sandcone	K + 16	73380	59210	6980.7	RAC	121.0	14.2	100	CL	Yes



RAC Radon Attenuation Cover

UNCWK.SUM/cb

TEST SUMMARY

DATE OF REPORT 10/13/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/25/94	Sieve & Pl	O+7	73900	60020	6980.0	RAC	---	---	---	CL	Yes
07/25/94	Sieve & Pl	P+8	73700	60100	6982.1	RAC	---	---	---	CL	Yes
07/25/94	Sieve & Pl	S+8	73420	60270	6987.9	RAC	---	---	---	CL	Yes
07/25/94	Sieve & Pl	L+11	73940	59620	6986.1	RAC	---	---	---	CL	Yes
07/25/94	Sieve & Pl	J+11	73840	59460	6980.7	RAC	---	---	---	CL	Yes
07/25/94	Sieve & Pl	K+19	73160	59020	---	RAC	---	---	---	CL	Yes
07/25/94	Sieve & Pl	L+16	73340	59300	6985.5	RAC	---	---	---	CL	Yes
07/26/94	Sieve & Pl	L+7	74020	59870	6979.3	RAC	---	---	---	CL	Yes
07/26/94	Sieve & Pl	G+14	73800	59040	6977.7	RAC	---	---	---	CL	Yes
07/26/94	Sandcone	H+10.5	73920	59300	6979.9	RAC	122.4	14.1	100	CL	Yes
07/26/94	Sandcone	I+9.5	73970	59410	6979.9	RAC	122.9	15.0	100	CL	Yes
07/26/94	Sandcone	K+9	73900	59660	6981.0	RAC	119.4	14.8	100	CL	Yes
07/26/94	Sandcone	K+8	74000	59730	6979.9	RAC	116.8	15.7	100	CL	Yes
07/26/94	Sandcone	M+7	73950	59970	6980.0	RAC	120.0	14.2	100	CL	Yes
07/26/94	Sandcone	M.5+7.5	73900	59960	6980.0	RAC	109.6	15.1	96	CL	Yes
07/27/94	Proctor Point	O+4	74040	60300	6980.4	RAC	114.1	13.8	---	CL	Yes
07/27/94	Proctor Point	P+7.5	73720	60150	6981.6	RAC	114.1	13.8	---	CL	Yes
07/27/94	Proctor Point	P+5	73970	60310	6979.8	RAC	118.0	12.0	---	CL	Yes
07/27/94	Sandcone	M+6	74050	60000	6978.9	RAC	114.7	13.6	97	CL	Yes
07/27/94	Sandcone	M+5	74110	60080	6978.0	RAC	113.7	13.7	96	CL	Yes
07/27/94	Sandcone	N+4	74120	60220	6979.8	RAC	115.8	14.4	100	CL	Yes
07/27/94	Sandcone	M+2	74350	60260	6979.8	RAC	111.7	14.3	97	CL	Yes
07/27/94	Sandcone	O+5	73980	60220	6969.0	RAC	110.3	14.2	95	CL	Yes
07/27/94	Sandcone	O+5 Retest 07/27/94	73980	60220	6969.0	RAC	114.6	14.8	99	CL	Yes

RAC-Radon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORP. ION 1994 RECLAMATION

NO. 3144JK0E

TEST SUMMARY

DATE OF REPORT 10/13/99

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/25/94	Sieve & PI	O+7	73900	60020	6980.0	RAC	---	---	---	CL	Yes
07/25/94	Sieve & PI	P+8	73700	60100	6982.1	RAC	---	---	---	CL	Yes
07/25/94	Sieve & PI	S+9	73420	60270	6987.9	RAC	---	---	---	CL	Yes
07/25/94	Sieve & PI	L+11	73940	59620	6986.1	RAC	---	---	---	CL	Yes
07/25/94	Sieve & PI	J+11	73840	59460	6980.7	RAC	---	---	---	CL	Yes
07/25/94	Sieve & PI	K+19	73160	59020	---77	RAC	---	---	---	CL	Yes
07/25/94	Sieve & PI	L+16	73340	59300	6985.5	RAC	---	---	---	CL	Yes
07/26/94	Sieve & PI	L+7	74020	59870	6979.3	RAC	---	---	---	CL	Yes
07/26/94	Sieve & PI	G+14	73800	59040	6977.7	RAC	---	---	---	CL	Yes
07/26/94	Sandcone	H+10.5	73920	59300	6979.9	RAC	122.4	14.1	100	CL	Yes
07/26/94	Sandcone	I+9.5	73970	59410	6979.9	RAC	122.9	15.0	100	CL	Yes
07/26/94	Sandcone	K+9	73900	59660	6981.0	RAC	118.4	14.8	100	CL	Yes
07/26/94	Sandcone	K+8	74000	59730	6979.9	RAC	116.8	15.7	100	CL	Yes
07/26/94	Sandcone	M+7	73950	59970	6980.0	RAC	120.0	14.2	100	CL	Yes
07/26/94	Sandcone	M.5+7.5	73900	59960	6980.0	RAC	109.6	16.1	96	CL	Yes
07/27/94	Proctor Point	O+4	74040	60300	6980.4	RAC	114.1	13.8	---	CL	Yes
07/27/94	Proctor Point	P+7.5	73720	60150	6981.6	RAC	114.1	13.8	---	CL	Yes
07/27/94	Proctor Point	P+5	73970	60310	6979.8	RAC	118.0	12.0	---	CL	Yes
07/27/94	Sandcone	M+6	74050	60000	6978.9	RAC	114.7	13.6	97	CL	Yes
07/27/94	Sandcone	M+5	74110	60080	6978.0	RAC	113.7	13.7	96	CL	Yes
07/27/94	Sandcone	N+4	74120	60220	6979.8	RAC	115.8	14.4	100	CL	Yes
07/27/94	Sandcone	M+2	74350	60260	6979.8	RAC	111.7	14.3	97	CL	Yes
07/27/94	Sandcone	O+5	73980	60220	6969.0	RAC	110.3	14.2	95	CL	Yes
07/27/94	Sandcone	O+5 Retest 07/27/94	73980	60220	6969.0	RAC	114.6	14.8	99	CL	Yes

RAC-Redon Attenuation Cover

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TEST SUMMARY

DATE OF REPORT 10/13/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/27/94	Proctor Point	O+11	73520	59850	6992.7	RAC	114.7	14.1	---	CL	Yes
07/27/94	Proctor	L+11	73700	59620	6936.1	RAC	118.0	12.0	---	CL	Yes
07/27/94	Proctor Point	Q+4.5	73900	60420	6980.0	RAC	115.7	13.3	---	CL	Yes
07/28/94	Proctor	L+16	73230	59280	6985.4	RAC	116.6	12.8	---	CL	Yes
07/28/94	Sandcone	N+7	73900	60020	6979.0	RAC	117.1	14.8	100	CL	Yes
07/28/94	Sandcone	O+6	73900	60160	6080.9	RAC	115.6	15.2	100	CL	Yes
07/28/94	Sandcone	O+4.5	74100	60300	6980.4	RAC	112.7	14.8	99	CL	Yes
07/28/94	Sandcone	N+7.5	73850	60000	6980.7	RAC	117.6	13.9	100	CL	Yes
07/28/94	Sandcone	N+5	74050	60160	6978.6	RAC	119.1	14.7	100	CL	Yes
07/28/94	Sieve & Pl	L+8	73950	59800	6980.5	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	K+10	73850	59600	6981.7	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	E+16	73760	58760	6971.4	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	I+16	73520	59060	6975.3	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	I+10	73980	59440	6979.9	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	O+4	73050	60300	6980.4	RAC	---	---	---	CL	Yes
08/01/94	Sandcone	K.5+11	73750	59580	6982.9	RAC	116.9	13.6	100	CL	Yes
08/01/94	Sandcone	M+9	73800	59820	6983.8	RAC	123.9	14.2	100	CL	Yes
08/01/94	Sandcone	N+8.5	73780	59920	6984.0	RAC	121.3	13.9	100	CL	Yes
08/01/94	Sandcone	O+8.5	73750	60000	6984.7	RAC	126.6	13.7	100	CL	Yes
08/01/94	Sandcone	Q+7.5	73650	60230	6981.0	RAC	119.3	13.9	100	CL	Yes
08/01/94	Sandcone	L+17	73250	59240	6988.9	RAC	121.4	14.2	100	CL	Yes
08/01/94	Sandcone	K.5+15	73430	59260	6985.3	RAC	116.8	13.6	100	CL	Yes
08/01/94	Sandcone	L+16	73300	59220	6985.7	RAC	121.5	13.9	100	CL	Yes
08/01/94	Sandcone	L+15	73400	59350	6986.9	RAC	118.6	13.1	100	CL	Yes
08/01/94	Sandcone	K.5+14	73520	59400	6985.0	RAC	121.1	11.7	100	CL	Yes

RAC-Radon Attenuation Cover

UNCWK.SUM/cb

TEST SUMMARY

DATE OF REPORT 10/13/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/27/94	Proctor Point	O+11	73520	59850	6992.7	RAC	114.7	14.1	---	CL	Yes
07/27/94	Proctor	L+11	73700	59620	6936.1	RAC	118.0	12.0	---	CL	Yes
07/27/94	Proctor Point	Q+4.5	73900	60420	6980.0	RAC	115.7	13.3	---	CL	Yes
07/28/94	Proctor	L+16	73230	59280	6985.4	RAC	116.6	12.8	---	CL	Yes
07/28/94	Sandcone	N+7	73900	60020	6979.0	RAC	117.1	14.8	100	CL	Yes
07/28/94	Sandcone	O+6	73900	60160	6080.9	RAC	115.6	15.2	100	CL	Yes
07/28/94	Sandcone	O+4.5	74100	60300	6980.4	RAC	112.7	14.8	99	CL	Yes
07/28/94	Sandcone	N+7.5	73850	60000	6980.7	RAC	117.6	13.9	100	CL	Yes
07/28/94	Sandcone	N+5	74050	60160	6978.6	RAC	119.1	14.7	100	CL	Yes
07/28/94	Sieve & Pl	L+8	73950	59800	6980.5	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	K+10	73850	59600	6981.7	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	E+16	73760	58760	6971.4	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	I+16	73520	59060	6975.3	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	I+10	73980	59440	6979.9	RAC	---	---	---	CL	Yes
07/28/94	Sieve & Pl	O+4	73050	60300	6980.4	RAC	---	---	---	CL	Yes
08/01/94	Sandcone	K.5+11	73750	59580	6982.9	RAC	116.9	13.6	100	CL	Yes
08/01/94	Sandcone	M+9	73800	59820	6983.8	RAC	123.9	14.2	100	CL	Yes
08/01/94	Sandcone	N+8.5	73780	59920	6984.0	RAC	121.3	13.9	100	CL	Yes
08/01/94	Sandcone	O+8.5	73750	60000	6984.7	RAC	126.6	13.7	100	CL	Yes
08/01/94	Sandcone	Q+7.5	73650	60230	6981.0	RAC	119.3	13.9	100	CL	Yes
08/01/94	Sandcone	L+17	73250	59240	6988.9	RAC	121.4	14.2	100	CL	Yes
08/01/94	Sandcone	K.5+15	73430	59260	6985.3	RAC	116.8	13.6	100	CL	Yes
08/01/94	Sandcone	L+18	73300	59220	6985.7	RAC	121.5	13.9	100	CL	Yes
08/01/94	Sandcone	L+15	73400	59350	6986.9	RAC	118.6	13.1	100	CL	Yes
08/01/94	Sandcone	K.5+14	73520	59400	6985.0	RAC	121.1	11.7	100	CL	Yes

RAC-Radon Attenuation Cover

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TEST SUMMARY

DATE OF REPORT 10/13/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/01/94	Thickness Measurement D 50 1.5 Aggregate	Swale D	---	---	---	---	---	---	---	---	---??
08/01/94	Proctor Point	M+9	73800	59820	6983.8	RAC	114.1	13.8	---	CL	Yes
08/01/94	Proctor Point	K+11	73750	59580	6982.9	RAC	115.8	12.8	---	CL	Yes
08/01/94	Proctor Point	L+16	73300	59220	6985.7	RAC	116.6	12.8	---	CL	Yes
08/01/94	Proctor Point	K,5+14	73520	59400	6985.0	RAC	115.3	10.0	---	CL	Yes
08/01/94	Proctor Point	N+13	73440	59560	6997.2	RAC	114.7	14.1	---	CL	Yes
08/01/94	Proctor Point	L+14.5	73520	59400	6985.0	RAC	116.1	13.4	---	CL	Yes
08/02/94	Proctor Point	R+7	73650	60320	6981.4	RAC	115.7	13.3	---	CL	Yes
08/02/94	Proctor Point	N+10	73660	59840	6987.8	RAC	114.1	13.8	---	CL	Yes
08/02/94	Sandcone	L+14	73480	59430	6987.1	RAC	119.8	13.6	100	CL	Yes
08/02/94	Sandcone	M+11	73640	59700	6988.7	RAC	118.1	13.6	100	CL	Yes
08/02/94	Sandcone	N+10	73660	59840	6987.8	RAC	122.6	13.8	100	CL	Yes
08/02/94	Sandcone	P+9	73610	60050	6986.0	RAC	114.1	14.2	100	CL	Yes
08/02/94	Sandcone	R+7	73650	60320	6981.4	RAC	113.1	14.2	98	CL	Yes
08/02/94	Sandcone	Q+8	73640	60200	6981.8	RAC	116.1	13.9	100	CL	Yes
08/02/94	Sandcone	O+9	73650	60030	6981.8	RAC	124.5	14.5	100	CL	Yes
08/02/94	Sandcone	M+10	73720	59760	6986.8	RAC	111.6	13.1	98	CL	Yes
08/02/94	Sandcone	L+12	73630	59550	6986.9	RAC	117.8	13.8	100	CL	Yes
08/03/94	Sandcone	S+8.5	73470	60320	6994.1	RAC	112.5	14.3	97	CL	Yes
08/03/94	Sandcone	P+10	73540	59990	6989.7	RAC	108.8	14.3	95	CL	Yes
08/03/94	Sandcone	N+10.5	73620	59800	6990.6	RAC	109.9	14.0	96	CL	Yes
08/03/94	Sandcone	M+12	73570	59630	6990.9	RAC	116.5	13.9	100	CL	Yes
08/04/94	Proctor Point	Q+9	73550	60120	6986.5	RAC	116.5	13.0	---	CL	Yes
08/04/94	Sieve - D50 1.5 Aggregate	Hamilton Brothers	---	---	---	---	---	---	---	---	Yes

TEST SUMMARY

DATE OF REPORT 10/13/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/01/94	Thickness Measurement D 50 1.5 Aggregate	Swale D	---	---	---	---	---	---	---	---	---??
08/01/94	Proctor Point	M+9	73800	59820	6983.8	RAC	114.1	13.8	---	CL	Yes
08/01/94	Proctor Point	K+11	73750	59580	6982.9	RAC	115.8	12.8	---	CL	Yes
08/01/94	Proctor Point	L+16	73300	59220	6985.7	RAC	116.6	12.8	---	CL	Yes
08/01/94	Proctor Point	K.5+14	73520	59400	6985.0	RAC	115.3	10.0	---	CL	Yes
08/01/94	Proctor Point	N+13	73440	59560	6997.2	RAC	114.7	14.1	---	CL	Yes
08/01/94	Proctor Point	L+14.5	73520	59400	6985.0	RAC	116.1	13.4	---	CL	Yes
08/02/94	Proctor Point	R+7	73650	60320	6981.4	RAC	115.7	13.3	---	CL	Yes
08/02/94	Proctor Point	N+10	73660	59840	6987.8	RAC	114.1	13.8	---	CL	Yes
08/02/94	Sandcone	L+14	73480	59430	6987.1	RAC	119.8	13.6	100	CL	Yes
08/02/94	Sandcone	M+11	73640	59700	6988.7	RAC	118.1	13.6	100	CL	Yes
08/02/94	Sandcone	N+10	73660	59840	6987.8	RAC	122.6	13.8	100	CL	Yes
08/02/94	Sandcone	P+9	73610	60050	6986.0	RAC	114.1	14.2	100	CL	Yes
08/02/94	Sandcone	R+7	73650	60320	6981.4	RAC	113.1	14.2	98	CL	Yes
08/02/94	Sandcone	Q+8	73640	60200	6981.8	RAC	116.1	13.9	100	CL	Yes
08/02/94	Sandcone	O+9	73650	60030	6981.8	RAC	124.5	14.5	100	CL	Yes
08/02/94	Sandcone	M+10	73720	59760	6986.8	RAC	111.6	13.1	98	CL	Yes
08/02/94	Sandcone	L+12	73630	59550	6986.9	RAC	117.8	13.8	100	CL	Yes
08/03/94	Sandcone	S+8.5	73470	60320	6994.1	RAC	112.5	14.3	97	CL	Yes
08/03/94	Sandcone	P+10	73540	59990	6989.7	RAC	108.8	14.3	95	CL	Yes
08/03/94	Sandcone	N+10.5	73620	59800	6990.6	RAC	109.9	14.0	96	CL	Yes
08/03/94	Sandcone	M+12	73570	59630	6990.9	RAC	116.5	13.9	100	CL	Yes
08/04/94	Proctor Point	Q+9	73550	60120	6986.5	RAC	116.5	13.0	---	CL	Yes
08/04/94	Sieve - D50 1.5 Aggregate	Hamilton Brothers	---	---	---	---	---	---	---	---	Yes

RAC: Radon Attenuation Cover  
UNCWK SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY

DATE OF REPORT 10/13/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/05/94	Sieve & Pl	D + 14	74000	58800	6976.5	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	Q.5 + 6.5	73710	60320	6981.4	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	Q + 3.5	73960	60460	6980.9	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	P + 10	73540	59990	6989.7	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	L + 12	73630	59550	6986.9	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	A + 14.5	74150	58540	6975.6	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	I + 15	73600	59120	6977.1	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	Q + 5.5	73820	60350	6980.2	RAC	---	---	---	CL	Yes



RAC-Radon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY

DATE OF REPORT 10/13/9

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/05/94	Sieve & Pl	D + 14	74000	58800	6976.5	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	Q.5 + 6.5	73710	60320	6981.4	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	Q + 3.5	73960	60460	6980.9	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	P + 10	73540	59990	6989.7	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	L + 12	73630	59550	6986.9	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	A + 14.5	74150	58540	6975.6	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	I + 15	73600	59120	6977.1	RAC	---	---	---	CL	Yes
08/05/94	Sieve & Pl	Q + 5.5	73820	60350	6980.2	RAC	---	---	---	CL	Yes



RAC-Radon Attenuation Cover

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

TEST SUMMARY

DATE OF REPORT 10/13/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/15/94	Sandcone - Swale C	Sta. 10+00	Right Berm	---	6990.7	RAC	111.4	13.9	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 8+00	Bottom	---	6989.8	RAC	120.6	15.6	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 6+00	Left Berm	---	6992.8	RAC	116.8	14.9	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 4+00	Bottom	---	6991.8	RAC	113.1	14.2	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 16+00	Right Berm	---	6987.8	RAC	115.6	15.0	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 14+00	Left Berm	---	6988.8	RAC	111.9	15.0	99	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 12+00	Bottom	---	6987.8	RAC	115.5	14.6	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 2+00	Bottom	---	6992.8	RAC	114.6	14.0	100	CL	Yes
08/18/94	Sandcone - Swale B	Sta. 14+00	Swale Bottom	---	6993.6	Native	115.2	11.9	100	CL	Yes
08/18/94	Sandcone - Swale B	Sta. 12+00	West Berm	---	6995.3	Native	99.6	7.9	88	CL	No
08/18/94	Sandcone - Swale B	Retest #2 08/18/94	---	---	6995.3	Native	102.1	6.8	90	CL	Yes
08/18/94	Sandcone - Swale B	Sta. 10+00	Swale Bottom	---	6997.0	Native	115.0	8.1	100	CL	Yes
08/18/94	Sandcone - Swale B	Sta. 8+00	West Berm	---	6998.6	Native	114.8	7.7	100	CL	Yes

RAC-Redon Attenuation Cover

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

TEST SUMMARY

DATE OF REPORT 10/13/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/15/94	Sandcone - Swale C	Sta. 10+00	Right Berm	---	6990.7	RAC	111.4	13.9	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 8+00	Bottom	---	6989.8	RAC	120.8	15.8	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 6+00	Left Berm	---	6992.8	RAC	116.8	14.9	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 4+00	Bottom	---	6991.8	RAC	113.1	14.2	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 16+00	Right Berm	---	6987.8	RAC	115.6	15.0	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 14+00	Left Berm	---	6988.8	RAC	111.9	15.0	99	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 12+00	Bottom	---	6987.8	RAC	115.5	14.6	100	CL	Yes
08/15/94	Sandcone - Swale C	Sta. 2+00	Bottom	---	6992.8	RAC	114.6	14.0	100	CL	Yes
08/18/94	Sandcone - Swale B	Sta. 14+00	Swale Bottom	---	6993.6	Native	115.2	11.9	100	CL	Yes
08/18/94	Sandcone - Swale B	Sta. 12+00	West Berm	---	6995.3	Native	99.6	7.9	88	CL	No
08/18/94	Sandcone - Swale B	Retest #2 08/18/94	---	---	6995.3	Native	102.1	6.8	90	CL	Yes
08/18/94	Sandcone - Swale B	Sta. 10+00	Swale Bottom	---	6997.0	Native	115.0	8.1	100	CL	Yes
08/18/94	Sandcone - Swale B	Sta. 8+00	West Berm	---	6998.6	Native	114.8	7.7	100	CL	Yes

RAC-Radon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK0

TEST SUMMARY

DATE OF REPORT 10/13/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
08/30/94	Sandcone - West Control Ditch	Sta. 12 +00	---	---	6958.3	Native	116.0	6.8	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 14 +00	---	---	6959.4	Native	120.8	11.0	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 16 +00	---	---	6956.5	Native	113.7	6.2	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 18 +00	---	---	6957.7	Native	113.5	7.4	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 20 +00	---	---	6956.4	Native	115.2	6.9	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 22 +00	---	---	6956.0	Native	121.0	11.6	100	CL	Yes
08/31/94	Thickness Requirement Bedding Sand Swale A	---	---	---	---	---	---	---	---	---	Yes



RAC Radon Attenuation Cover

UNCWK SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

TEST SUMMARY

DATE OF REPORT 10/13/95

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/30/94	Sandcone - West Control Ditch	Sta. 12+00	---	---	6958.3	Native	116.0	6.8	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 14+00	---	---	6959.4	Native	120.8	11.0	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 16+00	---	---	6956.5	Native	113.7	6.2	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 18+00	---	---	6957.7	Native	113.5	7.4	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 20+00	---	---	6956.4	Native	115.2	6.9	100	CL	Yes
08/30/94	Sandcone - West Control Ditch	Sta. 22+00	---	---	6956.0	Native	121.0	11.6	100	CL	Yes
08/31/94	Thickness Requirement Bedding Sand Swale A	---	---	---	---	---	---	---	---	---	Yes



RAC Radon Attenuation Cover

UNCWK SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK0

TEST SUMMARY

DATE OF REPORT 10/13/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
09/14/94	Sieve & PI	L + 17	73250	59220	6983.9	RAC	---	---	---	CL	Yes
09/14/94	Sieve & PI	G + 18	73490	58780	6969.7	RAC	---	---	---	CL	Yes
09/15/94	Thickness Requirement D50 1.5 Aggregate	West Control Ditch	---	---	---	---	---	---	---	CL	Yes
09/15/94	Sandcone - Swale D Retest of #1 7/01/94	---	---	---	---	---	112.9	15.2	100	CL	Yes
09/19/94	Soil Cover on D50 1.5 Aggregate	Central Cell	---	---	---	---	---	---	---	---	Yes
09/20/94	Sieve & PI	N + 12	73510	59710	6994.0	RAC	---	---	---	CL	Yes
09/26/94	Sieve - D50 1.5 Aggregate	Windrow	---	---	---	---	---	---	---	---	Yes
09/26/94	Sieve & PI - Swale C	Sta. 13+00	---	---	6987.8	RAC	---	---	---	CL	Yes
09/26/94	Sieve & PI - Swale C	Sta. 8+00	---	---	6990.3	RAC	---	---	---	CL	Yes
09/26/94	Sieve & PI - Swale C	Sta. 4+00	---	---	6992.3	RAC	---	---	---	CL	Yes
09/29/94	Thickness Requirement D50 1.5 Aggregate Placement	Central Cell	---	---	---	---	---	---	---	---	Yes



RAC-Radon Attenuation Cover

UNCWK.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKC

TEST SUMMARY

DATE OF REPORT 10/13/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
09/14/94	Sieve & PI	L + 17	73250	59220	6983.9	RAC	---	---	---	CL	Yes
09/14/94	Sieve & PI	G + 18	73490	58780	6969.7	RAC	---	---	---	CL	Yes
09/15/94	Thickness Requirement D50 1.5 Aggregate	West Control Ditch	---	---	---	---	---	---	---	CL	Yes
09/15/94	Sandcone - Swale D Retest of #1 7/01/94	---	---	---	---	---	112.9	15.2	100	CL	Yes
09/19/94	Soil Cover on D50 1.5 Aggregate	Central Cell	---	---	---	---	---	---	---	---	Yes
09/20/94	Sieve & PI	N + 12	73510	59710	6994.0	RAC	---	---	---	CL	Yes
09/26/94	Sieve - D50 1.5 Aggregate	Windrow	---	---	---	---	---	---	---	---	Yes
09/26/94	Sieve & PI - Swale C	Sta. 13 + 00	---	---	6987.8	RAC	---	---	---	CL	Yes
09/26/94	Sieve & PI - Swale C	Sta. 8 + 00	---	---	6990.3	RAC	---	---	---	CL	Yes
09/26/94	Sieve & PI - Swale C	Sta. 4 + 00	---	---	6992.3	RAC	---	---	---	CL	Yes
09/29/94	Thickness Requirement D50 1.5 Aggregate Placement	Central Cell	---	---	---	---	---	---	---	---	Yes



RAC-Radon Attenuation Cover

UNCWK.SUM/cb

**APPENDIX  
B**

APPENDIX B  
SOIL RADON BARRIER EVALUATION

## APPENDIX B

### RADON EVALUATION OF INTERIM COVER

United Nuclear measured the radon flux over the tailings area after completion of the interim cover in October 1991. The results of this survey, included as Attachment A, indicated that the radon flux over the South and North Cells was within design parameters, but the radon flux over the Central Cell was elevated in some locations. A core sampling and analysis investigation conducted in late 1992 and early 1993 indicated that lenses of more radioactive, fine tailings were present near the tailings surface in those areas exhibiting elevated flux values. These fine tailings may have migrated upwards and been mixed with the coarse tailings during regrading of the cell surface.

The 1992 and 1993 investigation, included as Attachment B, also provided as-built physical and radiological parameters for the Central Cell that allowed for predicting the radon flux after placement of the final cover. The RADON computer model was used to perform the analysis of the approved 6-inch final cover design and of modified 9-inch and 12-inch final covers. A 1-foot thick existing interim cover and a 16.4-foot mixed layer of coarse and fine tailings were used in the model to approximate as-built conditions. The soil and radiological properties assigned to the layers are presented in Table 1 and are based on the average values from the 1992-1993 investigation.

The modeling results for a 6-inch, 9-inch and 12-inch final cover over the Central Cell are presented in Tables 2, 3 and 4, respectively. Table 2 shows that the approved 6-inch cover design would reduce the average radon flux over the entire tailings area to 19.3 picoCuries per square meter per second ( $\text{pCi}/\text{m}^2/\text{s}$ ) and the maximum flux in the Central Cell to 51.7  $\text{pCi}/\text{m}^2/\text{s}$ . Although this exit flux met Nuclear Regulatory Commission (NRC) requirements that the average maximum exit flux not exceed 20  $\text{pCi}/\text{m}^2/\text{s}$ , United Nuclear Corporation elected to place an additional 3 inches of soil (i.e., 9 inches of final cover) for added safety. Table 3 shows that the 9-inch final cover design has a predicted average radon exit flux of 17.6  $\text{pCi}/\text{m}^2/\text{s}$ , which exceeds NRC's exit flux requirement by 2.4  $\text{pCi}/\text{m}^2/\text{s}$ .

TABLE 1

RADON INPUT PARAMETERS - CENTRAL CELL  
UNITED NUCLEAR CORPORATION

Layer	Thickness (in)	Porosity	Density g/cm <sup>3</sup>	Radium Content pCi/g	Emanation Coefficient	Long Term Moisture %	Radon Diffusion Coefficient cm <sup>2</sup> /s
Tailings	197	0.37	1.68	see note 5	0.12	6	0.0231
Existing Soil Cover	12	0.31	1.85	4.7	0.33	12.9	0.0072
New Soil Cover	see note 8	0.31	1.85	0	0	12.9	0.0072

Notes:

1. 197 in. (500 cm) thickness for tailings is recommended by NRC (Regulatory Guide 3.64).
2. Porosity is determined from  $\text{Porosity} = 1 - \text{density of soil} / (\text{density of water} \times \text{specific gravity})$
3. Tailings density determined by averaging density values (other than soil cover material).
4. Soil cover density determined by averaging soil cover density values.
5. Radium Content and Emanation Coefficient for Tailings were determined by considering only values from 0 to 4 feet beneath soil cover because radium content in soils nearer the soil cover will effect radon exit flux more than radium contents in deeper soils. RADON simulations were performed with the following radium contents:
  - Overall Radium Content over central cell from data is approximately 200 pCi/g.
  - Moderate Radium Content average is approximately 250 pCi/g (see Core Samples 17A, 13G, and 9G).
  - High Radium Content is approximately 543 pCi/g (see Core Sample 17I).
6. Long-term moisture contents from 1991 UNC Reclamation Plan.
7. Radium Diffusion Coefficient determined from averaging diffusion coefficient results.
8. Radon simulations with New Soil Cover Thicknesses of 6", 9", and 12" are performed over the average, moderate, and high flux areas in the central cell.

TABLE 2

**RADON COVER EVALUATION**  
**SCENARIO 1 - PLACE ADDITIONAL 6 INCHES OF SOIL COVER ON TOP OF 1 FOOT OF INTERIM COVER IN CENTRAL CELL**  
**UNITED NUCLEAR CORPORATION**

Area Designation and Description	Additional Soil Cover over Interim Cover (in)	Approximate Area (Acres)	Approximate Soil Cover Volume (cy)	Radon Exit Flux (pCi/m <sup>2</sup> /s)	Area x Radon Flux (Acres - pCi/m <sup>2</sup> /s)
1. North/South Cells, Evap. Ponds	6	73	58,887	16.2	1,183
2. Borrow Pit No. 2	6	5	4,033	5.4	27
3. Central Cell Low Exit Flux Area	6	43.1	34,767	19.6	845
4. Central Cell Moderately High Exit Flux Area	6	12.2	9,841	24.2	295
5. Central Cell High Exit Flux Area	6	6.7	5,405	51.7	346
<b>Totals</b>		<b>140</b>	<b>112,933</b>		<b>2,696</b>
<b>Average Radon Flux =</b>			<b><u>2696</u></b>	<b><u>= 19.3 pCi/m<sup>2</sup>/s</u></b>	
<b>over entire site</b>			<b>140</b>		

**Notes:**

1. Central cell moderate high flux area is area around Samples 17A, 13G, and 9G. Central cell high flux area is area around Sample 17I. Central cell low flux area is all other remaining area in central cell.
2. Radon Flux estimated by RADON computer Model.
3. Evap. Ponds soil and radiological properties assumed same as north and south cell properties.
4. Zero radium content assumed in soil cover material for areas listed under designation 1 & 2 above.
5. Borrow Pit No. 2 area soil properties assumed same as other areas. Radon exit flux for Borrow Pit No. 2 calculated by initially assuming an exit flux of 10 pCi/m<sup>2</sup>/s with 12 inches of cover over tailings, back calculating source term, and using this source term, computing exit flux with an additional 6 inches of soil cover over the 12 inches soil cover.
6. Soil properties provided in September 28, 1993 letter from UNC were averaged and assumed representative of entire site and used with RADON model.
7. Long term moisture contents from 1991 UNC Reclamation Plan.

TABLE 3

**RADON COVER EVALUATION**  
**SCENARIO 2 - PLACE ADDITIONAL 9 INCHES OF SOIL COVER ON TOP OF 1 FOOT OF INTERIM COVER IN CENTRAL CELL**  
**UNITED NUCLEAR CORPORATION**

Area Designation and Description	Additional Soil Cover over Interim Cover (in)	Approximate Area (Acres)	Approximate Soil Cover Volume (cy)	Radon Exit Flux (pCi/m <sup>2</sup> /s)	Area x Radon Flux (Acres - pCi/m <sup>2</sup> /s)
1. North/South Cells, Evap. Ponds	6	73	58,887	16.2	1,183
2. Borrow Pit No. 2	6	5	4,033	5.4	27
3. Central Cell Low Exit Flux Area	9	43.1	52,151	16.6	715
4. Central Cell Moderately High Exit Flux Area	9	12.2	14,762	20.6	251
5. Central Cell High Exit Flux Area	9	6.7	8,107	43.9	294
Totals		140	137,940		2,471
Average Radon Flux =			<u>2471</u>	= <u>17.6 pCi/m<sup>2</sup>/s</u>	
over entire site			140		

**Notes:**

1. Central cell moderate high flux area is area around Samples 17A, 13G, and 9G. Central cell high flux area is area around Sample 17I. Central cell low flux area is all other remaining area in central cell.
2. Radon flux estimated by RADON computer model.
3. Evap. Ponds soil and radiological properties assumed same as north and south cell properties.
4. Zero radium content assumed in soil cover material for areas listed under designation 1 & 2 above.
5. Borrow Pit No. 2 area soil properties assumed same as other areas. Radon exit flux for Borrow Pit No. 2 calculated by initially assuming an exit flux of 10 pCi/m<sup>2</sup>/s with 12 inches of cover over tailings, back calculating source term, and using this source term, computing exit flux with an additional 6 inches of soil cover over the 12 inches soil cover.
6. Soil properties provided in September 28, 1993 letter from UNC were averaged and assumed representative of entire site and used with RADON model.
7. Long-term moisture contents from 1991 UNC Reclamation Plan.

TABLE 4

**RADON COVER EVALUATION**  
**SCENARIO 3 - PLACE ADDITIONAL 12 INCHES OF SOIL COVER ON TOP OF 1 FOOT OF INTERIM COVER IN CENTRAL CELL**  
**UNITED NUCLEAR CORPORATION**

Area Designation and Description	Additional Soil Cover over Interim Cover (in)	Approximate Area (Acres)	Approximate Soil Cover Volume (cy)	Radon Exit Flux (pCi/m <sup>2</sup> /s)	Area x Radon Flux (Acres - pCi/m <sup>2</sup> /s)
1. North/South Cells, Evap. Ponds	6	73	58,887	16.2	1,183
2. Borrow Pit No. 2	6	5	4,033	5.4	27
3. Central Cell Low Exit Flux Area	12	43.1	69,535	14.2	612
4. Central Cell Moderately High Exit Flux Area	12	12.2	19,683	17.6	215
5. Central Cell High Exit Flux Area	12	6.7	10,809	37.6	252
Totals		140	162,947		2,288
Average Radon Flux =			2288	= 16.3 pCi/m <sup>2</sup> /s	
over entire site			140		

**Notes:**

1. Central cell moderate high flux area is area around Samples 17A, 13G, and 9G. Central cell high flux area is area around Sample 17I. Central cell low flux area is all other remaining area in central cell.
2. Radon flux estimated by RADON computer model.
3. Evap. Ponds soil and radiological properties assumed same as north and south cell properties.
4. Zero radium content assumed in soil cover material for areas listed under designation 1 & 2 above.
5. Borrow Pit No. 2 area soil properties assumed same as other areas. Radon exit flux for Borrow Pit No. 2 calculated by initially assuming an exit flux of 10 pCi/m<sup>2</sup>/s with 12 inches of cover over tailings, back calculating source term, and using this source term, computing exit flux with an additional 6 inches of soil cover over the 12 inches soil cover.
6. Soil properties provided in September 28, 1993 letter from UNC were averaged and assumed representative of entire site and used with RADON model.
7. Long-term moisture contents from 1991 UNC Reclamation Plan.

**ATTACHMENT A**  
**RADON FLUX MEASUREMENTS**



**ENERGY LABORATORIES, INC.**

P. O. BOX 3258 • CASPER, WY 82402 • PHONE (307) 236-0515  
 234 NORTH CENTER, SUITE 100 • CASPER, WY 82401 • FAX (307) 236-1000

**Large Area Activated Charcoal Canister (LAACC) Radon Flux Report**

Project: United Nuclear Corporation Date Set: October 21, 1991  
 Site: Churchrock Date Remove: October 22, 1991  
 Report Date: October 29, 1991 Date Counted: October 24, 1991

Method: UMC personnel set, retrieved, and transferred charcoal for LAACCs  
 EPA Method 115 per 40 CFR 61 (NESHAPs)  
 Radon Flux measurements have been corrected  
 for instrument & charcoal background counts

Lab I.D.	LAACC #	Canister #	Location	10/21/91 Time Set	10/22/91 Time Remove	Radon Flux pCi/m2s
91-40927	1	107	21 A	09:47	09:29	15.8
91-40928	2	108	23 A	09:49	09:30	70.3
91-40929	3	109	25 A	09:50	09:31	4.2
91-40930	4	110	27 A	09:52	09:32	254
Duplicate						252
91-40931	5	111	29 A	09:54	09:33	23.2
91-40932	6	112	31 A	09:56	09:34	51.0
91-40933	7	113	33 A	09:57	09:34	0.6
91-40934	8	114	35 A	09:59	09:35	25.2
91-40935	9	115	37 A	10:01	09:35	14.3
91-40936	10	116	39 A	10:02	09:36	57.9
91-40937	11	117	41 A	10:04	09:37	2.7
91-40938	12	118	43 B	10:05	09:38	1.7
91-40939	13	119	41 C	10:06	09:40	74.3
91-40940	14	120	39 C	10:08	09:42	115
Duplicate						115
91-40941	15	121	37 C	10:10	09:44	8.3
91-40942	16	122	35 C	10:12	10:02	2.8
91-40943	17	123	33 C	10:13	10:04	21.0
91-40944	18	124	31 C	10:15	10:04	87.7
91-40945	19	125	29 C	10:16	10:05	14.2
91-40946	20	126	29 E	10:18	10:06	0.2
91-40947	21	127	31 E	10:19	10:08	1.6
91-40948	22	128	33 E	10:21	10:09	1.8
91-40949	23	129	35 E	10:22	10:10	22.4
91-40950	24	130	37 E	10:24	10:11	1.0
Duplicate						1.2
91-40951	25	131	39 E	10:25	10:12	21.5
91-40952	26	132	35 G	10:27	10:13	2.4
91-40953	27	133	33 G	10:28	10:14	0.5
91-40954	28	134	31 G	10:29	10:15	2.8
91-40955	29	135	29 G	10:30	10:16	1.1
91-40956	30	136	29 I	10:31	10:39	0.8
91-40957	31	137	31 I	10:33	10:39	2.4
91-40958	32	138	34 I	10:34	10:40	2.0

-LI

Large Area Activated Charcoal Canister (LAACC) Radon Flux Report

Project: United Nuclear Corporation  
Site: Churcrook  
Location: Central Cell Covered Tails  
Report Date: October 29, 1991

Date Set: October 21, 1991  
Date Remove: October 22, 1991  
Date Counted: October 24, 1991

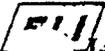
Lab I.D.	LAACC #	Canister #	Location	10/21/91 Time Set	10/22/91 Time Remove	Radon Flux pCi/m2s
91-40959	33	139	19 A	10:38	10:42	2.5
91-40960	34	140	19 C	10:40	10:43	1.5
Duplicate						1.4
91-40961	35	141	19 E	10:42	10:44	2.6
91-40962	36	142	19 G	10:44	10:45	35.0
91-40963	37	143	19 I	10:45	10:45	3.7
91-40964	38	144	17 K	10:48	10:47	0.7
91-40965	39	145	17 I	10:51	10:48	260
91-40966	40	146	17 G	10:52	10:49	448
91-40967	41	147	17 E	10:55	10:50	85.7
91-40968	42	148	17 C	10:57	10:50	9.2
91-40969	43	149	17 A	10:59	10:51	128
91-40970	44	150	15 A	11:01	10:59	28.5
Duplicate						28.7
91-40971	45	151	15 C	11:04	11:00	1.2
91-40972	46	152	15 E	11:06	11:01	137
91-40973	47	153	15 G	11:09	11:02	67.0
91-40974	48	154	15 I	11:10	11:04	8.5
91-40975	49	155	15 K	11:13	11:07	11.0
91-40976	50	156	15 M	11:17	11:09	248
91-40977	51	157	13 M	11:20	11:11	349
91-40978	52	158	13 K	11:24	11:12	3.5
91-40979	53	159	13 I	11:28	11:14	160
91-40980	54	160	13 G	11:30	11:15	29.6
91-40981	55	161	13 E	11:33	11:17	4.4
91-40982	56	162	13 C	11:36	11:17	95.3
91-40983	57	163	11 A → 13A	11:40	11:18	27.7
91-40984	58	164	11 A	11:42	11:33	5.6
91-40985	59	165	11 C	11:45	11:34	156
91-40986	60	166	11 E	11:47	11:34	42.1
91-40987	61	167	11 G	11:49	11:35	90.4
Duplicate						89.8
91-40988	62	168	11 I	11:51	11:36	53.2
91-40989	63	169	11 K	11:54	11:38	360
91-40990	64	170	11 M	11:57	11:39	792
91-40991	65	171	11 O	11:59	11:40	120
91-40992	66	172	9 O	12:00	11:42	35.8



Large Area Activated Charcoal Canister (LAACC) Radon Flux Report

Project: United Nuclear Corporation Date Set: October 21, 1991  
 Site: Churchrock Date Remove: October 22, 1991  
 Location: Central/North Cell Covered Tails Date Counted: October 24, 1991  
 Report Date: October 29, 1991

Lab I.D.	LAACC #	Canister #	Location	10/21/91 Time Set	10/22/91 Time Remove	Radon Flux pCi/m2s
91-40993	67	173	9 A	12:10	11:50	5.4
91-40994	68	174	7 A	12:11	11:51	14.0
91-40995	69	175	5 A	12:14	11:51	5.9
91-40996	70	176	3 A	12:15	11:52	3.5
91-40997	71	177	1 A	12:17	11:53	1.6
Duplicate						1.5
91-40998	72	178	-1 A	12:19	11:54	3.8
91-40999	73	179	-3 C	12:24	12:13	14.7
91-41000	74	180	-1 C	12:27	12:14	0.7
91-41001	75	181	1 C	12:29	12:15	159
91-41002	76	182	3 C	12:31	12:15	58.6
91-41003	77	183	5 C	12:33	12:16	34.6
91-41004	78	184	7 C	12:35	12:16	7.7
91-41005	79	185	9 C	12:36	12:17	5.1
91-41006	80	186	9 E	12:40	12:18	11.6
91-41007	81	187	7 E	12:42	12:19	44.4
Duplicate						46.5
91-41008	82	188	5 E	12:44	12:20	20.5
91-41009	83	189	3 E	12:46	12:21	63.4
91-41010	84	190	1 E	12:48	12:22	21.2
91-41011	85	191	-1 E	12:51	12:22	33.7
91-41012	86	192	-3 E	12:52	12:23	4.1
91-41013	87	193	-7 E	13:59	13:37	1.1
91-41014	88	194	-5 E	14:03	13:40	1.8
91-41015	89	195	-3 G	14:04	13:42	50.7
91-41016	90	196	1 G	14:17	14:01	11.4
91-41017	91	197	3 G	14:19	14:02	5.2
Duplicate						4.9
91-41018	92	198	5 G	14:23	14:03	0.8
91-41019	93	199	7 G	14:26	14:05	13.8
91-41020	94	200	9 G	14:30	14:06	149
91-41021	95	201	9 I	14:33	14:08	263
91-41022	96	202	7 I	14:35	14:10	57.7
91-41023	97	203	5 T	14:38	14:14	1.7
91-41024	98	204	3 I	14:40	14:15	0.8
91-41025	99	205	1 I	14:43	14:16	8.6
91-41026	100	206	-1 I	14:45	14:17	3.0
91-41027	101	207	-3 I	14:46	14:19	7.6
Duplicate						8.3
91-41028	102	208	-5 I	14:48	14:20	18.7
91-41029	103	209	-9 I	14:51	14:24	1.6
91-41030	104	210	3 K	14:53	14:48	9.8



**Large Area Activated Charcoal Canister (LAACC) Radon Flux Report**

Project: United Nuclear Corporation Date Set: ~~October 21, 1991~~  
 Site: Churchrock Date Remove: October 22, 1991  
 Location: Central/North Cell Covered Tails Date Counted: October 24, 1991  
 Report Date: October 29, 1991

Lab I.D.	LAACC #	Canister #	Location	10/21/91 Time Set	10/22/91 Time Remove	Radon Flux pCi/m2s
91-41031	105	211	5 K	14:56	14:50	2.8
91-41032	106	212	7 K	14:57	14:51	157
91-41033	107	213	9 K	14:59	14:53	86.0
91-41034	108	214	9 M	15:01	15:00	1.1
91-41035	109	215	7 M	15:03	15:01	1.8
91-41036	110	216	5 M	15:05	15:02	55.3
91-41037	111	217	3 M	15:07	15:03	61.0
91-41038	112	218	1 M	15:09	15:06	2.9
91-41039	113	219	1 O	15:10	15:07	57.8
91-41040	114	220	3 O	15:13	15:09	104
91-41041	115	221	5 O	15:14	15:10	8.9
91-41042	116	222	7 O	15:15	15:11	8.0

**Quality Assurance/Quality Control Data**

Date Set: October 21, 1991 Date Remove: October 22, 1991

Date Counted	Blank Charcoal Lot #1 cpm	Blank Charcoal Lot #2 cpm	Standard No. 1 cpm	Standard No. 2 cpm
10/24/91	115	166	1740	3447
	121	147	1725	3471
	102	152	1755	3522

Total Number Of Laboratory Duplicates: 10

Total Number of Measurements On South Cell: 32

Total Number of Measurements On Central Cell: 34

Total Number of Measurements On Central/North Cell: 50

Number of Measurements On Interim Covered Area: 116

Average Radon Flux For Total Area: 55.0 pCi/m2s

Minimum: 0.50 pCi/m2s

Maximum: 792 pCi/m2s

Average Radon Flux for South Cell: 28.3 pCi/m2s

Average Radon Flux for Central Cell: 112 pCi/m2s

Average Radon Flux for Central/North Cell: 33.3 pCi/m2s

**QUALITY ASSURANCE MANAGER:**

Energy Laboratories, Inc.

P.O. Box 3258

Casper, WY 82602

**ATTACHMENT B**  
**CORE SAMPLING AND ANALYSIS**

# UNITED NUCLEAR CORPORATION



P.O. Box 3077  
Gallup, New Mexico 87305-3077

Telephone: (505) 722-6651  
Fax: (505) 722-6654

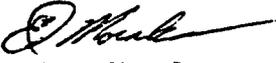
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Memorandum

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To: Juan Velasquez

Date: May 27, 1993

From:   
Edward M. Morales

Subject: Central Cell Soil Sample Results

Enclosed are two copies of the Radium 226, and Emanation Coefficient results from Energy Labs. Two copies of the Diffusion Coefficient results from Rogers and Assoc. Two copies of the results from Western Tech on the Density, Moisture, Particle size (hydrometer and specific Gravity).



**ENERGY LABORATORIES, INC.**

P.O. BOX 3258 • CASPER, WY 82602 • PHONE (307) 235-0515  
254 NORTH CENTER, SUITE 100 • CASPER, WY 82601 • FAX (307) 234-1639

**UNITED NUCLEAR CORPORATION  
SOIL ANALYSIS REPORT**

P.O. # EW-49-12-92

Report Date: 12-29-92

ELI #	Sample ID	Sample Date	Ra226 pCi/gm	Ra226 Prec. +/-
92-47201	17 A	11-19-92	44.5	0.8
92-47202	15 C	11-19-92	214	1.8
92-47203	17 I	11-19-92	134	1.5
92-47204	13 G	11-19-92	142	1.5
92-47205	11 K	11-20-92	42.6	0.8
92-47206	9 G	11-20-92	26.6	0.7
92-47207	13 R	11-20-92	218	1.9
92-47208	11 M	11-20-92	117	1.3
92-47209	9 M	11-20-92	80.2	1.5
92-47210	5 M	11-20-92	66.2	1.0

Report Approved By: *DB Rea*

kmk



# ENERGY LABORATORIES, INC.

P.O. BOX 3258 • CASPER, WY 82602 • PHONE (307) 235-0515  
254 NORTH CENTER, SUITE 100 • CASPER, WY 82601 • FAX (307) 234-1639

## SOIL ANALYSIS REPORT - UNC MINING & MILLING

Project: Central Cell Covered Tailing

Report Date: 02/11/93

LAB I.D.	SAMPLE/DEPTH, FT. I.D.	Pci/gm- Ra226 (Chemical)	Net CPM <sup>1</sup> A*	Net CPM <sup>2</sup> A <sub>∞</sub>	(A <sub>∞</sub> - A*)/A <sub>∞</sub> <sup>3</sup>
93-0545	17A 0-1	6.4 ± 0.3	5.0	9.6	0.4792
93-0546	17A 1.8-2.4	221 ± 1.6	590	680	0.1324
93-0547	17A 3-4	252 ± 1.7	566	671	0.1568
93-0548	17A 4-5	175 ± 1.4	462	523	0.1176
93-0549	17A 5.8-6.5	114 ± 1.2	306	362	0.1540
93-0550	9M 0-1	5.5 ± 0.3	6.5	7.4	0.1216
93-0551	9M 2-2.5	181 ± 1.4	466	503	0.0745
93-0552	9M 3.3-4.0	96.2 ± 1.1	220	256	0.1418
93-0553	9M 5-5.5	98.8 ± 1.0	284	307	0.0737
93-0554	9M 6.2-7.0	78.7 ± 1.0	200	225	0.1129
93-0555	13G 0-1	2.1 ± 0.3	6.6	14.3	0.5385
93-0556	13G 1.0-1.5	2.5 ± 0.2	8.6	11.7	0.2650
93-0557	13G 3.3-4.0	313 ± 1.9	406	455	0.1079
93-0558	13G 4.0-4.9	216 ± 1.6	473	534	0.1128
93-0559	13G 5.8-6.5	123 ± 1.2	365	444	0.1771
93-0560	11M 0-1	4.1 ± 0.2	8.5	11.3	0.2478
93-0561	11M 1.5-2.5	100 ± 1.1	254	298	0.1465
93-0562	11M 2.5-5.0	84.0 ± 1.0	232	252	0.0813
93-0563	11M 4-5	93.1 ± 1.0	223	246	0.0935
93-0564	11M 6.4-7.5	98.0 ± 1.0	252	271	0.0680
93-0565	9G 0-1	1.7 ± 0.1	4.0	5.8	0.3103
93-0566	9G 1.4-2.5	137 ± 1.2	323	355	0.0912
93-0567	9G 3.3-4	208 ± 2.0	747	811	0.0781
93-0568	9G 4-5	281 ± 1.8	754	842	0.1049
93-0569	9G 5.8-6.5	82.2 ± 1.0	183	207	0.1167
93-0570	9G 6.5-7.0	432 ± 2.2	823	904	0.0897
93-0571	17I 0-0.9	4.9 ± 0.2	1.9	10.2	0.8137
93-0572	17I .9-1.5	9.2 ± 0.3	10.0	10.0	0.0000
93-0573	17I 1.6-2.3	8.2 ± 0.3	9.1	11.6	0.2155
93-0574	17I 3.0-4.1	363 ± 2.0	898	967	0.0721
93-0575	17I 4.1-4.8	723 ± 2.8	1537	1695	0.0929
93-0576	17I 6.1-6.8	191 ± 2.0	469	521	0.1001

<sup>1</sup> A\* - Net CPM after de-emanation

<sup>2</sup> A<sub>∞</sub> - Net CPM after full ingrowth

<sup>3</sup> (A<sub>∞</sub> - A\*)/A<sub>∞</sub> Radon Emanation Coefficient

Report Approved By: *R.A. Harding*

kmk



**ENERGY LABORATORIES, INC.**

P.O. BOX 3258 • CASPER, WY 82602 • PHONE (307) 235-0515  
254 NORTH CENTER, SUITE 100 • CASPER, WY 82601 • FAX (307) 234-1639

SOIL ANALYSIS REPORT - UNC

SAMPLE I.D.:	13K 4.0-5.0	13K 6.5-7.5	13K 5.8-6.5	13K 1.3-1.8	13K 3.3-4.0
Report Date:	05-25-93	05-25-93	05-25-93	05-25-93	05-25-93
Sample Number:	93-15412	93-15413	93-15414	93-15415	93-15416

**RADIOMETRIC pCi/g:**

Ra226 - Chemical	102	199	108	10.7	84.3
Ra Prec. +/-	0.9	1.3	1.0	0.3	0.9

**Radon Emanation:**

A° - Initial Activity net cpm after de-emanation	462	597	432	36.0	376
A∞ - Final Activity net cpm after 15 days	494	665	441	37.0	393
Radon Emanation Coefficient (A∞ - A°)/A∞	0.0648	0.1023	0.0204	0.0270	0.0382

Report Approved By: *P.A. Leaking*  
kmk 2315412.unc



**ENERGY LABORATORIES, INC.**

P.O. BOX 3258 • CASPER, WY 82602 • PHONE (307) 235-0515  
 254 NORTH CENTER, SUITE 100 • CASPER, WY 82601 • FAX (307) 234-1635

SOIL ANALYSIS REPORT - UNC

<b>SAMPLE I.D.:</b>	<b>5M</b>	<b>5M</b>	<b>5M</b>
	0-2.5	5.8-7.5	5.0-5.8
<b>Report Date:</b>	05-25-93	05-25-93	05-25-93
<b>Sample Number:</b>	93-15417	93-15418	93-15419

**RADIOMETRIC pCi/g:**

Ra226 - Chemical	1.2	95.0	143
Ra Prec. +/-	0.1	0.9	1.1

**Radon Emanation:**

A <sup>0</sup> - Initial Activity net cpm after de-emanation	5.0	436	633
A <sup>∞</sup> - Final Activity net cpm after 15 days	8.0	446	646
Radon Emanation Coefficient (A <sup>∞</sup> - A <sup>0</sup> )/A <sup>∞</sup>	0.3750	0.0224	0.0201

Report Approved By: *R.A. Larkins*  
 9315412.unc



## ENERGY LABORATORIES, INC.

P.O. BOX 3259 • CASPER, WY 82602 • PHONE (307) 235-0515  
 254 NORTH CENTER, SUITE 100 • CASPER WY 82601 • FAX (307) 234-1639

SOIL ANALYSIS REPORT - UNC

SAMPLE I.D.:	11K 0.0-1.0	11K 6.3-7.0	11K 5.3-6.0	11K 4.0-4.7
Report Date:	05-25-93	05-25-93	05-25-93	05-25-93
Sample Number:	93-15420	93-15421	93-15422	93-15423

## RADIOMETRIC pCi/g:

Ra226 - Chemical	2.1	73.8	17.9	16.4
Ra Prec. +/-	0.1	0.8	0.2	0.2

## Radon Emanation:

A° - Initial Activity net cpm after de-emanation	11.0	322	380	277
A∞ - Final Activity net cpm after 15 days	12.0	341	407	324
Radon Emanation Coefficient (A∞ - A°)/A∞	0.0633	0.0557	0.0663	0.1451

Report Approved By: *R.A. Hocking*

kmk e315412.unc



## ENERGY LABORATORIES, INC.

P.O. BOX 3258 • CASPER, WY 82602 • PHONE (307) 235-0515  
 254 NORTH CENTER, SUITE 100 • CASPER WY 82601 • FAX (307) 234-1639

SOIL ANALYSIS REPORT - UNC

SAMPLE I.D.:	15C 7.0-7.5	15C 6.3-7.0	15C 0-1.0	15C 4.1-4.8	15C 1.6-2.3	15C 2.9-3.6
Report Date:	05-25-93	05-25-93	05-25-93	05-25-93	05-25-93	05-25-93
Sample Number:	93-15424	93-15425	93-15426	93-15427	93-15428	93-15429

## RADIOMETRIC pCi/g:

Ra226 - Chemical	32.3	55.8	0.5	41.1	0.4	43.5
Ra Prec. +/-	0.2	0.3	0.04	0.3	0.02	0.3

## Radon Emanation:

A <sup>0</sup> - Initial Activity net cpm after de-emanation	715	1228	9.0	837	7.0	1111
A <sub>∞</sub> - Final Activity net cpm after 15 days	853	1321	9.0	890	8.0	1185
Radon Emanation Coefficient (A <sub>∞</sub> - A <sup>0</sup> )/A <sub>∞</sub>	0.1618	0.0704	0.0000	0.0596	0.1250	0.0624

Report Approved By: *R.L. Leasing*

msk 2312412.unc

# Rogers & Associates Engineering Corporation

## REPORT OF RADON DIFFUSION COEFFICIENT MEASUREMENTS (TIME-DEPENDENT DIFFUSION TEST METHOD RAE-SQAP-3.6)

Report Date 3/19/93

Contract C 9300/5

By TKR

Sample Identification Soils from Sites 15C, 13K, 11K, 5M

Submitted by United Nuclear Corporation

Date Received 2/1/93

Sample ID	Moisture (Dry Wt. %)	Density (g/cm <sup>3</sup> )	Radon Diffusion Coefficient (cm <sup>2</sup> /s)	Saturation (Mp/P)	Specific Gravity
5M 0-2.5	7.9	1.88	1.1E-02	0.50	2.67
5M 5.0-5.8	7.8	1.45	4.0E-02	0.25	2.63
5M 6.8-7.5	6.0	1.66	3.3E-02	0.27	2.65
11K 0-1.0	11.5	1.90	8.8E-04	0.74	2.70
11K 4.0-4.7	6.1	1.53	1.6E-02	0.22	2.66
11K 5.3-6.0	7.1	1.53	4.2E-02	0.26	2.66
11K 6.3-7.0	8.6	1.92	6.3E-03	0.58	2.67
13K 1.3-1.8	9.2	1.75	1.6E-02	0.46	2.68
13K 3.3-4.0	5.1	1.74	5.1E-02	0.26	2.67
13K 4.0-5.0	7.1	1.69	4.9E-02	0.33	2.65
13K 5.8-6.5	7.1	1.65	2.7E-02	0.31	2.64
15C 0-1.0	12.7	1.77	9.6E-04	0.66	2.68
15C 1.6-2.3	11.1	1.82	4.3E-03	0.63	2.69
15C 2.9-3.6	13.0	1.76	5.2E-03	0.67	2.67
15C 4.1-4.8	12.4	1.82	2.6E-03	0.71	2.68
15C 6.3-7.0	18.8	1.70	2.8E-04	0.88	2.67

RAE

Post Office Box 330  
Salt Lake City • Utah 84110  
(801) 263-1600

LABORATORY REPORT

United Nuclear Corporation  
P.O. Box 3077  
Gallup, New Mexico 87305

Job Number 3142JB1  
Invoice Number 314205  
Date of Report 12/31/  
Reviewed by *J. Boyd*

Project Fall 1992 Reclamation Location Church Rock Mine, Churchrock, New Mexico Authorized by E. Morales/UNC Date 12-08-  
Sampled and Submitted by Enviro-Drill Inc. Date 11-19, 11-20 and 11-21-1992 Tested by H. Kuebler & T. Krake/Western Technologies

BORING NO.	DEPTH, FT.	MATERIAL TYPE	SPECIFIC GRAVITY	MOISTURE CONTENT, %	DRY DENSITY PCF	PERCENT PASSING U.S. STANDARD SIEVE OR DIAMETER					
						#10	#30	#50	#100	#200	0.001 mm
5M	0-1	Silty Clay, Soil Cover	2.67	8.5	124.4	100	98	97	89	66	16
5M	5-5.8	Coarse Tailings	2.63	8.5	90.0	100	89	55	28	20	5
5M	6.8-7.5	Coarse Tailings	2.65	6.4	103.2	100	87	53	22	11	2
9M	0-1	Silty Clay, Soil Cover	2.69	13.9	115.8	100	98	96	86	62	19
9M	2-2.5	Silty Clay, Soil Cover	2.65	7.4	116.9	100	90	63	31	21	4
9M	3.3-4	Coarse Tailings	2.68	6.9	105.2	100	83	43	15	9	3
9M	5-5.5	Coarse Tailings	2.68	7.1	N/A	100	86	48	17	15	4
9M	6.2-7	Coarse Tailings	2.65	7.1	112.3	100	87	51	17	10	2
9G	0-1	Sandy Clay, Soil Cover	2.66	8.4	105.5	100	99	98	80	60	19
9G	3.3-4	Coarse Tailings	2.68	9.8	113.4	100	89	60	29	18	4
9G	4-5	Coarse Tailings	2.64	7.5	N/A	100	88	51	20	10	2
9G	5.8-6.5	Coarse Tailings w/Slime	2.65	27.3	77.5	100	89	59	32	22	6
11K	0-1	Silty Clay, Soil Cover	2.70	12.5	117.2	100	98	96	87	69	26
11K	1.5-2	Silty Clay, Soil Cover	2.68	9.9	116.7	100	98	96	86	66	23
11K	3.3-4	Tailings	2.68	10.7	100.7	100	78	41	18	12	3
11K	4-4.7	Fine Tailings w/Brn. Clay	2.66	7.0	95.5	100	87	48	15	12	2

**LABORATORY REPORT**

United Nuclear Corporation  
 P.O. Box 3077  
 Gallup, New Mexico 87305

Job Number 3142JB1  
 Invoice Number 314205  
 Date of Report 12/31/  
 Reviewed by [Signature]

Project Fall 1992 Reclamation Location Church Rock Mine, Churchrock, New Mexico Authorized by E. Morales/UNC Date 12-08-  
 Sampled and Submitted by Enviro-Drill Inc. Date 11-19, 11-20 and 11-21-1992 Tested by H. Kuebler & T. Krake/Western Technologies

BORING NO.	DEPTH, FT.	MATERIAL TYPE	SPECIFIC GRAVITY	MOISTURE CONTENT, %	DRY DENSITY PCF	PERCENT PASSING U.S. STANDARD SIEVE OR DIAMETER					
						#10	#30	#50	#100	#200	0.001 mm
11K	6.3-7.0	Fine Tailings w/Brn. Clay	2.67	9.3	94.6	100	89	57	29	22	5
11M	0-1	Silty Clay, Soil Cover	2.69	12.5	107.8	100	98	97	91	79	14
11M	1.5-2.5	Sand w/Coal	2.67	4.8	116.4	100	88	52	18	12	4
11M	2.5-5	Coarse Tailings	2.68	4.9	100.5	100	89	53	22	16	3
11M	4-5	Coarse Tailings	2.64	5.0	N/A	100	85	46	15	9	2
11M	6.4-7.5	Coarse Tailings	2.69	4.7	102.4	100	87	47	17	11	3
13G	0-1	Silty Clay, Soil Cover	2.69	9.8	121.7	100	98	96	87	64	24
13G	1-1.5	Fine Tailings w/Slime	2.69	12.0	117.1	100	98	97	92	76	26
13G	3.3-4	Fine Tailings w/Slime	2.66	12.8	99.5	100	88	56	25	17	4
13G	4-4.9	Fine Tailings, No Slime	2.67	8.0	100.6	100	88	67	41	12	3
13G	5.8-6.5	Fine Tailings, No Slime	2.65	5.9	94.9	100	90	74	52	17	6
13K	0-1.3	Silty Clay, Soil Cover	2.70	16.3	119.2	100	99	98	91	70	23
13K	1.3-1.8	Sandy Clay, Soil Cover	2.68	10.2	122.8	100	94	84	69	50	16
13K	3.3-4	Sand Tailings	2.67	5.2	108.6	100	86	50	16	8	2
13K	4-5	Sand Tailings	2.65	7.2	N/A	100	85	49	17	10	2
13K	5.8-6.5	Sand Tailings w/Trace Slime	2.64	7.8	101.9	100	79	40	14	10	3

**LABORATORY REPORT**

United Nuclear Corporation  
 P.O. Box 3077  
 Gallup, New Mexico 87305

Job Number 3142JB1  
 Invoice Number 314205  
 Date of Report 12/31/  
 Reviewed by *[Signature]*

Project Fall 1992 Reclamation Location Church Rock Mine, Churchrock, New Mexico Authorized by E. Morales/UNC Date 12-08-  
 Sampled and Submitted by Enviro-Drill Inc. Date 11-19, 11-20 and 11-21-1992 Tested by H. Kuebler & T. Krake/Western Technologies

BORING NO.	DEPTH, FT.	MATERIAL TYPE	SPECIFIC GRAVITY	MOISTURE CONTENT, %	DRY DENSITY PCF	PERCENT PASSING U.S. STANDARD SIEVE OR DIAMETER					
						#10	#30	#50	#100	#200	0.001 m
15C	0-1	Silty Clay, Soil Cover	2.68	14.7	121.1	100	98	96	87	65	24
15C	1.6-2.3	Sandy Clay w/Sandstone	2.69	12.2	112.2	100	97	95	85	62	22
15C	2.9-3.6	Fine Tailings w/Slime	2.67	14.4	110.0	100	94	69	34	24	3
15C	4.1-4.8	Fine Tailings w/Slime	2.68	14.0	112.1	100	95	76	38	23	4
15C	6.3-7.0	Fine Tailings w/Slime	2.67	19.0	98.1	100	95	74	38	23	4
17A	0-1	Silty Clay, Soil Cover	2.69	10.8	89.5	100	99	97	90	70	27
17A	1.8-2.4	Coarse Tailings w/Brn. Clay	2.69	11.1	117.2	100	92	68	38	26	6
17A	3.2-4.0	Coarse Tailings w/Brn. Clay	2.63	13.4	112.5	100	91	59	29	21	3
17A	4-5	Coarse Tailings w/Trace Slime	2.69	14.1	N/A	100	93	71	37	25	5
17A	5.8-6.5	Coarse Tailings w/Trace Slime	2.66	13.7	114.6	100	92	69	36	25	6
17I	0-0.9	Silty Clay, Soil Cover	2.70	15.5	113.6	100	99	97	87	66	22
17I	0.9-1.5	Silty Clay, Soil Cover	2.67	13.0	118.1	100	99	98	90	67	23
17I	1.6-2.3	Silty Clay, Soil Cover	2.70	12.4	117.6	100	99	98	89	63	19
17I	3.0-4.1	Fine Tailings w/Slime	2.67	11.5	112.2	100	99	89	59	45	3
17I	4.1-4.8	Fine Tailings w/Slime	2.67	17.1	109.5	100	99	86	47	31	4
17I	6.1-6.8	Fine Tailings w/Slime	2.69	13.3	93.8	100	99	88	52	39	3

APPENDIX  
C

APPENDIX C

PHYSICAL PROPERTIES OF SOILS, RADON ATTENUATION COVER

**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**TEST SUMMARY FOR RAC MATERIAL**

WT JOB NO. 3144JK050

DATE OF REPORT 10/11/94

DATE	GRID	NORTHING	EASTING	ELEV.	3/4" SPEC. 95-100%	#4 SPEC. 90-100%	#10 SPEC. 85-100%	#40 SPEC. 65-100%	#100 SPEC. 50-100%	#200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. 7
07/06/94	B + 20	73860	58270	6965.2	100	97	95	92	76	55.6	12	CL	Yes
07/06/94	C + 19	73670	58410	6964.6	100	97	96	94	78	61.9	16	CL	Yes
07/06/94	G + 20	73340	58660	6963.7	98	93	90	86	62	47.6	10	CL	Yes
07/19/94	F + 17	73630	58770	6971.7	100	97	94	90	68	48.7	7	CL	Yes
07/19/94	H + 18	73300	59010	6972.9	100	98	95	92	70	60	14	CL	Yes
07/19/94	E + 18	73620	58620	6969.8	100	99	97	94	80	73.8	10	CL	Yes
07/19/94	F + 16	73710	58830	6973.7	100	98	95	92	82	55.3	7	CL	Yes
07/19/94	G + 14	73800	59030	6977.3	100	95	92	87	70	45.3	4	CL	Yes
07/19/94	C + 18	73950	58480	6969.7	100	97	95	93	83	61.2	15	CL	Yes
07/19/94	A + 18	73860	58340	6970.2	100	99	97	94	76	50.8	10	CL	Yes
07/19/94	C + 17	73820	58530	6977.0	100	98	97	94	78	56.1	7	CL	Yes
07/19/94	F.5 + 13.5	73950	58950	6977.7	100	99	95	92	66	45.9	8	CL	Yes

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

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

TEST SUMMARY FOR RAC MATERIAL

WT JOB NO. 3144JK050

DATE OF REPORT 10/11/94

DATE	GRID	NORTHING	EASTING	ELEV.	3/4" SPEC. 85-100%	#4 SPEC. 90-100%	#10 SPEC. 85-100%	#40 SPEC. 65-100%	#100 SPEC. 50-100%	#200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. 7
07/19/94	J+13	73730	59340	6980.4	98	94	91	88	66	47.6	9	CL	Yes
07/19/94	J+17	73380	59080	6975.2	100	99	97	95	80	52.8	9	CL	Yes
07/25/94	O+7	73900	60020	6980.0	100	96	95	93	82	55.1	9	CL	Yes
07/25/94	P+8	73700	60100	6982.1	100	98	97	95	78	62.4	8	CL	Yes
07/25/94	S+9	73420	60270	6987.9	99	96	94	90	66	46.5	2	ML	Yes
07/25/94	L+11	73940	59620	6986.1	100	97	95	92	77	49	8	CL	Yes
07/25/94	J+11	73840	59460	6980.7	100	98	97	94	83	60.2	16	CL	Yes
07/25/94	K+19	73160	59020	6974.5	100	99	97	95	81	56.2	2	ML	Yes
07/25/94	L+16	73340	59300	6985.5	100	96	95	93	81	56.2	11	CL	Yes
07/26/94	L+7	74020	59870	6979.3	100	97	95	93	84	55.5	10	CL	Yes
07/26/94	G+14	73800	59040	6977.7	98	95	93	91	86	51.2	11	CL	Yes
07/28/94	L+8	73950	59800	6980.5	100	98	96	94	81	56.3	10	CL	Yes

1994.UNC/cb

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

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY FOR RAC MATERIAL

DATE OF REPORT 10/11/94

DATE	GRID	NORTHING	EASTING	ELEV.	3/4" SPEC. 95-100%	#4 SPEC. 90-100%	#10 SPEC. 85-100%	#40 SPEC. 65-100%	#100 SPEC. 50-100%	#200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
07/28/94	K + 10	73850	59600	6981.7	100	98	97	95	86	60.0	14	CL	Yes
07/28/94	E + 16	73760	58760	6971.4	100	98	96	93	82	56.2	16	CL	Yes
07/28/94	I + 16	73520	59060	6975.3	100	97	96	93	82	60.0	13	CL	Yes
07/28/94	I + 10	73980	59440	6979.9	99	97	96	93	79	54.7	13	CL	Yes
07/28/94	O + 4	73050	60300	6980.4	100	96	94	92	82	57.1	8	CL	Yes
08/05/94	A + 16	74050	58450	6973.1	100	97	96	94	83	59.0	10	CL	Yes
08/05/94	C + 14.5	74010	58700	6976.3	100	98	97	94	85	62.9	17	CL	Yes
08/05/94	H + 16.5	73560	58950	6974.6	100	98	97	94	85	57.7	10	CL	Yes
08/05/94	O + 6	73900	60160	6980.9	100	98	96	94	83	61.2	11	CL	Yes
08/05/94	N + 7	73900	60020	6979.0	100	98	97	96	88	66.7	10	CL	Yes
08/05/94	N + 4	74120	60220	6979.8	100	98	96	93	83	54.0	7	CL	Yes
08/05/94	M + 2	74350	60260	6979.8	100	99	97	95	86	62.0	7	CL	Yes

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

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK051

TEST SUMMARY FOR RAC MATERIAL

DATE OF REPORT 10/11/94

DATE	GRID	NORTHING	EASTING	ELEV.	3/4" SPEC. 95-100%	#4 SPEC. 90-100%	#10 SPEC. 85-100%	#40 SPEC. 65-100%	#100 SPEC. 50-100%	#200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
08/05/94	M+5	74110	60080	6978.0	100	96	95	92	82	50.8	6	CL	Yes
08/05/94	O+12	73450	59800	6977.4	100	97	95	92	79	53.7	6	CL	Yes
08/05/94	F+13.5	73900	59000	6976.4	100	98	96	93	62	52.0	10	CL	Yes
08/05/94	E+15	73800	58820	6975.2	99	97	95	93	84	59.9	9	CL	Yes
08/05/94	E+13	74000	58950	6977.3	99	98	96	92	78	55.3	2	ML	Yes
08/05/94	D+18	73520	58420	6964.6	100	96	94	92	82	58.0	10	CL	Yes
08/05/94	D+14	74000	58800	6976.5	100	98	96	94	91	55.4	9	CL	Yes
08/05/94	Q.5+6.5	73710	60320	6981.4	99	95	92	88	69	36.9	12	CL	Yes
08/05/94	Q.5+3.5	73960	60460	6980.9	100	97	95	92	79	44.9	6	ML/CL	Yes
08/05/94	P+10	73540	59990	6989.7	100	98	96	93	82	57.4	7	CL	Yes
08/05/94	L+12	73630	59550	6986.9	100	97	95	91	78	52.9	4	CL/ML	Yes
08/05/94	A+14.5	74150	58540	6975.6	100	97	96	94	84	62.0	5	CL/ML	Yes

199-1 UNCRcb

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

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY FOR RAC MATERIAL

DATE OF REPORT 10/11/94

DATE	GRID	NORTHING	EASTING	ELEV.	3/4" SPEC. 95-100%	#4 SPEC. 90-100%	#10 SPEC. 85-100%	#40 SPEC. 65-100%	#100 SPEC. 50-100%	#200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
08/05/94	I+15	73600	59120	6977.1	100	98	96	93	82	57.1	7	CL/ML	Yes
08/05/94	Q+5.5	73820	60350	6980.2	100	98	97	94	83	56.2	6	CL/ML	Yes
09/09/94	N+11	73590	59760	6990.6	100	97	95	92	81	56.7	10	CL	Yes
09/09/94	M+6	74050	60000	6978.9	99	97	95	92	80	53.4	16	CL	Yes
09/09/94	O+7.5	73790	60050	6980.7	100	99	98	97	90	68.9	14	CL	Yes
09/09/94	S+10	73340	60220	6994.1	100	95	94	91	81	56.8	10	CL	Yes
09/12/94	H+14	73730	59110	6977.6	98	96	95	93	83	61.1	6	CL	Yes
09/12/94	I+17	73450	59000	6974.6	100	97	95	91	80	51.0	17	CL	Yes
09/12/94	Q+8	73640	60200	6981.8	99	98	96	94	82	54.0	9	CL	Yes
09/12/94	G+18	73250	58780	6969.7	100	99	98	95	85	60.0	13	CL	Yes
09/14/94	L+17	73250	59220	6983.9	100	97	96	94	84	60.0	13	CL	Yes
09/20/94	N+12	73510	59710	6994.0	100	98	97	94	83	56.9	11	CL	Yes

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

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

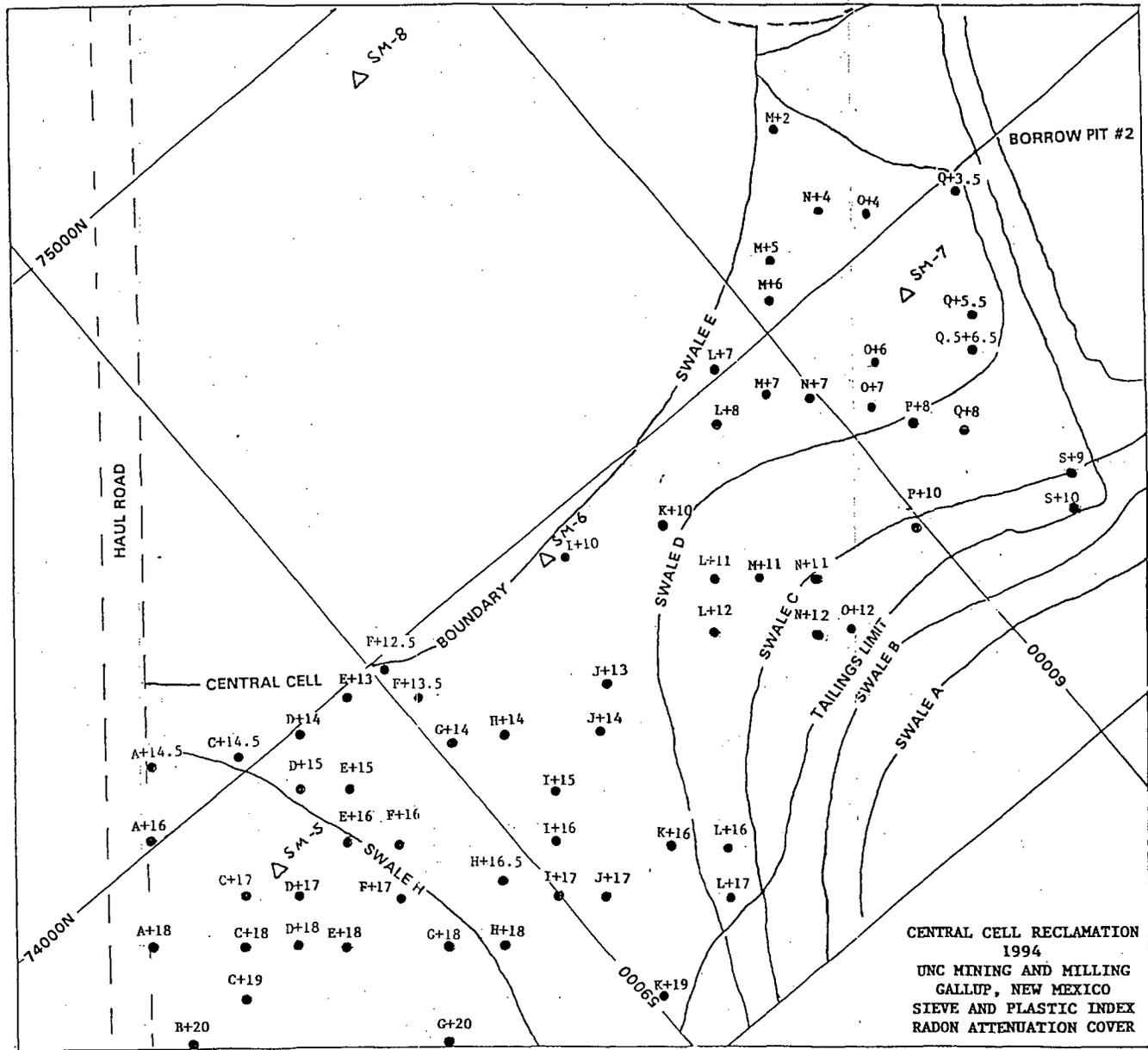
TEST SUMMARY FOR RAC MATERIAL

DATE OF REPORT 10/19/94

DATE	GRID	NORTHING	EASTING	ELEV.	3/4" SPEC. 95-100%	#4 SPEC. 90-100%	#10 SPEC. 85-100%	#40 SPEC. 65-100%	#100 SPEC. 50-100%	#200 SPEC. 40-85%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
10/14/94	F+12.5	73980	59030	6977.7	100	98	96	93	82	60.2	10	CL	Yes
10/14/94	D+17	73770	58610	6971.4	100	97	96	94	84	66.7	8	CL	Yes
10/14/94	D+15	73910	58750	6975.3	100	97	96	92	79	51.2	11	CL	Yes
10/14/94	M+7	73950	59970	6980.0	100	98	97	93	81	55.0	11	CL	Yes
10/14/94	M+11	73640	59700	6988.7	100	97	96	94	85	62.2	5	CL	Yes
10/14/94	J+14	73610	59270	6979.3	100	98	97	95	85	60.0	14	CL	Yes
10/14/94	K+16	73380	59210	6980.7	100	97	96	94	85	60.2	5	CL	Yes

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



CENTRAL CELL RECLAMATION  
 1994  
 UNC MINING AND MILLING  
 GALLUP, NEW MEXICO  
 SIEVE AND PLASTIC INDEX  
 RADON ATTENUATION COVER



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

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

Source: Grid Pt. B-20, 7360 N & 58270 E.      Submitted By: R. Whitaker/WT      Date 07/07/94

Elevation 6965.2      Authorized By: Client      Date 07/06/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	98	
3/8"	98	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	90	
100	76	50-100
200	55.5	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf

(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 12

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay (RAC)

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

Source: Grid Pt. C- 19, 73670 N. & 58410 E.  
Elevation 6964.6

Submitted By: R. Whitaker/WT Date 07/07/94

Authorized By: Client Date 07/06/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	89	
100	78	50-100
200	61.9	40-85

**Expansive Properties of Cohesive Soil**

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

**Moisture Density Relations, pcf  
(ASTM D698A)**

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

**Plasticity Index, ASTM D4318**

Liquid Limit 30  
Plasticity Index 16

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

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

Source: Grid Pt. G-20, 73340 N & 58660 E.      Submitted By: R. Whitaker/WT      Date 07/07/94

Elevation 6963.7      Authorized By: Client      Date 07/06/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	98	95-100
1/2"	97	
3/8"	97	
1/4"		
No. 4	93	90-100
8	90	
10	90	85-100
16	88	
30	87	
40	86	65-100
50	78	
100	62	50-100
200	47.6	40-85

**Expansive Properties of Cohesive Soil**

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

**Moisture Density Relations, pcf (ASTM D698A)**

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

**Plasticity Index, ASTM D4318**

Liquid Limit 27  
Plasticity Index 10

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

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

Source: Grid Pt. F-17, 73630 N & 58770 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

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

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	97	90-100
8	95	
10	94	85-100
16	93	
30	91	
40	90	65-100
50	88	
100	68	50-100
200	48.7	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf

(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 25  
Plasticity Index 7

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/10/94</u>

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/25/94</u>
--	----------------------------------	-----------------------

Source: <u>(L-16) 73340 N. &amp; 59300 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/25/94</u>
---	------------------------------------	-----------------------

Elevation 6985.5	Authorized By: <u>Client</u>	Date: <u>07/25/94</u>
------------------	------------------------------	-----------------------

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	98	
3/8"	98	
1/4"		
No. 4	96	90-100
8	95	
10	95	85-100
16	94	
30	93	65-100
40	93	
50	91	
100	81	50-100
200	56.0	40-85

Moisture Density Relations, pcf

(ASTM D698 Method C)

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

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

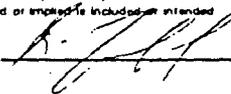
Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_ 30.4

Plasticity Index \_\_\_\_\_ 11

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: <u>Sandy Lean Clay, (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/26/94</u>	
Source: <u>Grid Pt. L-7, 74020 N &amp; 59870 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/26/94</u>	
<u>Elevation 6979.3</u>	Authorized By: <u>Client</u>	Date: <u>07/26/94</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	98	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	94	
40	93	65-100
50	92	
100	84	50-100
200	55.5	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 27  
Plasticity Index 10

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235.46/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay, (RAC)

Sampled By: H. Kuebler/WT Date 07/26/94

Source: Grid Pt. G-14, 73800 N & 59040 E.  
Elevation 6977.2

Submitted By: H. Kuebler/WT Date 07/26/94

Authorized By: Client Date 07/26/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	98	95-100
1/2"	97	
3/8"	96	
1/4"		
No. 4	95	90-100
8	94	
10	93	85-100
16	92	
30	91	
40	91	65-100
50	90	
100	86	50-100
200	51.2	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 30  
Plasticity Index 11

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235.47/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/10/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Lean Clay (RAC)	Sampled By:	H. Kuebler/WT      Date 07/28/94
Source:	(L-8) 73950 N. & 59800 E. Elevation 6980.5	Submitted By:	H. Kuebler/WT      Date 07/28/94
		Authorized By:	Client                      Date 07/28/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	96	
30	95	65-100
40	94	
50	93	
100	81	50-100
200	56.3	40-85

Moisture Density Relations, pcf  
(ASTM D698 Method C)

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

Plasticity Index, ASTM D4318

Liquid Limit                      25.7  
Plasticity Index                      10

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: <u>Sandy Lean Clay, (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/28/94</u>
Source: <u>Grid Pt. K-10, 73850 N &amp; 59600 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/28/94</u>
<u>Elevation 6981.7</u>	Authorized By: <u>Client</u>	Date: <u>07/28/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	94	
100	86	50-100
200	60.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf (ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 14

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235.52/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATE**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/10/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/28/94</u>
Source:	<u>(E + 16) 73760 N. &amp; 58760 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/28/94</u>
	<u>Elevation 6971.4</u>	Authorized By:	<u>Client</u> Date <u>07/28/94</u>

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	96	
30	94	65-100
40	93	
50	92	
100	82	50-100
200	56.2	40-85

**Moisture Density Relations, pcf  
(ASTM D698 Method C)**

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

**Plasticity Index, ASTM D4318**

Liquid Limit 31.6  
Plasticity Index 16

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATE**

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay (RAC)	Sampled By: H. Kuebler/WT	Date: 07/28/94
Source: (I-16) 73520 N. & 59060 E.	Submitted By: H. Kuebler/WT	Date: 07/28/94
Elevation 6975.3	Authorized By: Client	Date: 07/28/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	65-100
40	93	
50	91	
100	82	50-100
200	60.0	40-85

**Moisture Density Relations, pcf**

(ASTM D698 Method C)

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

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

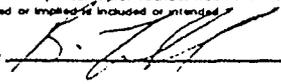
**Plasticity Index, ASTM D4318**

Liquid Limit 26.6

Plasticity Index 13

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235.108/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATE**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/10/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Lean Clay (RAC)	Sampled By:	H. Kuebler/WT Date 07/28/94
Source:	(I-10) 73980 N. & 59440 E. Elevation 6979.9	Submitted By:	H. Kuebler/WT Date 07/28/94
		Authorized By:	Client Date 07/28/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	99	95-100
1/2"	98	
3/8"	98	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	65-100
40	93	
50	92	
100	79	50-100
200	54.7	40-85

**Moisture Density Relations, pcf**

(ASTM D698 Method C)

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

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

**Plasticity Index, ASTM D4318**

Liquid Limit \_\_\_\_\_ 29.2

Plasticity Index \_\_\_\_\_ 13

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

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

Source: Grid Pt. O-4; 73050 N & 60300 E.      Submitted By: H. Kuebler/WT      Date 07/28/94

Elevation 6980.4      Authorized By: Client      Date 07/28/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	96	90-100
8	95	
10	94	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	82	50-100
200	57.1	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 24  
Plasticity Index 8

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/23/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 08/05/94

Source: (A-16) 74050 N. & 58450 E.      Submitted By: H. Kuebler/WT      Date 08/05/94

Elevation 6973.1      Authorized By: Client      Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	98	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	92	
100	83	50-100
200	59.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 10

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/23/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay

Sampled By: H. Kuebler/WT Date 08/05/94

Source: (C-14.5) 74010 N. & 58700 E.  
Elevation 6976.3

Submitted By: H. Kuebler/WT Date 08/05/94

Authorized By: Client Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	94	65-100
50	93	
100	85	50-100
200	62.9	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 33  
Plasticity Index 17

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

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/23/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 08/05/94  
Source: (H-16.5) 73560 N. & 58950 E.      Submitted By: H. Kuebler/WT      Date 08/05/94  
Elevation 6974.6      Authorized By: Client      Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	94	65-100
50	93	
100	85	50-100
200	57.7	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 27  
Plasticity Index 10

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/23/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay (RAC)      Sampled By: H. Kuebler/WT      Date 08/05/94

Source: (O-6) 73900 N. & 60160 E.      Submitted By: H. Kuebler/WT      Date 08/05/94

Elevation 6980.9      Authorized By: Client      Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	98	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	93	
100	83	50-100
200	61.2	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 11

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/23/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 08/05/94

Source: (N + 7) 73900 N. & 60020 E.      Submitted By: H. Kuebler/WT      Date 08/05/94

Elevation 6979.0      Authorized By: Client      Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"	100	
No. 4	98	90-100
8	97	
10	97	85-100
16	97	
30	96	
40	96	65-100
50	95	
100	88	50-100
200	66.7	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 10

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/23/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay

Sampled By: H. Kuebler/WT Date 08/05/94

Source: (N-4) 74120 N. & 60220 E.  
Elevation 6979.8

Submitted By: H. Kuebler/WT Date 08/05/94

Authorized By: Client Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	83	50-100
200	54.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 25  
Plasticity Index 7

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/23/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay      Sampled By: H. Kuebler/WT      Date 08/05/94

Source: (M-2) 74350 N. & 60260 E.      Submitted By: H. Kuebler/WT      Date 08/05/94

Elevation 6979.8      Authorized By: Client      Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	94	
100	86	50-100
200	62.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 25  
Plasticity Index 7

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 08/23/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay      Sampled By: H. Kuebler/WT      Date 08/05/94

Source: (M-5) 74110 N. & 60080 E.      Submitted By: H. Kuebler/WT      Date 08/05/94

Elevation 6978.0      Authorized By: Client      Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	98	
3/8"	98	
1/4"		
No. 4	96	90-100
8	95	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	82	50-100
200	50.8	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf (ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 25  
Plasticity Index 6

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

Job No. 3144JK050

Lab/Inv. No. 31440279

Report Date: 09/01/94

Project: 1994 Reclamation

Location: Church Rock, NM

Material: Sandy Silty Clay

Sampled By: H. Kuebler/WT Date 08/05/94

Source: (O+12) 73450 N. & 59800 E.  
Elevation 6977.4

Submitted By: H. Kuebler/WT Date 08/05/94

Authorized By: Client Date 08/05/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	97	90-100
8	96	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	79	50-100
200	53.7	40-85

**Expansive Properties of Cohesive Soil**

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

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

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

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

**Moisture Density Relations, pcf  
(ASTM D698A)**

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

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

**Plasticity Index, ASTM D4318**

Liquid Limit 27

Plasticity Index 6

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 08/05/94

Source: (F-13.5) 73900 N. & 59000 E.      Submitted By: H. Kuebler/WT      Date 08/05/94

Elevation 6976.4      Authorized By: Client      Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	62	50-100
200	52.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 27  
Plasticity Index 10

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay

Sampled By: H. Kuebler/WT Date 08/05/94

Source: (E-15) 73800 N. & 58820 E.

Submitted By: H. Kuebler/WT Date 08/05/94

Elevation 6975.2

Authorized By: Client Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	99	95-100
1/2"	98	
3/8"	98	
1/4"		
No. 4	97	90-100
8	96	
10	95	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	84	50-100
200	59.9	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 9

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silt Sampled By: H. Kuebler/WT Date 08/05/94

Source: (E+13) 74000 N. & 58950 E. Submitted By: H. Kuebler/WT Date 08/05/94

Elevation 6977.3 Authorized By: Client Date 08/05/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	99	95-100
1/2"		
3/8"	99	
1/4"		
No. 4	98	90-100
8	96	
10	96	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	78	50-100
200	55.3	40-85

**Expansive Properties of Cohesive Soil**

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

**Moisture Density Relations, pcf  
(ASTM D698A)**

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

**Plasticity Index, ASTM D4318**

Liquid Limit 21  
Plasticity Index 2

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 08/05/94

Source: (D+18) 73520 N. & 58420 E.      Submitted By: H. Kuebler/WT      Date 08/05/94

Elevation 6964.6      Authorized By: Client      Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	97	
1/4"		
No. 4	96	90-100
8	95	
10	94	85-100
16	93	
30	92	
40	92	65-100
50	91	
100	82	50-100
200	58.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 10

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay Sampled By: H. Kuebler/WT Date 08/05/94

Source: (D-14) 74000 N. & 58800 E. Submitted By: H. Kuebler/WT Date 08/05/94

Elevation 6976.5 Authorized By: Client Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	93	
100	91	50-100
200	55.4	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 26  
Plasticity Index 9

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay

Sampled By: H. Kuebler/WT Date 08/05/94

Source: (Q.5 & 6.5) 73710 N. & 60320 E.  
Elevation 6981.4

Submitted By: H. Kuebler/WT Date 08/05/94

Authorized By: Client Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	99	95-100
1/2"		
3/8"	98	
1/4"		
No. 4	95	90-100
8	92	
10	92	85-100
16	90	
30	89	
40	88	65-100
50	86	
100	69	50-100
200	36.9	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 31  
Plasticity Index 12

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

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay Sampled By: H. Kuebler/WT Date 08/05/94

Source: (Q+3.5) 73960 N. & 60460 E. Submitted By: H. Kuebler/WT Date 08/05/94

Elevation 6980.9 Authorized By: Client Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	79	50-100
200	44.9	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 25  
Plasticity Index 6

Copies to: Addressee (3), Billing (1)  
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REVIEWED BY: H. Kuebler



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay

Sampled By: H. Kuebler/WT Date 08/05/94

Source: (P+10) 73540 N. & 59990 E.  
Elevation 6989.7

Submitted By: H. Kuebler/WT Date 08/05/94

Authorized By: Client Date 08/05/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	82	50-100
200	57.4	40-85

**Expansive Properties of Cohesive Soil**

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

**Moisture Density Relations, pcf**  
**(ASTM D698A)**

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

**Plasticity Index, ASTM D4318**

Liquid Limit 26  
Plasticity Index 7

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

**Job No.** 3144JK050  
**Lab/Inv. No.** 31440279  
**Report Date:** 09/01/94

**Project:** 1994 Reclamation

**Location:** Churck Rock, NM

**Material:** Sandy Silty Clay

**Sampled By:** H. Kuebler/WT **Date** 08/05/94

**Source:** (L-12) 73630 N. & 59550 E.

**Submitted By:** H. Kuebler/WT **Date** 08/05/94

Elevation 6986.9

**Authorized By:** Client **Date** 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	93	
30	92	
40	91	65-100
50	89	
100	78	50-100
200	52.9	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf

(ASTM D698A)

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

Plasticity Index, ASTM D4318

**Liquid Limit** 18  
**Plasticity Index** 4

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay

Sampled By: H. Kuebler/WT Date 08/05/94

Source: (A + 14.5) 74150 N. & 58540 E.  
Elevation 6975.6

Submitted By: H. Kuebler/WT Date 08/05/94

Authorized By: Client Date 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	92	
100	84	50-100
200	62.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 5

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

**Job No.** 3144JK050  
**Lab/Inv. No.** 31440279  
**Report Date:** 09/01/94

**Project:** 1994 Reclamation

**Location:** Churck Rock, NM

**Material:** Sandy Silty Clay

**Sampled By:** H. Kuebler/WT **Date** 08/05/94

**Source:** (I+15) 73600 N. & 59120 E.  
Elevation 6977.1

**Submitted By:** H. Kuebler/WT **Date** 08/05/94

**Authorized By:** Client **Date** 08/05/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	95	
30	94	
40	93	65-100
50	91	
100	82	50-100
200	57.1	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf

(ASTM D698A)

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

Plasticity Index, ASTM D4318

**Liquid Limit** 26  
**Plasticity Index** 7

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

Job No. 3144JK050

Lab/Inv. No. 31440279

Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay

Sampled By: H. Kuebler/WT Date 08/05/94

Source: (Q+5.5) 73820 N. & 60350 E.  
Elevation 6980.2

Submitted By: H. Kuebler/WT Date 08/05/94

Authorized By: Client Date 08/05/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	94	65-100
50	93	
100	83	50-100
200	56.2	40-85

**Expansive Properties of Cohesive Soil**

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

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

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

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

**Moisture Density Relations, pcf**  
**(ASTM D698A)**

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

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

**Plasticity Index, ASTM D4318**

Liquid Limit 24

Plasticity Index 6

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay

Sampled By: H. Kuebler/WT Date 08/23/94

Source: Borrow Area East of Evap. Ponds

Submitted By: H. Kuebler/WT Date 08/23/94

Authorized By: Client Date 08/23/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	100	
3/8"		
1/4"		
No. 4	99	90-100
8	98	
10	98	85-100
16	97	
30	96	
40	96	65-100
50	95	
100	78	50-100
200	66.4	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 30  
Plasticity Index 12

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No: 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 09/13/94

Project: 1994 Reclamation

Location: Church Rock, NM

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

Source: (N + 11) 73590 N. & 59760 E.      Submitted By: H. Kuebler/WT      Date 09/09/94

Elevation 6990.6      Authorized By: Client      Date 09/09/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	98	
3/8"	98	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	81	50-100
200	56.7	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 26  
Plasticity Index 10

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

**Job No.** 3144JK050  
**Lab/Inv. No.** 31440336  
**Report Date:** 09/13/94

**Project:** 1994 Reclamation

**Location:** Churck Rock, NM

**Material:** Sandy Lean Clay

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

**Source:** (M + 6) 74050 N. & 60000 E.  
Elevation 6978.9

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

**Authorized By:** Client **Date** 09/09/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	99	95-100
1/2"		
3/8"	98	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	80	50-100
200	53.4	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

**Liquid Limit** 31  
**Plasticity Index** 16

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

Job No. 3144JK05C  
Lab/Inv. No. 31440336  
Report Date: 09/13/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay

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

Source: (O + 7.5) 73790 N. & 60050 E.  
Elevation 6980.7

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

Authorized By: Client Date 09/09/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	93	90-100
8	98	
10	98	85-100
16	98	
30	97	
40	97	65-100
50	96	
100	90	50-100
200	68.9	40-85

**Expansive Properties of Cohesive Soil**

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

**Moisture Density Relations, pcf**  
**(ASTM D698A)**

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

**Plasticity Index, ASTM D4318**

Liquid Limit 31  
Plasticity Index 14

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PREPARED BY

*H. Kuebler*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 09/13/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay

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

Source: (S + 10) 73340 N. & 60220 E.  
Elevation 6994.1

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

Authorized By: Client Date 09/09/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	95-100
1/2"	98	
3/8"	97	
1/4"		
No. 4	95	90-100
8	94	
10	94	85-100
16	93	
30	92	
40	91	65-100
50	90	
100	81	50-100
200	56.8	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 10

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

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 09/22/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 09/12/94

Source: (H.+ 14) 73730 N. & 59110 E.      Submitted By: H. Kuebler/WT      Date 09/12/94

Elevation 6977.6      Authorized By: Client      Date 09/12/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"	100	
1"	98	100
3/4"	98	95-100
1/2"	97	
3/8"	97	
1/4"		
No. 4	96	90-100
8	95	
10	95	85-100
16	94	
30	93	
40	93	65-100
50	92	
100	83	50-100
200	61.1	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 23  
Plasticity Index 6

Copies to: **Addressee (3), Billing (1)**  
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REVIEWED BY *H. Kuebler*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050

Lab/Inv. No. 31440336

Report Date: 09/22/94

Project: 1994 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H. Kuebler/WT Date 09/12/94

Source: (I + 17) 73450 N. & 59000 E.  
Elevation 6974.6

Submitted By: H. Kuebler/WT Date 09/12/94

Authorized By: Client Date 09/12/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	98	
1/4"		
No. 4	97	90-100
8	95	
10	95	85-100
16	94	
30	92	
40	91	65-100
50	90	
100	80	50-100
200	50.8	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 23  
Plasticity Index 6

Copies to: Addressee (3), Billing (1)  
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*R. J. Fall*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 09/21/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay Sampled By: H. Kuebler/WT Date 09/12/94

Source: (Q+8) 73640 N. & 60200 E. Submitted By: H. Kuebler/WT Date 09/12/94

Elevation 6981.8 Authorized By: Client Date 09/12/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	99	95-100
1/2"	98	
3/8"	98	
1/4"		
No. 4	98	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	93	
100	82	50-100
200	54.4	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 26  
Plasticity Index 9

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

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REVIEWED BY: [Signature]



**Western Technologies Inc.**

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Since 1955

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Farmington, New Mexico 87401  
(505) 327-4966 • fax 327-5293

**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 09/22/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay

Sampled By: H. Kuebler/WT Date 09/12/94

Source: (L-17) 73250 N. & 59220 E.

Submitted By: H. Kuebler/WT Date 09/12/94

Elevation 6983.9

Authorized By: Client Date 09/12/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	98	
3/8"	98	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	92	
100	84	50-100
200	60.4	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf (ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 30  
Plasticity Index 13

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REVIEWED BY H. Kuebler



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 09/22/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: <u>Sandy Lean Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>09/12/94</u>
Source: <u>(G-18) 73490 N. &amp; 58780 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>09/12/94</u>
<u>Elevation 6969.7</u>	Authorized By: <u>Client</u>	Date: <u>09/12/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	98	
10	98	85-100
16	97	
30	96	
40	95	65-100
50	94	
100	85	50-100
200	60.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 13

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

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 09/26/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 09/20/94

Source: (N+12) 73510 N. & 59710 E.      Submitted By: H. Kuebler/WT      Date 09/20/94

Elevation 6994.0      Authorized By: Client      Date 09/20/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	94	65-100
50	93	
100	83	50-100
200	56.9	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 27  
Plasticity Index 11

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

**PHYSICAL PROPERTIES OF SOILS**

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

Job No. 3144JK050  
Lab/Inv. No. 31440381  
Report Date: 10/18/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay Sampled By: H. Kuebler/WT Date 10/14/94

Source: Grid Pt. F-12.5, 73980 N & 59030 E. Submitted By: H. Kuebler/WT Date 10/14/94

Elevation 6977.7 Authorized By: Client Date 10/14/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	82	50-100
200	50.2	40-85

**Expansive Properties of Cohesive Soil**

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

**Moisture Density Relations, pcf  
(ASTM D698A)**

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

**Plasticity Index, ASTM D4318**

Liquid Limit 28  
Plasticity Index 10

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381.1/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440381  
Report Date: 10/18/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 10/14/94

Source: Grid Pt. D+17, 73770 N & 58610 E.      Submitted By: H. Kuebler/WT      Date 10/14/94

Elevation 6971.4      Authorized By: Client      Date 10/14/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	98	
1/4"		
No. 4	97	90-100
8	97	
10	96	85-100
16	96	
30	94	
40	94	65-100
50	93	
100	84	50-100
200	56.7	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

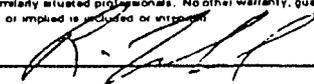
Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 8

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440381  
Report Date: 10/18/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 10/14/94

Source: Grid Pt. D+15, 73910 N & 58750 E.      Submitted By: H. Kuebler/WT      Date 10/14/94

Elevation 6975.3      Authorized By: Client      Date 10/14/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	93	
40	92	65-100
50	90	
100	79	50-100
200	51.2	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 30  
Plasticity Index 11

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440381  
Report Date: 10/18/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 10/14/94

Source: Grid Pt. M-7, 73950 N & 59970 E.      Submitted By: H. Kuebler/WT      Date 10/14/94

Elevation 6980.0      Authorized By: Client      Date 10/14/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	94	
40	93	65-100
50	91	
100	81	50-100
200	55.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 11

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440381  
Report Date: 10/18/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay      Sampled By: H. Kuebler/WT      Date 10/14/94

Source: Grid Pt. M + 11, 73640 N & 59700 E.      Submitted By: H. Kuebler/WT      Date 10/14/94

Elevation 6988.7      Authorized By: Client      Date 10/14/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	93	
100	85	50-100
200	62.2	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 25  
Plasticity Index 5

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440381  
Report Date: 10/18/94

Project: 1994 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay Sampled By: H. Kuebler/WT Date 10/14/94

Source: Grid Pt. J-14, 73610 N & 59270 E. Submitted By: H. Kuebler/WT Date 10/14/94

Elevation 6979.3 Authorized By: Client Date 10/14/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	94	
100	85	50-100
200	60.0	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf.  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 31  
Plasticity Index 14

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

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440381  
Report Date: 10/18/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Silty Clay      Sampled By: H. Kuebler/WT      Date 10/14/94

Source: Grid Pt. K-16, 73380 N & 59210 E.      Submitted By: H. Kuebler/WT      Date 10/14/94

Elevation 6980.7      Authorized By: Client      Date 10/14/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	98	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	93	
100	85	50-100
200	60.2	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 25  
Plasticity Index 5

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

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REVIEWED BY: *R. J. Hill*

APPENDIX  
D

APPENDIX D

FIELD DENSITY TESTS, RADON ATTENUATION COVER

**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

**TEST SUMMARY FOR SANDCONE DENSITIES**

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/07/94	Sandcone	B + 20	73660	58270	6965.2	RAC	116.0	12.7	100	CL	Yes
07/07/94	Sandcone	D + 20	73520	58420	6964.6	RAC	109.6	14.0	95	CL	Yes
07/07/94	Sandcone	G + 20	73340	58660	6963.7	RAC	115.3	13.4	100	CL	Yes
07/07/94	Sandcone	G + 19	73440	58730	6968.0	RAC	116.6	11.8	100	CL	Yes
07/07/94	Sandcone	A + 19	73790	58270	6966.8	RAC	115.2	14.0	100	CL	Yes
07/08/94	Sandcone	F + 16	73710	58820	6973.6	RAC	115.4	15.6	99	CL	Yes
07/08/94	Sandcone	G + 16	73650	58820	6978.8	RAC	118.0	16.1	100	CL	Yes
07/08/94	Sandcone	I + 18	73360	58930	6971.6	RAC	111.0	14.3	99	CL	Yes
07/08/94	Sandcone	J + 19	73220	58870	6971.4	RAC	118.2	13.6	100	CL	Yes
07/08/94	Sandcone	H + 18	73300	59010	6972.9	RAC	116.7	14.6	100	CL	Yes
07/08/94	Sandcone	F + 14	73880	58950	6976.6	RAC	112.9	15.9	96	CL	Yes
07/08/94	Sandcone	G + 16	73650	58910	6973.4	RAC	111.3	16.2	95	CL	Yes

RAC = Radon Attenuation Cover

JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

TEST SUMMARY FOR SANDCONE DENSITIES

WT JOB NO. 3144JK050

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/08/94	Sandcone	H + 17	73520	58920	6972.5	RAC	119.8	13.9	100	CL	Yes
07/08/94	Sandcone	I + 19	73450	59000	6973.6	RAC	115.2	13.8	100	CL	Yes
07/08/94	Sandcone	A + 20	73720	58200	6965.7	RAC	110.7	16.1	97	CL	Yes
07/08/94	Sandcone	E + 20	73310	58500	6964.4	RAC	116.3	15.8	100	CL	Yes
07/08/94	Sandcone	C + 19	73670	58410	6964.6	RAC	115.7	16.4	100	CL	Yes
07/08/94	Sandcone	D + 20	73530	58420	6964.7	RAC	110.6	16.5	97	CL	Yes
07/08/94	Sandcone	E + 19	73550	58560	6968.0	RAC	111.3	15.1	97	CL	Yes
07/12/94	Sandcone	A + 18	73860	58340	6970.2	RAC	115.8	16.2	100	CL	Yes
07/12/94	Sandcone	C + 18	73750	58480	6969.7	RAC	111.9	17.0	99	CL	Yes
07/12/94	Sandcone	E + 18	73620	58620	6969.8	RAC	112.7	16.8	100	CL	Yes
07/12/94	Sandcone	G + 18	73490	58780	6969.7	RAC	98.3	16.5	87	CL	No
07/12/94	Sandcone	F + 17	73630	58770	6971.7	RAC	101.8	17.2	90	CL	No

RAC = Radon Attenuation Cover



JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

TEST SUMMARY FOR SANDCONE DENSITIES

WT JOB NO. 3144JK050

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
07/12/94	Sandcone	B + 17	73890	58460	6972.1	RAC	111.4	16.3	99	CL	Yes
07/12/94	Sandcone	D + 17	73760	58610	6971.4	RAC	103.9	17.0	92	CL	No
07/18/94	Sandcone	E + 17	73690	58690	6970.6	RAC	122.5	13.8	100	CL	Yes
07/18/94	Sandcone	D + 17 Retest 7/12/94	73770	59610	6974.5	RAC	124.9	14.1	100	CL	Yes
07/18/94	Sandcone	G + 18 Retest 7/12/94	73500	59780	6970.1	RAC	113.4	14.6	98	CL	Yes
07/19/94	Sandcone	A + 16.5	73960	58410	6971.7	RAC	121.9	15.8	100	CL	Yes
07/19/94	Sandcone	C + 16.5	73860	58560	6972.9	RAC	112.7	15.9	100	CL	Yes
07/19/94	Sandcone	D + 16.5	73760	58650	6970.4	RAC	117.0	15.6	100	CL	Yes
07/19/94	Sandcone	F + 16.5 Retest 7/12/94	73680	58810	6972.7	RAC	121.2	16.1	100	CL	Yes
07/19/94	Sandcone	E + 16	73710	58820	6973.7	RAC	123.6	14.8	100	CL	Yes
07/19/94	Sandcone	C + 16	73900	58600	6973.6	RAC	119.5	16.8	100	CL	Yes
07/19/94	Sandcone	A + 16	74050	58450	6973.1	RAC	117.6	15.7	100	CL	Yes

RAC = Radon Attenuation Cover

JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

TEST SUMMARY FOR SANDCONE DENSITIES

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/19/94	Sandcone	A + 14.5	74150	58540	6975.6	RAC	114.1	15.4	98	CL	Yes
07/19/94	Sandcone	B + 14.5	74120	58630	6977.4	RAC	112.3	15.8	100	CL	Yes
07/19/94	Sandcone	C + 15	73990	58660	6975.2	RAC	110.4	15.6	98	CL	Yes
07/20/94	Sandcone	B + 13	74180	58700	6977.2	RAC	89.3	15.1	77	CL	No
07/20/94	Sandcone	B + 13 Retest 7/20/94	74180	58700	6977.2	RAC	87.6	15.1	75	CL	No
07/20/94	Sandcone	C + 13.5	74090	58750	6976.5	RAC	120.6	14.3	100	CL	Yes
07/20/94	Sandcone	A + 13	74320	58620	6975.5	RAC	119.3	14.7	100	CL	Yes
07/20/94	Sandcone	A + 14	74180	58570	6975.6	RAC	117.0	13.9	100	CL	Yes
07/20/94	Sandcone	C + 14.5	74010	58700	6976.3	RAC	109.9	15.3	96	CL	Yes
07/20/94	Sandcone	D + 15	73910	58750	6975.3	RAC	114.5	15.1	100	CL	Yes
07/20/94	Sandcone	E + 15	73800	58820	6975.2	RAC	117.6	14.6	100	CL	Yes
07/20/94	Sandcone	D + 14	74000	58800	6976.5	RAC	121.4	14.3	100	CL	Yes

 RAC = Radon Attenuation Cover

JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

TEST SUMMARY FOR SANDCONE DENSITIES

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/20/94	Sandcone	B + 13 Retest 7/20/94	74180	58700	6977.2	RAC	114.7	15.2	99	CL	Yes
07/20/94	Sandcone	F + 13.5	73900	59000	6976.4	RAC	113.4	14.6	97	CL	Yes
07/20/94	Sandcone	G + 15	73720	58980	6975.6	RAC	121.8	15.5	100	CL	Yes
07/20/94	Sandcone	H + 16	73580	58990	6974.3	RAC	114.0	16.1	100	CL	Yes
07/20/94	Sandcone	I + 17	73450	59000	6974.6	RAC	110.1	16.0	97	CL	Yes
07/20/94	Sandcone	J + 18	73300	59020	6973.3	RAC	119.0	14.7	100	CL	Yes
07/20/94	Sandcone	K + 19	73190	59020	6974.5	RAC	122.9	13.9	100	CL	Yes
07/20/94	Sandcone	K + 19.5	73150	59000	6973.3	RAC	122.8	15.3	100	CL	Yes
07/20/94	Sandcone	K + 18	73250	59080	6975.6	RAC	122.1	14.4	100	CL	Yes
07/20/94	Sandcone	J + 17	73380	59080	6976.2	RAC	114.7	15.7	100	CL	Yes
07/20/94	Sandcone	I + 16	73520	59060	6975.2	RAC	113.0	16.1	100	CL	Yes
07/21/94	Sandcone	H + 15	73670	59050	6976.5	RAC	118.7	15.8	100	CL	Yes

 AC = Radon Attenuation Cover

JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

TEST SUMMARY FOR SANDCONE DENSITIES

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/21/94	Sandcone	G + 14.5	73780	59000	6978.1	RAC	121.5	15.1	100	CL	Yes
07/21/94	Sandcone	G + 14	73800	59030	6977.3	RAC	112.7	14.8	97	CL	Yes
07/21/94	Sandcone	F + 13	73950	59030	6977.7	RAC	112.1	15.1	99	CL	Yes
07/21/94	Sandcone	F + 12.5	73980	59030	6977.7	RAC	114.5	15.1	100	CL	Yes
07/21/94	Sandcone	G + 13	73890	59100	6978.4	RAC	111.2	16.0	97	CL	Yes
07/21/94	Sandcone	H + 14	73730	59110	6977.6	RAC	113.6	16.2	97	CL	Yes
07/21/94	Sandcone	I + 15	73600	59120	6977.1	RAC	110.6	14.6	98	CL	Yes
07/21/94	Sandcone	J + 16	73460	59140	6977.4	RAC	110.9	15.7	98	CL	Yes
07/21/94	Sandcone	K + 17	73320	59170	6978.3	RAC	108.7	16.1	98	CL	Yes
07/22/94	Sandcone	L + 17	73250	59220	6983.9	RAC	121.4	13.9	100	CL	Yes
07/22/94	Sandcone	K + 16.5	73360	59200	6979.0	RAC	116.0	15.9	100	CL	Yes
07/22/94	Sandcone	K + 16	73380	59210	6980.7	RAC	121.0	14.2	100	CL	Yes

RAC = Radon Attenuation Cover



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

TEST SUMMARY FOR SANDCONE DENSITIES

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/22/94	Sandcone	J + 15	73466	59130	6977.1	RAC	120.3	15.9	100	CL	Yes
07/22/94	Sandcone	H + 12	73900	59240	6979.9	RAC	120.8	14.4	100	CL	Yes
07/22/94	Sandcone	J + 11	73830	59450	6980.5	RAC	116.5	14.4	100	CL	Yes
07/22/94	Sandcone	K + 10	73910	59580	6981.9	RAC	120.4	14.8	100	CL	Yes
07/22/94	Sandcone	L + 8	73940	59820	6980.5	RAC	120.0	15.1	100	CL	Yes
07/22/94	Sandcone	M + 8	73880	59980	6981.2	RAC	115.4	14.6	100	CL	Yes
07/22/94	Sandcone	N + 8	73820	59980	6981.0	RAC	118.1	14.2	100	CL	Yes
07/25/94	Sandcone	G + 12.5	73900	59160	6979.6	RAC	111.1	14.6	98	CL	Yes
07/25/94	Sandcone	H + 11	73980	59300	6979.9	RAC	116.6	14.2	100	CL	Yes
07/25/94	Sandcone	I + 13	73750	59260	6979.3	RAC	114.1	14.5	100	CL	Yes
07/25/94	Sandcone	J + 14	73610	59270	6979.3	RAC	118.9	14.6	100	CL	Yes
07/25/94	Sandcone	K + 14	73620	59270	6979.5	RAC	114.0	15.1	99	CL	Yes

RAC = Radon Attenuation Cover



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

TEST SUMMARY FOR SANDCONE DENSITIES

WT JOB NO. 3144JK050

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. 7
07/26/94	Sandcone	H + 10.5	73920	59300	6979.9	RAC	122.4	14.1	100	CL	Yes
07/26/94	Sandcone	I + 9.5	73970	59410	6979.9	RAC	122.9	15.0	100	CL	Yes
07/26/94	Sandcone	K + 9	73900	59660	6981.0	RAC	119.4	14.8	100	CL	Yes
07/26/94	Sandcone	K + 8	74000	59730	6979.9	RAC	116.8	15.7	100	CL	Yes
07/26/94	Sandcone	M + 7	73950	59970	6980.0	RAC	120.0	14.2	100	CL	Yes
07/26/94	Sandcone	M.5 + 7.5	73900	59960	6980.0	RAC	109.6	15.1	96	CL	Yes
07/27/94	Sandcone	M + 6	74050	60000	6978.9	RAC	114.7	13.6	97	CL	Yes
07/27/94	Sandcone	M + 5	74110	60080	6978.0	RAC	113.7	13.7	96	CL	Yes
07/27/94	Sandcone	N + 4	74120	60220	6979.8	RAC	115.8	14.4	100	CL	Yes
07/27/94	Sandcone	M + 2	74350	60260	6979.8	RAC	111.7	14.3	97	CL	Yes
07/27/94	Sandcone	O + 5	73980	60220	6969.0	RAC	110.3	14.2	95	CL	Yes
07/27/94	Sandcone	O + 5 Retest 7/27/94	73980	60220	6969.0	RAC	114.6	14.8	99	CL	Yes

 RAC = Radon Attenuation Cover

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

TEST SUMMARY FOR SANDCONE DENSITIES

WT JOB NO. 3144JK050

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/27/94	Sandcone	O+4	74040	60300	6980.4	RAC	117.0	14.5	100	CL	Yes
07/27/94	Sandcone	K+13	73600	59410	6983.4	RAC	122.5	15.0	100	CL	Yes
07/27/94	Sandcone	K+10	73860	59600	6981.6	RAC	121.3	14.8	100	CL	Yes
07/27/94	Sandcone	P+3.5	74050	60400	6980.7	RAC	119.0	14.5	100	CL	Yes
07/27/94	Sandcone	O+7.5	73800	60070	6980.7	RAC	115.7	13.8	100	CL	Yes
07/27/94	Sandcone	P+5	73970	60310	6979.8	RAC	114.9	13.8	97	CL	Yes
07/27/94	Sandcone	Q+4.5	73900	60420	6980.0	RAC	116.7	14.2	100	CL	Yes
07/27/94	Sandcone	Q+3.5	73960	60460	6980.9	RAC	115.7	13.7	100	CL	Yes
07/27/94	Sandcone	Q+5.5	73820	60350	6980.2	RAC	115.6	13.5	100	CL	Yes
07/27/94	Sandcone	P+7.5	73720	60150	6981.6	RAC	118.9	14.6	100	CL	Yes
07/27/94	Sandcone	Q.5+6.5	73710	60320	6981.4	RAC	120.7	14.2	100	CL	Yes
07/27/94	Sandcone	Q+6	73780	60310	6980.4	RAC	116.5	14.8	100	CL	Yes

RAC = Radon Attenuation Cover



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

TEST SUMMARY FOR SANDCONE DENSITIES

WT JOB NO. 3144JK05

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/28/94	Sandcone	N+7	73900	60020	6979.0	RAC	117.1	14.8	100	CL	Yes
07/28/94	Sandcone	O+6	73900	60160	6080.9	RAC	115.6	15.2	100	CL	Yes
07/28/94	Sandcone	O+4.5	74100	60300	6980.4	RAC	112.7	14.8	99	CL	Yes
07/28/94	Sandcone	N+7.5	73850	60000	6980.7	RAC	117.6	13.9	100	CL	Yes
07/28/94	Sandcone	N+5	74050	60160	6978.6	RAC	119.1	14.7	100	CL	Yes
08/01/94	Sandcone	K.5+11	73750	59580	6982.9	RAC	116.9	13.6	100	CL	Yes
08/01/94	Sandcone	M+9	73800	59820	6983.8	RAC	123.9	14.2	100	CL	Yes
08/01/94	Sandcone	N+8.5	73780	59920	6984.0	RAC	121.3	13.9	100	CL	Yes
08/01/94	Sandcone	O+8.5	73750	60000	6984.7	RAC	126.6	13.7	100	CL	Yes
08/01/94	Sandcone	Q+7.5	73650	60230	6981.0	RAC	119.3	13.9	100	CL	Yes
08/01/94	Sandcone	L+17	73250	59240	6988.9	RAC	121.4	14.2	100	CL	Yes
08/01/94	Sandcone	K.5+15	73430	59260	6985.3	RAC	116.8	13.6	100	CL	Yes

RAC = Radon Attenuation Cover



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

TEST SUMMARY FOR SANDCONE DENSITIES

DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/01/94	Sandcone	L + 16	73300	59220	6985.7	RAC	121.5	13.9	100	CL	Yes
08/01/94	Sandcone	L + 15	73400	59350	6986.9	RAC	118.6	13.1	100	CL	Yes
08/01/94	Sandcone	K.5 + 14	73520	59400	6985.0	RAC	121.1	11.7	100	CL	Yes
08/02/94	Sandcone	L + 14	73480	59430	6987.1	RAC	119.8	13.6	100	CL	Yes
08/02/94	Sandcone	M + 11	73640	59700	6988.7	RAC	118.1	13.6	100	CL	Yes
08/02/94	Sandcone	N + 10	73660	59840	6987.8	RAC	122.6	13.8	100	CL	Yes
08/02/94	Sandcone	P + 9	73610	60050	6986.0	RAC	114.1	14.2	100	CL	Yes
08/02/94	Sandcone	R + 7	73650	60320	6981.4	RAC	113.1	14.2	98	CL	Yes
08/02/94	Sandcone	Q + 8	73640	60200	6981.8	RAC	116.1	13.9	100	CL	Yes
08/02/94	Sandcone	O + 9	73650	60030	6981.8	RAC	124.5	14.6	100	CL	Yes
08/02/94	Sandcone	M + 10	73720	59760	6986.8	RAC	111.6	13.1	98	CL	Yes
08/02/94	Sandcone	L + 12	73630	59550	6986.9	RAC	117.8	13.8	100	CL	Yes

RAC = Radon Attenuation Cover



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK060

TEST SUMMARY FOR SANDCONE DENSITIES

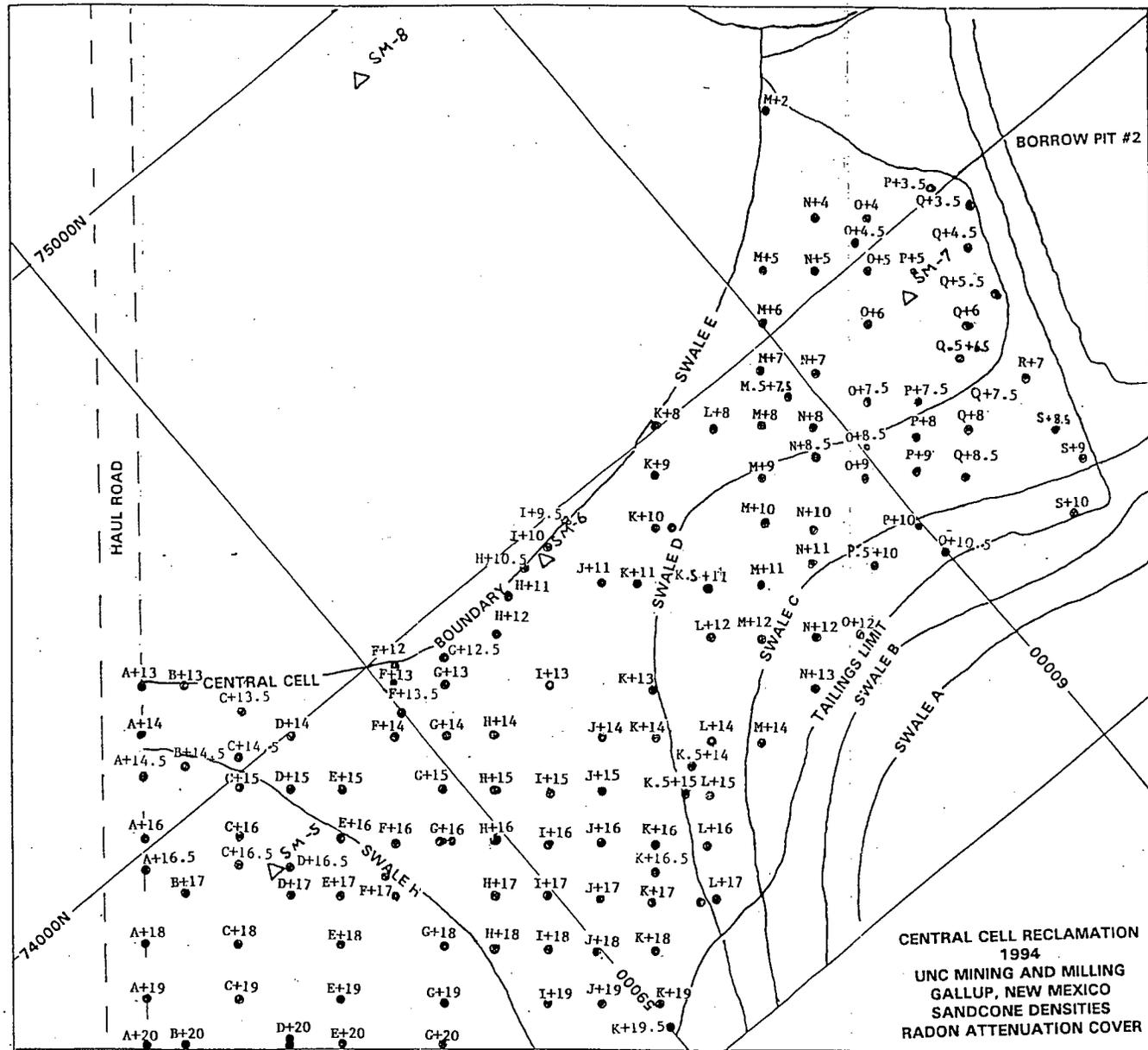
DATE OF REPORT 08/29/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
08/03/94	Sandcone	S + 8.5	73470	60320	6994.1	RAC	112.5	14.3	97	CL	Yes
08/03/94	Sandcone	P + 10	73540	59990	6989.7	RAC	108.8	14.3	95	CL	Yes
08/03/94	Sandcone	N + 10.5	73620	59800	6990.6	RAC	109.9	14.0	96	CL	Yes
08/03/94	Sandcone	M + 12	73570	59630	6990.9	RAC	116.5	13.9	100	CL	Yes
08/08/94	Sandcone	S + 10	73340	60220	6994.1	RAC	118.2	14.6	100	CL	Yes
08/08/94	Sandcone	O + 10.5	73600	59950	6989.1	RAC	112.4	14.2	99	CL	Yes
08/08/94	Sandcone	P.5 + 10.0	73530	60030	6990.0	RAC	115.1	14.1	100	CL	Yes
08/08/94	Sandcone	O + 12	73450	59800	6977.4	RAC	113.2	14.3	99	CL	Yes
08/08/94	Sandcone	N + 12	73510	59710	6994.0	RAC	112.5	14.3	99	CL	Yes
08/08/94	Sandcone	N + 13	73440	59650	6997.3	RAC	108.9	15.9	95	CL	Yes
08/08/94	Sandcone	M + 14	73420	59500	6993.0	RAC	117.1	13.5	100	CL	Yes

RAC = Radon Attenuation Cover



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**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 DENSITY TEST**

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

JOB NO. *3144JK050*  
LAB/INV NO. *31440235-2*  
REPORT DATE *07-13-94*  
REVIEWED BY *M. Branson*  
PAGE 1

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

DATE : *07-07-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	12.7	115.8	100	115.7	95	12.3 to 14.3	YES
2	14.0	109.5	95	115.7	95	12.3 to 14.3	YES
3	13.4	115.4	100+	112.5	95	12.9 to 14.9	YES
4	11.8	116.5	100+	115.3	95	10.0 to 12.0	YES
5	14.0	115.1	99	115.7	95	12.3 to 14.3	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	7/7	Grid point B-20, 93660 N. & 58270 E.	6965.2
2	7/7	Grid point D-20, 73520 N. & 58420 E.	6964.6
3	7/7	Grid point G-20, 73340 N. & 58660 E.	6963.7
4	7/7	Grid point G-19, 73440 N. & 58730 E.	6968.0
5	7/7	Grid point A-19, 73790 N. & 58270 E.	6966.8

+ DATUM: Elev. of Test = Bottom of 6" RAC

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	G+19 RAC BOTTOM LIFT	10.0	115.3	698-A
SANDY LEAN CLAY (RAC)	GRID PT A-19 BOTTOM LIFT	12.3	115.7	698-A
SANDY SILTY CLAY	GRIDPT I-19 RAC BOTTOM LIFT	12.9	112.5	698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-5  
REPORT DATE 07-18-94  
REVIEWED BY M. Branson *[Signature]*  
PAGE 1

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

DATE : 07-08-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.6	115.3	99	116.8	95	12.4 to 16.4	YES
2	16.1	116.9	100	116.8	95	12.4 to 16.4	YES
3	14.3	111.1	99	112.5	95	10.9 to 14.9	YES
4	13.6	118.4	100+	113.0	95	10.6 to 14.6	YES
5	14.6	116.7	100+	112.5	95	10.9 to 14.9	YES
6	15.9	112.3	96	116.8	95	12.4 to 16.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/08	Grid Pt F-16 73710 N. & 58820 E.	6973.6
2	07/08	Grid Pt G-16 73650 N. & 58820 E.	6973.8
3	07/08	Grid Pt I-18 73360 N. & 58930 E.	6971.6
4	07/08	Grid Pt J-19 73220 N. & 58870 E.	6971.4
5	07/08	Grid Pt H-18 73300 N. & 59010 E.	6972.9
6	07/08	Grid Pt F-14 73880 N. & 58950 E.	6976.6

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

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-2922/D-3017
2	Subgrade	ASTM D-2922/D-3017
3	Subgrade	ASTM D-2922/D-3017
4	Subgrade	ASTM D-2922/D-3017
5	Subgrade	ASTM D-2922/D-3017
6	Subgrade	ASTM D-2922/D-3017

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY SILTY CLAY	GRIDPT I-19 RAC BOTTOMLIFT	12.9	112.5	698-A
SANDY SILTY CLAY	GRIDPT J-19 TOPLIFT	12.6	113.0	698-A
SANDY LEAN CLAY	BORROW PIT #2 STOCKPILE	14.4	116.8	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. *3144JK050*  
LAB/INV NO. *31440235-5*  
REPORT DATE *07-18-94*  
REVIEWED BY *M. Branson*  
PAGE 2

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

DATE : *07-08-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	16.2	111.2	95	116.8	95	12.4 to 16.4	YES
8	13.9	119.8	100+	113.0	95	10.6 to 14.6	YES
9	13.8	115.2	100+	113.0	95	10.6 to 14.6	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	07/08	<i>Grid Pt G-16 73650 N. &amp; 58910 E.</i>	6973.4
8	07/08	<i>Grid Pt H-17 73520 N. &amp; 58920 E.</i>	6972.5
9	07/08	<i>Grid Pt I-19 73450 N. &amp; 59000 E.</i>	6973.6

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

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
7	<i>Subgrade</i>	<i>ASTM D-2922/D-3017</i>
8	<i>Subgrade</i>	<i>ASTM D-2922/D-3017</i>
9	<i>Subgrade</i>	<i>ASTM D-2922/D-3017</i>



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-3  
REPORT DATE 07-13-94  
REVIEWED BY M. Branson  
PAGE 1

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

DATE : 07-08-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS:
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	16.1	110.7	97	114.6	95	14.6 to 16.6	YES
2	15.8	116.3	100+	114.6	95	14.6 to 16.6	YES
3	16.4	115.7	100+	114.6	95	14.6 to 16.6	YES
4	16.5	110.6	97	114.6	95	14.6 to 16.6	YES
5	15.1	111.3	97	114.6	95	14.6 to 16.6	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM -
1	7/8	Grid Point A-20, 73720 N. & 58200 E.	6965.
2	7/8	Grid Point E-20, 73310 N. & 58500 E.	6964.
3	7/8	Grid Point C-19, 73670 N. & 58410 E.	6964.
4	7/8	Grid Point D-20, 73530 N. & 58420 E.	6964.
5	7/8	Grid Point E-19, 73550 N. & 58560 E.	6968.

+DATUM: Elev. of Test = Top of RAC

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTER PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	LINE A-18 RAC TOPLIFT	14.6	114.6	698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-6  
REPORT DATE 07-18-94  
REVIEWED BY *M. Branson*  
PAGE 1

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

DATE : 07-12-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	16.2	115.7	100+	114.6	95	12.6 to 16.6	YES
2	17.0	111.8	99	112.9	95	13.3 to 17.3	YES
3	16.8	112.5	100	112.9	95	13.3 to 17.3	YES
4	16.5	98.2	87	112.9	95	13.3 to 17.3	NO
5	17.2	101.9	90	112.9	95	13.3 to 17.3	NO
6	16.3	111.5	99	112.9	95	13.3 to 17.3	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/12	Grid Pt A-18 73860 N. & 58340 E.	6970.2
2	07/12	Grid Pt C-18 73750 N. & 58480 E.	6969.7
3	07/12	Grid Pt E-18 73620 N. & 58620 E.	6969.8
4	07/12	Grid Pt G-18 73490 N. & 58780 E.	6969.7
5	07/12	Grid Pt F-17 73630 N. & 58770 E.	6971.7
6	07/12	Grid Pt B-17 73890 N. & 58460 E.	6972.1

+DATUM: Test Elev. = Radon Attenuation Cover

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	LINE A-18 RAC TOPLIFT	14.6	114.6	698-A
SANDY LEAN CLAY	GRID PT C-16(RAC) TOP LIFT	15.3	112.9	698-A

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SOIL/AGGREGATE FIELD DENSITY TEST

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

JOB NO. *3144JK050*  
LAB/INV NO. *31440235-6*  
REPORT DATE *07-18-94*  
REVIEWED BY *M. Branson*  
PAGE 2

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

DATE : *07-12-94*

TEST NO.	IN-PLACE		MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)		COMPACTION (%)	MOISTURE (%)	
7	17.0	104.0	112.9	95	13.3 to 17.3	NO

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	07/12	<i>Grid Pt D-17 73760 N. &amp; 58610 E.</i>	6971.4

+ DATUM: *Test Elev. = Radon Attenuation Cover*

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



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. **3144JK050**  
LAB/INV NO. **31440235-8**  
REPORT DATE **08-24-94**  
REVIEWED BY **R. Zubrod**  
PAGE **7**

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

DATE : **07-18-94**

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	13.8	122.4	100+	115.7	95	11.6 to 15.6	YES
2	14.1	119.1	100+	115.7	95	11.6 to 15.6	YES
3	14.6	114.1	99	115.3	95	10.9 to 14.9	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/18	Grid Point E+17, 73690 N. & 58690 E.	6970.6
2	07/18	Grid Point D+17, 73770 N. & 59610 E.	6974.5
3	07/18	Grid Point G+18, 73500 N. & 59780 E.	6970.1

+ DATUM: Test Elevation = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
CLAYEY SAND Sandy Clay (RAC)	NATIVE T-17 Borrow Pit #2 Stockpile	13.6 12.9	115.7 115.3	D698-A D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-9  
REPORT DATE 08-24-94  
REVIEWED BY R. Zubrod  
PAGE 1

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

DATE : 07-19-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.8	121.9	100+	112.9	95	13.3 to 17.3	YES
2	15.9	112.8	100	112.9	95	13.3 to 17.3	YES
3	15.6	117.2	100+	112.9	95	13.3 to 17.3	YES
4	15.1	121.2	100+	112.9	95	13.3 to 17.3	YES
5	14.8	123.5	100+	112.9	95	13.3 to 17.3	YES
6	16.8	119.6	100+	112.9	95	13.3 to 17.3	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/19	Grid Point A + 16.5, 73960 N. & 58410 E.	6971.7
2	07/19	Grid Point C + 16.5, 73860 N. & 58560 E.	6972.9
3	07/19	Grid Point D + 16.5, 73760 N. & 58650 E.	6970.4
4	07/19	Grid Point F + 16.5, 73680 N. & 58810 E.	6972.7
5	07/19	Grid Point E + 16, 73710 N. & 58820 E.	6973.7
6	07/19	Grid Point C + 16, 73900 N. & 58600 E.	6973.6

+ DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY Sandy Clay (RAC)	GRID PT C-16(RAC) TOP LIFT Borrow Pit #2 Stockpile	15.3	112.9	D698-A
		13.4	116.1	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. **3144JK050**  
LAB/INV NO. **31440235-9**  
REPORT DATE **08-24-94**  
REVIEWED BY **R. Zubrod**  
PAGE 2

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

DATE : **07-19-94**

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	13.4	120.0	100+	116.1	95	11.4 to 15.4	YES
8	15.4	116.0	100	116.1	95	11.4 to 15.4	YES
9	15.8	112.2	99	112.9	95	13.3 to 17.3	YES
10	15.6	110.4	98	112.9	95	13.3 to 17.3	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	07/19	Grid Point A + 16, 74050 N. & 58450 E.	6973.1
8	07/19	Grid Point A + 14.5, 74150 N. & 58540 E.	6975.6
9	07/19	Grid Point B + 14.5, 74120 N. & 58630 E.	6977.4
10	07/19	Grid Point C + 15, 73990 N. & 58660 E.	6975.2

+ DATUM: *Elevation of Test = RAC Material*

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



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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : **UNC Mining and Milling**  
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JOB NO. **3144JK050**  
LAB/INV NO. **31440235-10**  
REPORT DATE **08-24-94**  
REVIEWED BY **R. Zubrod**  
PAGE **1**

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

DATE : **07-20-94**

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.1	89.2	77	116.1	95	11.4 to 15.4	NO
2	15.1	87.5	75	116.1	95	11.4 to 15.4	NO
3	14.3	120.5	100+	114.7	95	12.1 to 16.1	YES
4	14.7	119.5	100+	116.1	95	11.4 to 15.4	YES
5	13.9	117.3	100+	116.1	95	11.4 to 15.4	YES
6	15.3	109.9	96	114.7	95	12.1 to 16.1	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/20	Grid Point B+13, 74180 N. & 58700 E.	6977.2
2	07/20	Retest #1 (07/20/94)	6977.2
3	07/20	Grid Point C+13.5, 74090 N. & 58750 E.	6976.5
4	07/20	Grid Point A+13, 74320 N. & 58620 E.	6975.5
5	07/20	Grid Point A+14, 74180 N. & 58570 E.	6975.6
6	07/20	Grid Point C+14.5, 74010 N. & 58700 E.	6976.3

+DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	LINE A-18 RAC TOPLIFT	14.6	114.6	D698-A
SANDY SILTY CLAY	GRIDPT J-19 TOPLIFT	12.6	113.0	D698-A
BROWN CLAYEY SAND	73710N.&58820E. ELV= 6973.6	14.4	116.8	D698-A
CLAYEY SAND	GRID PT E-14 73930N&58870E	13.8	114.8	D698-A
SANDY CLAY	UNC J-13	14.1	114.7	D698-A
CLAYEY SAND	T-16	14.2	113.0	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. *3144JK050*  
LAB/INV NO. *31440235-10*  
REPORT DATE *08-24-94*  
REVIEWED BY *R. Zubrod*  
PAGE 2

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

DATE : *07-20-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	15.1	114.6	100	114.8	95	11.8 to 15.8	YES
8	14.6	117.5	100+	114.8	95	11.8 to 15.8	YES
9	14.3	121.4	100+	115.8	95	10.8 to 14.8	YES
10	15.2	114.6	99	116.1	95	11.4 to 15.4	YES
11	14.6	113.6	97	116.8	95	12.4 to 16.4	YES
12	15.5	121.6	100+	114.8	95	11.8 to 15.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	07/20	Grid Point D+15, 73910 N. & 58750 E.	6975.3
8	07/20	Grid Point E+15, 73800 N. & 58820 E.	6975.2
9	07/20	Grid Point D+14, 74000 N. & 58800 E.	6976.5
10	07/20	Retest #2 (07/20/94)	6977.2
11	07/20	Grid Point F+13.5, 73900 N. & 59000 E.	6976.4
12	07/20	Grid Point G+15, 73720 N. & 58980 E.	6975.6

+DATUM: *Elevation of Test = RAC Material*

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
<i>NATIVE SUBGRADE</i> <i>Sandy Clay (RAC)</i>	<i>GRID G1.14</i> <i>Borrow Pit #2 Stockpile</i>	<i>12.8</i> <i>13.4</i>	<i>115.8</i> <i>116.1</i>	<i>D698-A</i> <i>D698-A</i>



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-10  
REPORT DATE 08-24-94  
REVIEWED BY R. Zubrod  
PAGE 3

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

DATE : 07-20-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
13	16.1	113.9	100+	113.0	95	12.2 to 16.2	YES
14	16.0	110.0	97	113.0	95	12.2 to 16.2	YES
15	14.7	119.0	100+	114.6	95	12.6 to 16.6	YES
16	13.9	122.9	100+	113.0	95	10.6 to 14.6	YES
17	15.3	122.8	100+	114.6	95	12.6 to 16.6	YES
18	14.4	122.2	100+	114.6	95	12.6 to 16.6	YES
19	15.7	114.8	100+	113.0	95	12.2 to 16.2	YES
20	16.1	113.1	100	113.0	95	12.2 to 16.2	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
13	07/20	Grid Point H+16, 73580 N. & 58990 E.	6974.3
14	07/20	Grid Point I+17, 73450 N. & 59000 E.	6974.6
15	07/20	Grid Point J+18, 73300 N. & 59020 E.	6973.3
16	07/20	Grid Point K+19, 73190 N. & 59020 E.	6974.5
17	07/20	Grid Point K+19.5, 73150 N. & 59000 E.	6973.3
18	07/20	Grid Point K+18, 73250 N. & 59080 E.	6975.6
19	07/20	Grid Point J+17, 73380 N. & 59080 E.	6976.2
20	07/20	Grid Point I+16, 73520 N. & 59060 E.	6975.2

+ DATUM: Elevation of Test = RAC Material

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
13	Subgrade	ASTM D-1556/AASHTO T-217
14	Subgrade	ASTM D-1556/AASHTO T-217
15	Subgrade	ASTM D-1556/AASHTO T-217
16	Subgrade	ASTM D-1556/AASHTO T-217
17	Subgrade	ASTM D-1556/AASHTO T-217
18	Subgrade	ASTM D-1556/AASHTO T-217
19	Subgrade	ASTM D-1556/AASHTO T-217
20	Subgrade	ASTM D-1556/AASHTO T-217



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. *3144JK050*  
LAB/INV NO. *31440235-11*  
REPORT DATE *08-25-94*  
REVIEWED BY *R. Zubrod*  
PAGE 1

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

DATE : *07-21-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.8	118.9	100+	114.8	95	11.8 to 15.8	YES
2	15.1	121.4	100+	114.8	95	11.8 to 15.8	YES
3	14.8	112.7	97	115.8	95	10.8 to 14.8	YES
4	15.1	112.1	99	113.6	95	11.4 to 15.4	YES
5	15.1	114.5	100+	113.6	95	11.4 to 15.4	YES
6	16.0	111.1	97	114.7	95	12.1 to 16.1	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/21	Grid Point H+15, 73670 N. & 59050 E.	6976.5
2	07/21	Grid Point G+14.5, 73780 N. & 59000 E.	6978.1
3	07/21	Grid Point G+14, 73800 N. & 59030 E.	6977.3
4	07/21	Grid Point F+13, 73950 N. & 59030 E.	6977.7
5	07/21	Grid Point F+12.5, 73980 N. & 59030 E.	6977.7
6	07/21	Grid Point G+13, 73890 N. & 59100 E.	6978.4

+ DATUM: *Elevation of Test = RAC Material*

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
<i>SANDY SILTY CLAY</i>	<i>GRIDPT K-16 BOTTOMLIFT</i>	<i>15.8</i>	<i>110.5</i>	<i>D698-A</i>
<i>BROWN CLAYEY SAND</i>	<i>73710N. &amp; 58820E. ELV = 6973.6</i>	<i>14.4</i>	<i>116.8</i>	<i>D698-A</i>
<i>CLAYEY SAND</i>	<i>GRID PT E-14 73930N &amp; 58870E</i>	<i>13.8</i>	<i>114.8</i>	<i>D698-A</i>
<i>SANDY CLAY</i>	<i>UNC J-13</i>	<i>14.1</i>	<i>114.7</i>	<i>D698-A</i>
<i>CLAYEY SAND</i>	<i>T-16</i>	<i>14.2</i>	<i>113.0</i>	<i>D698-A</i>
<i>NATIVE SUBGRADE</i>	<i>GRID G1.14</i>	<i>12.8</i>	<i>115.8</i>	<i>D698-A</i>

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-11  
REPORT DATE 08-25-94  
REVIEWED BY R. Zubrod  
PAGE 2

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

DATE : 07-21-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	16.2	113.7	97	116.8	95	12.4 to 16.4	YES
8	14.6	110.6	98	113.0	95	12.2 to 16.2	YES
9	15.7	111.0	98	113.0	95	12.2 to 16.2	YES
10	16.1	108.8	98	110.5	95	13.8 to 17.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	07/21	Grid Point H+14, 73730 N. & 59110 E.	6977.6
8	07/21	Grid Point I+15, 73600 N. & 59120 E.	6977.1
9	07/21	Grid Point J+16, 73460 N. & 59140 E.	6977.4
10	07/21	Grid Point K+.17, 73320 N. & 59170 E.	6978.3

+DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY CLAY	J-10 ELEVATION 6979.8	13.4	113.6	D698-A



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-12  
REPORT DATE 08-25-94  
REVIEWED BY R. Zubrod  
PAGE 1

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

DATE : 07-22-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	13.9	121.4	100+	114.1	95	10.5 to 14.5	YES
2	14.4	117.4	100+	114.1	95	10.5 to 14.5	YES
3	14.2	121.0	100+	116.6	95	10.8 to 14.8	YES
4	15.9	120.1	100+	113.0	95	12.2 to 16.2	YES
5	14.4	120.8	100+	114.7	95	12.1 to 16.1	YES
6	14.4	116.5	100+	114.8	95	11.8 to 15.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/22	Grid Point L + 17, 73250 N. & 59220 E.	6983.9
2	07/22	Grid Point K + 16.5, 73360 N. & 59200 E.	6979.0
3	07/22	Grid Point K + 16, 73380 N. & 59210 E.	6980.7
4	07/22	Grid Point J + 15, 73460 N. & 59130 E.	6977.1
5	07/22	Grid Point H + 12, 73900 N. & 59240 E.	6979.9
6	07/22	Grid Point J + 11, 73830 N. & 59450 E.	6980.5

+ DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
CLAYEY SAND	GRID PT E-14 73930N&58870E	13.8	114.8	D698-A
SANDY CLAY	UNC J-13	14.1	114.7	D698-A
CLAYEY SAND	T-16	14.2	113.0	D698-A
SANDY CLAY	GRID L-7 ELEVATION 6979.3	12.5	114.1	D698-A
SANDY CLAY	J-10 ELEVATION 6979.8	13.4	113.6	D698-A
Sany Clay	L-16	12.8	116.6	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-12  
REPORT DATE 08-24-94  
REVIEWED BY R. Zubrod  
PAGE 2

*N*

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

DATE : 07-22-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	14.8	120.4	100+	113.6	95	11.4 to 15.4	YES
8	15.1	120.0	100+	114.1	95	11.8 to 15.8	YES
9	14.6	115.3	100+	114.1	95	11.8 to 15.8	YES
10	14.2	118.2	100+	114.1	95	11.8 to 15.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	07/22	Grid Point K+10, 73910 N. & 59580 E.	6981.9
8	07/22	Grid Point L+8, 73940 N. & 59820 E.	6980.5
9	07/22	Grid Point M+8, 73880 N. & 59880 E.	6981.2
10	07/22	Grid Point N+8, 73820 N. & 59980 E.	6981.0

+DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Sandy Clay	P-8	13.8	114.1	D698-A



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. *3144JK050*  
LAB/INV NO. *31440235-13*  
REPORT DATE *08-24-94*  
REVIEWED BY *R. Zubrod*  
PAGE 1 *N*

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

DATE : *07-25-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	14.6	111.0	98	113.6	95	11.4 to 15.4	YES
2	14.2	116.6	100+	114.8	95	11.8 to 15.8	YES
3	14.5	114.2	100	114.7	95	12.1 to 16.1	YES
4	14.6	118.7	100+	114.7	95	12.1 to 16.1	YES
5	15.1	113.9	99	114.7	95	12.1 to 16.1	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/25	Grid Point G + 12.5, 73900 N. & 59160 E.	6979.6
2	07/25	Grid Point H + 11, 73980 N. & 59300 E.	6979.9
3	07/25	Grid Point I + 13, 73750 N. & 59260 E.	6979.3
4	07/25	Grid Point J + 14, 73610 N. & 59270 E.	6979.3
5	07/25	Grid Point K + 14, 73620 N. & 59270 E.	6979.5

+ DATUM: *Elevation of Test = RAC Material*

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
<i>CLAYEY SAND</i>	<i>GRID PT E-14 73930N&amp;58870E</i>	<i>13.8</i>	<i>114.8</i>	<i>D698-A</i>
<i>SANDY CLAY</i>	<i>UNC J-13</i>	<i>14.1</i>	<i>114.7</i>	<i>D698-A</i>
<i>SANDY CLAY</i>	<i>J-10 ELEVATION 6979.8</i>	<i>13.4</i>	<i>113.6</i>	<i>D698-A</i>

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. : 3144JK050  
LAB/INV NO. : 31440235-14  
REPORT DATE : 08-24-94  
REVIEWED BY : R. Zubrod  
PAGE 1

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

DATE : 07-26-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	14.1	122.4	100+	114.8	95	11.8 to 15.8	YES
2	15.0	121.1	100+	114.8	95	11.8 to 15.8	YES
3	14.8	119.3	100+	114.8	95	11.8 to 15.8	YES
4	15.7	116.8	100+	114.8	95	11.8 to 15.8	YES
5	14.2	120.9	100+	114.1	95	10.5 to 14.5	YES
6	15.1	109.7	96	114.1	95	11.8 to 15.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/26	Grid Point H+10.5, 73920 N. & 59300 E.	6979.9
2	07/26	Grid Point I+9.5, 73970 N. & 59410 E.	6979.9
3	07/26	Grid Point K+9, 73900 N. & 59660 E.	6981.0
4	07/26	Grid Point K+8, 74000 N. & 59730 E.	6979.9
5	07/26	Grid Point M+7, 73950 N. & 59970 E.	6980.0
6	07/26	Grid Point M.5+7.5, 73900 N. & 59960 E.	6980.0

+ DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
CLAYEY SAND	GRID PT E-14 73930N&58870E	13.8	114.8	D698-A
SANDY CLAY	GRID L-7 ELEVATION 6979.3	12.5	114.1	D698-A
Sandy Clay	P-8	13.8	114.1	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. **3144JK050**  
LAB/INV NO. **31440235-15**  
REPORT DATE **08-24-94**  
REVIEWED BY **R. Zubrod**  
PAGE **1**

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

DATE : **07-27-94**

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	13.6	114.7	97	118.0	95	10.0 to 14.0	YES
2	13.7	113.7	96	118.0	95	10.0 to 14.0	YES
3	14.4	115.7	100+	114.1	95	11.8 to 15.8	YES
4	14.3	111.8	97	115.7	95	11.3 to 15.3	YES
6	14.2	110.2	95	115.7	95	11.3 to 15.3	YES
7	14.8	114.5	99	115.7	95	11.3 to 15.3	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/27	Grid Point M-6, 74050 N. & 60000 E.	6978.9
2	07/27	Grid Point M-5, 74110 N. & 60080 E.	6978.0
3	07/27	Grid Point N-4, 74120 N. & 60220 E.	6979.8
4	07/27	Grid Point M-2, 74350 N. & 60260 E.	6979.8
6	07/27	Grid Point O +5, 73980 N. & 60220 E.	6969.0
7	07/27	Retest #6 (07/27/94)	6969.0

+DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY CLAY	UNC J-13	14.1	114.7	D698-A
NATIVE SUBGRADE	GRID G1.14	12.8	115.8	D698-A
SANDY CLAY	O-7 ELEVATION 6980.5	13.3	115.7	D698-A
Sandy Clay	P-8	13.8	114.1	D698-A
Sandy Clay	L-11	12.0	118.0	D698-A

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

**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-15  
REPORT DATE 08-24-94  
REVIEWED BY R. Zubrod  
PAGE 2

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

DATE : 07-27-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
8	14.5	117.1	100+	114.1	95	11.8 to 15.8	YES
9	15.0	122.4	100+	114.7	95	12.1 to 16.1	YES
10	14.6	121.0	100+	115.8	95	10.8 to 14.8	YES
11	14.5	119.3	100+	114.1	95	11.8 to 15.8	YES
12	13.8	115.9	100	115.7	95	11.3 to 15.3	YES
13	13.8	114.7	97	118.0	95	10.0 to 14.0	YES
14	14.2	116.7	100+	115.7	95	11.3 to 15.3	YES
15	13.7	115.6	100	115.7	95	11.3 to 15.3	YES
16	13.5	115.5	100	115.7	95	11.3 to 15.3	YES
17	14.6	119.0	100+	114.1	95	11.8 to 15.8	YES
18	14.2	120.4	100+	115.7	95	11.3 to 15.3	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
8	07/27	Grid Point O+4, 74040 N. & 60300 E.	6980.4
9	07/27	Grid Point K+13, 73600 N. & 59410 E.	6983.4
10	07/27	Grid Point K+10, 73860 N. & 59600 E.	6981.6
11	07/27	Grid Point P+3.5, 74050 N. & 60400 E.	6980.7
12	07/27	Grid Point O+7.5, 73800 N. & 60070 E.	6980.7
13	07/27	Grid Point P+5, 73970 N. & 60310 E.	6979.8
14	07/27	Grid Point Q+4.5, 73900 N. & 60420 E.	6980.0
15	07/27	Grid Point Q+3.5, 73960 N. & 60460 E.	6980.9
16	07/27	Grid Point Q+5.5, 73820 N. & 60350 E.	6980.2
17	07/27	Grid Point P+7-5, 73720 N. & 60150 E.	6981.6
18	07/27	Grid Point Q5+6-5, 73710 N. & 60320 E.	6981.4

+ DATUM: Elevation of Test = RAC Material

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
8	Subgrade	ASTM D-1556/AASHTO T-217
9	Subgrade	ASTM D-1556/AASHTO T-217
10	Subgrade	ASTM D-1556/AASHTO T-217
11	Subgrade	ASTM D-1556/AASHTO T-217
12	Subgrade	ASTM D-1556/AASHTO T-217
13	Subgrade	ASTM D-1556/AASHTO T-217
14	Subgrade	ASTM D-1556/AASHTO T-217
15	Subgrade	ASTM D-1556/AASHTO T-217
16	Subgrade	ASTM D-1556/AASHTO T-217
17	Subgrade	ASTM D-1556/AASHTO T-217
18	Subgrade	ASTM D-1556/AASHTO T-217



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
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REPORT DATE 08-24-94  
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PAGE 3

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

DATE : 07-27-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
19	14.8	116.5	100+	115.7	95	11.3 to 15.3	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
19	07/27	Grid Point Q +6, 73780 N. & 60310 E.	6980.4

+DATUM: Elevation of Test = RAC Material

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



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

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

**Project:** Church Rock Uranium Mill Tailings Reclamation

**Location:** Church Rock, NM

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

**Source:** Grid Pt. H-18, 73300 N & 59010 E.      **Submitted By:** H. Kuebler/WT      **Date** 07/19/94

Elevation 6972.9      **Authorized By:** Client      **Date** 07/19/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	96	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	90	
100	70	50-100
200	60.2	40-85

**Expansive Properties of Cohesive Soil**

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

**Moisture Density Relations, pcf**

(ASTM D698A)

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

**Plasticity Index, ASTM D4318**

**Liquid Limit** 30  
**Plasticity Index** 14

**Copies to:** 235.32/bc      **Addressee (3), Billing (1), Field File (1).**

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**REVIEWED BY** *[Signature]*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Lean Clay W/Sand, (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/19/94</u>
Source: <u>Grid Pt. E-18, 73620 N &amp; 58620 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/19/94</u>
Elevation 6969.8	Authorized By: <u>Client</u>	Date: <u>07/19/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	98	
10	97	85-100
16	96	
30	95	
40	94	65-100
50	92	
100	80	50-100
200	73.8	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

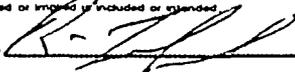
Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 27  
Plasticity Index 10

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

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

Source: Grid Pt. F-16, 73710 N & 58830 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

Elevation 6973.7      Authorized By: Client      Date 07/19/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	98	90-100
8	96	
10	95	85-100
16	94	
30	93	
40	92	65-100
50	91	
100	82	50-100
200	55.3	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 27  
Plasticity Index 7

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

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

Source: Grid Pt. G-14, 73800 N & 59030 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

Elevation 6977.3      Authorized By: Client      Date 07/19/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	98	
3/8"	97	
1/4"		
No. 4	95	90-100
8	92	
10	92	85-100
16	90	
30	88	
40	87	65-100
50	85	
100	70	50-100
200	45.3	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 26  
Plasticity Index 4

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

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

Source: Grid Pt. C-18, 73950 N & 58480 E.      Submitted By: H. Kuebler/WT      Date: 07/19/94

Elevation 6969.7      Authorized By: Client      Date: 07/19/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	97	90-100
8	96	
10	95	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	83	50-100
200	61.2	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 15

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235.28/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

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

Source: Grid Pt. A-18, 73860 N & 58340 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

Elevation 6970.2      Authorized By: Client      Date 07/19/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	94	65-100
50	93	
100	76	50-100
200	50.8	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 10

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

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REVIEWED BY: *[Signature]*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: <u>Sandy Silty Clay, (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/19/94</u>
Source: <u>Grid Pt. C-17, 73820 N &amp; 58530 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/19/94</u>
<u>Elevation 6977.0</u>	Authorized By: <u>Client</u>	Date: <u>07/19/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	94	65-100
50	93	
100	78	50-100
200	56.1	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 7

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

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



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Lean Clay W/Sand,(RAC)      Sampled By: H. Kuebler/WT      Date 07/19/94

Source: Grid Pt. F.5-13.5,73950 N & 58950 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

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

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	97	
10	97	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	66	50-100
200	45.9	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 26  
Plasticity Index 9

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235.30/bc

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REVIEWED BY: *[Signature]*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

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

Source: Grid Pt. J-13, 73730 N & 59340 E.      Submitted By: H. Kuebler/WT      Date 07/19/94

Elevation 6980.4      Authorized By: Client      Date 07/19/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	98	95-100
1/2"	97	
3/8"	96	
1/4"		
No. 4	94	90-100
8	92	
10	91	85-100
16	90	
30	89	
40	88	65-100
50	86	
100	66	50-100
200	47.6	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 25  
Plasticity Index 9

Copies to:  
235.33/bc

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

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REVIEWED BY *H. Kuebler*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

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

**Project:** Church Rock Uranium Mill Tailings Reclamation

**Location:** Church Rock, NM

**Material:** Sandy Lean Clay, (RAC)

**Sampled By:** H. Kuebler/WT **Date** 07/19/94

**Source:** Grid Pt. J-17, 73380 N & 59080 E.  
Elevation 6975.2

**Submitted By:** H. Kuebler/WT **Date** 07/19/94

**Authorized By:** Client **Date** 07/19/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	98	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	93	
100	80	50-100
200	52.6	40-85

**Expansive Properties of Cohesive Soil**

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

**Moisture Density Relations, pcf (ASTM D698A)**

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

**Plasticity Index, ASTM D4318**

**Liquid Limit** 26  
**Plasticity Index** 9

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235.34/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay Sampled By: H. Kuebler/WT Date 07/25/94

Source: (0 + 7) 73900 N. & 60020 E. Submitted By: H. Kuebler/WT Date 07/25/94

Elevation 6980.0 Authorized By: Client Date 07/25/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	98	
1/4"		
No. 4	96	90-100
8	95	
10	95	85-100
16	94	
30	93	65-100
40	93	
50	92	
100	82	50-100
200	55.1	40-85

Moisture Density Relations, pcf  
(ASTM D698 Method C)

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

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 9

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay (RAC)      Sampled By: H. Kuebler/WT      Date 07/25/94  
Source: (P-8) 73700 N. & 60100 E.      Submitted By: H. Kuebler/WT      Date 07/25/94  
Elevation 6982.1      Authorized By: Client      Date 07/25/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	96	65-100
40	95	
50	93	
100	78	50-100
200	62.4	40-85

Moisture Density Relations, pcf

(ASTM D698 Method C)

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

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

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_ 29

Plasticity Index \_\_\_\_\_ 8

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/10/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Silt</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
Source:	<u>(S-9) 73420 N. &amp; 60270 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
	<u>Elevation 6987.9</u>	Authorized By:	<u>Client</u> Date <u>07/25/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	99	95-100
1/2"	98	
3/8"	98	
1/4"		
No. 4	96	90-100
8	94	
10	94	85-100
16	92	
30	91	65-100
40	90	
50	89	
100	66	50-100
200	46.5	40-85

Moisture Density Relations, pcf

(ASTM D698 Method C)

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

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

Plasticity Index, ASTM D4318

Liquid Limit 23

Plasticity Index 2

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/10/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
Source:	<u>(L-11) 73940 N. &amp; 59620 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
	<u>Elevation 6986.1</u>	Authorized By:	<u>Client</u> Date <u>07/25/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	98	
1/4"		
No. 4	97	90-100
8	96	
10	95	85-100
16	94	
30	93	65-100
40	92	
50	91	
100	77	50-100
200	49.0	40-85

Moisture Density Relations, pcf

(ASTM D698 Method C)

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

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

Plasticity Index, ASTM D4318

Liquid Limit 29

Plasticity Index 8

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/10/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
Source:	<u>(J-11) 73840 N. &amp; 59460 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
	<u>Elevation 6980.7</u>	Authorized By:	<u>Client</u> Date <u>07/25/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	65-100
40	94	
50	93	
100	83	50-100
200	60.2	40-85

Moisture Density Relations, pcf

(ASTM D698 Method C)

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

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

Plasticity Index, ASTM D4318

Liquid Limit 29

Plasticity Index 16

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

**Project:** Church Rock Uranium Mill Tailings Reclamation

**Location:** Church Rock, NM

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

**Source:** Grid Pt. K-19; 73160 N & 59020 E.      **Submitted By:** H. Kuebler/WT      **Date** 07/25/94

Elevation 6980.7      **Authorized By:** Client      **Date** 07/25/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	98	
10	97	85-100
16	97	
30	96	
40	95	65-100
50	93	
100	81	50-100
200	56.2	40-85

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 20  
Plasticity Index 2

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440235-16  
REPORT DATE 08-24-94  
REVIEWED BY R. Zubrod  
PAGE 1

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

DATE : 07-28-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	14.8	117.0	100+	114.1	95	11.8 to 15.8	YES
2	15.2	115.5	100	115.7	95	11.3 to 15.3	YES
3	14.8	112.7	99	114.1	95	11.8 to 15.8	YES
4	13.9	117.7	100+	114.1	95	11.8 to 15.8	YES
5	14.7	119.2	100+	114.1	95	11.8 to 15.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	07/28	Grid Point N+7, 73900 N. & 60020 E.	6979.0
2	07/28	Grid Point O+6, 73900 N. & 60160 E.	6080.9
3	07/28	Grid Point O+4.5, 74100 N. & 60300 E.	6980.4
4	07/28	Grid Point N+7.5, 73850 N. & 60000 E.	6980.7
5	07/28	Grid Point N+5, 74050 N. & 60160 E.	6978.6

+ DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY CLAY Sandy Clay	O-7 ELEVATION 6980.5 P-8	13.3 13.8	115.7 114.1	D698-A D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440279  
REPORT DATE 08-25-94  
REVIEWED BY R. Zubrod  
PAGE 1

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

DATE : 08-01-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	13.6	116.8	100+	115.8	95	10.8 to 14.8	YES
2	14.2	123.9	100+	114.1	95	11.8 to 15.8	YES
3	13.9	121.4	100+	114.1	95	11.8 to 15.8	YES
4	13.7	126.5	100+	118.0	95	10.0 to 14.0	YES
5	13.9	119.3	100+	118.0	95	10.0 to 14.0	YES
6	14.2	121.3	100+	114.1	95	10.5 to 14.5	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/01	Grid Point K.5+11, 73750 N. & 59580 E.	6982.9
2	08/01	Grid Point M+9, 73800 N. & 59820 E.	6983.8
3	08/01	Grid Point N+8.5, 73780 N. & 59920 E.	6984.0
4	08/01	Grid Point O+8.5, 73750 N. & 60000 E.	6984.7
5	08/01	Grid Point Q+7.5, 73650 N. & 60230 E.	6981.0
6	08/01	Grid Point L-17, 73250 N. & 59240 E.	6988.9

+DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	G+19 RAC BOTTOM LIFT	10.0	115.3	D698-A
NATIVE SUBGRADE	GRID G1.14	12.8	115.8	D698-A
SANDY CLAY	GRID L-7 ELEVATION 6979.3	12.5	114.1	D698-A
Sandy Clay	L-16	12.8	116.6	D698-A
Sandy Clay	P-8	13.8	114.1	D698-A
Sandy Clay	L-11	12.0	118.0	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. **3144JK050**  
LAB/INV NO. **31440279**  
REPORT DATE **08-24-94**  
REVIEWED BY **R. Zubrod**  
PAGE 2

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

DATE : **08-01-94**

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	13.6	117.0	100	116.6	95	10.8 to 14.8	YES
8	13.9	121.6	100+	116.6	95	10.8 to 14.8	YES
9	13.1	118.5	100+	116.6	95	10.8 to 14.8	YES
10	11.7	121.3	100+	115.3	95	8.0 to 12.0	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	08/01	Grid Point K.5+15, 73430 N. & 59260 E.	6985.3
8	08/01	Grid Point L-16, 73300 N. & 59220 E.	6985.7
9	08/01	Grid Point L-15, 73400 N. & 59350 E.	6986.9
10	08/01	Grid Point K.5-14, 73520 N. & 59400 E.	6985.0

+ DATUM: Elevation of Test = RAC Material

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



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440279-1  
REPORT DATE 08-25-94  
REVIEWED BY R. Zubrod  
PAGE 1

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

DATE : 08-02-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	13.6	119.8	100+	116.1	95	11.4 to 15.4	YES
2	13.6	118.0	100	118.0	95	10.0 to 14.0	YES
3	13.8	122.5	100+	114.1	95	11.8 to 15.8	YES
4	14.2	114.1	100	114.1	95	11.8 to 15.8	YES
5	14.2	113.3	98	115.7	95	11.3 to 15.3	YES
6	13.9	116.1	100	116.5	95	11.0 to 15.0	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/02	Grid Point L+14, 73480 N. & 59430 E.	6987.1
2	08/02	Grid Point M+11, 73640 N. & 59700 E.	6988.7
3	08/02	Grid Point N+10, 73660 N. & 59840 E.	6987.8
4	08/02	Grid Point P+9, 73610 N. & 60050 E.	6986.0
5	08/02	Grid Point R+7, 73650 N. & 60320 E.	6981.4
6	08/02	Grid Point Q+8, 73640 N. & 60200 E.	6981.8

+DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY CLAY	Q-7 ELEVATION 6980.5	13.3	115.7	D698-A
Sandy Clay	S-9	13.0	116.5	D698-A
Sandy Clay	P-8	13.8	114.1	D698-A
Sandy Clay	L-11	12.0	118.0	D698-A
Sandy Clay (RAC)	Borrow Pit #2 Stockpile	13.4	116.1	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440279-1  
REPORT DATE 08-24-94  
REVIEWED BY R. Zubrod  
PAGE 2

*N*

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

DATE : 08-02-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	14.5	124.4	100+	114.1	95	11.8 to 15.8	YES
8	13.1	111.6	98	114.1	95	11.8 to 15.8	YES
9	13.8	117.8	100	118.0	95	10.0 to 14.0	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	08/02	Grid Point O+9, 73650 N. & 60030 E.	6981.8
8	08/02	Grid Point M+10, 73720 N. & 59760 E.	6986.8
9	08/02	Grid Point L+12, 73630 N. & 59550 E.	6986.9

+DATUM: Elevation of Test = RAC Material

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



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. *3144JK050*  
LAB/INV NO. *31440279-2*  
REPORT DATE *08-24-94*  
REVIEWED BY *R. Zubrod*  
PAGE 1

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

DATE : *08-03-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	14.3	112.8	97	116.5	95	11.0 to 15.0	YES
2	14.3	117.9	100+	114.1	95	11.8 to 15.8	YES
3	14.0	109.9	96	114.1	95	11.8 to 15.8	YES
4	13.9	116.6	100+	114.1	95	11.8 to 15.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/03	Grid Point S+ 8.5, 73470 N. & 60320 E.	6994.1
2	08/03	Grid Point P+ 10, 73540 N. & 59990 E.	6989.7
3	08/03	Grid Point N+ 10.5, 73620 N. & 59800 E.	6990.6
4	08/03	Grid Point M+ 12, 73570 N. & 59630 E.	6990.9

+ DATUM: *Elevation of Test = RAC Material*

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
<i>Sandy Clay</i>	<i>S-9</i>	<i>13.0</i>	<i>116.5</i>	<i>D698-A</i>
<i>Sandy Clay</i>	<i>P-8</i>	<i>13.8</i>	<i>114.1</i>	<i>D698-A</i>

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. 3144JK050  
LAB/INV NO. 31440279-3  
REPORT DATE 08-24-94  
REVIEWED BY R. Zubrod  
PAGE 1

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

DATE : 08-08-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	14.6	118.2	100+	116.5	95	11.0 to 15.0	YES
2	14.2	112.4	98	114.7	95	12.1 to 16.1	YES
3	14.1	115.1	100	114.7	95	12.1 to 16.1	YES
4	14.3	113.2	99	114.7	95	12.1 to 16.1	YES
5	14.3	112.4	99	114.1	95	11.8 to 15.8	YES
6	15.9	108.9	95	114.7	95	12.1 to 16.1	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/08	Grid Point S+10, 73340 N. & 60220 E.	6994.1
2	08/08	Grid Point O+10.5, 73600 N. & 59950 E.	6989.1
3	08/08	Grid Point P.5+10, 73530 N. & 60030 E.	6990.0
4	08/08	Grid Point O+.12, 73450 N. & 59800 E.	6977.4
5	08/08	Grid Point N+12, 73510 N. & 59710 E.	6994.0
6	08/08	Grid Point N+13, 73440 N. & 59650 E.	6997.3

+ DATUM: Elevation of Test = RAC Material

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY CLAY	UNC J-13	14.1	114.7	D698-A
Sandy Clay	S-9	13.0	116.5	D698-A
Sandy Clay	P-8	13.8	114.1	D698-A
Sandy Clay (RAC)	Borrow Pit #2 Stockpile	13.4	116.1	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

JOB NO. *3144JK050*  
LAB/INV NO. *31440279-3*  
REPORT DATE *08-24-94*  
REVIEWED BY *R. Zubrod*  
PAGE 2

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

DATE : *08-08-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	13.5	117.1	100+	116.1	95	11.4 to 15.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
7	08/08	<i>Grid Point M + 14, 73420 N. &amp; 59500 E.</i>	6993.0

+ DATUM: *Elevation of Test = RAC Material*

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

APPENDIX  
E

APPENDIX E  
PROCTOR TESTS, RADON ATTENUATION COVER

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

TEST SUMMARY FOR PROCTORS

*8*

WT JOB NO. 3144JK0

DATE OF REPORT 09/17/95

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

RAC = Radon Attenuation Cover



JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

TEST SUMMARY FOR PROCTORS

DATE OF REPORT 09/17/95

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

RAC = Radon Attenuation Cover



JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKC

TEST SUMMARY FOR PROCTORS

DATE OF REPORT 09/17/94

K

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/21/94	Proctor Point	F+13	73950	59030	6977.7	RAC	113.6	13.4	---	CL	Yes
07/22/94	Proctor Point	L+17	73250	59220	6983.9	RAC	114.1	12.5	---	CL	Yes
07/22/94	Proctor Point	J+15	73460	59130	6977.1	RAC	113.0	14.2	---	CL	Yes
07/24/94	Proctor	P+8	73690	60100	6982.2	RAC	114.1	13.8	---	CL	Yes
07/25/94	Proctor	O+7	73830	60100	6980.5	RAC	115.7	13.3	---	CL	Yes
07/25/94	Proctor	J+10	73940	59540	6979.8	RAC	113.6	13.4	---	CL	Yes
07/25/94	Proctor	L+7	74050	59870	6979.2	RAC	114.1	12.5	---	CL	Yes
07/25/94	Proctor	S+9	73420	60280	6987.8	RAC	116.5	13.0	---	CL	Yes
07/25/94	Proctor Point	H+11	73980	59300	6979.6	RAC	114.8	13.8	---	CL	Yes
07/27/94	Proctor Point	O+4	74040	60300	6980.4	RAC	114.1	13.8	---	CL	Yes
07/27/94	Proctor Point	P+7.5	73720	60150	6981.6	RAC	114.1	13.8	---	CL	Yes
07/27/94	Proctor Point	P+5	73970	60310	6979.8	RAC	118.0	12.0	---	CL	Yes

RAC=Radon Attenuation Cover



JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JKO

TEST SUMMARY FOR PROCTORS

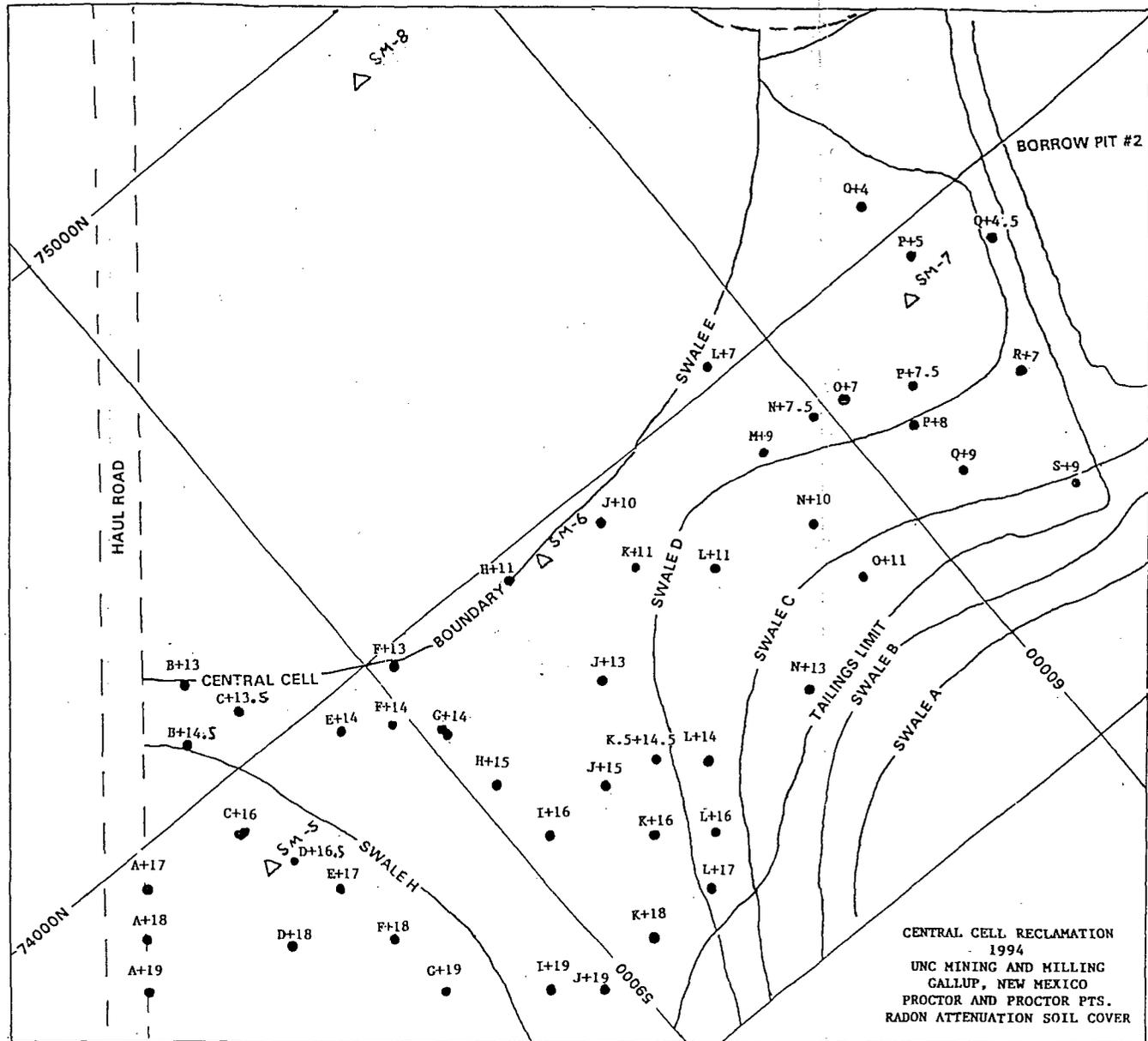
DATE OF REPORT 09/17/95



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

RAC = Radon Attenuation Cover

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No. <u>3144JK050</u> Lab/Inv. No. <u>31440184</u> Report Date: <u>07/12/94</u>
Project: <u>Chuck Rock Uranium Mill Tailings Reclamation</u>	
Location: <u>Church Rock, NM</u>	
Material: <u>Sandy Lean Clay</u>	Sampled By: <u>H. Kuebler/WT</u> Date <u>06/27/94</u>
Source: <u>G + 19, (RAC) Bottom Lift,</u>	Submitted By: <u>H. Kuebler/WT</u> Date <u>06/27/94</u>
<u>73420 N. &amp; 58720 E.,</u>	Authorized By: <u>Client</u> Date <u>06/27/94</u>
<u>Elevation 6967.75</u>	

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Lean Clay</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>06/27/94</u>
Source:	<u>Line A-18, (RAC) Top Lift,</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>06/27/94</u>
	<u>73880 N. &amp; 58280 E.,</u>	Authorized By:	<u>Client</u>	Date	<u>06/27/94</u>
	<u>Elevation 6970.7</u>				

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440184
		Report Date:	07/12/94
Project:	Chuck Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Lean Clay, (RAC)	Sampled By:	R. Whitaker/WT
		Date	06/29/94
Source:	Grid Point C-16, Top Lift	Submitted By:	R. Whitaker/WT
		Date	06/29/94
	73980 N. & 58670 E. Elevation 6973.65	Authorized By:	Client
		Date	06/29/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	112.9
Optimum Moisture, %	15.3

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

PHYSICAL PROPERTIES OF SOILS

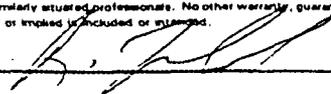
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy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

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay, (RAC)</u>	Sampled By:	<u>R. Whitaker/WT</u> Date <u>07/06/94</u>
Source:	<u>Grid Pt. J-19, (Top Lift)</u>	Submitted By:	<u>R. Whitaker/WT</u> Date <u>07/06/94</u>
	<u>73220 N. &amp; 58950 E.</u>	Authorized By:	<u>Client</u> Date <u>07/06/94</u>
	<u>Elevation 6971.4</u>		

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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REVIEWED BY R. Whitaker



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>07/18/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Clayey Sand</u>	Sampled By:	<u>H. Kuelber/WT</u> Date <u>07/07/94</u>
Source:	<u>Grid Pt. E-14,73930 N. &amp; 58870 E.</u>	Submitted By:	<u>B. Coker/WT</u> Date <u>07/07/94</u>
	<u>Elevation 6976.2</u>	Authorized By:	<u>Client</u> Date <u>07/07/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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REVIEWED BY: *H. Kuelber*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>07/18/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Brown Clayey Sand</u>	Sampled By:	<u>R. Whitaker/WT</u> Date <u>07/07/94</u>
Source:	<u>Grid Pt. F-14,73710 N. &amp; 58820 E.</u>	Submitted By:	<u>R. Whitaker/WT</u> Date <u>07/07/94</u>
	<u>Elevation 6973.6</u>	Authorized By:	<u>Client</u> Date <u>07/07/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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REVIEWED BY *R. Whitaker*



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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	07/27/94
Project:	Chuck Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Clay (RAC)	Sampled By:	H. Kuebler/WT
		Date	07/18/94
Source:	Grid Pt. I-16, 73540 N. & 59060 E.	Submitted By:	H. Kuebler/WT
	Elevation 6975.3	Authorized By:	Client
		Date	07/18/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	113.0
Optimum Moisture, %	14.2

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

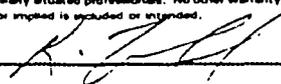
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>07/18/94</u>
Source:	<u>Grid Pt. E-17,73700 N. &amp; 58700 E.</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>07/18/94</u>
	<u>Elevation 6971.6</u>	Authorized By:	<u>Client</u>	Date	<u>07/18/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>07/27/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
Source:	<u>Grid Pt. J-13,73700 N. &amp; 59340 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
	<u>Elevation 6980.2</u>	Authorized By:	<u>Client</u> Date <u>07/19/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
Source:	<u>A + 17, 73930 N. &amp; 58400 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
	<u>Elevation 6970.9</u>	Authorized By:	<u>Client</u> Date <u>07/19/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
Source:	<u>F+ 18, 73420 N. &amp; 58700 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
	<u>Elevation 6970.0</u>	Authorized By:	<u>Client</u> Date <u>07/19/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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REVIEWED BY: *[Signature]*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

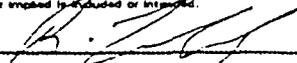
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/02/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
Source:	<u>Grid Pt. G-14,73800 N. &amp; 59050 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
	<u>Elevation 6977.2</u>	Authorized By:	<u>Client</u> Date <u>07/19/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

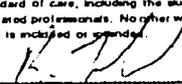
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
Source:	<u>D + 16.5, 73760 N. &amp; 58650 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
	<u>Elevation 6970.4</u>	Authorized By:	<u>Client</u> Date <u>07/19/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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

*R. J. [Signature]*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

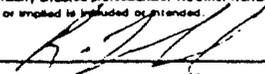
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>07/27/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
Source:	<u>Grid Pt. G-14,73800 N. &amp; 58040 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/19/94</u>
	<u>Elevation 6977.7</u>	Authorized By:	<u>Client</u> Date <u>07/19/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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Farmington, New Mexico 87401  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

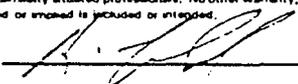
Material: <u>Silty Sand with Clay (Native)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/20/94</u>
Source: <u>Grid Pt. B-13,73260 N. &amp; 58650 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/20/94</u>
<u>Elevation 6977.2</u>	Authorized By: <u>Client</u>	Date: <u>07/20/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

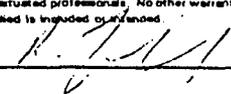
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

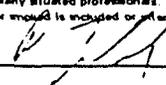
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

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

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/22/94</u>
Source: <u>L + 17, 73250 N. &amp; 59220 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/22/94</u>
<u>Elevation 6983.9</u>	Authorized By: <u>Client</u>	Date: <u>07/22/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	113.6
Optimum Moisture, %	13.4

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>07/22/94</u>
Source:	<u>J+15, 73460 N. &amp; 59130 E.</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>07/22/94</u>
	<u>Elevation 6977.1</u>	Authorized By:	<u>Client</u>	Date	<u>07/22/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

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

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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235.39/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/02/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay, (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
Source:	<u>Grid Pt. O-7,73830 N. &amp; 60100 E.</u>	Submitted By:	<u>H. Kuelber/WT</u> Date <u>07/25/94</u>
	<u>Elevation 6980.5</u>	Authorized By:	<u>Client</u> Date <u>07/25/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

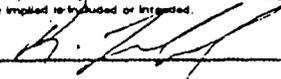
Material: <u>Sandy Clay, (RAC)</u>	Sampled By: <u>H. Kuelber/WT</u>	Date: <u>07/25/94</u>
Source: <u>Grid Pt. S-9, 73420 N. &amp; 60280 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>07/25/94</u>
<u>Elevation 6987.8</u>	Authorized By: <u>Client</u>	Date: <u>07/25/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
Source:	<u>H+ 11, 73980 N. &amp; 59300 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/25/94</u>
	<u>Elevation 6979.6</u>	Authorized By:	<u>Client</u> Date <u>07/25/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440235</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/27/94</u>
Source:	<u>O + 4, 74040 N. &amp; 60300 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/27/94</u>
	<u>Elevation 6980.4</u>	Authorized By:	<u>Client</u> Date <u>07/27/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/24/94
Project:	1994 Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Clay (RAC)	Sampled By:	H. Kuebler/WT
		Date	07/27/94
Source:	P+7.5, 73720 N. & 60150E.	Submitted By:	H. Kuebler/WT
		Date	07/27/94
	Elevation 6981.6	Authorized By:	Client
		Date	07/27/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	114.1
Optimum Moisture, %	13.8

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No. <u>3144JK050</u> Lab/Inv. No. <u>31440235</u> Report Date: <u>08/24/94</u>
Project: <u>1994 Church Rock Uranium Mill Tailings Reclamation</u>	
Location: <u>Church Rock, NM</u>	
Material: <u>Sandy Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u> Date <u>07/27/94</u>
Source: <u>P+5, 73970 N. &amp; 60310 E.</u>	Submitted By: <u>H. Kuebler/WT</u> Date <u>07/27/94</u>
<u>Elevation 6979.8</u>	Authorized By: <u>Client</u> Date <u>07/27/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/24/94
Project:	1994 Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Clay (RAC)	Sampled By:	H. Kuebler/WT Date 07/27/94
Source:	O + 11, 73520 N. & 59850 E. Elevation 6992.7	Submitted By:	H. Kuebler/WT Date 07/27/94
		Authorized By:	Client Date 07/27/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	114.7
Optimum Moisture, %	14.1

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

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

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Farmington, New Mexico 87401  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

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

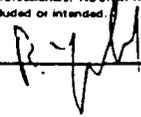
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/10/94
Project:	1994 Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Clay (RAC)	Sampled By:	H. Kuebler/WT Date 07/28/94
Source:	L + 16, 73230 N. & 59280 E. Elevation 6985.4	Submitted By:	H. Kuebler/WT Date 07/28/94
		Authorized By:	Client Date 07/28/94

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	116.6
Optimum Moisture, %	12.8

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440279</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>08/01/94</u>
Source:	<u>M+9, 73800 N. &amp; 59820 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>08/01/94</u>
	<u>Elevation 6983.8</u>	Authorized By:	<u>Client</u> Date <u>08/01/94</u>

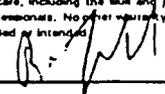
Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440279</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>08/01/94</u>
Source:	<u>K5-14, 73520 N. &amp; 59400 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>08/01/94</u>
	<u>Elevation 6985.0</u>	Authorized By:	<u>Client</u> Date <u>08/01/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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REVIEWED BY P. J. H.



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440279</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>08/01/94</u>
Source:	<u>N + 13, 73440 N. &amp; 59560 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>08/01/94</u>
	<u>Elevation 6997.2</u>	Authorized By:	<u>Client</u> Date <u>08/01/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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REVIEWED BY *[Signature]*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

Maximum Dry Density, pcf	116.1
Optimum Moisture, %	13.4

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: 1994 Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Clay (RAC)</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>08/02/94</u>
Source: <u>N+10, 73660 N. &amp; 59840 E.</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>08/02/94</u>
<u>Elevation 6987.8</u>	Authorized By: <u>Client</u>	Date: <u>08/02/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

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

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REVIEWED BY *[Signature]*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440279</u>
		Report Date:	<u>08/24/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Clay (RAC)</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>08/04/94</u>
Source:	<u>Q+9, 73550 N. &amp; 60120 E.</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>08/04/94</u>
	<u>Elevation 6986.5</u>	Authorized By:	<u>Client</u> Date <u>08/04/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

One Point Check

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

(Corresponds with Proctor S-9)  
Copies to: Addressee (3), Billing (1)  
279.17/bc

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REVIEWED BY: B. J. M.

**APPENDIX  
F**

APPENDIX F

ROCK QUALITY DETERMINATIONS, ROCK MULCH AND RIPRAP



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**ROCK QUALITY DETERMINATION**

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

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

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

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

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

Material Type: Crushed Basalt Intended Use D50 - 1.5"

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

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

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

/cb:RQD.UNC



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Farmington, New Mexico 87401  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

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

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs.    5

% Loss at 500 Revs.    29

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

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



**Western Technologies Inc.**

400 South Lorena Avenue  
Farmington, New Mexico 87401  
(505) 327-0111 SOUNDNESS OF AGGREGATES

**LABORATORY REPORT**

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

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

Project: Church Rock Uranium Mill tailings Reclamation

Location: Chuch Rock, NM

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

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

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

Solution: Sodium Sulfate (Used)

FINE AGGREGATE

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

COARSE AGGREGATE

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

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

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

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

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REVIEWED BY R. J. [Signature]



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**ROCK QUALITY DETERMINATION**

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

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

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project  
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 05/24/94  
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 05/24/94  
Material Type: Basaltic Igneous Intended Use \_\_\_\_\_

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

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

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

/cb:RQD.UNC



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Farmington, New Mexico 87401  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Gallup, NM

Material: Basaltic Rock, D<sup>60</sup> - 1.5 Aggregate      Sampled By: H. Kuebler/WT      Date 05/24/94

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

Authorized By: Client      Date 05/24/94

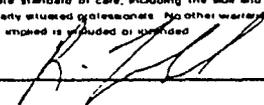
Coarse Aggregate, ASTM C127

Bulk Specific Gravity	2.731
Bulk Specific Gravity (SSD)	2.773
Apparent Specific Gravity	2.852
Absorption, Percent	1.55

Copies to:  
135.10A/bc

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

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REVIEWED BY: 



**Western Technologies Inc.**

400 South Lorena Avenue  
Farmington, New Mexico 87401  
(505) 325-7300 SOUNDNESS OF AGGREGATES

**LABORATORY REPORT**

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

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

Project: Church Rock Uranium Mill tailings Reclamation

Location: Chuch Rock, NM

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

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

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

Solution: Sodium Sulfate (Used)

FINE AGGREGATE

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

COARSE AGGREGATE

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

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

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

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

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WTI and client. WTI 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 \_\_\_\_\_



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(505) 327-4966 • fax 327-5293

**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

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

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs.    4.3  
% Loss at 500 Revs.        

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

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WI and client. WI 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, quality, or representation either expressed or implied is included or excluded.

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### ROCK QUALITY DETERMINATION

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

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

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

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

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

Material Type: Basaltic 1.5 Aggregate Intended Use D50 1.5 Aggregate

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

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

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

/cb:RQD.UNC



**Western Technologies Inc.**

400 South Lorena Avenue  
Farmington, New Mexico 87401  
(505) 327-1999 **SOUNDNESS OF AGGREGATES**

**LABORATORY REPORT**

Client:

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

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

Project: Church Rock Uranium Mill tailings Reclamation  
Location: Chuch Rock, NM  
Material: D<sup>50</sup> - 1.5 Aggregate Sampled By: H. Kuebler/WT Date 07/21/94  
Source: Windrow on site Submitted By: H. Kuebler/WT Date 07/21/94  
Procedure: ASTMC88, 5 cycles Authorized By: Client Date 07/21/94  
Solution: Sodium Sulfate (Fresh)

FINE AGGREGATE

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

COARSE AGGREGATE

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

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

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

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

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REVIEWED BY: [Signature]



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

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

Coarse Aggregate, ASTM C127

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

Copies to:  
235.37B/bc

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

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



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

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

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs.    7.1

% Loss at 500 Revs.        

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

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**ROCK QUALITY DETERMINATION**

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

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

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

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

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

Material Type: Crushed Basalt Intended Use D50-3"

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

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

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

/cb:RQD.UNC



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

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

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

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

Location: Church Rock, New Mexico

Material:	<u>D<sup>60</sup> - 3" Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>08/04/94</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>08/04/94</u>
		Authorized By:	<u>E. Morales/Client</u>	Date	<u>08/04/94</u>

Coarse Aggregate, ASTM C127

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

Copies to:  
279.001/bc

Addressee (3), Billing (1)

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

*H. Kuebler*



**Western Technologies Inc.**

400 South Lorena Avenue  
Farmington, New Mexico 87401  
(505) 325-0100 SOUNDNESS OF AGGREGATES

**LABORATORY REPORT**

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

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

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

FINE AGGREGATE

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

COARSE AGGREGATE

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

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

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

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

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REVIEWED BY: [Signature]



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

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

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 4.72

% Loss at 500 Revs.     

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

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REVIEWED BY R. J. [Signature]

APPENDIX G

ROCK GRADATION TESTS, ROCK MULCH AND RIPRAP

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK051

TEST SUMMARY FOR D50 1.5 MATERIAL

DATE OF REPORT 10/03/94

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

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

1994 UNC/cb

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





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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK05C</u>
		Lab/Inv. No.	<u>31440111</u>
		Report Date:	<u>05/05/94</u>

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

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

Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>04/14/94</u>
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Authorized By:	<u>Client</u>	Date	<u>04/14/94</u>
----------------	---------------	------	-----------------

SIEVE ANALYSIS, ASTM C136 & C117

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

Moisture Density Relations, pcf (ASTM D698 Method C)

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

Plasticity Index, ASTM D4318

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440111
		Report Date:	05/03/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	D <sup>50</sup> - 1.5" Aggregate	Sampled By:	H. Kuebler/WT      Date 04/28/94
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT      Date 04/28/94
		Authorized By:	Client                  Date 04/28/94

SIEVE ANALYSIS, ASTM C136 & C117

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

Moisture Density Relations, pcf  
(ASTM D698 Method C)

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

Plasticity Index, ASTM D4318

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440135
		Report Date:	05/17/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	D <sup>50</sup> - 1.5 Aggregate	Sampled By:	H. Kuebler/WT Date 05/10/94
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT Date 05/10/94
		Authorized By:	Client Date 05/10/94

SIEVE ANALYSIS, ASTM C136 & C117

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

Moisture Density Relations, pcf (ASTM D698 Method C)

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

Plasticity Index, ASTM D4318

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK05C</u>
		Lab/Inv. No.	<u>31440135</u>
		Report Date:	<u>05/17/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>D<sup>50</sup> - 1.5 Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>05/10/94</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>05/10/94</u>
		Authorized By:	<u>Client</u> Date <u>05/10/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

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

Moisture Density Relations, pcf  
(ASTM D698 Method C)

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

Plasticity Index, ASTM D4318

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATE**

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

**SIEVE ANALYSIS, ASTM C136 & C117**

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

**Moisture Density Relations, pcf**

(ASTM D698 Method C)

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

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

**Plasticity Index, ASTM D4318**

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

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

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

**PHYSICAL PROPERTIES OF AGGREGATE**

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

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

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

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

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

Source: Stockpile

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

Authorized By: Client Date 05/24/94

**SIEVE ANALYSIS, ASTM C136 & C117**

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

**Moisture Density Relations, pcf  
(ASTM D698 Method C)**

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

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

**Plasticity Index, ASTM D4318**

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

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

SIEVE ANALYSIS, ASTM C136 & C117

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

Moisture Density Relations, pcf

(ASTM D698 Method C)

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

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

Plasticity Index, ASTM D4318

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

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

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATE**

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

**SIEVE ANALYSIS, ASTM C136 & C117**

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

Moisture Density Relations, pcf  
(ASTM D698 Method C)

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

Plasticity Index, ASTM D4318

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440279</u>
		Report Date:	<u>08/08/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>D<sup>50</sup> - 1.5" Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>08/04/94</u>
Source:	<u>Hamilton Brothers Belt</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>08/04/94</u>
		Authorized By:	<u>Client</u> Date <u>08/04/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

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

Moisture Density Relations, pcf  
(ASTM D698 Method C)

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

Plasticity Index, ASTM D4318

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

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279.1/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

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

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

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: D<sup>60</sup> - 1.5 Aggregate      Sampled By: H. Kuebler/WT      Date 09/26/94

Source: Windrow on site      Submitted By: H. Kuebler/WT      Date 09/26/94

Authorized By: Client      Date 09/26/94

SIEVE ANALYSIS, ASTM C136 & C117

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

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

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

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

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

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

Plasticity Index, ASTM D4318

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

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

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336.11/bc

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*[Signature]*



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

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

SIEVE ANALYSIS, ASTM C136 & C117

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

Moisture Density Relations, pcf  
(ASTM D698 Method C)

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

Plasticity Index, ASTM D4318

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

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APPENDIX H  
ROCK MULCH THICKNESS

( )

### D50 1.5 AGGREGATE PLACEMENT

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



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WT JOB NO. 3144JK050

DATE OF REPORT 08/19/94

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

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

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**WT JOB NO. 3144JK050**

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

*W*

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

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

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WT JOB NO. 3144JK050

DATE OF REPORT 08/19/94

*dy*

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

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

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WT JOB NO. 3144JK050

DATE OF REPORT 08/24/94

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

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

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WT JOB NO. 3144JK050

DATE OF REPORT 08/24/94

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

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

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WT JOB NO. 3144JK050

DATE OF REPORT 08/24/94

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

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

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

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

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

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 08/29/94

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

DATE OF REPORT 08/29/94

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

DATE OF REPORT 09/02/94

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

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

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WT JOB NO. 3144JK050

DATE OF REPORT 09/09/94

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

DATE OF REPORT 10/07/94

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

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

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

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APPENDIX

1

APPENDIX I  
SOIL/ROCK MATRIX MEASUREMENTS

### SOIL COVER ON D50 1.5 AGGREGATE

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

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





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WT JOB NO. 3144JK050

DATE OF REPORT 09/17/94

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

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

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DATE OF REPORT 09/17/94

SOIL COVER ON D50 1.5 AGGREGATE  
09/01/94

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

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WT JOB NO. 3144JK050

DATE OF REPORT 09/17/94

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

*N*

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

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



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DATE OF REPORT 09/17/94

*W*

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

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

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WT JOB NO. 3144JK050

DATE OF REPORT 09/17/94

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

Location	Thickness	Location	Thickness
I.5+18.5	3 3/4"	I.5+19.5	3"
J+16	3"	J+17	3 1/4"
J+18	4"	J+19	3 3/4"
J+20	3 1/4"	J.5+16.5	3 1/2"
J.5+17.5	4"	J.5+18.5	4 1/2"
J.5+19.5	3 1/4"	K+17	4"
K+18	3 3/4"	K+19	3 3/4"
K+20	3 1/2"	K.5+17.5	3 1/2"
K.5+18.5	3 1/4"	K.5+19.5	4 1/4"



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DATE OF REPORT 09/17/94

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

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

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WT JOB NO. 3144JK050

DATE OF REPORT 09/26/94

SOIL COVER ON D50 1.5 AGGREGATE  
09/19/94

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

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WT JOB NO. 3144JK050

DATE OF REPORT 09/26/94

SOIL COVER ON D50 1.5 AGGREGATE  
09/19/94

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

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WT JOB NO. 3144JK050

DATE OF REPORT 10/03/94

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

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

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WT JOB NO. 3144JK050

DATE OF REPORT 10/03/94

SOIL COVER ON D50 1.5 AGGREGATE  
09/29/94

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

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 10/07/94

SOIL COVER ON D50 1.5 AGGREGATE  
10/04/94

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

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DATE OF REPORT 10/07/94

**SOIL COVER ON D50 1.5 AGGREGATE  
10/04/94**

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

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

/cb:UNC.THI





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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

DATE OF REPORT 10/07/94

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

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

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

/cb:UNC.THI

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APPENDIX

J

APPENDIX J

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

## SWALES

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

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

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

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

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

TEST SUMMARY FOR SWALE A

DATE OF REPORT 10/03/94

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/28/94	Proctor	6+00	---	---	7004.1	Native	113.7	14.0	---	CL	Yes
08/29/94	Sandcone	7+00	Bottom of Swale	---	7003.9	Native	103.7	7.6	91	CL	Yes
08/29/94	Sandcone	9+00	West Berm	---	7006.0	Native	115.5	10.4	100	CL	Yes
08/29/94	Sandcone	11+00	Bottom of Swale	---	7003.1	Native	110.4	11.7	97	CL	Yes
08/31/94	Bedding Sand Thickness Measurement	---	Swale A	---	---	---	---	---	---	---	Yes
09/08/94	D50 1.5 Aggregate	Thickness Measurement	Swale A	---	---	---	---	---	---	---	Yes

RAC = Radon Attenuation Cover

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales		Job No. <u>3144JK050</u>
			Lab/Inv. No. <u>31440184</u>
			Report Date: <u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay, Native</u>	Sampled By: <u>R. Whitaker/WT</u>	Date <u>06/28/94</u>
Source:	<u>Swale A; Station 6+00</u>	Submitted By: <u>R. Whitaker/WT</u>	Date <u>06/28/94</u>
	<u>Elevation 7004.1</u>	Authorized By: <u>Client</u>	Date <u>06/28/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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184.28/bc

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REVIEWED BY R. Whitaker



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

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

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

DATE : 08-29-94

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

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

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

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

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY NATIVE	SWALE B, STA14+00 E6993.68	14.0	113.7	D698-A

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

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

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

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**WT JOB NO. 3144JK050**

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

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

*Handwritten mark*

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

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

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

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05C

TEST SUMMARY FOR SWALE B

DATE OF REPORT 10/03/94

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

 Right Berm = West Berm

RAC = Radon Attenuation Cover

JK050.SUM/cb



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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

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

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

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

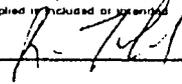
Material: <u>Silty Lean Clay, Native</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/20/94</u>
Source: <u>Swale B, Station 8+00,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/20/94</u>
<u>Elevation 6998.6</u>	Authorized By: <u>Client</u>	Date: <u>06/20/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay, Native</u>	Sampled By:	<u>R. Whitaker/WT</u> Date <u>06/28/94</u>
Source:	<u>Swale B; Station 14+00</u>	Submitted By:	<u>R. Whitaker/WT</u> Date <u>06/28/94</u>
	<u>Elevation 6993.68</u>	Authorized By:	<u>Client</u> Date <u>06/28/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

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

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

DATE : 08-18-94

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

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

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

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

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

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SOIL/AGGREGATE FIELD DENSITY TEST

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

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

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

DATE : 08-23-94

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

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

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

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

**SWALE B  
BEDDING SAND PLACEMENT  
THICKNESS**

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

**SWALE B  
BEDDING SAND PLACEMENT  
THICKNESS**

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

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

*JK*

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

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

/cb:BSPUNC.K050

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK0

TEST SUMMARY FOR SWALE C

DATE OF REPORT 10/03/94

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

RAC = Radon Attenuation Cover

JK050 SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY FOR SWALE C

DATE OF REPORT 10/03/9

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

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

RAC = Radon Attenuation Cover

JK050 SUM/cb



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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440184
		Report Date:	07/12/94
Project:	Chuck Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Silty Lean Clay	Sampled By:	R. Davis/WT Date 06/14/94
Source:	Swale C, Station 16+00, Elevation 6983.6	Submitted By:	R. Davis/WT Date 06/14/94
		Authorized By:	Client Date 06/14/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	126.0
Optimum Moisture, %	12.0

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

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Silty Sand, Native</u>	Sampled By:	<u>R. Davis/WT</u> Date <u>06/14/94</u>
Source:	<u>Swale C, Station 6 +00,</u>	Submitted By:	<u>R. Davis/WT</u> Date <u>06/14/94</u>
	<u>Elevation 6988.0</u>	Authorized By:	<u>Client</u> Date <u>06/14/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

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

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

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

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

DATE : 06-14-94

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

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

+DATUM: Elev of Test = Top of Native Subgrade

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

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

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Field File & Billing (2)



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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

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

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

DATE : *06-14-94*

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

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

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

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





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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440279  
Report Date: 09/01/94

Project: 1994 Reclamation

Location: Church Rock, NM

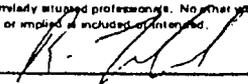
Material: <u>Sandy Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>08/10/94</u>
Source: <u>Swale C, Station 16+00,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>08/10/94</u>
<u>Elevation 6984.8</u>	Authorized By: <u>Client</u>	Date: <u>08/10/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.5</u>
Optimum Moisture, %	<u>13.2</u>

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279.015/bc

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

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

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

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

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

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

DATE : 08-15-94

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

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

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

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

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

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**SOIL/AGGREGATE FIELD DENSITY TEST**

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

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

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

DATE : *08-15-94*

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

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

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

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



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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

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

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

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

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

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

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

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

*01*

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

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

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

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

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

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

Project: 1994 Reclamation

Location: Churck Rock, NM

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

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

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

SIEVE ANALYSIS, ASTM C136 & C117

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

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 16

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HE VIEWED BY H. Kuebler



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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

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

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

Project: 1994 Reclamation

Location: Churck Rock, NM

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

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

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

SIEVE ANALYSIS, ASTM C136 & C117

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

Expansive Properties of Cohesive Soil

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

Moisture Density Relations, pcf  
(ASTM D698A)

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

Plasticity Index, ASTM D4318

Liquid Limit 26  
Plasticity Index 11

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REVIEWED BY: H. Kuebler



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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

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

Job No. 3144JK050  
Lab/Inv. No. 31440336  
Report Date: 10/03/94

Project: 1994 Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 09/26/94

Source: Swale C, Station 4 + 00 (RAC)      Submitted By: H. Kuebler/WT      Date 09/26/94

Elevation 6992.3      Authorized By: Client      Date 09/26/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	97	90-100
8	95	
10	92	85-100
16	91	
30	91	
40	91	65-100
50	90	
100	78	50-100
200	51.0	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

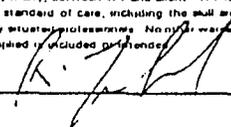
Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 24  
Plasticity Index 17

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REVIEWED BY: 

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK051

TEST SUMMARY FOR SWALE D

DATE OF REPORT 10/03/94

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/07/94	Proctor	14 + 50	---	---	6979.0	Tailings Native	114.4	13.0	---	SM	Yes
06/07/94	Proctor	7 + 00	---	---	6981.21	Native	110.6	12.7	---	SM	Yes
06/07/94	Sandcone	6 + 50	Swale Bottom	---	6981.3	Native	115.9	6.8	100	SM	Yes
06/07/94	Sandcone	8 + 50	East Slope Berm	---	6982.1	Native	101.8	5.1	92	SM	Yes
06/07/94	Sandcone	10 + 50	West Slope Berm	---	6981.6	Native	109.8	7.4	99	SM	Yes
06/07/94	Sandcone	12 + 50	Swale Bottom	---	6979.7	Native	99.4	6.8	90	SM	Yes
06/07/94	Sandcone	14 + 50	West Slope Berm	---	6979.0	Native	109.8	6.5	96	SM	Yes
06/07/94	Sandcone	16 + 50	East Slope Berm	---	6979.0	Native	108.5	7.4	95	SM	Yes
06/07/94	Sandcone	18 + 50	Swale Bottom	---	6978.0	Native	115.5	9.4	100	SM	Yes
06/08/94	Proctor	20 + 50	---	---	6978.6	Native	110.5	15.0	---	ML-CL	Yes
06/08/94	Sandcone	24 + 50	Swale Bottom	---	6976.3	Native	111.3	8.3	97	SM	Yes
06/08/94	Sandcone	22 + 50	Swale Bottom	---	6976.9	Native	104.3	7.8	94	ML-CL	Yes
06/08/94	Sandcone	20 + 50	East Slope Berm	---	6978.6	Native	101.1	7.4	91	ML-CL	Yes

RAC = Radon Attenuation Cover

JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY FOR SWALE D

DATE OF REPORT 10/03/9

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/09/94	Proctor	8+00	---	---	6982.5	Intern RAC	108.7	16.4	---	CL	Yes
06/10/94	Soil Classification	8+00	---	---	6982.5	Intern RAC	---	---	---	CL	Yes
06/10/94	Proctor Point	22+00	---	---	6977.5	Intern RAC	108.7	16.4	---	CL	Yes
06/10/94	Soil Classification	22+00	---	---	6977.5	Intern RAC	---	---	---	CL	Yes
06/10/94	Sandcone	6+00	Swale Bottom	---	6982.5	Intern RAC	100.9	14.7	93	CL	No
06/10/94	Sandcone	8+00	Left Slope Berm	---	6983.5	Intern RAC	92.8	11.5	85	CL	No
06/10/94	Sandcone	26+00	Right Slope Berm	---	6978.1	Intern RAC	113.9	18.1	100	CL	Yes
06/10/94	Sandcone	24+00	Swale Bottom	---	6977.4	Intern RAC	102.0	17.1	94	CL	No
06/10/94	Sandcone	22+00	Left Slope Berm	---	6979.0	Intern RAC	102.6	17.6	94	CL	No
06/10/94	Sandcone	20+00	Right Slope Berm	---	6978.6	Intern RAC	102.3	17.7	94	CL	No

RAC = Radon Attenuation Cover

JK050 SUM:cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY FOR SWALE D

DATE OF REPORT 10/03/9

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/15/94	Sandcone	28+00	North Slope Berm	---	6978.1	Intern RAC	112.8	18.1	100+	CL	Yes
06/15/94	Sandcone	26+00	Retest 6/10/94	---	6978.1	Intern RAC	121.8	18.1	100+	CL	Yes
06/15/94	Sandcone	24+00	Retest 6/10/94	---	6977.4	Intern RAC	117.3	17.1	100+	CL	Yes
06/15/94	Sandcone	22+00	Retest 6/10/94	---	6979.0	Intern RAC	119.6	17.6	100+	CL	Yes
06/15/94	Sandcone	20+00	Retest 6/10/94	---	6978.6	Intern RAC	121.4	17.7	100+	CL	Yes
06/15/94	Sandcone	18+00	West of Center-Line, Swale Bottom Berm	---	6979.1	Intern RAC	119.3	18.3	100+	CL	Yes
06/15/94	Sandcone	16+00	15' East of Centerline, Berm Slope	---	6980.1	Intern RAC	119.3	17.5	100+	CL	Yes
06/15/94	Sandcone	14+00	10' South of Centerline, Berm Slope	---	6979.1	Intern RAC	116.4	16.8	100+	CL	Yes
06/15/94	Sandcone	12+00	8' North of Centerline, Berm Slope	---	6979.8	Intern RAC	122.4	17.4	100+	CL	Yes
06/15/94	Sandcone	10+00	Swale Bottom	---	6980.4	Intern RAC	110.7	17.4	100+	CL	Yes
06/15/94	Soil Classification	16+00	---	---	6979.1	Intern RAC	---	---	---	CL	Yes

RAC = Radon Attenuation Cover

JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY FOR SWALE D

DATE OF REPORT 10/03/94

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/16/94	Sandcone	8+00	Swale Bottom Retest 6/10/94	---	6981.9	Intern RAC	106.4	18.1	98	CL	Yes
06/16/94	Sandcone	6+00	Right Berm Retest 6/10/94	---	6983.6	Intern RAC	112.5	17.4	100	CL	Yes
06/16/94	Sandcone	4+00	Left Berm	---	6983.8	Intern RAC	107.9	17.9	99	CL	Yes
06/21/94	Proctor	5+00	---	---	6983.0	RAC	113.0	13.6	---	CL	Yes
06/21/94	Proctor	20+00	---	---	6978.2	RAC	113.0	13.4	---	CL	Yes
06/27/94	Proctor	26+00	---	---	6977.1	RAC	111.8	14.8	---	CL	Yes
06/28/94	Sandcone	4+00	---	---	6983.3	RAC	108.0	15.5	96	CL	Yes
06/28/94	Sandcone	8+00	---	---	6982.2	RAC	112.9	15.6	100	CL	Yes
07/01/94	Soil Classification	5+00	---	---	6983.0	RAC	---	---	---	CL	Yes
07/01/94	Sandcone	10+00	Left Berm	---	6983.6	RAC	101.3	9.7	90	CL	No
07/01/94	Sandcone	12+00	Swale Bottom	---	6981.1	RAC	111.5	15.2	99	CL	Yes
07/01/94	Sandcone	14+00	Left Berm	---	6982.0	RAC	97.1	12.5	86	CI	No

 AC = Radon Attenuation Cover

JK050 SUM/cb



UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY FOR SWALE D

DATE OF REPORT 10/03/95

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/01/94	Sandcone	16+00	Right Berm	---	6981.9	RAC	104.7	14.6	93	CL	No
07/01/94	Sandcone	18+00	Swale Bottom	---	6979.3	RAC	99.4	17.4	88	CL	No
07/05/94	Sandcone	14+00	Retest	---	6982.0	RAC	120.4	13.5	100	CL	Yes
07/05/94	Sandcone	16+00	Retest	---	6981.9	RAC	107.3	14.6	95	CL	Yes
07/05/94	Sandcone	18+00	Retest	---	6979.3	RAC	110.4	13.5	98	CL	Yes
07/06/94	Soil Classification	12+00	---	---	6981.0	RAC	---	---	---	CL	Yes
07/06/94	Soil Classification	20+00	---	---	6978.6	RAC	---	---	---	CL	Yes
07/06/94	Soil Classification	4+00	---	---	6983.0	RAC	---	---	---	CL	Yes
07/08/94	Soil Classification	8+00	---	---	6981.9	RAC	---	---	---	CL	Yes
07/11/94	Sandcone	20+00	Right Berm	---	6980.9	RAC	108.3	15.2	96	CL	Yes
07/11/94	Sandcone	25+00	Swale Berm	---	6977.7	RAC	115.3	14.7	100	CL	Yes
07/11/94	Sandcone	27+00	Left Berm	---	6978.9	RAC	117.3	14.9	100	CL	Yes
07/11/94	Bedding Sand Thickness Measurement	---	---	---	---	---	---	---	---	---	Yes
08/01/94	D50 1.5 Aggregate	Thickness Measurement	---	---	---	---	---	---	---	---	Yes
08/08/94	D50 1.5 Aggregate	Thickness Measurement	---	---	---	---	---	---	---	---	Yes
09/15/94	Sandcone	10+00	Left Berm Retest #1 7/1/94	---	6983.6	RAC	112.9	15.2	100	CL	Yes

RAC = Radon Attenuation Cover

JK050.SUM/cb



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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 06/16/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Silty Sand</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/07/94</u>
Source: <u>Swale D, Station 14 + 50,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/07/94</u>
<u>Elevation 6979.0</u>	Authorized By: <u>Client</u>	Date: <u>06/07/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>114.4</u>
Optimum Moisture, %	<u>13.0</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
184.8/bc

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REVIEWED BY:



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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

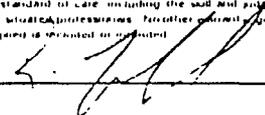
Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>06/16/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Silty Sand</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>06/07/94</u>
Source:	<u>Swale D, Station 7 + 00,</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>06/07/94</u>
	<u>Elevation 6981.21</u>	Authorized By:	<u>Client</u> Date <u>06/07/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>110.6</u>
Optimum Moisture, %	<u>12.7</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
184.7/bc

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ANALYZED BY: 



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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-3  
REPORT DATE 06-16-94  
REVIEWED BY M. Branson  
PAGE 7

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler

DATE : 06-07-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	6.8	115.9	100+	110.6	90	N/A	YES
2	5.1	101.8	92	110.6	90	N/A	YES
3	7.4	109.8	99	110.6	90	N/A	YES
4	6.8	99.4	90	110.6	90	N/A	YES
5	6.5	109.8	96	114.4	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	06/07	Swale D; Station 6+50; Bottom of Swale.	6981.
2	06/07	Swale D; Station 8+50; East Slope.	6982.
3	06/07	Swale D; Station 10+50; West Slope.	6981.
4	06/07	Swale D; Station 12+50; Bottom of Swale.	6979.
5	06/07	Swale D; Station 14+50; West Slope.	6979.

+DATUM: Elev = Top of native subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Sand Tailing Silty Sand Tailings	Swale D, Sta. 7+00	12.7	110.6	698-A
	Swale D, Sta. 14+50	13.0	114.4	698-A

Copies to: Addressee - (3)  
Field File & Billing (2)



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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-4  
REPORT DATE 06-16-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler

DATE : 06-07-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
6	7.4	108.5	95	114.4	90	N/A	YES
7	9.4	115.5	100+	114.4	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
6	06/07	Swale D; Station 16+50, East Slope.	6979.
7	06/07	Swale D; Station 18+50, Bottom of Swale.	6978.

+ DATUM: Elev. = Top Native Subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
6 7	Subgrade Subgrade	ASTM D-1556/AASHTO T-217 ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TEST PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Sand Tailings	Swale D, Sta. 14+50	13.0	114.4	698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. 3144JK050  
LAB/INV NO. 31440184-2  
REPORT DATE 06-16-94  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-08-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	8.3	111.3	97	114.4	90	N/A	YES
2	7.8	104.3	94	110.5	90	N/A	YES
3	7.4	101.1	91	110.5	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	06/08	Swale D; Station 24+50; Bottom of Trench.	6976.0
2	06/08	Swale D; Station 22+50; Bottom of Trench.	6976.0
3	06/08	Swale D; Station 20+50; East of Slope.	6978.0

+DATUM: Elev. of test = Top of Native Subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Sand Tailings Clayey Silt	Swale D, Sta. 14+50	13.0	114.4	698-A
	Native Swale D; Sta. 20+50	15.0	110.5	698-A

Copies to: Addressee - (3)  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 06/16/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Clayey Silt, Native</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/08/94</u>
Source: <u>Swale D, Station 20 + 50,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/08/94</u>
Elevation 6978.6	Authorized By: <u>Client</u>	Date: <u>06/08/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>110.5</u>
Optimum Moisture, %	<u>15.0</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
184.9/bc

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WTI and client. WTI warrants that this was performed under the appropriate standards of care, including the skill and judgment that is reasonable, expected from similarly situated professionals. WTI's warranty, guarantee, or representation, either expressed or implied, is excluded hereunder.

WTT WTI by R. [Signature]





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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Silty Clay      Sampled By: H. Kuebler/WT      Date: 06/10/94

Source: Swale D, Station 8+00      Submitted By: H. Kuebler/WT      Date: 06/10/94

Elevation 6982.5      Authorized By: Client      Date: 06/10/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	94	
100	81	50-100
200	59	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 12

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184.11/bc

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ANALYZED BY R. J. H.



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: <u>Silty Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/10/94</u>
Source: <u>Swale D, Station 22 + 00</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/10/94</u>
<u>Elevation 6977.0</u>	Authorized By: <u>Client</u>	Date: <u>06/10/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	96	
10	95	85-100
16	94	
30	93	
40	93	65-100
50	92	
100	79	50-100
200	59	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf (ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 27  
Plasticity Index 10

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184.12/bc

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

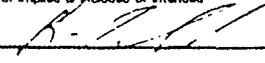
Material: <u>Silty Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/10/94</u>
Source: <u>Swale D, Station 22 + 00,</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/10/94</u>
<u>Elevation 6977.0</u>	Authorized By: <u>Client</u>	Date: <u>06/10/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>108.7</u>
Optimum Moisture, %	<u>16.4</u>

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-10  
REPORT DATE 07-19-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-10-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	14.7	100.9	93	108.7	95	16.4 to 18.4	NO
2	11.5	92.8	85	108.7	95	16.4 to 18.4	NO
3	18.1	113.9	100+	108.7	95	16.4 to 18.4	YES
4	17.1	102.0	94	108.7	95	16.4 to 18.4	NO
5	17.6	102.6	94	108.7	95	16.4 to 18.4	NO
6	17.7	102.3	94	108.7	95	16.4 to 18.4	NO

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	6/10	Swale D; Station 6+00; Bottom.	6982.5
2	6/10	Swale D; Station 8+00; Left Berm.	6983.5
3	6/10	Swale D; Station 26+00; Right Berm.	6978.7
4	6/10	Swale D; Station 24+00; Bottom.	6977.4
5	6/10	Swale D; Station 22+00; Left Berm.	6979.0
6	6/10	Swale D; Station 20+00; Right Berm.	6978.0

+ DATUM: Elev. of test = Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217
6	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Clay	Borrow Pit #2 Stockpile	16.4	108.7	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-8  
REPORT DATE 06-27-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-15-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	18.1	112.8	100+	108.7	95	16.4 to 18.4	YES
2	18.1	121.8	100+	108.7	95	16.4 to 18.4	YES
3	17.1	117.3	100+	108.7	95	16.4 to 18.4	YES
4	17.6	119.6	100+	108.7	95	16.4 to 18.4	YES
5	17.7	121.4	100+	108.7	95	16.4 to 18.4	YES
6	18.3	119.3	100+	108.7	95	16.4 to 18.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	6/15	Swale "D"; Station 28+00; N. Slope 10' from Centerline.	6978.1
2	6/15	Swale "D"; Station 26+00; Retest of 6/10/94	6978.1
3	6/15	Swale "D"; Station 24+00; Retest of 6/10/94	6977.4
4	6/15	Swale "D"; Station 22+00; Retest of 6/10/94	6979.0
5	6/15	Swale "D"; Station 20+00; Retest of 6/10/94 8' from Centerline.	6978.6
6	6/15	Station 18+00; Swale "D"; 10' W. of Centerline.	6979.1

+ DATUM: Elev. of Test = Top of Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217
6	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Clay	Borrow Pit #2 Stockpile	16.4	108.7	D698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184-8*  
REPORT DATE *06-27-94*  
REVIEWED BY *M. Branson*  
PAGE 2

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *06-15-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	17.5	119.3	100+	108.7	95	16.4 to 18.4	YES
8	16.8	116.4	100+	108.7	95	16.4 to 18.4	YES
9	17.4	122.4	100+	108.7	95	16.4 to 18.4	YES
10	17.4	110.7	100+	108.7	95	16.4 to 18.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
7	6/15	Station 16+00; Swale "D"; 15' E. of Centerline.	6980.
8	6/15	Station 14+00; Swale "D"; 10' S. of Centerline.	6979.
9	6/15	Station 12+00; Swale "D"; 08' N. of Centerline.	6979.
10	6/15	Station 10+00; Swale "D"; Bottom	6980.

+DATUM: Elev. of Test = Top of Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
7	Subgrade	ASTM D-1556/AASHTO T-217
8	Subgrade	ASTM D-1556/AASHTO T-217
9	Subgrade	ASTM D-1556/AASHTO T-217
10	Subgrade	ASTM D-1556/AASHTO T-217



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Silty Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/16/94</u>
Source: <u>Swale D, Station 16+00</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/16/94</u>
<u>Elevation 6979.1</u>	Authorized By: <u>Client</u>	Date: <u>06/16/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	98	
1/4"		
No. 4	97	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	94	65-100
50	93	
100	85	50-100
200	57.4	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf (ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 31  
Plasticity Index 13

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184.17/bc

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REVIEWED BY: H. Kuebler



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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-7  
REPORT DATE 06-27-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-16-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS:
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	18.1	106.4	98	108.7	95	16.4 to 18.4	YES
2	17.4	112.5	100+	108.7	95	16.4 to 18.4	YES
3	17.9	107.9	99	108.7	95	16.4 to 18.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	6/16	Swale "D"; Station 8+00 Bottom.	6981.9
2	6/16	Swale "D"; Station 6+00 Right Berm	6983.0
3	6/16	Swale "D"; Station 4+00 Left Berm.	6983.0

+ DATUM: Elev. of Test = Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Clay	Borrow Pit #2 Stockpile	16.4	108.7	D698-A

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay</u>	Sampled By:	<u>R. Whitaker/WT</u> Date <u>06/21/94</u>
Source:	<u>Swale D, Station 5 +00, (RAC)</u>	Submitted By:	<u>R. Whitaker/WT</u> Date <u>06/21/94</u>
	<u>Elevation 6983.0</u>	Authorized By:	<u>Client</u> Date <u>06/21/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.0</u>
Optimum Moisture, %	<u>13.6</u>

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HE VII WED BY R. Whitaker



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/12/94</u>
Project:	<u>Chuck Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Sandy Lean Clay</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>06/21/94</u>
Source:	<u>Swale D, Station 20 + 00, (RAC)</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>06/21/94</u>
	<u>Elevation 6978.2</u>	Authorized By:	<u>Client</u> Date <u>06/21/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.0</u>
Optimum Moisture, %	<u>13.4</u>

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440184
		Report Date:	07/12/94
Project:	Chuck Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Sandy Lean Clay, (RAC)	Sampled By:	H. Kuebler/WT
		Date	06/27/94
Source:	Swale D; Station 26 + 00	Submitted By:	H. Kuebler/WT
	Elevation 6977.1	Authorized By:	Client
		Date	06/27/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	111.8
Optimum Moisture, %	14.8

Copies to: Addressee (3), Billing (1), Field File (1)  
184.26/bc

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-11  
REPORT DATE 07-05-94  
REVIEWED BY M. Branson *MB*  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-28-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS:
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.5	108.0	96	113.0	95	13.6 to 15.6	YES
2	15.6	112.9	100	113.0	95	13.6 to 15.6	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	6/28	Swale D; Station 4+00 RAC	6983.0
2	6/28	Swale D; Station 8+00 RAC	6982.0

+ DATUM: Elev. of test = Top of RAC Soil Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Sandy Clean Sand	Borrow pit #2 Stockpile	13.6	113.0	698-A

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/06/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Churck Rock, NM

Material: Sandy Lean Clay      Sampled By: H. Kuebler/WT      Date 07/01/94

Source: Swale D, Station 5 + 00      Submitted By: H. Kuebler/WT      Date 07/01/94

Elevation 6983.0      Authorized By: Client      Date 07/01/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	99	90-100
8	98	
10	97	85-100
16	96	
30	96	
40	95	65-100
50	94	
100	81	50-100
200	59	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 32  
Plasticity Index 15

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235.1/bc

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Farmington, New Mexico 87401  
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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440235  
REPORT DATE 07-13-94  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : R. Whitaker/WT

DATE : 07-01-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	9.7	101.3	90	113.0	95	13.4 to 15.4	NO
2	15.2	111.5	99	113.0	95	13.4 to 15.4	YES
3	12.5	97.1	86	113.0	95	13.4 to 15.4	NO
4	14.6	104.7	93	113.0	95	13.4 to 15.4	NO
5	17.4	99.4	88	113.0	95	13.4 to 15.4	NO

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	7/1	Swale D, Station 10+00, Left Berm	6983.6
2	7/1	Swale D, Station 12+00, Bottom of Swale	6981.7
3	7/1	Swale D, Station 14+00, Left Berm	6982.0
4	7/1	Swale D, Station 16+00, Right Berm	6981.5
5	7/1	Swale D, Station 18+00, Bottom of Swale	6979.3

+ DATUM: Elev. of Test = Top of RAC

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	SWALE D, STA20+00 (RAC)	13.4	113.0	698-A

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. 3144JK050  
LAB/INV NO. 31440235-1  
REPORT DATE 07-13-94  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 07-05-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITH: SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	13.5	120.4	100+	113.0	95	13.4 to 15.4	YES
2	14.6	107.3	95	113.0	95	13.4 to 15.4	YES
3	13.5	110.4	98	113.0	95	13.4 to 15.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATIC DATUM
1	7/5	Swale D, Retest of #3 from 7/1/94	6982.
2	7/5	Swale D, Retest of #4 from 7/1/94	6981.
3	7/5	Swale D, Retest of #5 from 7/1/94	6979.

+DATUM: Elev. of Test = Top of RAC

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	SWALE D, STA20+00 (RAC)	13.4	113.0	698-A

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay, Intern Atten. Cover</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/06/94</u>
Source: <u>Swale D, Station 12+00</u>	Submitted By: <u>R. Whitaker/WT</u>	Date: <u>07/07/94</u>
Elevation <u>6981.00</u>	Authorized By: <u>Client</u>	Date: <u>07/06/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	99	
3/8"	99	
1/4"		
No. 4	98	90-100
8	96	
10	96	85-100
16	95	
30	94	
40	93	65-100
50	92	
100	84	50-100
200	59.6	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 29  
Plasticity Index 12

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235.6/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Lean Clay, Intern Atte. Cover</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>07/06/94</u>
Source: <u>Swale D, Station 20+00</u>	Submitted By: <u>R. Whitaker/WT</u>	Date: <u>07/07/94</u>
Elevation 6978.6	Authorized By: <u>Client</u>	Date: <u>07/06/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	96	
10	95	85-100
16	94	
30	92	
40	91	65-100
50	89	
100	74	50-100
200	54.7	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf (ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 30  
Plasticity Index 16

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay (RAC)      Sampled By: H. Kuebler/WT      Date 07/06/94

Source: Swale D, Station 4 + 00      Submitted By: R. Whitaker/WT      Date 07/07/94

Elevation 6983.0      Authorized By: Client      Date 07/06/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	98	90-100
8	97	
10	96	85-100
16	96	
30	94	
40	94	65-100
50	91	
100	66	50-100
200	56.0	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf (ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 28  
Plasticity Index 8

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay (RAC)

Sampled By: H. Kuebler/WT Date 07/06/94

Source: Swale D, Station 8+00

Submitted By: R. Whitaker/WT Date 07/07/94

Elevation 6981.9

Authorized By: Client Date 07/06/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	99	
1/4"		
No. 4	99	90-100
8	97	
10	97	85-100
16	96	
30	95	
40	95	65-100
50	94	
100	83	50-100
200	59.9	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf (ASTM D698A)

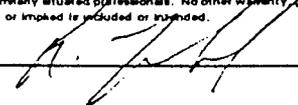
Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 30  
Plasticity Index 14

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235.9/bc

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SOIL/AGGREGATE FIELD DENSITY TEST

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. 3144JK050  
LAB/INV NO. 31440235-7  
REPORT DATE 07-19-94  
REVIEWED BY M. Branson *[Signature]*  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 07-11-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.2	108.3	96	113.0	95	11.4 to 15.4	YES
2	14.7	115.3	100+	111.8	95	12.8 to 16.8	YES
3	14.9	117.3	100+	111.8	95	12.8 to 16.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	07/11	Swale D Station 20+00 Right Berm	6980.
2	07/11	Swale D Station 25+00 Swale Bottom	6977.
3	07/11	Swale D Station 27+00 Left Berm	6978.

+ DATUM: Test Elev. = Radon Atten. Cover Material

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Clean Clay SANDY LEAN CLAY	Swale "D"; Sta. 26+00	14.8	111.8	698-A
	SWALE D, STA 20+00 (RAC)	13.4	113.0	698-A

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 07/11/94**

**SWALE D  
BEDDING SAND PLACEMENT  
THICKNESS**

<b>STATION NO.</b>	<b>RIGHT BERM</b>	<b>BOTTOM OF SWALE</b>	<b>LEFT BERM</b>
2+00	3 1/4"	3"	3 1/4"
3+00	3 1/4"	3"	3 1/2"
4+00	3 1/2"	3"	3"
5+00	3"	3"	3 1/2"
6+00	3 1/2"	3 1/4"	3"
7+00	3"	3 1/4"	3"
8+00	3 1/4"	3 1/4"	3 1/4"
9+00	3 1/4"	3 1/2"	3 1/2"
10+00	3 1/4"	3"	3 1/4"

Dist: Client (3) Field File (1) Billing (1)

NOTE: Station 0+00 is behind Technician

/cb:BSPUNC.K050



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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 08/01/94

SWALE D  
BEDDING SAND PLACEMENT  
THICKNESS

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
11+00	3"	3 1/2"	3 1/2"
12+00	3"	3"	3 1/4"
13+00	3"	3"	3 1/4"
14+00	3 1/4"	3"	3 1/4"
15+00	3 1/4"	3"	3 1/2"
16+00	3 1/2"	3 1/2"	3 1/4"
17+00	3 1/4"	3 1/4"	3 1/4"
18+00	3 1/2"	3 1/4"	3 1/4"

Dist: Client (3) Field File (1) Billing (1)

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 08/01/94**

**SWALE D  
D50 1.5 AGGREGATE PLACEMENT  
THICKNESS**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
2+00	3 1/2"	3 1/4"	3"
3+00	3 1/2"	3 1/2"	3"
4+00	3 1/2"	3"	3 1/2"
5+00	3 1/2"	3 1/2"	3 1/2"
6+00	3 1/4"	3 1/2"	4"
7+00	3 1/2"	3 1/2"	3 1/2"
8+00	3 1/2"	3 1/2"	3 1/2"
9+00	3"	3 1/4"	3 1/2"
10+00	3 1/4"	3 1/2"	4"
11+00	4"	3 1/2"	3 1/2"
12+00	3 1/2"	4"	3"

Dist: Client (3) Field File (1) Billing (1)

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK050

DATE OF REPORT 08/01/94

**SWALE D  
BEDDING SAND PLACEMENT  
THICKNESS**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
19+00	3 1/4"	3 1/2"	3"
21+00	3 1/4"	3 1/4"	3"
22+00	3"	3"	3"
23+00	3"	3 1/4"	3 1/4"
24+00	3 1/4"	3 1/4"	3"
25+00	3"	3"	3"
26+00	3"	3"	3 1/2"
27+00	3 1/2"	3 1/4"	3"
28+00	3 1/2"	3 1/4"	3 1/2"

Dist: Client (3) Field File (1) Billing (1)

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 08/08/94

14

SWALE D  
D 50 1.5 AGGREGATE PLACEMENT  
THICKNESS

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
21+00	3 1/2"	3 1/2"	3 1/2"
22+00	3 1/2"	3 1/2"	3"
23+00	3 1/2"	3 1/4"	3"
24+00	3 1/2"	3 1/4"	3 1/4"
25+00	3 1/2"	3 1/2"	3"
26+00	3 1/4"	3 1/4"	3 1/4"
27+00	3 1/4"	3 1/4"	3 1/2"
28+00	3 1/2"	3 1/2"	3"

Dist: Client (3) Field File (1) Billing (1)

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 08/08/94

SWALE D  
D 50 1.5 AGGREGATE PLACEMENT  
THICKNESS

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
13+00	3 1/2"	3 1/2"	3 1/2"
14+00	3 1/2"	3 1/2"	3"
15+00	3 1/2"	3 1/4"	3 1/2"
16+00	3 1/4"	3 1/4"	3 1/4"
17+00	3 1/4"	3 1/2"	3 1/4"
18+00	3 1/4"	3 1/4"	3 1/4"
19+00	3 1/4"	3 1/2"	3 1/2"
20+00	3 1/2"	3 1/4"	3 1/2"

Dist: Client (3) Field File (1) Billing (1)

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. 3144JK050  
LAB/INV NO. 31440336  
REPORT DATE 10-03-94  
REVIEWED BY R. Zubrod  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 09-15-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.2	113.0	100	113.0	95	11.4 to 15.4	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	09/15	Swale D, Station 10+00, Left Berm, Retest of 7/01/94	6983.1

+ DATUM: 100' = Top of Radon Attenuation Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade, Roadway Crossing was Removed	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SANDY LEAN CLAY	SWALE D, STA20+00 (RAC)	13.4	113.0	D698-4

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK01

TEST SUMMARY FOR SWALE H

DATE OF REPORT 10/03/9

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/01/94	Proctor	30+00	---	---	6971.0	Tailings Native	110.8	15.2	---	SM	Yes
06/01/94	Proctor	26+00	---	---	6968.0	Tailings Native	113.8	13.4	---	SM	Yes
06/01/94	Sandcone	30+00	Swale Bottom	---	6971.6	Tailings Native	104.2	5.6	94	SM	Yes
06/01/94	Sandcone	28+00	Swale Bottom	---	6969.9	Tailings Native	103.8	12.1	94	SM	Yes
06/01/94	Sandcone	26+00	South Slope Berm	---	6970.0	Tailings Native	103.9	10.8	91	SM	Yes
06/02/94	Sandcone	24+00	Swale Bottom	---	6966.5	Tailings Native	102.9	12.4	90	SM	Yes
06/02/94	Sandcone	22+00	North Slope Berm	---	6964.8	Tailings Native	117.4	9.2	100	SM	Yes
06/06/94	Proctor	24+00	---	---	6967.5	Intern RAC	111.4	15.9	---	CL	Yes
06/06/94	Proctor	29+00	---	---	6971.5	Intern RAC	112.4	14.7	---	CL	Yes
06/10/94	Sandcone	22+00	Swale Bottom	---	6964.8	Intern RAC	103.8	17.2	93	CL	Yes
06/10/94	Sandcone	26+00	Left Berm	---	6972.1	Intern RAC	105.4	16.4	95	CL	Yes
06/10/94	Sandcone	28+00	Right Berm	---	6975.0	Intern RAC	98.6	18.5	88	CL	No
06/10/94	Sandcone	30+00	Swale Bottom	---	6972.6	Intern RAC	107.7	16.6	96	CL	Yes

RAC = Radon Attenuation Cover

JK050.SUM/cb

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY FOR SWALE H

DATE OF REPORT 10/03/94

DATE	TYPE OF TEST	LOCATION	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
06/17/94	Soil Classification	23 + 00	---	---	6967.2	Intern	---	---	---	CL	Yes
06/17/94	Soil Classification	29 + 00	---	---	6971.6	Intern	---	---	---	CL	Yes
06/17/94	Sandcone	22 + 00	Retest 6/10/94	---	6964.8	Intern	106.8	16.0	96	CL	Yes
06/17/94	Sandcone	24 + 00	Retest 6/10/94	---	6967.5	Intern	107.4	16.6	96	CL	Yes
06/17/94	Sandcone	28 + 00	Retest 6/10/94	---	6975.0	Intern	110.4	15.6	98	CL	Yes
06/20/94	Proctor	24 + 00	---	---	6968.0	RAC	110.4	15.8	---	CL	Yes
06/21/94	Sandcone	30 + 00	Swale Bottom	---	6973.3	RAC	108.8	15.8	99	CL	Yes
06/21/94	Sandcone	26 + 00	Right Berm	---	6972.5	RAC	107.9	16.2	98	CL	Yes
06/21/94	Sandcone	23 + 00	Left Berm	---	6969.9	RAC	107.4	16.3	97	CL	Yes
07/06/94	Soil Classification	26 + 00	---	---	6972.5	RAC	---	---	---	CL	Yes
07/11/94	Bedding Sand Thickness Measurement	---	---	---	---	---	---	---	---	---	Yes
07/13/94	Combined .35 Aggregate and Bedding Sand	Thickness Measurement	---	---	---	---	---	---	---	---	Yes
08/08/94	D50 3.0 Aggregate	Thickness Measurement	---	---	---	---	---	---	---	---	Yes

RAC = Radon Attenuation Cover

 K050.SUM/cb





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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440184
		Report Date:	06/07/94
Project:	Chuck Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Silty Sand, Native Subgrade	Sampled By:	H. Kuebler/WT Date 06/01/94
Source:	Swale H, Station 30+00, Elevation 6971.0	Submitted By:	H. Kuebler/WT Date 06/01/94
		Authorized By:	Client Date 06/01/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	110.8
Optimum Moisture, %	15.2

Copies to: Addressee (3), Billing (1), Field File (1)  
184.2/bc

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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 06/07/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

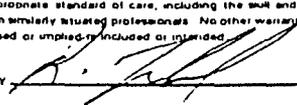
Material:	<u>Silty Sand, Native Subgrade</u>	Sampled By:	<u>H. Kuebler/WT</u>	Date	<u>06/01/94</u>
Source:	<u>Swale H, Station 26 +00,</u>	Submitted By:	<u>H. Kuebler/WT</u>	Date	<u>06/01/94</u>
	<u>Elevation 6968.0</u>	Authorized By:	<u>Client</u>	Date	<u>06/01/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.8</u>
Optimum Moisture, %	<u>13.4</u>

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. 3144JK050  
LAB/INV NO. 31440184  
REPORT DATE 07-11-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-01-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	5.6	104.2	94	110.8	90	N/A	YES
2	12.1	103.8	94	110.8	90	N/A	YES
3	10.8	103.9	91	113.8	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	06/01	Swale "H", 30+00 Bottom.	6971.0
2	06/01	Swale "H", 28+00 Bottom.	6969.0
3	06/01	Swale "H", 26+00 South Slope.	6970.0

+ DATUM: Elev. of test = Top of native subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3		ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Silty Sand	Swale "H"	15.2	110.8	698-A
Silty Sand	Swale "H"	13.4	113.8	698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184-1*  
REPORT DATE *07-11-94*  
REVIEWED BY *M. Branson*  
PAGE 1

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *06-02-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	12.4	102.9	90	113.8	90	N/A	YES
2	9.2	117.4	100+	113.8	90	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATIC DATUM
1	06/02	<i>Swale "H"; Station 24+00 Bottom</i>	6966.
2	06/02	<i>Swale "H"; Station 22+00 North Slope.</i>	6964.

+ DATUM: *Elev. of Test = Top of Native Subgrade*

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1 2	<i>Subgrade</i>	<i>ASTM D-1556/AASHTO T-217</i> <i>ASTM D-1556/AASHTO T-217</i>

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
<i>Silty Sand</i>	<i>Swale "H"</i>	13.4	113.8	698-A

Copies to: Addressee - (3)  
Field File & Billing (2)



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LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050		
		Lab/Inv. No.	31440184		
		Report Date:	06/16/94		
Project:	Chuck Rock Uranium Mill Tailings Reclamation				
Location:	Church Rock, NM				
Material:	Silty Clay	Sampled By:	H. Kuebler/WT	Date	06/06/94
Source:	Swale H, Station 24 + 00,	Submitted By:	H. Kuebler/WT	Date	06/06/94
	Elevation 6967.5	Authorized By:	Client	Date	06/06/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	111.4
Optimum Moisture, %	15.9

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184.5/bc

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440184
		Report Date:	06/16/94
Project:	Chuck Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Silty Clay	Sampled By:	H. Kuebler/WT    Date    06/06/94
Source:	Swale H, Station 29 + 00, Elevation 6871.5	Submitted By:	H. Kuebler/WT    Date    06/06/94
		Authorized By:	Client                      Date    06/06/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	112.4
Optimum Moisture, %	14.7

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
*Post Office Box 3077*  
*Gallup, NM 87305*

JOB NO. *3144JK050*  
LAB/INV NO. *31440184-10*  
REPORT DATE *07-19-94*  
REVIEWED BY *M. Branson*  
PAGE 2

PROJECT : *1994 Reclamation*  
LOCATION : *McKinley County, NM*  
AUTHORIZED BY : *Ed Morales*  
TEST LOCATIONS DESIGNATED BY : *H. Kuebler/WT*

DATE : *06-10-94*

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
7	17.2	103.8	93	111.4	95	15.9 to 17.9	NO
8	16.4	105.4	95	111.4	95	15.9 to 17.9	YES
9	18.5	98.6	88	112.4	95	14.7 to 16.7	NO
10	16.6	107.7	96	112.4	95	14.7 to 16.7	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
7	6/10	Swale H; Station 22+00; Bottom.	6964.0
8	6/10	Swale H; Station 26+00; Left Berm.	6972.0
9	6/10	Swale H; Station 28+00; Right Berm.	6975.0
10	6/10	Swale H; Station 30+00; Bottom.	6972.0

+ DATUM: Elev. of test = Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
7	Subgrade	ASTM D-1556/AASHTO T-217
8	Subgrade	ASTM D-1556/AASHTO T-217
9	Subgrade	ASTM D-1556/AASHTO T-217
10	Subgrade	ASTM D-1556/AASHTO T-217



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: <u>Sandy Silty Clay</u>	Sampled By: <u>H. Kuebler/WT</u>	Date: <u>06/17/94</u>	
Source: <u>Swale H, Station 23 + 00</u>	Submitted By: <u>H. Kuebler/WT</u>	Date: <u>06/17/94</u>	
<u>Elevation 6967.2</u>	Authorized By: <u>Client</u>	Date: <u>06/17/94</u>	

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	98	
10	98	85-100
16	97	
30	96	
40	96	65-100
50	95	
100	79	50-100
200	66	40-85

Expansive Properties of Cohesive Soil

Water Content	
Dry Density, pcf	
Maximum Swell, %	
Surcharge, KSF	

Moisture Density Relations, pcf  
(ASTM D698A)

Maximum Dry Density	
Optimum Moisture, %	

Plasticity Index, ASTM D4318

Liquid Limit	35
Plasticity Index	13

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Sandy Silty Clay      Sampled By: H. Kuebler/WT      Date 06/17/94

Source: Swale H, Station 29 + 00      Submitted By: H. Kuebler/WT      Date 06/17/94

Elevation 6971.6      Authorized By: Client      Date 06/17/94

**SIEVE ANALYSIS, ASTM C136 & C117**

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	100	90-100
8	98	
10	98	85-100
16	98	
30	97	
40	96	65-100
50	95	
100	82	50-100
200	67.2	40-85

**Expansive Properties of Cohesive Soil**

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

**Moisture Density Relations, pcf**

(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

**Plasticity Index, ASTM D4318**

Liquid Limit 33  
Plasticity Index 15

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-6  
REPORT DATE 06-27-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler

DATE : 06-17-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	16.0	106.8	96	111.4	95	15.9 to 17.9	YES
2	16.6	107.4	96	111.4	95	15.9 to 17.9	YES
3	15.6	110.4	98	112.4	95	14.7 to 16.7	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM
1	6/17	Swale "H"; Station 22+00; Retest 6/10/94	6964.0
2	6/17	Swale "H"; Station 24+00; Retest 6/10/94	6967.0
3	6/17	Swale "H"; Station 28+00; Retest 6/10/94	6975.0

+ DATUM: Elev. of Test = Intern Cover

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
SILTY SAND	SWALE H, STA. 24+00	15.9	111.4	698-A
SILTY CLAY	SWALE H; STA. 29+00	14.7	112.4	698-A

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**SOIL/AGGREGATE FIELD DENSITY TEST**

CLIENT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440184-5  
REPORT DATE 06-27-94  
REVIEWED BY M. Branson  
PAGE 1

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM  
AUTHORIZED BY : Ed Morales  
TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

DATE : 06-21-94

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	15.8	108.8	99	110.4	95	15.8 to 17.8	YES
2	16.2	107.9	98	110.4	95	15.8 to 17.8	YES
3	16.3	107.4	97	110.4	95	15.8 to 17.8	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	6/21	Swale "H"; Staion 30+00 Bottom.	6973.3
2	6/21	Swale "H"; Staion 26+00 Right Berm.	6972.4
3	6/21	Swale "H"; Staion 23+00 Left Berm.	6969.5

+ DATUM: Elevation of Test = RAC

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
Sandy Clean Clay	Borrow Pit #2 Stockpile	15.8	110.4	D698-A

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**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF SOILS**

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/20/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: Clayey Sand (RAC)      Sampled By: H. Kuebler/WT      Date 07/06/94

Source: Swale H, Station 26 + 00      Submitted By: H. Kuebler/WT      Date 07/07/94

Elevation 6972.5      Authorized By: Client      Date 07/06/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification (As Required)
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	95-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	99	90-100
8	98	
10	98	85-100
16	97	
30	96	
40	96	65-100
50	95	
100	90	50-100
200	63.8	40-85

Expansive Properties of Cohesive Soil

Water Content \_\_\_\_\_  
Dry Density, pcf \_\_\_\_\_  
Maximum Swell, % \_\_\_\_\_  
Surcharge, KSF \_\_\_\_\_

Moisture Density Relations, pcf

(ASTM D698A)

Maximum Dry Density \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit 30  
Plasticity Index 11

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 07/11/94**

**SWALE H  
BEDDING SAND PLACEMENT  
THICKNESS**

STATION NO.	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
30+00	3 1/4"	3"	3"
29+00	3"	3 1/2"	3 1/4"
28+00	3 1/4"	3 1/2"	3 1/2"
27+00	3 1/2"	3 1/4"	3"
26+00	3 1/2"	3 1/2"	3"
25+00	3 1/4"	3 1/4"	3 1/4"
24+00	3 1/4"	3 1/2"	3 1/4"
23+00	3"	3"	3"
22+00	3 1/2"	3 1/4"	3"

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 07/13/94**

**SWALE H  
.35 AGGREGATE AND BEDDING SAND PLACEMENT  
THICKNESS**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
30+00	7 1/4"	7"	7 1/4"
29+00	6 1/4"	6"	7 1/2"
28+00	7 1/2"	7 1/4"	6 1/2"
27+00	7 1/2"	7 1/2"	6 1/2"
26+00	7 1/2"	7 1/4"	6 1/2"
25+00	6 1/2"	7"	6 1/2"
24+00	7"	7 1/2"	7 1/4"
23+00	7 1/2"	6 1/4"	7"

Dist: Client (3) Field File (1) Billing (1)

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 08/08/94

SWALE H  
D 50 3.0 AGGREGATE PLACEMENT  
THICKNESS

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
30+00	6"	6 1/2"	8"
29+00	6 3/4"	6 1/4"	7"
28+00	6 1/4"	6 1/4"	6 1/2"
27+00	8 1/4"	6 3/4"	7"
26+00	6 1/2"	6"	7 1/2"
25+00	6"	8"	6"
24+00	7 1/4"	6 1/2"	7 1/4"
23+00	6"	6 1/4"	6 1/4"

Dist: Client (3) Field File (1) Billing (1)

/cb:BSPUNC.K050

**APPENDIX  
K**

APPENDIX K  
BEDDING MATERIAL GRADATION TESTS

UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY FOR BEDDING SAND MATERIAL

DATE OF REPORT 09/12/94

DATE	SAMPLE LOCATION	% PASS 3" SPEC. 100%	% PASS 3/4" SPEC. 85-100%	% PASS #4 SPEC. 65-100%	% PASS #10 SPEC. 47-94%	% PASS #40 SPEC. 23-70%	% PASS 200 SPEC. 15-30%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
04/29/94	Hamilton Brothers	100	100	100	87	58	20.9	---	---	Yes
05/09/94	Hamilton Brothers	100	100	100	85	58	21.9	---	---	Yes
05/23/94	Stockpile	100	100	99	82	54	21.0	---	---	Yes
05/24/94	Stockpile	100	100	99	86	58	20.0	---	---	Yes
	AVERAGE	100	100	100	85	57	21	---	---	---

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440111</u>
		Report Date:	<u>05/05/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Bedding Sand</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>04/29/94</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>04/29/94</u>
		Authorized By:	<u>Client</u> Date <u>04/29/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	85-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	100	65-100
8	91	
10	87	47-94
16	77	
30	65	
40	58	23-70
50	49	
100	30	
200	20.9	15-30

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440135
		Report Date:	05/17/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Bedding Sand	Sampled By:	H. Kuebler/WT Date 05/09/94
Source:	Hamilton Brothers	Submitted By:	H. Kuebler/WT Date 05/09/94
		Authorized By:	Client Date 05/09/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"	100	100
3/4"	100	85-100
1/2"	100	
3/8"	100	
1/4"		
No. 4	100	65-100
8	88	
10	85	47-94
16	75	
30	64	
40	58	23-70
50	50	
100	29	
200	21.9	15-30

Moisture Density Relations, pcf

(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440135</u>
		Report Date:	<u>05/27/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>Bedding Sand</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>05/24/94</u>
Source:	<u>Stockpile</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>05/24/94</u>
		Authorized By:	<u>Client</u> Date <u>05/24/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	100	85-100
1/2"		
3/8"		
1/4"		
No. 4	99	65-100
8		
10	86	47-94
16		
30		
40	58	23-70
50		
100		
200	20	15-30

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK05

TEST SUMMARY FOR .35 AGGREGATE MATERIAL

DATE OF REPORT 09/12/94

DATE	SAMPLE LOCATION	% PASS 3" SPEC. 65-100%	% PASS 3/4" SPEC. 43-80%	% PASS #4 SPEC. 22-60%	% PASS #10 SPEC. 15-38%	% PASS #40 SPEC. 5-12%	% PASS 200 SPEC. 0-10%	PLASTICITY INDEX	USCS SOIL CLASS	WITHIN SPECS. ?
06/03/94	Belt Sample	100	84	24	15	7.7	3.7	N/A	N/A	NOTE
06/10/94	Belt Sample	100	89	44	10	16.0	7.1	N/A	N/A	NOTE
06/24/94	Belt Sample	100	67	27.9	17	8.0	4.6	N/A	N/A	Yes
06/29/94	Windrow	100	68	27.1	17	9.0	5.2	N/A	N/A	Yes
07/08/94	Windrow	100	45	21	15	10.0	5.6	N/A	N/A	OK'd by E. Morales
	AVERAGE	100	71	29	15	10	5.0	N/A	N/A	---

NOTE: 6/3/94 to 6/10/94 aggregate production was blended with aggregates produced after 06/10/94. The blended material was sampled on the job site.

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client: United Nuclear Corporation Job No. 3144JK050  
 Post Office Box 3077  
 Gallup, New Mexico 87305 Lab/Inv. No. 31440184  
 ATTN: Ed Morales Report Date: 06/07/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: .35 Aggregate Sampled By: H. Kuebler/WT Date 06/03/94

Source: Hamilton Brothers, Belt Sample Submitted By: H. Kuebler/WT Date 06/03/94

Authorized By: Client Date 06/03/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	84	43-80
1/2"		
3/8"		
1/4"		
No. 4	24	22-60
8		
10	15	15-38
16		
30		
40	7.7	5-12
50		
100		
200	3.7	0-10

Moisture Density Relations, pcf

(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440184</u>
		Report Date:	<u>07/13/94</u>
Project:	<u>Church Rock Uranium Mill Tailings Reclamation</u>		
Location:	<u>Church Rock, NM</u>		
Material:	<u>.35 Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>06/10/94</u>
Source:	<u>Hamilton Brothers</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>06/10/94</u>
		Authorized By:	<u>Client</u> Date <u>06/10/94</u>

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"		
1-1/2"		
1-1/8"		
1"		
3/4"	89	43-80
1/2"		
3/8"		
1/4"		
No. 4	44	22-60
8		
10	30	15-38
16		
30		
40	16	5-12
50		
100		
200	7.1	0-10

Moisture Density Relations, pcf

(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440184  
Report Date: 07/12/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: H. Kuebler/WT Date 06/24/94

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 06/24/94

Authorized By: Client Date 06/24/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	67	43-80
1/2"		
3/8"		
1/4"		
No. 4	28	22-60
8		
10	17	15-38
16		
30		
40	9	5-12
50		
100		
200	4.6	0-10

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440184
		Report Date:	07/12/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	.35 Aggregate	Sampled By:	H. Kuebler/WT      Date 06/29/94
Source:	Windrow at Site	Submitted By:	H. Kuebler/WT      Date 06/29/94
		Authorized By:	Client                      Date 06/29/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
2"	100	65-100
1-1/2"		
1-1/8"		
1"		
3/4"	68	43-80
1/2"		
3/8"		
1/4"		
No. 4	27	22-60
8		
10	17	15-38
16		
30		
40	9	5-12
50		
100		
200	5.2	0-10

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_  
Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_  
Plasticity Index \_\_\_\_\_

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATE

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	08/02/94
Project:	Church Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	.35 Aggregate	Sampled By:	H. Kuebler/WT      Date 07/08/94
Source:	Stockpile	Submitted By:	H. Kuebler/WT      Date 07/08/94
		Authorized By:	Client                      Date 07/08/94

SIEVE ANALYSIS, ASTM C136 & C117

Sieve Size	% Passing Accumulative	Specification
3"	100	65-100
2"		
1-1/2"		
1"		
3/4"	45	43-80
1/2"		
3/8"		
1/4"		
No. 4	21	22-60
8		
10	17	15-38
16		
30		
40	10	5-12
50		
100		
200	5.6	0-10

Moisture Density Relations, pcf  
(ASTM D698 Method C)

Maximum Dry Density, pcf \_\_\_\_\_

Optimum Moisture, % \_\_\_\_\_

Plasticity Index, ASTM D4318

Liquid Limit \_\_\_\_\_

Plasticity Index \_\_\_\_\_

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**ROCK QUALITY DETERMINATION**

United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305-3077  
Attn: Mr. Ed Morales

Job No. 3144JK050  
Inv. No. 31440235  
Date of Report 08/04/94  
Reviewed By [Signature]

Project: 1994 Church Rock Uranium Mill Tailings Reclamation Project

Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/08/94

Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/08/94

Material Type: .35 Aggregate Igneous Intended Use \_\_\_\_\_

Property	Value	Score	Weighting Factor	Score x Weight
Specific Gravity (SSD)	2.78	10	9	90
Absorption, %	1.60	3	2	6
L.A. Abrasion, 100 rev, %	5.0	8	11	88
Sodium Soundness Loss, %	.74	10	1	10

Total = Rock Quality Score =  $194/230 \times 100 = 84$

Dist: Client (3) Billing (1) Field File (1)

/cb:RQD.UNC



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305-3077 Attn: Mr. Ed Morales	Job No.	<u>3144JK050</u>
		Lab/Inv. No.	<u>31440135</u>
		Report Date:	<u>08/02/94</u>
Project:	<u>1994 Church Rock Uranium Mill Tailings Reclamation Project</u>		
Location:	<u>Church Rock, New Mexico</u>		
Material:	<u>.35 Aggregate</u>	Sampled By:	<u>H. Kuebler/WT</u> Date <u>07/08/94</u>
Source:	<u>Stockpile</u>	Submitted By:	<u>H. Kuebler/WT</u> Date <u>07/08/94</u>
Supplier:	<u>Hamilton Brothers Construction</u>	Authorized By:	<u>E. Morales/Client</u> Date <u>07/08/94</u>

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 5

% Loss at 500 Revs. 21

Copies to: Addressee (3), Billing (1), Field File (1)  
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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF AGGREGATES

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305

Job No. 3144JK050

Lab/Inv. No. 31440235

Report Date: 08/02/94

Project: Church Rock Uranium Mill Tailings Reclamation

Location: Gallup, NM

Material: .35 Aggregate

Sampled By: H. Kuebler/WT Date 07/08/94

Source: Stockpile

Submitted By: H. Kuebler/WT Date 07/08/94

Authorized By: Client Date 07/08/94

Coarse Aggregate, ASTM C127

Bulk Specific Gravity	<u>2.74</u>
Bulk Specific Gravity (SSD)	<u>2.78</u>
Apparent Specific Gravity	<u>2.87</u>
Absorption, Percent	<u>1.6</u>

Copies to:  
235.16B/bc

Addressee (3), Billing (1), Field File (1)

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**LABORATORY REPORT**

SOUNDNESS OF AGGREGATES

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 08/02/94

Project: Church Rock Uranium Mill tailings Reclamation

Location: Chuch Rock, NM

Material: .35 Aggregate      Sampled By: H. Kuebler/WT      Date: 07/07/94

Source: Stockpile      Submitted By: H. Kuebler/WT      Date: 07/08/94

Procedure: ASTM C88      Authorized By: Client      Date: 07/08/94

Solution: Sodium Sulfate (Fresh)

FINE AGGREGATE

Fine Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weight Percentage Loss, %
Minus No. 100				
No. 50 to No. 100				
No. 30 to No. 50				
No. 16 to No. 30				
No. 8 to No. 16				
No. 4 to No. 8				
3/8 to No. 4				
Totals				

COARSE AGGREGATE

Coarse Fraction Size	Grading of Original Sample Percent	Wt. of Test Fractions Before Test, grams	Percentage Passing Designated Sieve	Weighted Percentage Loss, %
2-1/2" to 2"				
2" to 1-1/2"	16			
1-1/2" to 1"	31	1008.7	.38	.12
1" to 3/4"	8	508.5	.669	.15
3/4" to 1/2"	9	673.5	1.3	.12
1/2" to 3/8"	6	331.3	3.3	.20
3/8" to No. 4	9	300.9	2.8	.25
Minus No. 4				
Totals	79			0.74

\*The size fraction indicated contains less than 5% of one or more components therefore, the percent loss is assumed to be that of the next smaller size.

Percentage of fraction in original grading: % Plus #4, % Minus #4.

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235.17/bc

The above services and report were performed pursuant to the terms and conditions of the agreement or proposal, if any, between WTI and client. WTI 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**

**L**

APPENDIX L

TEST RESULTS, RUNOFF CONTROL DITCH

### WEST CONTROL DITCH

West control ditch was to be contoured to 1994 Reclamation plan specifications. Nielson's, Inc. worked on the west control ditch periodically, with final completion of the control ditch on October 10, 1994. The west berm of the west control berm was built-up to a higher elevation than its previous existing elevation and the control ditch bottom was contoured to a width and elevation as prescribed in the 1994 Reclamation plans. Field density tests were performed to determine if the fill placement was according to project specifications for compaction and moisture content requirements at the specific test locations.

Bedding material was placed in a lift ranging from 3 to 3 1/2 inches thick. Nielson's, Inc. graded the material by manual means (rake and shovel). Thickness measurements were performed to determine if the material met project specifications for thickness at the specific test locations.

D50 1.5 aggregate was placed on the bedding material to act as an erosion protection layer. Nielson's, Inc. placed D50 1.5 aggregate by manual means. Project specifications stated D50 1.5 aggregate was to be placed in a lift between 3" to 4" thick. Thickness measurements were performed to determine if the material met project specifications for thickness at the specific locations.

**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

WT JOB NO. 3144JK05

**TEST SUMMARY FOR WEST CONTROL DITCH**

DATE OF REPORT 10/11/94

DATE	TYPE OF TEST	GRID	NORTHING	EASTING	ELEV.	MATERIAL TYPE	DENSITY, PCF	MOISTURE, %	RELATIVE COMPACTION	USCS SOIL CLASS	WITHIN SPECS. ?
07/12/94	Proctor	18+50	---	---	6958.0	Native	113.0	13.2	---	CL	Yes
07/18/94	Proctor	19+50	---	---	6957.1	Native	120.0	11.2	---	CL	Yes
08/30/94	Sandcone	12+00	---	---	6958.3	Native	116.0	6.8	100	CL	Yes
08/30/94	Sandcone	14+00	---	---	6959.4	Native	120.8	11.0	100	CL	Yes
08/30/94	Sandcone	16+00	---	---	6956.5	Native	113.7	6.2	100	CL	Yes
08/30/94	Sandcone	18+00	---	---	6957.7	Native	113.5	7.4	100	CL	Yes
08/30/94	Sandcone	20+00	---	---	6956.4	Native	115.2	6.9	100	CL	Yes
08/30/94	Sandcone	22+00	---	---	6956.0	Native	121.0	11.6	100	CL	Yes
09/13/94	Thickness Requirements	Bedding Sand	---	---	---	---	---	---	---	---	Yes
09/15/94	Thickness Requirements	D50 1.5 Aggregate	---	---	---	---	---	---	---	---	Yes
10/06/94	Thickness Requirements	D50 1.5 Aggregate	---	---	---	---	---	---	---	---	Yes



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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client:	United Nuclear Corporation Post Office Box 3077 Gallup, New Mexico 87305 ATTN: Mr. Ed Morales	Job No.	3144JK050
		Lab/Inv. No.	31440235
		Report Date:	07/18/94
Project:	Chuck Rock Uranium Mill Tailings Reclamation		
Location:	Church Rock, NM		
Material:	Clayey Silty Sand (Native)	Sampled By:	R.Whitaker/WT
		Date	07/12/94
Source:	West Control Ditch, Station 19 + 50	Submitted By:	R.Whitaker/WT
		Date	07/12/94
		Authorized By:	Client
		Date	07/12/94

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	120.0
Optimum Moisture, %	11.2

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**LABORATORY REPORT**

PHYSICAL PROPERTIES OF SOILS

Client: United Nuclear Corporation  
Post Office Box 3077  
Gallup, New Mexico 87305  
ATTN: Mr. Ed Morales

Job No. 3144JK050  
Lab/Inv. No. 31440235  
Report Date: 07/18/94

Project: Chuck Rock Uranium Mill Tailings Reclamation

Location: Church Rock, NM

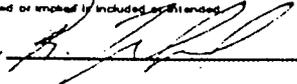
Material:	<u>Sandy Lean Clay (Native)</u>	Sampled By:	<u>R.Whitaker/WT</u>	Date	<u>07/12/94</u>
Source:	<u>West Control Ditch, Station 18 + 50</u>	Submitted By:	<u>R.Whitaker/WT</u>	Date	<u>07/12/94</u>
		Authorized By:	<u>Client</u>	Date	<u>07/12/94</u>

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf	<u>113.0</u>
Optimum Moisture, %	<u>13.2</u>

Copies to: Addressee (3), Billing (1), Field File (1)  
235.19/bc

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**SOIL/AGGREGATE FIELD DENSITY TEST**

IT : *UNC Mining and Milling*  
Post Office Box 3077  
Gallup, NM 87305

JOB NO. 3144JK050  
LAB/INV NO. 31440279-8  
REPORT DATE 09-08-94  
REVIEWED BY R. Zubrod  
PAGE 7

PROJECT : 1994 Reclamation  
LOCATION : McKinley County, NM

AUTHORIZED BY : Ed Morales

DATE : 08-30-94

TEST LOCATIONS DESIGNATED BY : H. Kuebler/WT

TEST NO.	IN-PLACE			MAXIMUM DENSITY (pcf)	REQUIRED		WITHIN SPECS?
	MOISTURE (%)	DRY DENSITY (pcf)	COMPACTION (%)		COMPACTION (%)	MOISTURE (%)	
1	6.8	116.0	100+	113.0	95	N/A	YES
2	11.0	120.8	100+	120.0	95	N/A	YES
3	6.2	113.7	100+	113.0	95	N/A	YES
4	7.4	113.5	100	113.0	95	N/A	YES
5	6.9	115.2	100+	113.0	95	N/A	YES
6	11.6	121.0	100+	120.0	95	N/A	YES

TEST NO.	TEST DATE	TEST LOCATION	ELEVATION DATUM +
1	08/30	W. Control Channel, Station 12+00, Bottom of Ditch	6958.3
2	08/30	W. Control Channel, Station 14+00, E. Berm	6959.4
3	08/30	W. Control Channel, Station 16+00, Bottom of Ditch	6956.5
4	08/30	W. Control Channel, Station 18+00, W. Berm	6957.7
5	08/30	W. Control Channel, Station 20+00, W. Berm	6956.4
6	08/30	W. Control Channel, Station 22+00, W. Berm	6956.0

+DATUM: Elev. of Test = Top of Native Subgrade

TEST NO.	COMMENTS	FIELD DENSITY TEST METHOD
1	Subgrade	ASTM D-1556/AASHTO T-217
2	Subgrade	ASTM D-1556/AASHTO T-217
3	Subgrade	ASTM D-1556/AASHTO T-217
4	Subgrade	ASTM D-1556/AASHTO T-217
5	Subgrade	ASTM D-1556/AASHTO T-217
6	Subgrade	ASTM D-1556/AASHTO T-217

MOISTURE/DENSITY RELATIONSHIP		OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	TESTED PER ASTM
MATERIAL DESCRIPTION	SOURCE			
CLAYEY SILTY SAND	W. CONTROL DITCH STA 19+50	11.2	120.0	D698-A
SANDY LEAN CLAY	W. CONTROL DITCH STA 18+50	13.2	113.0	D698-A

Copies to: Addressee - (3)  
Field File & Billing (2)



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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 09/19/94**

**WEST CONTROL DITCH  
BEDDING SAND PLACEMENT  
THICKNESS  
09/13/94**

STATION NO.	LEFT BERM	BOTTOM OF SWALE	RIGHT BERM
12+00	3 1/4"	3"	3"
13+00	3"	3"	3 1/2"
14+00	3 1/4"	3 1/2"	3"
15+00	3 1/2"	3 1/2"	3 1/2"
16+00	3 1/4"	3 1/2"	3 1/2"
17+00	3 1/4"	3"	3 1/4"
18+00	3 1/2"	3 1/4"	3 1/2"
19+00	3"	3 1/4"	3 1/2"
20+00	3 1/2"	3 1/2"	3 1/4"
21+00	3"	3 1/2"	3 1/4"
22+00	3"	3 1/4"	3 1/4"
23+00	3"	3 1/4"	3 1/2"

Dist: Client (3) Field File (1) Billing (1)

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UNITED NUCLEAR CORPORATION 1994 RECLAMATION

WT JOB NO. 3144JK050

DATE OF REPORT 09/26/94

WEST CONTROL DITCH  
BEDDING SAND PLACEMENT  
THICKNESS  
09/15/94

STATION NO.	RIGHT BERM	BOTTOM OF SWALE	LEFT BERM
12+00	3 1/2"	4"	3 1/2"
13+00	3 1/2"	3"	3"
14+00	3 1/4"	3 1/2"	3 1/2"
15+00	3"	3"	3 1/4"
16+00	3 1/4"	3"	3"
17+00	3"	3 1/4"	3 1/4"
18+00	3"	3 1/4"	3 1/2"
19+00	3 1/2"	3"	3 1/2"
20+00	3 1/4"	3 1/4"	3 1/4"
21+00	3 3/4"	3 3/4"	3 1/4"
22+00	3 1/4"	3 1/4"	3"
23+00	3 1/4"	3 1/2"	3 3/4"

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**UNITED NUCLEAR CORPORATION 1994 RECLAMATION**

**WT JOB NO. 3144JK050**

**DATE OF REPORT 10/11/94**

**WEST CONTROL DITCH  
D 50 1.5 AGGREGATE  
EAST BERM SLOPE  
THICKNESS  
10/06/94**

<b>STATION NO.</b>	<b>THICKNESS</b>	<b>STATION NO.</b>	<b>THICKNESS</b>
13+00	3 1/2"	14+00	3"
15+00	3 1/4"	16+00	3 1/2"
17+00	3 1/2"	18+00	4"
19+00	4"	20+00	4"
21+00	4"	22+00	3"
23+00	3 1/2"		

Dist: Client (3) Field File (1) Billing (1)

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