

Project 86-060-38
April 1996



As-Built Report

South Cell Final Reclamation

Church Rock Site
Gallup, New Mexico

Submitted To:

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

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AS-BUILT REPORT

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

1.0 INTRODUCTION

This report describes the construction of the final reclamation cover for the South 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 South 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 September 1995 and encompassed approximately 19.4 acres of the South Cell and surrounding areas. Work also continued on the Runoff Control Ditch located west of the tailings disposal area.

Construction of the final cover for the South Cell represents the third 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), and final reclamation of the Central Cell was previously completed in 1994 as documented in the "As-Built Report, Central Cell Final Reclamation" (Canonie, 1995). 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 for the installation of the final cover over the South Cell. Construction activities for this phase of the reclamation included:

1. Grubbing of the South Cell area to remove vegetation from the interim soil cover
2. Placing and compacting 9 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. Sheet 4 shows the as-built plan view of the final cover, surface water controls for the South Cell and the section of the Runoff Control Ditch constructed in 1995. Final reclamation of Borrow Pit No. 2, located east of the Central Cell, including completion of Branch Swales A, B and C, was also completed during the 1995 construction season. Details of the borrow pit reclamation are provided in a separate document titled "As-Built Report, Borrow Pit No. 2 Final Reclamation" [Smith Environmental Technologies Corporation (Smith Environmental), 1996].

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 1995 field reports of daily construction activities.

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 are provided in the appendices.

2.0 RADON ATTENUATION LAYER

The radon attenuation layer over the South Cell consists of 18 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/m²/sec). The 18-inch layer consists of the soil cover placed during interim stabilization activities in 1991 (Canonie, 1992a) plus the final lift of soil added during this phase of reclamation activities. 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 South 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 9 inches, thereby bringing the total thickness of the radon attenuation cover to 18 inches.

The soil used to construct the final lift of the radon attenuation cover was obtained from the South Cell borrow area (see Sheet 4), which is located southeast of the South Cell. The soil within the stockpile ranges from a lean clay and sandy/silty clay to a silty sand 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 South Cell area using scrapers. Fine grading of the soil cover was performed using a motor grader.

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 compacted using a smooth-drum roller.

The total volume of radon attenuation cover placed over the South Cell, excluding swale areas, was approximately 24,000 cubic yards (cy). This estimate is based on 19.4 acres of South Cell tailings area and an average final soil cover of 9 inches. The radon attenuation cover placed in the swale areas (less than 1 acre) was inspected and tested separately as described in Section 4.0 of this report. The 24,000 cy of soil cover was placed, moisture conditioned and compacted in 11 work days between July 6 and August 2, 1995, at an average rate of about 2,200 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).

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 *Survey Control*

During previous reclamation activities in 1991, the top of the South Cell tailings was graded to the design slope and a minimum of 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 (Canonie, 1992a). To insure that the final lift of soil cover was applied uniformly and that the required total cover thickness of 18 inches was achieved, the South 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 9 inches was then added to the remaining 9-inch interim cover, thereby bringing the total thickness of the radon attenuation cover to 18 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.

2.2.2 *Soil Properties*

The suitability of the borrow soil for use in the radon attenuation cover was verified by performing gradation and Atterberg tests at 3 locations within the South Cell borrow area and at 30 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 730 cy of soil (i.e., 24,000 cy/33 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 B.

2.2.3 *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 52 locations distributed uniformly over the tailings soil cover were tested, of which 50 met the required density and moisture specifications on the initial test. The remaining 2 locations were recompact until additional testing confirmed that required minimum moisture-density standards were met. The test frequency of 1 moisture-density test for every 462 cy of soil (i.e., 24,000 cy/ 52 moisture-density tests) exceeds the specified test rate of 1 test for every 500 cy placed. The laboratory reports documenting the results of the moisture-density testing are presented in Appendix C.

The average dry density and moisture content of the 52 passing tests were 109.9 pounds per cubic foot (pcf) and 14.2 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 0.32 and a saturation of 78 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 mathematical model for the radon attenuation cover provided in the Reclamation Plan.

2.2.4 *Proctor Tests*

A total of 10 Standard Proctor tests were conducted during completion of the radon attenuation cover over the South Cell. The results of these tests are presented in Appendix D. The Standard Proctor tests were performed in accordance with ASTM D 698A to determine the relationship between moisture and density in the barrow soils over a range of moisture and density values.

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. The total of 10 Standard Proctor tests performed on the radon attenuation soil cover resulted in a testing frequency of one Standard Proctor test performed for every five field density tests. No One-Point Proctor tests were performed because the higher frequency for the Standard Proctor tests made such testing redundant.

3.0 EROSION PROTECTION COVER

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 South 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 basalt aggregate with a D_{50} of 1.5 inches. This same rock was also used as riprap in portions of the Runoff Control Ditch and 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 elongated parallel piles. 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 South Cell borrow area. 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 basalt rock with durability characteristics superior to the criteria stipulated in the technical specifications. A total

of 3 tests were performed on the "Basalt 1.5-inch Aggregate" to verify the rock's quality. The test results are presented in Appendix E. The average test values for the rock included a specific gravity of 2.75, an absorption of 1.5 percent, a sodium sulfate loss of 2.9 percent, and an L.A. Abrasion percentage of 4.9. The rock quality score for the 3 tests, using the scoring criteria provided in the August 1990 STP, ranged from 85 to 93 with an average score of 90.

The specifications require that rock quality 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's records show that in 1995 a total of 18,479 cy of D_{50} 1.5-inch rock were placed as rock mulch and riprap during final reclamation of the South Cell, the Runoff Control Ditch, and Borrow Pit No. 2. No change in rock characteristics was noted by the quality control technician. Therefore, the rock quality testing rate of 1 series of tests per 6,160 cy of rock placed (i.e., 18,479 cy/3 tests) exceeded the test rate required by the specifications.

3.2.2 *Rock Mulch Thickness and Size Gradation*

The basalt 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 5 samples were tested at the quarry and 3 at the site prior to spreading. One of the samples collected and tested at the quarry did not meet gradation specifications and this material was not used. The remaining tests at the quarry and on the samples collected and tested at the site all met the gradation requirements. The results of the sieve analysis testing are presented in Appendix F.

The thickness of the rock mulch was checked and recorded on 50- to 100-foot centers over the entire extent of the South 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 G.

3.2.3 *Soil Thickness and Penetration*

The soil used to construct the soil/rock matrix was obtained from the South Cell borrow area. Gradation analyses performed for constructing the radon attenuation barrier (see Appendix B) indicates that this soil ranges from lean clay and sandy/silty clay to silty sand 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 H and show that the soil layer above the rock mulch was a minimum of 3 inches in all areas. In some areas, the soil layer thickness was increased in excess of 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

Surface water control structures associated with the South Cell include:

1. Branch Swales H, I and J
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 South Cell reclamation in 1995.

Branch Swales H, I and J are shallow, riprapped ditches located on top of the South Cell designed to convey runoff from the reclaimed tailings area to the South Cell Drainage Channel, which will be constructed in the future. Construction of those portions of Branch Swales H and J that pass through the Evaporation Pond area will also be constructed in the future when the Evaporation Ponds are reclaimed.

In conjunction with South Cell reclamation activities, work also continued on the Runoff Control Ditch between Stations 25+00 to 43+00 (Sheet 4). This ditch, located west of the tailings area, is designed to intercept runoff from the west embankment of the North, Central and South Cells.

4.1 Branch Swales H, I, and J

Branch Swales H, I, and J were constructed on top of the South 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 1995 construction activities. Swale I was completed in 1995, while Swales H and J were partially

completed. Swales H and J are designed to extend further to the north across 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 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 southeastern edge of the South Cell.
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. Exposed soils were also monitored for radon emissions. After completion of the subgrade, a radon attenuation layer was placed over the bottom and sideslopes of the lower section of Swale I. The total thickness of the radon attenuation layer in this area, including the interim cover, measured a minimum of 18 inches. Each lift of the radon attenuation layer was conditioned by adding water and compacted with a sheepsfoot compactor followed by a smooth-drum roller. Placement of a radon attenuation layer was not required in the upper reaches of Swale I and in Swales H and J

because they were constructed southeast of the tailings area in native soils and fill derived from the Borrow Pit No. 2 soil stockpile.

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 Swales H and I 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 Swale J. A minimum of 6 inches of riprap was placed in Swales H and I. The riprap was placed using a front-end loader, hand rakes, and a trackhoe.

4.1.2 *Specifications and Testing*

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 radon attenuation 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 Swales H and I.
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 Swale J.
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 Swales H and I.

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.

4.1.2.1 *Field Modifications*

Prior to the start of final reclamation of the South Cell, United Nuclear conducted a detailed review of the reclamation plan requirements for construction of the branch swales. This review identified several areas where minor modifications of the South Cell Swales were necessary to match the swale design to the as-built topography of the interim cover and surrounding areas. These minor modifications were developed by Canonie using NRC guidelines and were incorporated into the construction design as a field change. The modifications affecting branch swale construction are shown in parentheses in Table 2. Appendix I provides the details of the design modifications for the South Cell swales.

4.1.2.2 *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.

Swale I was again surveyed after placement of the radon attenuation layer. This survey served two purposes:

1. Verify that a minimum of 18 inches of radon attenuation soil cover had been placed.
2. Verify 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 4.1.2.5 and 4.1.2.6.

4.1.2.3 *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 12 locations spaced over the swales were tested, of which 11 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 5 Standard Proctor tests were performed on the subgrade material resulting in a testing frequency of 1 Standard Proctor test performed for every 2.4 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 J.

4.1.2.4 *Radon Attenuation Layer Testing*

As required in the Reclamation Plan, the radon attenuation layer was placed over the lower portion of Swale I. The upper portion of Swale I and Swales H and J did not require a radon attenuation layer because of their location beyond the limits of tailings. Construction of the radon attenuation layer over Swale I required the placement and compaction of approximately 500 cy of soil from the South Cell borrow area. The volume of soil used in constructing the radon attenuation layer in these swales was estimated by multiplying the area of Swale I covered by the radon attenuation layer (about 0.2 acre) by the depth of the compacted soil cover (18 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.

One gradation test was performed on the radon attenuation soils placed in Swale I. The results were within the gradation requirements illustrated on Figure B-1 in Appendix B of the Reclamation Plan. The test frequency of 1 test per 500 cy of soil placed exceeded the specified test frequency of 1 test per 1,000 cy of soil placed.

Two in-place field moisture-density tests of the radon attenuation soil cover in Swale I were performed using the sand cone method (ASTM D 1556). These tests were performed at the upper and lower ends of the covered portion of the swale. Both 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 test frequency of 1 test for every 250 cy of soil (i.e., 500 cy/2 tests) exceeded the specified test frequency of one test for every 500 cy of soil.

4.1.2.5 *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 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 Swales H and I. The second layer of bedding material consisted of crushed basalt aggregate from Hamilton's pit and had a nominal D_{50} of 0.35 inch. Its thickness was also 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 depth of the second bedding layer ranged from 3 to 4 inches thick in Swales H and I.

Three 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 Ditch. 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.

Eight 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. The first 5 sieve analyses did not meet the gradation requirements, and the tested material was discarded. Results of the last 3 tests 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.

The D_{50} 0.35-inch bedding material exceeded the durability specifications for aggregate with rock quality characteristics similar to the 1.5-inch rock aggregate (see Section 3.2). The average test values for the rock included a specific gravity of 2.74, an absorption of 1.9 percent, a sodium soundness loss of 4.1 percent, and an L.A. Abrasion percentage of 3.6. The rock quality scores for the test, using the scoring criteria provided in the August 1990 STP, ranged from 80 to 90, with an average score of 84.7. The three rock quality tests for the D_{50} 0.35-inch aggregate are presented in Appendix E.

4.1.2.6 *Riprap Testing*

Two sizes of riprap were used during construction of the branch swales associated with the South Cell. In accordance with the reclamation plan, riprap with a D_{50} of 1.5 inches was used in Swale J, and riprap with a D_{50} of 3 inches was used in Swales H and I.

1.5-Inch Riprap

Riprap consisting of a basalt rock with a D_{50} of 1.5 inches was placed at a minimum thickness of 3 inches on the bottom and sides of Swale J. 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 basalt 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 90. 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 E and F, respectively.

Three-Inch Riprap

In accordance with the specifications of the reclamation plan, riprap consisting of a basalt rock with a D_{50} of 3 inches was placed at a minimum thickness of 6 inches on the bottom and sides of Swales H and I. 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 Swales H and I was a dense basalt 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. Three tests were performed to verify the rock's quality. The test results are presented in Appendix E. The average test values for the rock included a specific gravity of 2.74, an absorption of 1.7 percent, a sodium soundness loss of 2.6 percent, and an L.A. Abrasion percentage of 3.9. Using the scoring criteria provided in the August 1990 STP, the rock quality scores for the test ranged from 83 to 90, with an average score of 87.3.

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's records show that a total of 2,554 cy of D_{50} 3-inch rock was placed as riprap during 1995. No change in rock characteristics was noted by the quality control technician. Three rock quality tests were conducted, or 1 for each 850 cy of rock used. Therefore, the rock quality testing rate exceeds the test rate required by the specifications.

The basalt rock with a D_{50} of 3 inches that was used to riprap Swales H and I was also subjected to 8 sieve analyses to ensure that gradation requirements were being met. The following size gradations were required for the D_{50} 3-inch rock: 100 percent passing a 6-inch screen; 45-67 percent passing a 4-inch screen; and 0-22 percent passing a 1-inch screen. Four of the samples did not meet these requirements, and the material was rejected. The remaining tests showed that the material was within specifications. The results of the sieve analysis testing are presented in Appendix F.

4.2 Runoff Control Ditch

The Runoff Control Ditch is located immediately west of the tailings disposal area as shown on Sheet 4. During 1995, construction of the Runoff Control Ditch continued in a southerly direction from Stations 25+00 to 43+00. The upper reach of the Runoff Control Ditch was completed to Station 25+00 in 1993 and 1994 as part of the North Cell and Central 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 and 5H/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 second bedding layer of rock aggregate with a D_{50} of 0.35 inch was then placed to a minimum depth of 3 inches in the lower reach of the Runoff Control Ditch (i.e., from Stations 38+00 to 43+00). Subsequently, the upper reach was covered with a minimum of 3 inches of riprap having

a D_{50} of 1.5 inches and the lower reach was covered with a minimum of 6 inches of riprap having a D_{50} of 3 inches.

4.2.2 *Specifications and Testing*

The specifications for construction 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 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 the lower reach.
5. 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 the upper reach.
6. 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 the lower reach.

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 Runoff Control Ditch from Station 25+00 to Station 43+00 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 10 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 1 Standard Proctor test performed for every 5 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 3.5 inches thick over the entire length of the ditch.

In accordance with the Reclamation Plan, a second bedding layer was placed on top of the D_{50} 0.02-inch bedding layer in the lower reach of the Runoff Control Ditch (i.e., from Stations 38+00 to 43+00). The second layer of bedding material consisted of crushed basalt aggregate from Hamilton's pit and had a nominal D_{50} of 0.35 inch. A minimum of 3 inches of this coarser bedding material in the lower reach was verified in the field by measuring its depth on the ditch bottom and sides every 100 feet. The results of these measurements are presented in Appendix L and show that the depth of the second bedding layer ranged from 3 to 4 inches thick in the lower reach.

Sieve analyses and rock quality testing indicate that the bedding material met gradation and durability specifications. These analyses and tests are discussed in Section 4.1.2.5 with the results presented in Appendices K and E, respectively.

4.2.2.4 *Riprap Testing*

Riprap consisting of a basalt 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 upper reach of the ditch (i.e., Stations 25+00 to 38+00). Riprap consisting of a basalt rock with a D_{50} of 3.0 inches was placed at a minimum thickness of 6 inches on the bottom and sides of the lower reach of the ditch (i.e., Stations 38+00 to 43+00). 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 minimum thickness requirements.

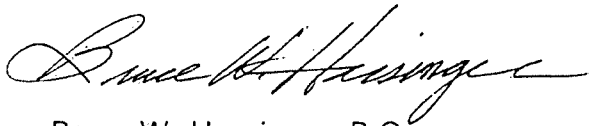
The rock used for the riprap was the same basalt rock used to construct the rock mulch. As discussed in Sections 3.2.1 and 4.1.2.6, this rock has superior durability characteristics with rock quality scores between 83 and 93. Sieve analyses of this rock were performed as discussed in Section 3.2.2 and Section 4.1.2.6, to maintain the size gradation in conformance with the specifications. Rock quality and gradation test results for the riprap are provided in Appendices E and F, respectively.

5.0 CLOSING REMARKS

The South 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.

Smith Environmental Technologies Corporation appreciates this opportunity to provide engineering services for the reclamation construction and as-built conditions documentation regarding work conducted during 1995 in the South Cell Tailings Disposal Area at the Church Rock Facility. If you have any questions, please contact me at (303) 790-1747.

Respectfully submitted,



Bruce W. Hassinger, P.G.
Project Manager

BWH/ajw

REFERENCES

SMITH

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.

Canonie Environmental Services Corp., 1995, "As-Built Report, Central Cell Final Reclamation", prepared for United Nuclear Corporation, Church Rock Facility, Gallup, New Mexico.

Nuclear Regulatory Commission, 1990, "Staff Technical Position, Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites", August.

Smith Environmental Technologies Corporation, 1996, "As-Built Report, Borrow Pit No. 2 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

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TABLES



TABLE 1
EARTHMOVING EQUIPMENT

| Equipment Type | Number |
|--------------------------------------|--------|
| Caterpillar 633 Scrapers | 2 |
| Caterpillar 825 Sheepsfoot Compactor | 1 |
| Caterpillar D-8 Dozer | 1 |
| Caterpillar EL 300 Excavator | 1 |
| Caterpillar 14G Graders | 1 |
| Caterpillar 950B Front-End Loaders | 2 |
| Caterpillar 631 Water Wagon | 1 |
| End Dump Trucks | 2 |
| Belly Dump Trucks | 2 |
| Water Truck | 1 |

TABLE 2

**SWALES H, I, AND J
DESIGN PARAMETERS**

| Parameter | Swale H | | Swale I | | Swale J | |
|------------------------------------|--------------------------------|---------|--------------------------------|----------|---------|---------|
| Length (ft) | 2,550 | (2,350) | 550 | (750) | 1,900 | (1,700) |
| Slope (ft/ft) | 0.0085 | (0.010) | 0.0040 | (0.0067) | 0.0047 | |
| Bottom Width (ft) | 20 | | 20 | | 10 | |
| Minimum Depth (ft) | 2.5 | | 3.5 | | 2.5 | |
| Bedding Layer D ₅₀ (in) | 0.02, Layer 1 0.35, Layer 2 | | 0.02, Layer 1 0.35, Layer 2 | | 0.02 | |
| Bedding Layer Thickness (in) | 3, Layer 1 3, Layer 2 | | 3, Layer 1 3, Layer 2 | | 3 | |
| Riprap D ₅₀ (in) | 3.0 | | 3.0 | | 1.5 | |
| Riprap Thickness (in) | 6 | | 6 | | 3 | |

Notes:

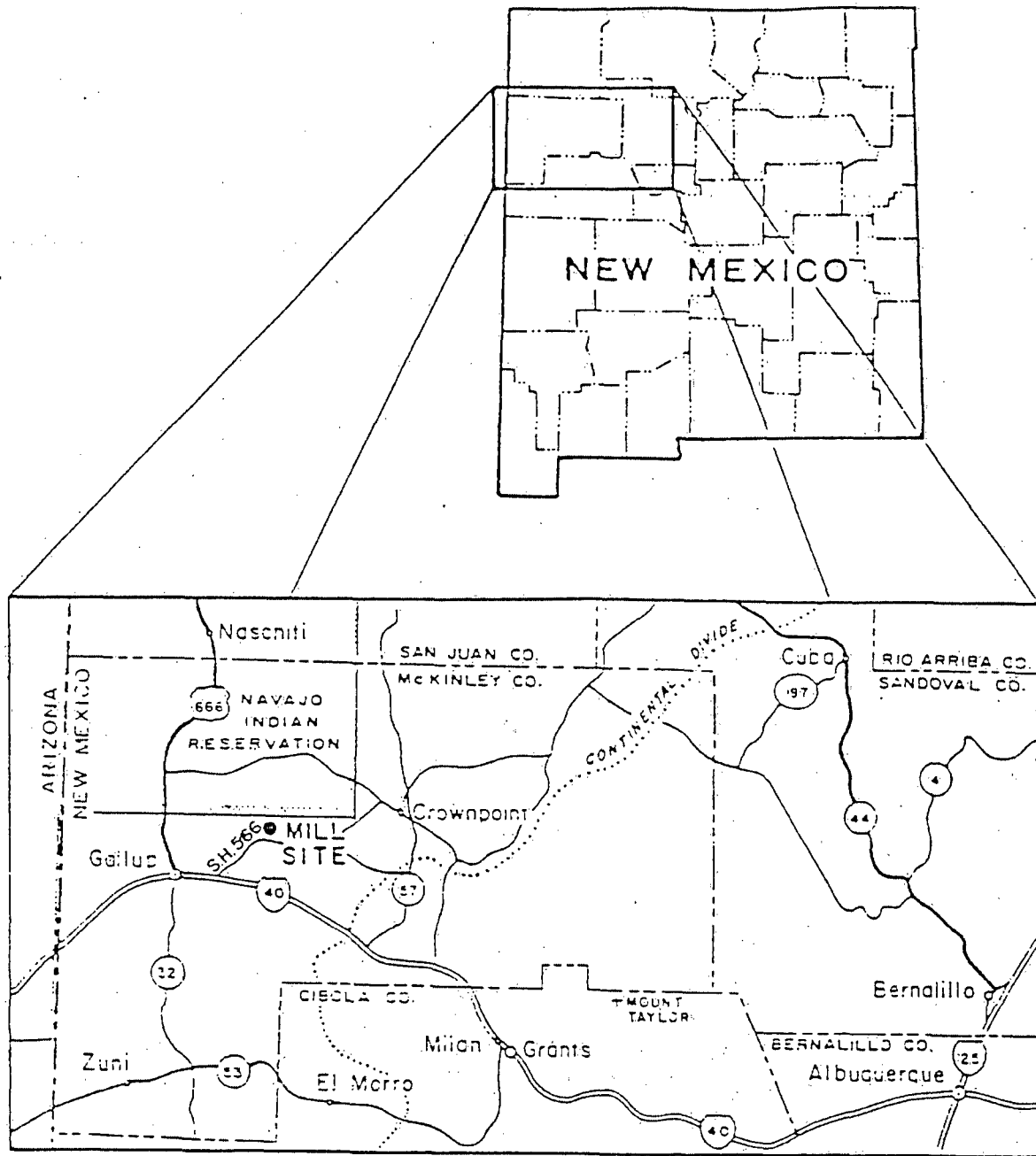
1. The sides of the swales are to be installed at a slope of 3H/1V.
2. Values shown in parentheses are field design modifications. See Appendix I for additional details.

FIGURES

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FIGURES

DRAWING NUMBER 86-060-A1032

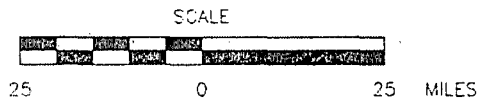


NOTES:

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.



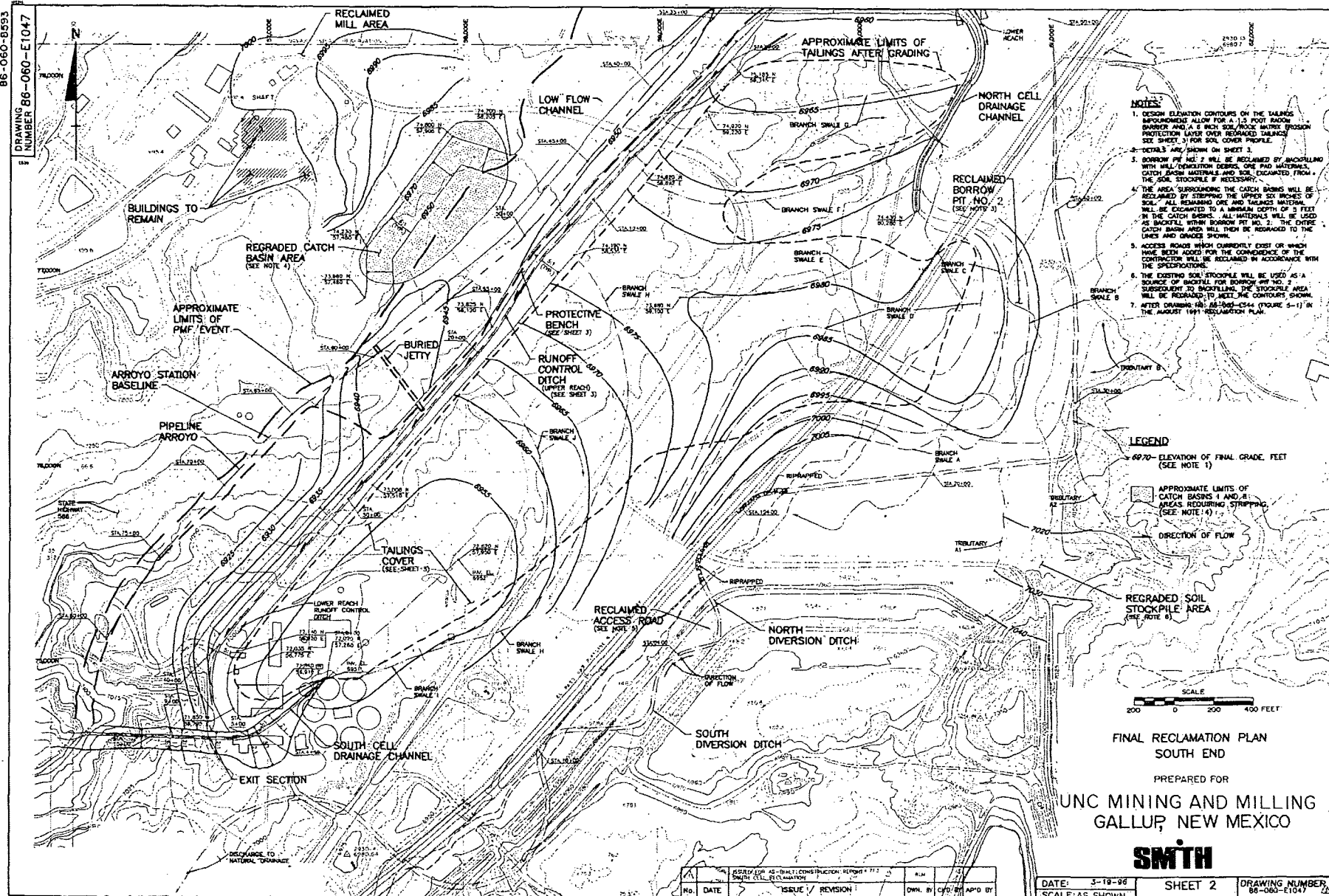
SITE VICINITY MAP

PREPARED FOR
UNC MINING AND MILLING
GALLUP, NEW MEXICO.

SMITH

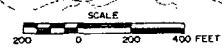
| | | | | | | |
|-----|---|------------------|----------------------------|-----------------|---------|--------------------------------|
| 1 | ISSUED FOR AS-BUILT CONSTRUCTION REPORT SOUTH CELL RECLAMATION | RLM | | DATE: 2-19-96 | SHEET 1 | DRAWING NUMBER 86-060-A1032 |
| No. | DATE | ISSUE / REVISION | OWN. BY: CK'D BY: AP'D BY: | SCALE: AS SHOWN | | |

86-060-8593
DRAWING
NUMBER 86-060-E1047



- NOTES:**
1. DESIGN ELEVATION CONTOURS ON THE TAILINGS MOUNDINGS ALLOW FOR A 1.5 FOOT BASON SHOWER AND A 6 INCH SOIL/ROCK MATRIX PROTECTION LAYER OVER REGRADED TAILINGS. SEE SHEET 3 FOR SOIL COVER PROFILE.
 2. DETAILS ARE SHOWN ON SHEET 3.
 3. BORROW PIT NO. 2 WILL BE RECLAIMED BY BACKFILLING WITH WELL-SORTED DEBRIS, ONE PAD MATERIALS, CATCH BASIN MATERIALS AND SOIL EXCAVATED FROM THE SOIL STOCKPILE IF NECESSARY.
 4. THE AREA SURROUNDING THE CATCH BASINS WILL BE RECLAIMED BY STRIPPING THE UPPER SOIL INCHES OF SOIL. ALL REMAINING ONE AND TWO INCHES MATERIAL WILL BE EXCAVATED TO A MINIMUM DEPTH OF 3 FEET IN THE CATCH BASINS. ALL MATERIALS WILL BE USED AS BACKFILL WITHIN BORROW PIT NO. 2. THE ENTIRE CATCH BASIN AREA WILL THEN BE REGRADED TO THE LINES AND GRADES SHOWN.
 5. ACCESS ROADS WHICH CURRENTLY EXIST OR WHICH HAVE BEEN ADDED FOR THE CONVENIENCE OF THE CONTRACTOR WILL BE RECLAIMED IN ACCORDANCE WITH THE SPECIFICATIONS.
 6. THE EXISTING SOIL STOCKPILE WILL BE USED AS A SOURCE OF BACKFILL FOR BORROW PIT NO. 2. SUBSEQUENT TO BACKFILLING THE STOCKPILE AREA WILL BE REGRADED TO MEET THE CONTOUR SHOWN.
 7. AFTER DRAINING HAS BEEN COMPLETED (FIGURE 5-1) IN THE AUGUST 1991 RECLAMATION PLAN.

- LEGEND**
- 6970 - ELEVATION OF FINAL GRADE, FEET (SEE NOTE 1)
 - APPROXIMATE LIMITS OF CATCH BASINS 4 AND 8; AREAS REQUIRING STRIPPING (SEE NOTE 4)
 - DIRECTION OF FLOW



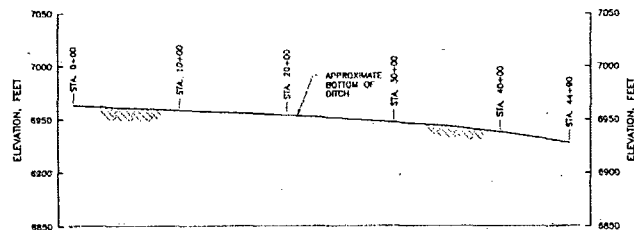
FINAL RECLAMATION PLAN
SOUTH END
PREPARED FOR
UNC MINING AND MILLING
GALLUP, NEW MEXICO

SMITH

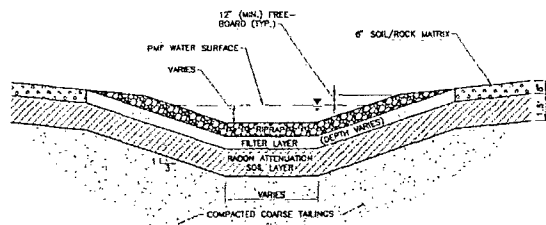
| NO. | DATE | ISSUE / REVISION | OWN. BY | CHKD. BY | APP'D. BY |
|-----|------|---|---------|----------|-----------|
| 1 | | DESIGN FOR AS-BUILT CONSTRUCTION, REVISION # 11.0 | | | |
| | | SMITH CELL RECLAMATION | | | |

DATE: 3-18-98
SCALE: AS SHOWN
SHEET 2
DRAWING NUMBER: 86-060-E1047

86-060-8593

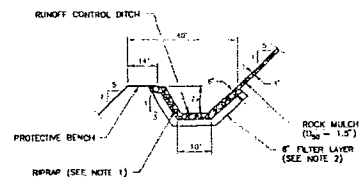


PROFILE
RUNOFF CONTROL DITCH



TYPICAL BRANCH SWALE
NOT TO SCALE

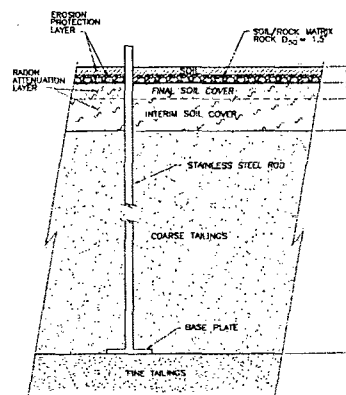
NOTE:
1. BRANCH SWALE DIMENSIONS AND RIPRAP
SIZES PROVIDED IN TABLE 2.



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 $5'$ IN UPPER REACH OF RUNOFF CONTROL DITCH.

TYPICAL SECTION
RUNOFF CONTROL DITCH
(LOOKING NORTHEAST)
NOT TO SCALE



SOIL COVER PROFILE
NOT TO SCALE

NOTES:

1. AFTER DRAWINGS 86-060-E589 (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

SMITH

| | | | | | |
|-----|------|------------------|---------|------------|-------------|
| NO. | DATE | ISSUE / REVISION | DWG. BY | CHECKED BY | APPROVED BY |
| 1 | | | | | |

| | | |
|-----------------|---------|-----------------------------|
| DATE: 2-19-96 | SHEET 3 | DRAWING NUMBER 86-060-E1034 |
| SCALE: AS SHOWN | | |

APPENDIX A

APPENDIX A
FIELD REPORTS
(BORROW PIT NO. 2 AND SOUTH CELL)



**Western
Technologies
Inc.**

The Quality People
Since 1955

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

**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 97305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450122
DATE OF REPORT: 5/22/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 5/09/95
Subject Project Specifications Superintendent James Harris

Observations and Action Taken: Ed Morales and I discussed testing requirements for 1995 Reclamation Project. According to UNC, 70 gradation and Atterbergs limits and 67 compaction tests will be needed on Radon Attenuation ~~region~~ cover to be done on Borrow Pit #2 to meet project specification. South cell needs 50 compaction tests and 25 gradation and Atterbergs limits to meet Radon Attenuation cover project requirements. Testing frequency in borrow pit #2 for exposed natural ground shall be one test every 2000 cubic yards, 10 compaction and 2 proctors (ASTM 698). Nielson Inc began to prepare natural ground for Radon Attenuation cover in Borrow Pit #2.

Comments:

Copies: Client (3), Billing (1), Field File (1).
59/rgo:UNC031

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

REVIEWED BY

Thomas Kuebler



**Western
Technologies
Inc.**

The Quality People
Since 1955

400 South Lorena Avenue
Farmington, New Mexico 87401
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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 97305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450122
DATE OF REPORT: 5/31/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 5/22/95
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. placed material in swale B & C. Sieve analysis on .35 aggregate indicated material doesn't meet specification. Hamilton Brothers will recrusher aggregate.

Comments:

Copies: Client (3), Billing (1), Field File (1).
5.22/rgo:UNC031

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

REVIEWED BY

Thomas P. Hake



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Inc.**

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 97305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450122
DATE OF REPORT: 5/31/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 5/23/95
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place fill in swale B & C
which will later be shaped into swale slopes. Hamilton Bro submitted another .35 aggregate
sieve sample. Sieve analysis indicated material didn't meet specification. Hamilton Brothers will
waste the small stockpile and try again.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
5.23/rgo:UNC031

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

REVIEWED BY Thomas Drake



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Technologies
Inc.**

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 97305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450122
DATE OF REPORT: 5/31/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 5/24/95
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to excavate swales. I performed sieve analysis on .35 aggregate in Gallup Lab. Test indicated .35 material does not meet specification. Hamilton Brothers will try to blend coarser material.

Comments:

Copies: Client (3), Billing (1), Field File (1).
5.24/rgo:UNC031

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

REVIEWED BY

Thomas Kuebler



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Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 97305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450122
DATE OF REPORT: 5/31/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 5/25/95
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to excavate for swales.
Hamilton Brothers required a sieve analysis performed on .35 aggregate. I worked on sieve
analysis all day.

Comments:

Copies: Client (3), Billing (1), Field File (1).
5.25/rgo:UNC031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 97305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450145
DATE OF REPORT: 06/08/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 06/05/95
Subject Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. was excavating contaminated soil from
swale H & I after UNC and Western Technologies located area.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
6-5/rgo:UNC031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 97305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450145
DATE OF REPORT: 06/08/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 06/06/95
Subject Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to remove contaminated soil from swales H & I and placing soils into Borrow Pit #2. Western Technologies observed contamination removal.

Comments:

Copies: Client (3), Billing (1), Field File (1).
6-6/rgo:UNC031

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

REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 97305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450145

DATE OF REPORT: 06/09/95

Project 1995 Reclamation

Location Church Rock New Mexico

Contractor Nielson Inc. Report By H. Kuebler Date 06/07/95

Subject Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to excavate contaminated soils from Swale I and placing soils in Borrow Pit #2.

Comments:

Copies: Client (3), Billing (1), Field File (1).
6-7/rgo:UNC031

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REVIEWED BY: Thomas W. Hake



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 97305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450145
DATE OF REPORT: 06/13/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 06/08/95
Subject Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to excavate Swale I for contaminated materials. Nothing for W.T. to do. Tech time 3 hours.

Comments:

Copies: Client (3), Billing (1), Field File (1).
6-8/rgo:UNC031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450145

DATE OF REPORT: 06/16/95

Project 1995 Reclamation

Location Church Rock New Mexico

Contractor Nielson Inc. Report By H. Kuebler Date 06/12/95

Subject Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. began to prepare south cell for final
Radon Attenuation Cover. Hamilton Bros. phoned needing serves to be done on D50 - 9" rock.
I and other technicians work on sieve analysis D50 - 9 and .35 aggregate in Gallup lab.

Comments:

Copies: Client (3), Billing (1), Field File (1).
6-12/rgo:UNC031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450145
DATE OF REPORT: 06/16/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 06/13/95
Subject Observations/Tests Superintendent James Harris

Observations and Action Taken: UNC furnished Western Technologies Inc. with elevations of compaction tests (from 05-10-95 till present). Western Technologies Inc. work on paperwork. Nielson Inc. continued to excavate Swale I.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
6-13/rgo:UNC031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
 Attn: Mr. Ed Morales
 PO Box 3077
 Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450145
DATE OF REPORT: 06/16/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By Ed Morales Date 06/14/95
Subject Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. began to excavate for Swale J.
Western Technologies Inc. reviewed paperwork and completed proctor testing.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
6-14/rgo:UNC031

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REVIEWED BY

Thomas Krueh

REPORT ON JOB SITE CONDITIONS

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450145

DATE OF REPORT: 06/16/95

Project 1995 Reclamation

| | |
|----------|------------------------|
| Location | Church Rock New Mexico |
|----------|------------------------|

Contractor Nielson Inc. Report By Ed Morales Date 06/15/95

| | | | |
|---------|--------------|----------------|--------------|
| Subject | Observations | Superintendent | James Harris |
|---------|--------------|----------------|--------------|

Observations and Action Taken: Nielson began to place Radon Attenuation cover in Borrow Pit #2. Western Technologies performed sandcones densities in Swale I. Density tests failed.

Comments:

Copies: Client (3), Billing (1), Field File (1).
6-15/rqo:UNC031

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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

| | | | |
|------------|---|-----------------|--------------------------|
| Client | UNC Mining & Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305 | Job No: | 3145JB031 |
| | | Lab/Invoice No. | 31450145 |
| | | Date of Report: | 06/22/95 |
| Project | 1995 Reclamation | | |
| Location | Church Rock, New Mexico | | |
| Contractor | Nielson Inc. | Report By | H. Kuebler Date 06/20/95 |
| Subject | Testing, Observations | Superintendent | |

Observations and Action Taken: Nielson Inc. requested compaction testing to begin at 8:00am on 6-20-95 however, the crew had overwatered the area which was to be tested. The new schedule for testing was to be that afternoon. Western Technologies inc. informed Nielson Inc. that the testing area was still too wet. Compaction tests revealed that in Swales H and I RAC material needed to be compacted more.

Comments:

Copies: Client (3), Billing (1), Field File (1).
620/dn:unc031

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

REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450185

DATE OF REPORT: 07/10/95

Project 1995 Reclamation

Location Church Rock New Mexico

Contractor Nielson Inc. Report By H. Kuebler Date 07/06/95

Subject Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. began to place Radon Attenuation
Cover in south cell. Western Technologies continued compaction testing in Borrow Pit #2.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
7-6/rgo:UNC031

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REVIEWED BY Thomas Kuebler



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Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

CLIENT UNC Mining & Milling
 Attn: Mr. Ed Morales
 PO Box 3077
 Gallup, NM 87305

DATE OF REPORT: 07/11/95

Superintendent

Cover in south cell. Western Technologies informed Nielson Inc. the west section of Borrow Pit #2 needed to be recompacted.

Comments:

Copies: Client (3), Billing (1), Field File (1).
7-7/rpq:UNC031

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450185

DATE OF REPORT: 07/12/95

Project 1995 Reclamation

Location Church Rock New Mexico

Contractor Nielson Inc. Report By H. Kuebler Date 07/10/95

Subject Testing/Observations Superintendent _____

Observations and Action Taken: Nielson Inc. continued to place Radon Attenuation
Cover in south cell. Compaction testing was to have happen in west section of Borrow Pit #2.
Swale C and Swale I, areas were not ready for compaction testing.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
7-10/rgo:UNC031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: **3145JB031**
LAB/INVOICE NO: **31450185**
DATE OF REPORT: **07/17/95**

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 07/11/95
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place R. A. C. in south cell and contour Swales C, H, and I. Moisture samples were taken along east end of south cell.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
7-11/rgo:UNC031

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REVIEWED BY Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450185
DATE OF REPORT: 07/17/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 07/12/95
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place R. A. C. in south cell and recompact Swales H, I, and C. Western Technologies informed UNC the gradation for D50 - 3.0 failed specifications, UNC informed Hamilton Brothers. Moisture samples were taken on R.A.C material from H line to I line in south cell.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
7-12/rgo:UNC031

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REVIEWED BY Thomas Prake



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450185

DATE OF REPORT: 07/17/95

Project 1995 Reclamation

Location Church Rock New Mexico

Contractor Nielson Inc. Report By H. Kuebler Date 07/13/95

Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place R. A. C. in south cell and begin to place .02 and .35 aggregate in Swale B. Western Technologies Inc. performed compaction tests in Swale H, I, and C.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
7-13/rgo:UNC031

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

REVIEWED BY

Thomas Drake

REPORT ON JOB SITE CONDITIONS

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450185

DATE OF REPORT: 07/18/95

Project 1995 Reclamation

Location Church Rock New Mexico

Contractor Nielson Inc. Report By H. Kuebler Date 07/17/95

Subject Testing/Observations Superintendent James Harris

| | |
|--------------------------------|--|
| Observations and Action Taken: | <u>Nielson Inc. continued placing RAC in south cell.</u> |
|--------------------------------|--|

Aggregate placement in Swale B continued. Western Technologies monitored aggregate placement.

Comments:

Copies: Client (3), Billing (1), Field File (1).
7-17/rqo:UNC031

The above services and report were performed pursuant to the terms and conditions of the contract, if any, between WI and client. WI 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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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450185
DATE OF REPORT: 07/19/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 07/18/95
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. placed .02 material in Swale B from Station 18 + 00 to Station 14 + 00. Thickness measurement indicated thickness met specification. Radon Attenuation Cover placement continued in south cell.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
7-18/rgo:UNC031

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REVIEWED BY

Thomas H. Hinkle

REPORT ON JOB SITE CONDITIONS

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450185

DATE OF REPORT: 07/21/95

Project 1995 Reclamation

Location Church Rock New Mexico

Contractor Nielson Inc. Report By Date 07/20/95

| | | | |
|---------|----------------------|----------------|--------------|
| Subject | Testing/Observations | Superintendent | James Harris |
|---------|----------------------|----------------|--------------|

Observations and Action Taken: Nielson Inc. continued to place .35 aggregate in Swale B. Measurements indicated .35 aggregate met thickness requirements. Nielson Inc. continued to place R.A.C. material in south cell.

Comments:

Copies: Client (3), Billing (1), Field File (1).
7-20/rqo:UNC031

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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No: **3145JB031**
Lab/Invoice No: **31450185**
Date of Report: **08/16/95**

Project **1995 Reclamation**

Location **Church Rock, New Mexico**

Contractor **Nielson's Inc.** Report By **H. Kuebler** Date **07/21/95**

Subject **Observations** Superintendent **James Harris**

Observations and Action Taken: **Nielson's Inc. did not work today.**

Western Technologies worked on paperwork and laboratory work.

Comments: _____

Copies: Client (3), Billing (1), Field File (1)
721/ha:unc031

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REVIEWED BY: 



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450185
DATE OF REPORT: 07/26/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 07/24/95
Subject Testing/Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. was performing cut and fill operations
in south end of west Control Channel. Aggregate placement continued in Swale C.

Measurements indicated that thickness did not meet job specifications. Nielson will rework
failing areas.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
7-24/rgo:UNC031

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REVIEWED BY

Thomas Kuebler



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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No: **3145JB031**
Lab/Invoice No: **31450185**
Date of Report: **07/27/95**

Project **1995 Reclamation**

Location **Church Rock, New Mexico**

Contractor **Nielson, Inc.**

Report By **H. Kuebler** Date **07/25/95**

Subject **Observations**

Superintendent

Observations and Action Taken: **Nielson, Inc. continued to place
aggregate bedding in Swale C and also continued to place RAC in the south cell.**

Comments:

Copies: Client (3), Billing (1), Field File (1)
725/dn:unc031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450185

DATE OF REPORT: 07/28/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 07/26/95
Subject Testing Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place aggregate bedding
in Swale C. Western Technologies Inc. performed a 3500 lb. sieve on D50 - 3.0 at Hamilton
Brothers yard.

Comments:

Copies: Client (3), Billing (1), Field File (1).
7-26/rgo:UNC031

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REVIEWED BY

Thomas Prohle

REPORT ON JOB SITE CONDITIONS

CLIENT UNC Mining & Milling
 Attn: Mr. Ed Morales
 PO Box 3077
 Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450185
DATE OF REPORT: 08/01/95

| | | | | | |
|------------|------------------------|----------------|--------------|------|----------|
| Project | 1995 Reclamation | | | | |
| Location | Church Rock New Mexico | | | | |
| Contractor | Nielson Inc. | Report By | H. Kuebler | Date | 07/27/95 |
| Subject | Testing | Superintendent | James Harris | | |

| | |
|---|---|
| Observations and Action Taken: | Nielson Inc. recompacted west section of Borrow |
| Pit #2. Western Technologies Inc. performed compaction testing in the area. | Nielson Inc. began |
| to place aggregate in Swale H. | |

Comments:

Copies: Client (3), Billing (1), Field File (1).
7-27/rqo:UNC031

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

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Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450185
DATE OF REPORT: 08/01/95

Project 1995 Reclamation
Location Church Rock New Mexico
Contractor Nielson Inc. Report By H. Kuebler Date 07/28/95
Subject Testing Superintendent James Harris

Observations and Action Taken: Nielson Inc. placed aggregate in Swale H & I.
Nielson Inc. continued placement of RAC south cell. Western Technologies Inc. done density
tests in south cell.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
7-28/rgo:UNC031

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REVIEWED BY

Thomas H. Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450185

DATE OF REPORT: 08/02/95

Project 1995 Reclamation

Location Church Rock New Mexico

Contractor Nielson Inc. Report By H. Kuebler Date 07/31/95

Subject Testing Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place aggregate in Swale H & I, processing RAC between A & C lines south cell and placed 1.5 aggregate mulch in Borrow Pit #2. Western Technologies monitored aggregate thickness in Swale H & I.

Comments:

Copies: Client (3), Billing (1), Field File (1).
7-31/rgo:UNC031

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Thomas Huake

REPORT ON JOB SITE CONDITIONS

CLIENT UNC Mining & Milling
 P.O. Box 3077
 Gallup, NM 87305
 Attn: Ed Morales

JOB NO: 3145JB031

LAB/INVOICE NO: 31450243

DATE OF REPORT: 08/07/95

Project 1995 Reclamation

Location Church Rock, New Mexico

Contractor Nielson Inc. Report By H. Kuebler Date 8/1/95

| | | | |
|---------|--------------------------|----------------|--------------|
| Subject | Testing and Observations | Superintendent | James Harris |
|---------|--------------------------|----------------|--------------|

| | |
|---|---|
| Observations and Action Taken: | Nielson Inc. placed D ⁵⁰ -1.5 aggregate in |
| Borrow Pit #2, reworked grid lined A to C in South Cell. Then placed .35 aggregate in Swale | |
| H & I. Western Technologies performed measurements in Swale H & I. W.T.I. also performed | |
| moisture contents between A & C lines. | |

Comments:

Copies: Client (3), Billing (1), Field File (1).
81/MK:UNC.031

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450243

DATE OF REPORT: 08/02/95

Project 1995 Reclamation

Location Church Rock, NM

Contractor Nielson Inc. Report By H. Kuebler Date 08/02/95

Subject Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to prepare grid lines
A to C.5 in South cell and West control ditch for densities tests. Rock mulch placement
for borrow pit #2 continued. Nielson Inc. rescheduled rock mulch thickness for 08/03/95.

Comments:

Copies: Client (3), Billing (1), Field File (1)
8.2\kb:UNC031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450243
DATE OF REPORT: 08/03/95

Project 1995 Reclamation

Location CHurch Rock, NM

Contractor Nielson Inc. Report By H. Kuebler Date 08/03/95

Subject Superintendent James Harris

Observations and Action Taken: Nielson Inc. continued to place D50-1.5 aggregate in South cell and repair West section in borrow pit #2. Western Technologies measured thickness of D50-1.5 aggregate in West section of borrow pit #2. Thickness appeared to have met job specifications.

Comments: _____

Copies: Client (3), Billing (1), Field File (1)
8.2\kb:UNC031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450243
DATE OF REPORT: 08/04/95

Project 1995 Reclamation

Location Church Rock, NM

Contractor Nielson Inc.

Report By

H. Kuebler

Date

08/04/95

Subject

Superintendent

James Harris

Observations and Action Taken:
in South cell.

Nielson Inc. continued to place D50-1.5 aggregate

Comments:

Copies: Client (3), Billing (1), Field File (1)
8.2\kb:UNC031

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REVIEWED BY

Thomas Kuebler



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
P.O. Box 3077
Gallup, NM 87305
Attn: Ed Morales

JOB NO: 3145JB031

LAB/INVOICE NO: 31450243

DATE OF REPORT: 08/10/95

Project 1995 Reclamation

Location Church Rock, New Mexico

Contractor Nielson Inc. Report By H. Kuebler Date 8/8/95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson Inc. began to place .02 sand in north runoff ditch. Existing surface grade is weathered sandstone and shale. No density test can be performed. Nielson Inc. continued to place D⁵⁰- 1.5 aggregate in the south cell.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
88/MK:UNC.031

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REVIEWED BY

Thomas Hinkle



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
P.O. Box 3077
Gallup, NM 87305
Attn: Ed Morales

JOB NO: 3145JB031

LAB/INVOICE NO: 31450243

DATE OF REPORT: 08/16/95

Project 1995 Reclamation

Location Church Rock, New Mexico

Contractor Nielson's Inc. Report By H. Kuebler Date 8/9/95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. continued to place D⁵⁰-1.5 aggregate in the south cell. Nielson's Inc. crew were removing plugs in swale C and I.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
89/ha:UNC.031

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
P.O. Box 3077
Gallup, NM 87305
Attn: Ed Morales

JOB NO: 3145JB031

LAB/INVOICE NO: 31450243

DATE OF REPORT: 08/16/95

Project 1995 Reclamation

Location Church Rock, New Mexico

Contractor Nielson's Inc. Report By H. Kuebler Date 8/10/95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Larry Bush, UNC stated soil cover on top
D⁵⁰-1.5 aggregate was a minimum of 3" no maximum thickness was required. I informed
James Harris, Larry Bush, that I was not going to be on the site Monday 8-14-95. They
stated no replacement technician was needed. Nielson's Inc. continued to place D⁵⁰1.5
aggregate in south cell. Thickness measurement occurred during the course of the day.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
810/ha:UNC.031

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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client **UNC Mining & Milling**
PO Box 3077
Gallup, NM 87305
Attn: Ed Morales

Job No: **3145JB031**
Lab/Invoice No: **31450243**
Date of Report: **8-18-95**

Project **1995 Reclamation**

Location **Church Rock, NM**

Contractor **Nielson's Inc.** Report By **H. Kuebler** Date **8-14-95**

Subject **Testing and Observations** Superintendent **James Harris**

Observations and Action Taken: Western Technologies did not work today.
Nielson's Inc. was rained out.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
814\ha:UNC031

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REVIEWED BY *James Harris*



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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client **UNC Mining & Milling**
PO Box 3077
Gallup, NM 87305
Attn: Ed Morales

Job No: 3145JB031

Lab/Invoice No: 31450243

Date of Report: 8-18-95

Project 1995 Reclamation

Location Church Rock, NM

Contractor Nielson's Inc. Report By H. Kuebler Date 8-15-95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Western Technologies worked paperwork.

Nielson's Inc. pumped out water from swales from previous nights rain.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
815\ha:UNC031

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REVIEWED BY *Chris McEl...*



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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

Client UNC Mining & Milling
PO Box 3077
Gallup, NM 87305
Attn: Ed Morales

Job No: 3145JB031
Lab/Invoice No: 31450243
Date of Report: 8-23-95

Project 1995 Reclamation

Location Church Rock, NM

Contractor Nielson's Inc. Report By H. Kuebler Date 8-16-95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. repaired areas of site that
were eroded from previous rains. Western Technologies and UNC visited Hamilton Brothers
to observe D⁵⁰-9 inch crushing operation.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
816\ha:UNC031

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REVIEWED BY *Chris T. McHugh*



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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

| | | | |
|------------|---|-----------------|-------------------------|
| Client | UNC Mining & Milling PO Box 3077 Gallup, NM 87305 Attn: Ed Morales | Job No: | 3145JB031 |
| | | Lab/Invoice No: | 31450243 |
| | | Date of Report: | 8-23-95 |
| Project | 1995 Reclamation | | |
| Location | Church Rock, NM | | |
| Contractor | Nielson's Inc. | Report By | H. Kuebler Date 8-21-95 |
| Subject | Testing and Observations | Superintendent | James Harris |

| | |
|--------------------------------|--|
| Observations and Action Taken: | Nielson's Inc. was rained out. Western |
| Technologies developed report. | |

Comments:

Copies: Client (3), Billing (1), Field File (1).
821\ha:UNC031

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450243
DATE OF REPORT: 8-29-95

Project 1995 Reclamation
Location Church Rock, NM
Contractor Nielson's Inc. Report By H. Kuebler Date 8-22-95
Subject Project Specifications Superintendent James Harris

Observations and Action Taken: Job site shut down until 8-28-95 due to rain
and muddy conditions. Western Technologies will be working on reports.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
822\ha:UNC031

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REVIEWED BY

Ante M. X. [Signature]



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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

| | | | |
|------------|---|-----------------|-------------------------|
| Client | UNC Mining & Milling PO Box 3077 Gallup, NM 87305 Attn: Ed Morales | Job No: | 3145JB031 |
| | | Lab/Invoice No: | 31450243 |
| | | Date of Report: | 9-6-95 |
| Project | 1995 Reclamation | | |
| Location | Church Rock, NM | | |
| Contractor | Nielson's Inc. | Report By | H. Kuebler Date 8-28-95 |
| Subject | Testing and Observations | Superintendent | James Harris |

Observations and Action Taken: Previous weekend rain prevented Nielson's Inc. from working on site. Western Technologies performed laboratory testing.
Nielson's Inc. pumped water from south cell.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
828\ha:UNC031

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REVIEWED BY: Chris McHenry



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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

| | | | |
|------------|---|-----------------|-------------------------|
| Client | UNC Mining & Milling PO Box 3077 Gallup, NM 87305 Attn: Ed Morales | Job No: | 3145JB031 |
| | | Lab/Invoice No: | 31450243 |
| | | Date of Report: | 9-1-95 |
| Project | 1995 Reclamation | | |
| Location | Church Rock, NM | | |
| Contractor | Nielson's Inc. | Report By | H. Kuebler Date 8-29-95 |
| Subject | Testing and Observations | Superintendent | James Harris |

Observations and Action Taken: Site condition still muddy. Nielson's Inc.
did not work today. Western Technologies performed laboratory tests (Sieves & PI).
I discussed with Ed Morales how many scoring results on aggregate was needed per
aggregate class. Mr. Morales stated three scores. I had stockpiled samples from
earlier Sieve samples and I will submit to Farmington for scoring tests.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
829\ha:UNC031

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REVIEWED BY Chris D. Harris



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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

| | | | |
|------------|-------------------------|-----------------|--------------------------|
| Client | UNC Mining & Milling | Job No: | 3145JB031 |
| | Attn: Mr. Ed Morales | Lab/Invoice No: | 31450243 |
| | PO Box 3077 | Date of Report: | 08/30/95 |
| | Gallup, NM 87305 | | |
| Project | 1995 Reclamation | | |
| Location | Church Rock, New Mexico | | |
| Contractor | Nielson Inc. | Report By | H. Kuebler Date 08/30/95 |
| Subject | Observations, testing | Superintendent | James Harris |

Observations and Action Taken: Western Technologies worked on laboratory tests for four (4) hours in the Gallup Office. Nielson Inc. continued to excavate diversion channel in south cell.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
830/dn:unc031

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REVIEWED BY _____



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LABORATORY REPORT

REVIEW OF JOBSITE CONDITIONS

| | | | |
|------------|---|-----------------|-------------------------|
| Client | UNC Mining & Milling PO Box 3077 Gallup, NM 87305 Attn: Ed Morales | Job No: | 3145JB031 |
| | | Lab/Invoice No: | 31450243 |
| | | Date of Report: | 9-6-95 |
| Project | 1995 Reclamation | | |
| Location | Church Rock, NM | | |
| Contractor | Nielson's Inc. | Report By | H. Kuebler Date 8-31-95 |
| Subject | Testing and Observations | Superintendent | James Harris |

Observations and Action Taken: Nielson's Inc. placed D⁵⁰-1.5 aggregate
along west section of south cell and continued to excavate Diversion Channel. WTI
checked thickness of D⁵⁰-1.5 along west section of south cell.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
831\ha:UNC031

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REVIEWED BY: Christine M. Henry



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450292
DATE OF REPORT: 9-11-95

Project 1995 Reclamation
Location Church Rock, NM
Contractor Nielson's Inc. Report By H.K. Date 9-5-95
Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. repaired areas in swales where
previous rains had eroded .02 sand. Nielson's Inc. placed additional soil on D⁵⁰-1.5
aggregate mulch in Borrow Pit #2 where low elevations to prevent "ponding".

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
95\ha:UNC031

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450292
DATE OF REPORT: 9-11-95

Project 1995 Reclamation
Location Church Rock, NM
Contractor Nielson's Inc. Report By H.K. Date 9-6-95
Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. continued to place D⁵⁰-1.5 aggregate in south cell. Western Technologies performed thickness measurement between A and D line south cell.

Comments:

Copies: Client (3), Billing (1), Field File (1).
96\ha:UNC031

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REVIEWED BY:

[Signature]

REPORT ON JOB SITE CONDITIONS

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450292
DATE OF REPORT: 9-14-95

| | | | | |
|------------|--------------------------|----------------|--------------|--------------|
| Project | 1995 Reclamation | | | |
| Location | Church Rock, NM | | | |
| Contractor | Nielson's Inc. | Report By | | Date 9-11-95 |
| Subject | Testing and Observations | Superintendent | James Harris | |

| | |
|--------------------------------|--|
| Observations and Action Taken: | Nielson's Inc. continued to place D ⁵⁰ -.02 and D ⁵⁰ 1.5 aggregate in south cell control ditch. Western Technologies measurement thickness of D ⁵⁰ -1.5 in North of North cell and D ⁵⁰ -.02 sand in South cell control ditch. |
|--------------------------------|--|

Comments:

Copies: Client (3), Billing (1), Field File (1).
911\ha:UNC031

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REVIEWED BY



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450298

DATE OF REPORT: 9-14-95

Project 1995 Reclamation

Location Church Rock, NM

Contractor Nielson's Inc. Report By HK Date 9-12-95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. continued placement of D⁵⁰-.02
and D⁵⁰1.5 aggregate in south cell control ditch. Western Technologies monitored
thickness.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
912\ha:UNC031

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

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450292
DATE OF REPORT: 9-18-95

Project 1995 Reclamation
Location Church Rock, NM
Contractor Nielson's Inc. Report By HK Date 9-13-95
Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. continued placement of D⁵⁰-.02
and D⁵⁰1.5 aggregate in south cell control channel. Western Technologies monitored
thickness on soil placed on south cell D⁵⁰-1.5 aggregate.

Comments:

Copies: Client (3), Billing (1), Field File (1).
913\ha:UNC031

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031
LAB/INVOICE NO: 31450292
DATE OF REPORT: 9-18-95

Project 1995 Reclamation
Location Church Rock, NM
Contractor Nielson's Inc. Report By HK Date 9-14-95
Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. continued place aggregate in south cell west control ditch. Hamilton Brothers began to manufacture D⁵⁰-9" MPRAP. A sieve sample was done by WTI. Material is in specifications.

Comments:

Copies: Client (3), Billing (1), Field File (1).
914\ha:UNC031

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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450292

DATE OF REPORT: 9-25-95

Project 1995 Reclamation

Location Church Rock, NM

Contractor Nielson's Inc. Report By HK Date 9-22-95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. did not work today. WTI and
UNC wrote a punch list to finish project.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
922\ha:UNC031

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REVIEWED BY Robert M. Harris



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450292

DATE OF REPORT: 9-28-95

Project 1995 Reclamation

Location Church Rock, NM

Contractor Nielson's Inc. Report By HK Date 9-25-95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. repaired areas on punch list.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
925\ha:UNC031

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REVIEWED BY Chris McLaughlin



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450292

DATE OF REPORT: 9-28-95

Project 1995 Reclamation

Location Church Rock, NM

Contractor Nielson's Inc. Report By HK Date 9-26-95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Nielson's Inc. didn't work today. WTI
checked repairs on punch list and traveled to Hamilton Brothers to do sieve analysis
however, Hamilton Brothers was not ready.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
926\ha:UNC031

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REVIEWED BY: Christina M. Henry



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**REPORT ON
JOB SITE CONDITIONS**

CLIENT **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

JOB NO: 3145JB031

LAB/INVOICE NO: 31450292

DATE OF REPORT: 9-28-95

Project 1995 Reclamation

Location Church Rock, NM

Contractor Nielson's Inc. Report By HK Date 9-27-95

Subject Testing and Observations Superintendent James Harris

Observations and Action Taken: Job complete. Western Technologies did

D-50-9 inch sieve.

Comments: _____

Copies: Client (3), Billing (1), Field File (1).
927\ha:UNC031

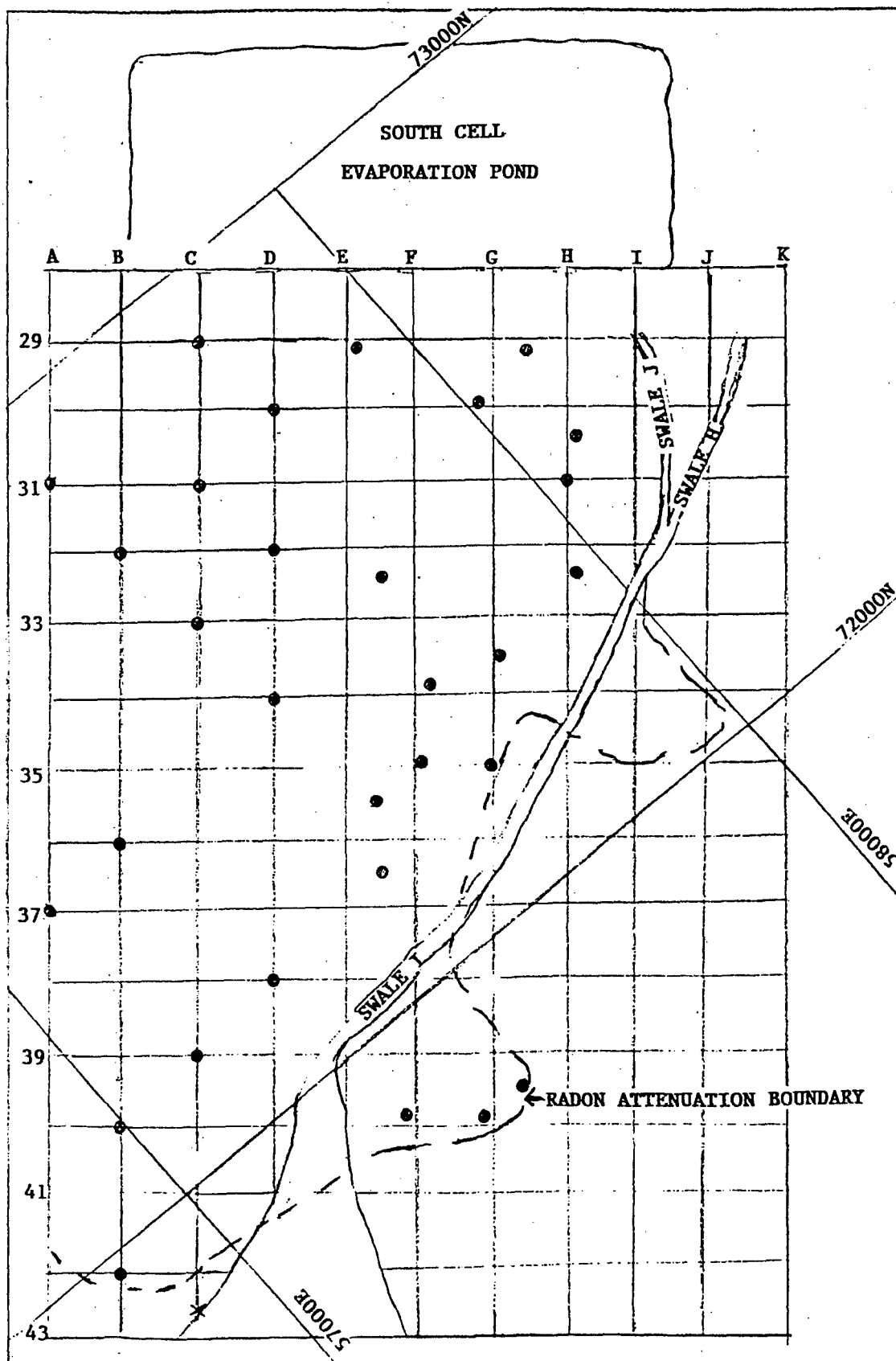
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**APPENDIX
B**

APPENDIX B

PHYSICAL PROPERTIES OF SOILS, RADON ATTENUATION COVER



SIEVE LOCATION SOUTH CELL

UNITED NUCLEAR CORPORATION 1995 RECLAMATION**WT JOB NO. 3145JB031****TEST SUMMARY FOR RADON ATTENUATION MATERIAL****DATE OF REPORT 12/07/95****SOUTH CELL**

| DATE | SAMPLE LOCATION | % PASS 3/4" SPEC. 95-100% | % PASS #4 SPEC. 90-100% | % PASS #10 SPEC. 85-100% | % PASS #40 SPEC. 65-100% | % PASS 100 SPEC. 50-100% | % PASS 200 SPEC. 40-85% | PLASTICITY INDEX | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|----------------------------------|---------------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|---------------------|-----------------------|-----------------------|
| 03/02/95 | S. of S. Cell Borrow Area | 100 | 100 | 99 | 95 | 77 | 51.0 | 7 | CL | Yes |
| 03/02/95 | Center of S. Cell Borrow Area | 100 | 99 | 97 | 90 | 71 | 41.0 | 7 | CL | Yes |
| 03/02/95 | N. of S. Cell Borrow Area | 100 | 96 | 92 | 86 | 77 | 63.0 | 14 | CL | Yes |
| 07/13/95 | F.8 + 39.8 | 100 | 94 | 90 | 85 | 52 | 40.3 | 11 | CL | Yes |
| 07/13/95 | H.2 + 30.4 | 99 | 98 | 97 | 88 | 63 | 51.2 | 29 | CL | Yes |
| 07/18/95 | C + 39 | 100 | 95 | 93 | 87 | 60 | 43.8 | 3 | SM | Yes |
| 07/18/95 | G.3 + 33.4 | 100 | 100 | 95 | 93 | 78 | 58.7 | 11 | CL | Yes |
| 07/18/95 | F.9 + 29.7 | 100 | 100 | 96 | 94 | 80 | 57.2 | 11 | CL | Yes |
| 07/18/95 | G.5 + 29.2 | 100 | 99 | 98 | 96 | 81 | 57.1 | 13 | CL | Yes |
| 07/18/95 | F.1 + 34.9 | 100 | 100 | 98 | 96 | 80 | 56.1 | 12 | CL | Yes |
| 07/18/95 | E.3 + 29.2 | 100 | 95 | 94 | 91 | 76 | 54.0 | 10 | CL | Yes |
| 07/18/95 | E.5 + 32.5 | 100 | 98 | 96 | 93 | 75 | 52.4 | 13 | CL | Yes |

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR RADON ATTENUATION MATERIAL

DATE OF REPORT 12/07/95

SOUTH CELL

| DATE | SAMPLE LOCATION | % PASS 3/4" SPEC. 95-100% | % PASS #4 SPEC. 90-100% | % PASS #10 SPEC. 85-100% | % PASS #40 SPEC. 65-100% | % PASS 100 SPEC. 50-100% | % PASS 200 SPEC. 40-85% | PLASTICITY INDEX | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|-----------------|---------------------------------|-------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|---------------------|-----------------------|-----------------------|
| 07/19/95 | E.5 + 36 | 100 | 97 | 95 | 91 | 75 | 47.5 | 4 | CL | Yes |
| 07/19/95 | E.8 + 39.8 | 100 | 95 | 93 | 83 | 73 | 48.6 | 12 | CL | Yes |
| 07/19/95 | G.5 + 39.5 | 100 | 97 | 95 | 92 | 65 | 53.1 | 11 | CL | Yes |
| 07/21/95 | D + 34 | 100 | 98 | 97 | 85 | 72 | 58.6 | 17 | CL | Yes |
| 07/27/95 | C + 33 | 100 | 98 | 96 | 93 | 80 | 53.4 | 10 | CL | Yes |
| 07/27/95 | C + 29 | 100 | 95 | 94 | 92 | 61 | 39.8 | 2 | ML | Yes |
| 07/29/95 | C + 31 | 99 | 930 | 91 | 88 | 59 | 46.0 | 16 | CL | Yes |
| 07/95 | H + 31 | 100 | 100 | 97 | 95 | 74 | 55.9 | 14 | CL | Yes |
| 07/95 | H.2 + 32.3 | 100 | 99 | 98 | 96 | 83 | 61.8 | 20 | CL | Yes |
| 07/95 | A + 31 | 100 | 98 | 96 | 93 | 73 | 56.8 | 11 | CL | Yes |
| 07/95 | G + 35 | 100 | 99 | 96 | 94 | 79 | 55.9 | 7 | CL | Yes |
| 07/95 | C + 43 | 100 | 92 | 91 | 84 | 48 | 43.3 | NP | SM | Yes |

cb/1995.UNC/7

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

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR RADON ATTENUATION MATERIAL

DATE OF REPORT 12/07/95

SOUTH CELL

| DATE | SAMPLE LOCATION | % PASS 3/4" SPEC. 95-100% | % PASS #4 SPEC. 90-100% | % PASS #10 SPEC. 85-100% | % PASS #40 SPEC. 65-100% | % PASS 100 SPEC. 50-100% | % PASS 200 SPEC. 40-85% | PLASTICITY INDEX | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|-----------------|------------------------------|----------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------|------------------|-----------------|--------------------|
| 07/95 | A + 37 | 96 | 92 | 90 | 84 | 48 | 41.7 | NP | SM | Yes |
| 07/95 | D + 38 | 100 | 97 | 94 | 90 | 66 | 53.2 | 15 | CL | Yes |
| 07/95 | D + 30 | 100 | 100 | 94 | 91 | 69 | 47.0 | NP | SM | Yes |
| 07/95 | D + 32 | 100 | 98 | 96 | 93 | 76 | 51.0 | 10 | CL | Yes |
| 07/95 | B + 32 | 100 | 96 | 92 | 86 | 68 | 47.3 | 10 | CL | Yes |
| 07/95 | B + 42 | 100 | 94 | 89 | 78 | 54 | 40.2 | NP | SM | Yes |
| 07/95 | B + 38 | 96 | 87 | 85 | 78 | 53 | 40.3 | NP | SM | Yes |
| 09/01/95 | F.2+33.8 | 100 | 98 | 97 | 95 | 80 | 56.0 | 7 | CL | Yes |
| 09/30/95 | B + 36 | 100 | 95 | 92 | 89 | 63 | 42.3 | 4 | ML-CL | Yes |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

cb/1995.UNC/B

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



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy/silty Clay

Sampled By: H. Kuebler Date 03/02/95

Source: S of S cell, borrow area

Submitted By: H. Kuebler Date 03/02/95

Authorized By: Client Date 03/02/95

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" | | |
| 3/8" | | |
| 1/4" | 100 | |
| No. 4 | 100 | 90-100 |
| 8 | 99 | |
| 10 | 99 | 85-100 |
| 16 | 98 | |
| 30 | 96 | |
| 40 | 95 | 65-100 |
| 50 | 93 | |
| 100 | 77 | 50-100 |
| 200 | 51 | 40-85 |

Plasticity Index, ASTM D4318

Liquid Limit 27

Plasticity Index 7

Copies: Client (3), Billing (1), Field File (1)
1:unc.031

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REVIEWED BY

Thomas Hush



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty/clay Sand

Sampled By: H. Kuebler Date 03/02/95

Source: Center of S cell, borrow area

Submitted By: H. Kuebler Date 03/02/95

Authorized By: Client Date 03/02/95

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" | | |
| 3/8" | 100 | |
| 1/4" | | |
| No. 4 | 99 | 90-100 |
| 8 | 97 | |
| 10 | 97 | 85-100 |
| 16 | 94 | |
| 30 | 91 | |
| 40 | 90 | 65-100 |
| 50 | 88 | |
| 100 | 71 | 50-100 |
| 200 | 41.0 | 40-85 |

Plasticity Index, ASTM D4318

Liquid Limit 25

Plasticity Index 7

Copies: Client (3), Billing (1), Field File (1)
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REVIEWED BY

Thomas Morales



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay

Sampled By: H. Kuebler /WT Date 03/02/95

Source: N of S Cell, Borrow Area

Submitted By: H. Kuebler /WT Date 03/02/95

Authorized By: Client Date 03/02/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 15" | 100 | 100 |
| 10" | 88 | 45 - 58 |
| 5" | 35 | 10 - 33 |
| 3" | 2.4 | 0 - 23 |
| 3/4" | 100 | 95 - 100 |
| 1/2" | 99 | |
| 3/8" | 98 | |
| 1/4" | --- | |
| No. 4 | 96 | 90 - 100 |
| 8 | 93 | |
| 10 | 92 | 85 - 100 |
| 16 | 90 | |
| 30 | 87 | |
| 40 | 86 | 65 - 100 |
| 50 | 84 | |
| 100 | 77 | 50 - 100 |
| 200 | 63.0 | 40 - 85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit 34

Plasticity Index 14

Copies: Client (3), Billing (1), Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay

Sampled By: C.P. & H.K. Date 07/13/95

Source: F.8 + 39.8 72820N & 57370E

Submitted By: C. Padilla Date 07/14/95

Elevation 6957.0

Authorized By: Client Date 07/13/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | 100 | |
| 3/4" | 100 | 95-100 |
| 1/2" | 98 | |
| 3/8" | 97 | |
| 1/4" | | |
| No. 4 | 94 | 90-100 |
| 8 | 91 | |
| 10 | 90 | 85-100 |
| 16 | 88 | |
| 30 | 86 | |
| 40 | 85 | 65-100 |
| 50 | 83 | |
| 100 | 52 | 50-100 |
| 200 | 40.3 | 40-85 |

Plasticity Index, ASTM D4318

Liquid Limit 30

Plasticity Index 11

Copies: Client (3), Billing (1), Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Silty Clay

Sampled By: C.P. & H.K. Date 07/13/95

Source: (H.2 + 30.4) 72450N & 58070E

Submitted By: C. Padilla Date 07/14/95

Elevation 6953.1

Authorized By: Client Date 07/13/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | 100 | |
| 3/4" | 99 | 95-100 |
| 1/2" | 99 | |
| 3/8" | 99 | |
| 1/4" | | |
| No. 4 | 98 | 90-100 |
| 8 | 97 | |
| 10 | 97 | 85-100 |
| 16 | 95 | |
| 30 | 92 | |
| 40 | 88 | 65-100 |
| 50 | 83 | |
| 100 | 63 | 50-100 |
| 200 | 21.5 | 40-85 |

Plasticity Index, ASTM D4318

Liquid Limit 34

Plasticity Index 29

Copies: Client (3), Billing (1), Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450292

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H.K./WT Date 7-18-95

Source: C+39

Submitted By: H.K./WT Date 7-18-95

72150 N and 57130 E Elev. 6952.2

Authorized By: Client Date 7-18-95

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" | 99 | |
| 3/8" | 98 | |
| 1/4" | | |
| No. 4 | 95 | 90-100 |
| 8 | 93 | |
| 10 | 93 | 85-100 |
| 16 | 92 | |
| 30 | 90 | |
| 40 | 87 | 65-100 |
| 50 | 82 | |
| 100 | 60 | 50-100 |
| 200 | 43.8 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 20

Plasticity Index 3

Copies: Client (3), Billing (1), Field File (1).
8\ha:UNC031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 12/08/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H. Kuebler/WT Date 07/18/95

Source: G.3+33.4, 72320N & 57830E

Submitted By: H. Kuebler/WT Date 07/18/95

Elev. 6950.9

Authorized By: Client Date 07/18/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | | |
| 2" | | |
| 1 1/2" | | |
| 1" | | |
| 3/4" | 100 | 95-100 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 100 | 90-100 |
| 8 | 95 | |
| 10 | 95 | 85-100 |
| 16 | 94 | |
| 30 | 93 | |
| 40 | 93 | 65-100 |
| 50 | 92 | |
| 100 | 78 | 50-100 |
| 200 | 58.7 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit 30

Plasticity Index 11

Copies: Client (3), Billing (1) Field File (1)
10.1/cb:UNC.031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450292

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT Date 7-18-95

Source: F-9+29.7

Submitted By: H.K./WT Date 7-18-95

72630 N and 57950 E Elev. 6951.6

Authorized By: Client Date 7-18-95

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" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 100 | 90-100 |
| 8 | 97 | |
| 10 | 96 | 85-100 |
| 16 | 96 | |
| 30 | 94 | |
| 40 | 94 | 65-100 |
| 50 | 93 | |
| 100 | 80 | 50-100 |
| 200 | 57.2 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 28

Plasticity Index 11

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

1.10ha:UNC031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450292

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT Date 7-18-95

Source: G.5+29.2

Submitted By: H.K./WT Date 7-18-95

72580 N and 58100 E Elev. 6952.8

Authorized By: Client Date 7-18-95

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" | 99 | |
| 1/4" | | |
| No. 4 | 99 | 90-100 |
| 8 | 98 | |
| 10 | 98 | 85-100 |
| 16 | 98 | |
| 30 | 97 | |
| 40 | 96 | 65-100 |
| 50 | 95 | |
| 100 | 81 | 50-100 |
| 200 | 57.1 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

| | |
|--------------------------|----|
| Maximum Dry Density, pcf | NA |
| Optimum Moisture, % | NA |

Plasticity Index, ASTM D4318

| | |
|------------------|----|
| Liquid Limit | 28 |
| Plasticity Index | 13 |

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450292

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT

Date 7-18-95

Source: F-1+34.9

Submitted By: H.K./WT

Date 7-18-95

72250 N and 57620 E Elev. 6951.5

Authorized By: Client

Date 7-18-95

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" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 100 | 90-100 |
| 8 | 98 | |
| 10 | 98 | 85-100 |
| 16 | 97 | |
| 30 | 96 | |
| 40 | 96 | 65-100 |
| 50 | 95 | |
| 100 | 80 | 50-100 |
| 200 | 56.1 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 28

Plasticity Index 12

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

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-15-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Clay

Sampled By: H.K./WT Date 7-18-95

Source: E 0.3+29.2

Submitted By: H.K./WT Date 7-18-95

72800 N and 57930 E Elev. 6951.5

Authorized By: Client Date 7-18-95

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 | 76 | 50-100 |
| 200 | 54.0 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 30

Plasticity Index 10

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-15-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Clay Sampled By: H.K./WT Date: 7-18-95

Source: E 0.5+32.5 Submitted By: H.K./WT Date: 7-18-95

72530 N and 57740 E Elev. 6950.8 Authorized By: Client Date: 7-18-95

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" | 99 | |
| 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 | 75 | 50-100 |
| 200 | 52.4 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 32

Plasticity Index 13

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-15-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Clay

Sampled By: H.K./WT Date 7-19-95

Source: E 0.5+36

Submitted By: H.K./WT Date 7-19-95

72230 N and 57480 E Elev. 6951.4

Authorized By: Client Date 7-19-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | | 95-100 |
| 1/2" | 100 | |
| 3/8" | 99 | |
| 1/4" | | |
| No. 4 | 97 | 90-100 |
| 8 | 95 | |
| 10 | 95 | 85-100 |
| 16 | 94 | |
| 30 | 92 | |
| 40 | 91 | 65-100 |
| 50 | 90 | |
| 100 | 75 | 50-100 |
| 200 | 47.5 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 26

Plasticity Index 4

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File: UNC031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 10-9-95

Project: 1995 Reclamation

Revised 11-14-95

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT Date 7-19-95

Source: E 0.8+39.8

Submitted By: H.K./WT Date 7-19-95

72900 N and 57300 E Elev. 6952.7

Authorized By: Client Date 7-19-95

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" | 99 | |
| 3/8" | 99 | |
| 1/4" | | |
| No. 4 | 95 | 90-100 |
| 8 | 94 | |
| 10 | 93 | 85-100 |
| 16 | 91 | |
| 30 | 85 | |
| 40 | 83 | 65-100 |
| 50 | 82 | |
| 100 | 73 | 50-100 |
| 200 | 48.6 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 28

Plasticity Index 12

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-15-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Clay

Sampled By: H.K./WT

Date 7-19-95

Source: G.5 + 39.5 Elev. 6957.8

Submitted By: H.K./WT

Date 7-19-95

71820 N and 57410 E

Authorized By: Client

Date 7-19-95

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" | 99 | |
| 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 | 65 | 50-100 |
| 200 | 53.1 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf

NA

Optimum Moisture, %

NA

Plasticity Index, ASTM D4318

Liquid Limit

28

Plasticity Index

11

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Silty Clay

Sampled By: C.P. & H.K. Date 07/21/95

Source: (D + 34) 72410N & 57320E

Submitted By: C. Padilla Date 07/21/95

Elevation 6950.3

Authorized By: Client Date 07/21/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | 100 | |
| 3/4" | 100 | 95-100 |
| 1/2" | 100 | |
| 3/8" | 99 | |
| 1/4" | | |
| No. 4 | 98 | 90-100 |
| 8 | 98 | |
| 10 | 97 | 85-100 |
| 16 | 95 | |
| 30 | 93 | |
| 40 | 85 | 65-100 |
| 50 | 82 | |
| 100 | 72 | 50-100 |
| 200 | 58.6 | 40-85 |

Plasticity Index, ASTM D4318

Liquid Limit 24

Plasticity Index 17

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay

Sampled By: C. Padilla Date 07/27/95

Source: (C + 33) 72430N & 57400E

Submitted By: C. Padilla Date 07/27/95

Elevation 6951.2

Authorized By: Client Date 07/27/95

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" | | |
| 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 | 92 | |
| 100 | 80 | 50-100 |
| 200 | 53.4 | 40-85 |

Plasticity Index, ASTM D4318

Liquid Limit 25

Plasticity Index 10

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PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Silt

Sampled By: C. Padilla Date 07/27/95

Source: (C + 29) 72880N & 57780E

Submitted By: C. Padilla Date 07/27/95

Elevation 6955.8

Authorized By: Client Date 07/27/95

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 | 94 | |
| 30 | 92 | |
| 40 | 92 | 65-100 |
| 50 | 90 | |
| 100 | 61 | 50-100 |
| 200 | 39.8 | 40-85 |

Plasticity Index, ASTM D4318

| | |
|------------------|----|
| Liquid Limit | 20 |
| Plasticity Index | 2 |

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 10/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay

Sampled By: C. Padilla Date 07/28/95

Source: (C + 31) 72730N & 57650E

Submitted By: C. Padilla Date 07/29/95

Elevation 6952.6

Authorized By: Client Date 07/27/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | 100 | |
| 3/4" | 99 | 95-100 |
| 1/2" | 95 | |
| 3/8" | 94 | |
| 1/4" | | |
| No. 4 | 93 | 90-100 |
| 8 | 91 | |
| 10 | 91 | 85-100 |
| 16 | 90 | |
| 30 | 89 | |
| 40 | 88 | 65-100 |
| 50 | 87 | |
| 100 | 59 | 50-100 |
| 200 | 46.0 | 40-85 |

Plasticity Index, ASTM D4318

| | |
|------------------|----|
| Liquid Limit | 26 |
| Plasticity Index | 16 |

Copies: Client (3), Billing (1), Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT Date 7-95

Source: (H+31) 72420 N & 58040 E

Submitted By: H.K./WT Date 7-95

Elev. 6951.7

Authorized By: Client Date 7-95

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" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | | 90-100 |
| 8 | 97 | |
| 10 | 97 | 85-100 |
| 16 | 96 | |
| 30 | 95 | |
| 40 | 95 | 65-100 |
| 50 | 94 | |
| 100 | 74 | 50-100 |
| 200 | 55.9 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

| | |
|--------------------------|----|
| Maximum Dry Density, pcf | NA |
| Optimum Moisture, % | NA |

Plasticity Index, ASTM D4318

| | |
|------------------|----|
| Liquid Limit | 30 |
| Plasticity Index | 14 |

Copies: Client (3), Billing (1), Field File (1).
75.5vha:UN031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT Date 7-95

Source: (H.2+32.3) 72230 N & 57980 E

Submitted By: H.K./WT Date 7-95

Elev. 6951.7

Authorized By: Client Date 7-95

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" | | |
| 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 | 83 | 50-100 |
| 200 | 61.8 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 31

Plasticity Index 20

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay

Sampled By: H. Kuebler /WT Date July 1995

Source: (A + 31), 72900N & 57500E

Submitted By: H. Kuebler /WT Date July 1995

Elevation 6956.2

Authorized By: Client Date July 1995

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" | --- | |
| 3/8" | 99 | |
| 1/4" | --- | |
| No. 4 | 98 | 90 - 100 |
| 8 | 97 | |
| 10 | 96 | 85 - 100 |
| 16 | 96 | |
| 30 | 94 | |
| 40 | 93 | 65 - 100 |
| 50 | 92 | |
| 100 | 73 | 50 - 100 |
| 200 | 56.8 | 40 - 85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit 26

Plasticity Index 11

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Clayey Sand

Sampled By: H.K./WT Date 7-95

Source: (A+35) 72580 N & 57290 E

Submitted By: H.K./WT Date 7-95

Elev. 6956.2

Authorized By: Client Date 7-95

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" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 98 | 90-100 |
| 8 | 96 | |
| 10 | 96 | 85-100 |
| 16 | 95 | |
| 30 | 92 | |
| 40 | 82 | 65-100 |
| 50 | 67 | |
| 100 | 44 | 50-100 |
| 200 | 37.7 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 19

Plasticity Index 6

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Silty Clay

Sampled By: H.K./WT Date 7-95

Source: (G+35) 71800 N & 57600 E

Submitted By: H.K./WT Date 7-95

Elev. 6952.3

Authorized By: Client Date 7-95

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" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 99 | 90-100 |
| 8 | 97 | |
| 10 | 96 | 85-100 |
| 16 | 95 | |
| 30 | 94 | |
| 40 | 94 | 65-100 |
| 50 | 93 | |
| 100 | 79 | 50-100 |
| 200 | 55.9 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

| | |
|--------------------------|----|
| Maximum Dry Density, pcf | NA |
| Optimum Moisture, % | NA |

Plasticity Index, ASTM D4318

| | |
|------------------|----|
| Liquid Limit | 25 |
| Plasticity Index | 7 |

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450415

Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Silty Sand

Sampled By: H. Kuebler /WT Date July 1995

Source: UNC C + 43, 71840N & 56880E
Elevation 6955.7

Submitted By: H. Kuebler /WT Date July 1995

Authorized By: Client Date July 1995

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" | 95 | |
| 1/4" | --- | |
| No. 4 | 92 | 90 - 100 |
| 8 | 91 | |
| 10 | 91 | 85 - 100 |
| 16 | 89 | |
| 30 | 87 | |
| 40 | 84 | 65 - 100 |
| 50 | 77 | |
| 100 | 48 | 50 - 100 |
| 200 | 43.3 | 40 - 85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit NV

Plasticity Index NP

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Silty Sand

Sampled By: H. Kuebler /WT Date July 1995

Source: (A + 37), 72410N & 57110E

Submitted By: H. Kuebler /WT Date July 1995

Elevation 6956.4

Authorized By: Client Date July 1995

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 96 | 95 - 100 |
| 1/2" | 95 | |
| 3/8" | 95 | |
| 1/4" | --- | |
| No. 4 | 92 | 90 - 100 |
| 8 | 91 | |
| 10 | 90 | 85 - 100 |
| 16 | 89 | |
| 30 | 87 | |
| 40 | 84 | 65 - 100 |
| 50 | 77 | |
| 100 | 48 | 50 - 100 |
| 200 | 41.7 | 40 - 85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit NV

Plasticity Index NP

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H.K./WT Date 7-95

Source: (A+41) 72110 N & 56860 E

Submitted By: H.K./WT Date 7-95

Elev. 6956.6

Authorized By: Client Date 7-95

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" | 96 | |
| 1/4" | | |
| No. 4 | 94 | 90-100 |
| 8 | 93 | |
| 10 | 92 | 85-100 |
| 16 | 91 | |
| 30 | 89 | |
| 40 | 86 | 65-100 |
| 50 | 78 | |
| 100 | 44 | 50-100 |
| 200 | 30.2 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NV

Plasticity Index NP

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Dark Brown Fine Sand

Sampled By: H.K./WT Date 7-95

Source: (C+43) 71840 N & 56880 E

Submitted By: H.K./WT Date 11-9-95

Elev. 6955.7

Authorized By: Client Date 7-95

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" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 100 | 90-100 |
| 8 | 91 | |
| 10 | 91 | 85-100 |
| 16 | 90 | |
| 30 | 87 | |
| 40 | 85 | 65-100 |
| 50 | 77 | |
| 100 | 43 | 50-100 |
| 200 | 39.7 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 19

Plasticity Index NP

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT Date 7-95

Source: (D+38) 72150 N & 57280 E

Submitted By: H.K./WT Date 7-95

Elev. 6951.1

Authorized By: Client Date 7-95

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" | | |
| 3/8" | 99 | |
| 1/4" | | |
| No. 4 | 97 | 90-100 |
| 8 | 94 | |
| 10 | 94 | 85-100 |
| 16 | 92 | |
| 30 | 91 | |
| 40 | 90 | 65-100 |
| 50 | 89 | |
| 100 | 66 | 50-100 |
| 200 | 53.2 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 28

Plasticity Index 15

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H.K./WT Date 7-95

Source: (D+30) 72750 N & 57800 E

Submitted By: H.K./WT Date 7-95

Elev. 6950.5

Authorized By: Client Date 7-95

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" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 100 | 90-100 |
| 8 | 94 | |
| 10 | 94 | 85-100 |
| 16 | 93 | |
| 30 | 92 | |
| 40 | 91 | 65-100 |
| 50 | 90 | |
| 100 | 69 | 50-100 |
| 200 | 47.0 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 23

Plasticity Index NP

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT Date 7-95

Source: (D+32) 72600 N & 57670 E

Submitted By: H.K./WT Date 7-95

Elev. 6951.3

Authorized By: Client Date 7-95

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" | 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 | 76 | 50-100 |
| 200 | 51.0 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 28

Plasticity Index 10

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Clayey Sand

Sampled By: H.K./WT Date 7-95

Source: (B+32) 72760 N & 57510 E

Submitted By: H.K./WT Date 7-95

Elev. 6955.0

Authorized By: Client Date 7-95

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" | | |
| 3/8" | 98 | |
| 1/4" | | |
| No. 4 | 96 | 90-100 |
| 8 | 93 | |
| 10 | 92 | 85-100 |
| 16 | 91 | |
| 30 | 89 | |
| 40 | 86 | 65-100 |
| 50 | 80 | |
| 100 | 68 | 50-100 |
| 200 | 47.3 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 24

Plasticity Index 10

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H.K./WT Date 7-95

Source: (B+42) 71980 N & 57860 E

Submitted By: H.K./WT Date 7-95

Elev. 6956.4

Authorized By: Client Date 7-95

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" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 94 | 90-100 |
| 8 | 89 | |
| 10 | 89 | 85-100 |
| 16 | 87 | |
| 30 | 83 | |
| 40 | 78 | 65-100 |
| 50 | 65 | |
| 100 | 54 | 50-100 |
| 200 | 40.2 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NV

Plasticity Index NP

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

5\ha:UN031

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

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H.K./WT Date 7-95

Source: (B+38) 72280 N & 57130 E

Submitted By: H.K./WT Date 7-95

Elev. 6954.1

Authorized By: Client Date 7-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | 100 | |
| 3/4" | 96 | 95-100 |
| 1/2" | 92 | |
| 3/8" | 90 | |
| 1/4" | | |
| No. 4 | 87 | 90-100 |
| 8 | 86 | |
| 10 | 85 | 85-100 |
| 16 | 85 | |
| 30 | 82 | |
| 40 | 78 | 65-100 |
| 50 | 63 | |
| 100 | 53 | 50-100 |
| 200 | 40.3 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NV

Plasticity Index NP

Copies: Client (3), Billing (1), Field File (1).
5.1\ha:UN031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450292

Report Date: 9-25-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Clay

Sampled By: H.K./WT Date 9-1-95

Source: F.2+33.8 Elev.6950.9

Submitted By: H.K./WT Date 9-1-95

72400 N & 57620 E

Authorized By: Client Date 9-1-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | | |
| 1/2" | 100 | |
| 3/8" | 99 | |
| 1/4" | | |
| No. 4 | 98 | |
| 8 | 98 | |
| 10 | 97 | |
| 16 | 97 | |
| 30 | 96 | |
| 40 | 95 | |
| 50 | 95 | |
| 100 | 80 | |
| 200 | 56.0 | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 25

Plasticity Index 7

Moisture Content

39.5

Copies: Client (3), Billing (1), Field File (1).
Jha:UNC031

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

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM

Job No. 3145JB031

Lab/Inv. No. 31450292

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H.K./WT Date 9-30-95

Source: B+36

Submitted By: H.K./WT Date 9-30-95

72400 N and 57250 E Elev. 6953.2

Authorized By: Client Date 9-30-95

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" | 97 | |
| 3/8" | 97 | |
| 1/4" | | |
| No. 4 | 95 | 90-100 |
| 8 | 93 | |
| 10 | 92 | 85-100 |
| 16 | 92 | |
| 30 | 91 | |
| 40 | 89 | 65-100 |
| 50 | 86 | |
| 100 | 63 | 50-100 |
| 200 | 42.3 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit 23

Plasticity Index 4

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

\\ha:UNC031

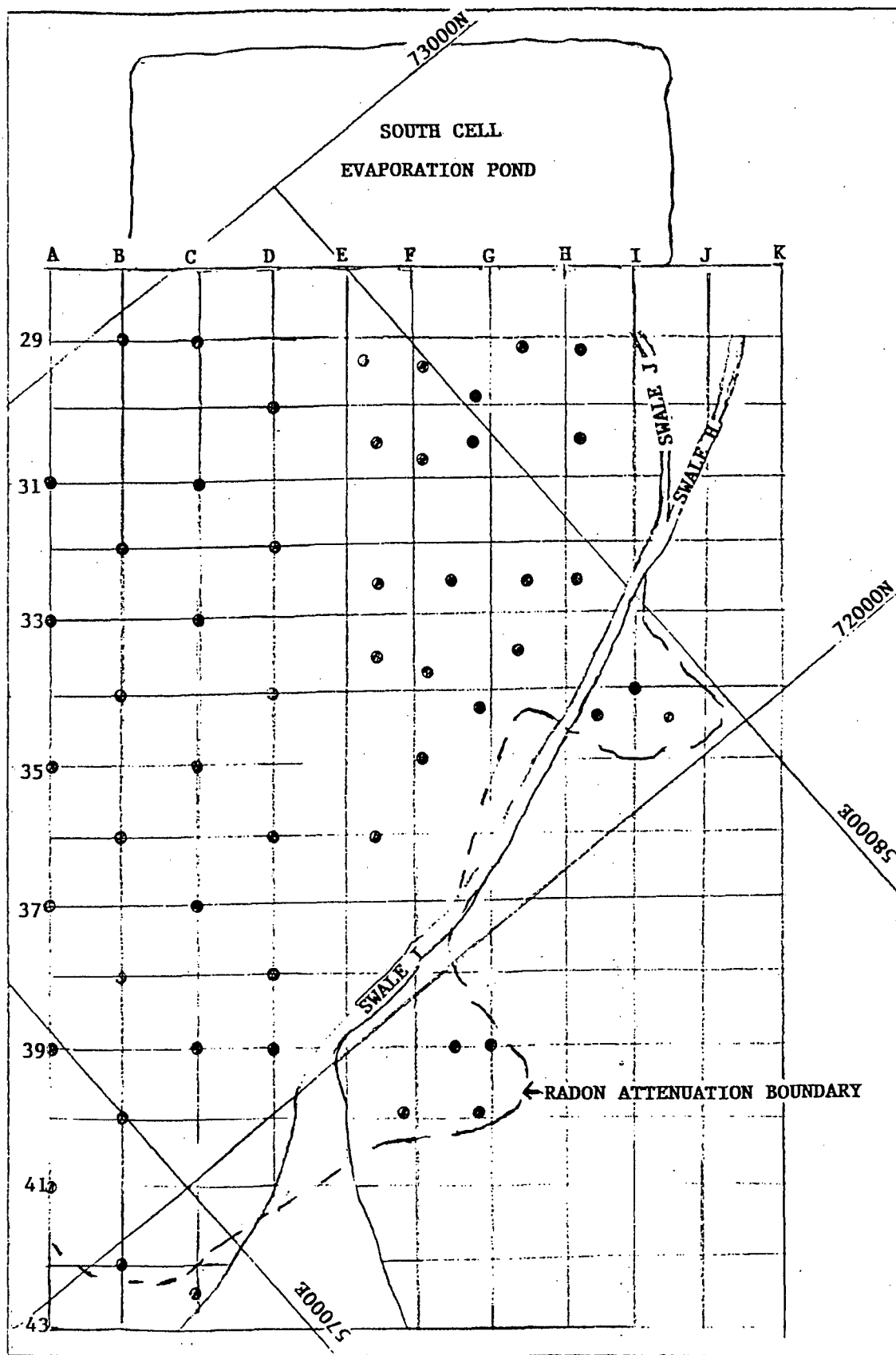
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APPENDIX
C

APPENDIX C

FIELD DENSITY TESTS, RADON ATTENUATION COVER



RAC DENSITIES SOUTH CELL

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|--------------|------------|----------|---------|--------|---------------|--------------|-------------|---------------------|-----------------|-----------------|
| 07/17/95 | Sandcone | I + 34 | 72130.0 | 57980.0 | 6960.7 | RAC | 104.8 | 15.4 | 96 | CL | Yes |
| 07/17/95 | Sandcone | G + 39 | 71880.0 | 57450.0 | 6952.7 | RAC | 109.9 | 15.2 | 98 | CL | Yes |
| 07/17/95 | Sandcone | E.5 + 39 | 71970.0 | 57340.0 | 6951.4 | RAC | 107.6 | 14.9 | 96 | CL | Yes |
| 07/17/95 | Sandcone | I.5 + 34.5 | 72050.0 | 57930.0 | 6961.8 | RAC | 107.1 | 16.2 | 99 | CL | Yes |
| 07/17/95 | Sandcone | H.5 + 34.5 | 72130.0 | 57850.0 | 6952.2 | RAC | 104.4 | 17.1 | 96 | CL | Yes |
| 07/18/95 | Sandcone | G.5 + 29.2 | 72600.0 | 58120.0 | 6953.5 | RAC | 106.3 | 15.7 | 98 | CL | Yes |
| 07/18/95 | Sandcone | H.2 + 29.3 | 72560.0 | 58170.0 | 6954.6 | RAC | 108.4 | 16.1 | 100 | CL | Yes |
| 07/18/95 | Sandcone | F.9 + 29.7 | 72600.0 | 58040.0 | 6951.5 | RAC | 111.5 | 14.6 | 99 | CL | Yes |
| 07/18/95 | Sandcone | F.2 + 29.5 | 72820.0 | 57980.0 | 6952.7 | RAC | 113.5 | 15.9 | 100 | CL | Yes |
| 07/18/95 | Sandcone | E.3 + 29.2 | 72740.0 | 57940.0 | 6951.6 | RAC | 108.0 | 14.3 | 96 | CL | Yes |
| 07/18/95 | Sandcone | E.5 + 30.5 | 72630.0 | 57870.0 | 6951.1 | RAC | 109.9 | 15.6 | 98 | CL | Yes |
| 07/18/95 | Sandcone | F.2 + 30.7 | 72570.0 | 57900.0 | 6951.4 | RAC | 108.1 | 15.5 | 96 | CL | Yes |

RAC = Radon Attenuation Cover

cb/UNC.031/12

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

UNITED NUCLEAR CORPORATION 1995 RECLAMATION**WT JOB NO. 3145JB031****TEST SUMMARY FOR SOUTH CELL****DATE OF REPORT 12/06/95**

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|--------------|------------|----------|---------|--------|------------------|-----------------|----------------|------------------------|-----------------------|-----------------------|
| 07/18/95 | Sandcone | F.9 + 30.5 | 72500.0 | 57960.0 | 6951.4 | RAC | 111.5 | 14.9 | 99 | CL | Yes |
| 07/18/95 | Sandcone | H.2 + 30.4 | 72450.0 | 58070.0 | 6953.1 | RAC | 106.3 | 15.6 | 98 | CL | Yes |
| 07/18/95 | Sandcone | H.2 + 32.3 | 72320.0 | 57980.0 | 6951.7 | RAC | 107.1 | 16.1 | 99 | CL | Yes |
| 07/18/95 | Sandcone | G.5 + 32.5 | 72350.0 | 57900.0 | 6951.8 | RAC | 108.5 | 15.8 | 100 | CL | Yes |
| 07/18/95 | Sandcone | F.5 + 32.5 | 72240.0 | 57820.0 | 6950.5 | RAC | 109.3 | 14.3 | 97 | CL | Yes |
| 07/18/95 | Sandcone | E.5 + 32.5 | 72480.0 | 57730.0 | 6950.9 | RAC | 108.9 | 14.6 | 97 | CL | Yes |
| 07/18/95 | Sandcone | G.3 + 33.4 | 72320.0 | 57830.0 | 6950.9 | RAC | 106.4 | 15.7 | 98 | CL | Yes |
| 07/18/95 | Sandcone | F.2 + 33.8 | 72340.0 | 57710.0 | 6951.1 | RAC | 107.4 | 15.1 | 96 | CL | Yes |
| 07/18/95 | Sandcone | E.5 + 33.5 | 72400.0 | 57680.0 | 6951.1 | RAC | 106.6 | 14.2 | 95 | CL | Yes |
| 07/18/95 | Sandcone | F.9 + 34.3 | 72240.0 | 57730.0 | 6951.3 | RAC | 107.7 | 15.4 | 95 | CL | Yes |
| 07/18/95 | Sandcone | F.1 + 34.9 | 72250.0 | 57640.0 | 6951.3 | RAC | 113.7 | 16.2 | 100 | CL | Yes |
| 07/18/95 | Sandcone | E.5 + 36 | 72200.0 | 57520.0 | 6951.3 | RAC | 110.9 | 15.8 | 98 | CL | Yes |

RAC=Radon Attenuation Cover

cb/UNC.031/13

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

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|--------------|------------|----------|---------|--------|---------------|--------------|-------------|---------------------|-----------------|-----------------|
| 07/18/95 | Sandcone | E.8 + 39.8 | 72900.0 | 57300.0 | 6952.7 | RAC | 109.8 | 15.9 | 97 | CL | Yes |
| 07/18/95 | Sandcone | F.8 + 39.8 | 72820.0 | 57370.0 | 6957.0 | RAC | 113.2 | 16.1 | 100 | CL | Yes |
| 07/28/95 | Sandcone | C + 37 | 72280.0 | 57260.0 | 6951.1 | RAC | 108.0 | 14.6 | 96 | CL | Yes |
| 07/28/95 | Sandcone | C + 35 | 72460.0 | 57410.0 | 6950.2 | RAC | 107.6 | 13.5 | 95 | CL | Yes |
| 07/28/95 | Sandcone | C + 33 | 72430.0 | 57400.0 | 6951.2 | RAC | 106.3 | 15.6 | 92 | CL | No |
| 07/28/95 | Sandcone | C + 31 | 72730.0 | 57650.0 | 6952.7 | RAC | 104.1 | 14.8 | 92 | CL | No |
| 07/28/95 | Sandcone | C + 29 | 72880.0 | 57780.0 | 6955.8 | RAC | 108.9 | 14.6 | 97 | CL | Yes |
| 07/28/95 | Sandcone | D + 38 | 72150.0 | 57280.0 | 6951.1 | RAC | 110.6 | 14.6 | 98 | CL | Yes |
| 07/28/95 | Sandcone | D + 36 | 72290.0 | 57400.0 | 6951.6 | RAC | 113.5 | 14.3 | 100 | CL | Yes |
| 07/28/95 | Sandcone | D + 34 | 72410.0 | 57320.0 | 6950.3 | RAC | 108.4 | 14.9 | 96 | CL | Yes |
| 07/28/95 | Sandcone | D + 32 | 72600.0 | 57670.0 | 6951.3 | RAC | 107.0 | 15.6 | 95 | CL | Yes |
| 07/28/95 | Sandcone | D + 30 | 72750.0 | 57800.0 | 6950.5 | RAC | 106.6 | 13.0 | 95 | CL | Yes |

RAC = Radon Attenuation Cover

cb/UNC.031/14

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

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|-------------------|--------|----------|---------|--------|------------------|-----------------|----------------|------------------------|-----------------------|-----------------------|
| 08/02/95 | Sandcone | C + 43 | 71840.0 | 56880.0 | 6955.7 | RAC | 109.7 | 14.4 | 97 | CL | Yes |
| 08/02/95 | Sandcone | C + 39 | 72150.0 | 57130.0 | 6952.2 | RAC | 108.0 | 14.8 | 96 | CL | Yes |
| 08/02/95 | Sandcone - Retest | C + 33 | 72430.0 | 57400.0 | 6951.3 | RAC | 106.6 | 13.7 | 95 | CL | Yes |
| 08/02/95 | Sandcone - Retest | C + 31 | 72730.0 | 57650.0 | 6952.6 | RAC | 111.7 | 13.2 | 99 | CL | Yes |
| 08/02/95 | Sandcone | B + 36 | 72440.0 | 57270.0 | 6953.1 | RAC | 111.1 | 11.6 | 95 | CL | Yes |
| 08/02/95 | Sandcone | B + 38 | 72280.0 | 57130.0 | 6954.1 | RAC | 112.3 | 12.3 | 96 | CL | Yes |
| 08/02/95 | Sandcone | B + 40 | 72120.0 | 57000.0 | 6954.9 | RAC | 112.6 | 12.3 | 96 | CL | Yes |
| 08/02/95 | Sandcone | B + 42 | 71980.0 | 57860.0 | 6956.4 | RAC | 111.8 | 12.7 | 95 | CL | Yes |
| 08/02/95 | Sandcone | B + 32 | 72760.0 | 57510.0 | 6955.0 | RAC | 112.8 | 12.1 | 96 | CL | Yes |
| 08/02/95 | Sandcone | B + 34 | 72610.0 | 57400.0 | 6953.0 | RAC | 111.1 | 11.4 | 95 | CL | Yes |
| 08/03/95 | Sandcone | A + 41 | 72110.0 | 56860.0 | 6956.6 | RAC | 113.2 | 11.0 | 96 | CL | Yes |
| 08/03/95 | Sandcone | A + 39 | 72130.0 | 56970.0 | 6956.6 | RAC | 117.0 | 10.7 | 100 | CL | Yes |

RAC = Radon Attenuation Cover

cb/UNC.031/15

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

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|--------------|--------|----------|---------|--------|------------------|-----------------|----------------|------------------------|-----------------------|-----------------------|
| 08/03/95 | Sandcone | A + 37 | 72410.0 | 57110.0 | 6956.4 | RAC | 118.4 | 10.1 | 100 | CL | Yes |
| 08/03/95 | Sandcone | A + 35 | 72580.0 | 57290.0 | 6956.2 | RAC | 115.8 | 11.6 | 99 | CL | Yes |
| 08/03/95 | Sandcone | A + 33 | 72570.0 | 57240.0 | 6956.2 | RAC | 111.3 | 12.1 | 95 | CL | Yes |
| 08/03/95 | Sandcone | A + 31 | 72900.0 | 57500.0 | 6956.4 | RAC | 110.8 | 12.5 | 95 | CL | Yes |
| 08/03/95 | Sandcone | B + 29 | 72960.0 | 57700.0 | 6953.8 | RAC | 114.9 | 12.3 | 98 | CL | Yes |
| 08/03/95 | Sandcone | D + 39 | 72060.0 | 57220.0 | 6951.9 | RAC | 110.6 | 14.1 | 98 | CL | Yes |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

RAC = Radon Attenuation Cover

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



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

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

Date of Report **08-28-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450185-10**
Authorized By **E. MORALES** Date **07-17-95**
Tested By **H. KUEBLER/WT** Date **07-17-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

Test Locations Designated By **CLIENT**

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

Calibrated Volume of Sand Cone Apparatus **0.0387 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0376 | 15.4 | 105.1 | 0.0 | 46 | 108.7 | 15.3 | 97 | 15.3 TO 17.3 | 95 | YES |
| 2 | 0.0291 | 15.2 | 110.6 | 0.0 | 44 | 112.3 | 14.1 | 98 | 14.1 TO 16.1 | 95 | YES |
| 3 | 0.0299 | 14.9 | 108.0 | 0.0 | 44 | 112.3 | 14.1 | 96 | 14.1 TO 16.1 | 95 | YES |
| 4 | 0.0391 | 16.2 | 108.2 | 0.0 | 46 | 108.7 | 15.3 | 100 | 15.3 TO 17.3 | 95 | YES |
| 5 | 0.0395 | 17.1 | 105.5 | 0.0 | 46 | 108.7 | 15.3 | 97 | 15.3 TO 17.3 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|-----------------------------|-----------------------------|-------------|-----------------|
| | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | I+34, 72130 N & 57930 E | | 6960.7 | SUBGRADE |
| 2 | G+39, 71880 N & 57450 E | | 6952.7 | SUBGRADE |
| 3 | E.5+39, 71970 N & 57340 E | | 6951.4 | SUBGRADE |
| 4 | I.5+34.5, 72050 N & 57930 E | | 6961.8 | SUBGRADE |
| 5 | H.5+34.5, 72130 N & 57850 E | | 6952.2 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|---------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 46 | 31450185 | CLAY - H.2+30.4 | 72450N & 58070E, 6973.1 | 15.3 | 108.7 | D698-A |
| 44 | 31450185 | CLAY | F8+39.872820N57370E6957.0 | 14.1 | 112.3 | D698-A |

Comments: **CB**

* DATUM Test Elevation = Top of RAC

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

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

REVIEWED BY

A. McHaney



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Farmington, New Mexico 87401
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**SOIL / AGGREGATE
FIELD UNIT WEIGHT TESTS
(FIELD DENSITY)**

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

Date of Report **11-15-95**
Job No. **3145JB031** Page 1 of 2
Event/Invoice No. **31450185-13**
Authorized By **E. MORALES** Date **07-18-95**
Tested By **C. PADILLA/WT** Date **07-18-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**
Test Locations Designated By **C. PADILLA/WT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**
Calibrated Volume of Sand Cone Apparatus **0.0383 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0413 | 15.7 | 106.2 | 0.0 | 46 | 108.7 | 15.3 | 98 | 15.3 TO 17.3 | 95 | YES |
| 2 | 0.0339 | 16.1 | 108.6 | 0.0 | 46 | 108.7 | 15.3 | 100 | 15.3 TO 17.3 | 95 | YES |
| 3 | 0.0402 | 14.6 | 111.5 | 0.0 | 42 | 112.4 | 14.0 | 99 | 14.0 TO 16.0 | 95 | YES |
| 4 | 0.0358 | 15.9 | 113.6 | 0.0 | 42 | 112.4 | 14.0 | 100 + | 14.0 TO 16.0 | 95 | YES |
| 5 | 0.0388 | 14.3 | 108.0 | 0.0 | 42 | 112.4 | 14.0 | 96 | 14.0 TO 16.0 | 95 | YES |
| 6 | 0.0372 | 15.6 | 109.9 | 0.0 | 42 | 112.4 | 14.0 | 98 | 14.0 TO 16.0 | 95 | YES |
| 7 | 0.0382 | 15.5 | 108.1 | 0.0 | 42 | 112.4 | 14.0 | 96 | 14.0 TO 16.0 | 95 | YES |
| 8 | 0.0390 | 14.9 | 111.5 | 0.0 | 42 | 112.4 | 14.0 | 99 | 14.0 TO 16.0 | 95 | YES |
| 9 | 0.0438 | 15.6 | 106.3 | 0.0 | 46 | 108.7 | 15.3 | 98 | 15.3 TO 17.3 | 95 | YES |
| 10 | 0.0449 | 16.1 | 107.2 | 0.0 | 46 | 108.7 | 15.3 | 99 | 15.3 TO 17.3 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|-------------------------------|--|-----------------------------|-------------|-----------------|
| | | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | G.5 + 29.2, 72600 N & 58120 E | | | 6953.5 | SUBGRADE |
| 2 | H.2 + 29.3, 72560 N & 58170 E | | | 6954.6 | SUBGRADE |
| 3 | F.9 + 29.7, 72600 N & 58040 E | | | 6951.5 | SUBGRADE |
| 4 | F.2 + 29.5, 72820 N & 57980 E | | | 6952.7 | SUBGRADE |
| 5 | E.3 + 29.2, 72740 N & 57940 E | | | 6951.6 | SUBGRADE |
| 6 | E.5 + 30.5, 72630 N & 57870 E | | | 6951.1 | SUBGRADE |
| 7 | F.2 + 30.7, 72570 N & 57900 E | | | 6951.4 | SUBGRADE |
| 8 | F.9 + 30.5, 72500 N & 57960 E | | | 6951.4 | SUBGRADE |
| 9 | H.2 + 30.4, 72450 N & 58070 E | | | 6953.1 | SUBGRADE |
| 10 | H.2 + 32.3, 72320 N & 57980 E | | | 6951.7 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|----------------------------------|--------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 46 | 31450185 | CLAY - H.2 + 30.4 | 72450N & 58070E, 6973.1 | 15.3 | 108.7 | D698-A |
| 42 | 31850185 | CLAY | D + 34, 72410N & 57320E, 6950.3 | 14.0 | 112.4 | D698-A |
| 44 | 31450185 | CLAY | F8 + 39.872820N & 57370E, 6957.0 | 14.1 | 112.3 | D698-A |

Comments: **CB**
* **DATUM** Elevation of Test = Top of RAC

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

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

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**SOIL / AGGREGATE
FIELD UNIT WEIGHT TESTS**
CONTINUATION SHEET

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

Date of Report **11-15-95**
Job No. **3145JB031** Page 2 of 2
Event/Invoice No. **31450185-13**
Authorized By **E. MORALES** Date **07-18-95**
Tested By **C. PADILLA/WT** Date **07-18-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 11 | 0.0400 | 15.8 | 108.6 | 0.0 | 46 | 108.7 | 15.3 | 100 | 15.3 TO 17.3 | 95 | YES |
| 12 | 0.0461 | 14.3 | 109.3 | 0.0 | 42 | 112.4 | 14.0 | 97 | 14.0 TO 16.0 | 95 | YES |
| 13 | 0.0379 | 14.6 | 108.9 | 0.0 | 42 | 112.4 | 14.0 | 97 | 14.0 TO 16.0 | 95 | YES |
| 14 | 0.0389 | 15.7 | 106.4 | 0.0 | 46 | 108.7 | 15.3 | 98 | 15.3 TO 17.3 | 95 | YES |
| 15 | 0.0478 | 15.1 | 107.4 | 0.0 | 42 | 112.4 | 14.0 | 96 | 14.0 TO 16.0 | 95 | YES |
| 16 | 0.0368 | 14.2 | 106.6 | 0.0 | 42 | 112.4 | 14.0 | 95 | 14.0 TO 16.0 | 95 | YES |
| 17 | 0.0332 | 15.4 | 107.7 | 0.0 | 42 | 112.4 | 14.0 | 96 | 14.0 TO 16.0 | 95 | YES |
| 18 | 0.0394 | 16.0 | 113.9 | 0.0 | 42 | 112.4 | 14.0 | 100 + | 14.0 TO 16.0 | 95 | YES |
| 19 | 0.0379 | 15.8 | 111.0 | 0.0 | 42 | 112.4 | 14.0 | 99 | 14.0 TO 16.0 | 95 | YES |
| 20 | 0.0306 | 15.9 | 109.9 | 0.0 | 42 | 112.4 | 14.0 | 98 | 14.0 TO 16.0 | 95 | YES |
| 21 | 0.0318 | 16.1 | 114.4 | 0.0 | 44 | 112.3 | 14.1 | 100 + | 14.1 TO 16.1 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|-------------------------------|-----------------------------|-------------|-----------------|
| | | Approximate Fill Depth, ft. | Elevation * | |
| 11 | G.5 + 32.5, 72350 N & 57900 E | | 6951.8 | SUBGRADE |
| 12 | F.5 + 32.5, 72420 N & 57820 E | | 6950.5 | SUBGRADE |
| 13 | E.5 + 32.5, 72480 N & 57730 E | | 6950.9 | SUBGRADE |
| 14 | G.3 + 33.4, 72320 N & 57830 E | | 6950.9 | SUBGRADE |
| 15 | F.2 + 33.8, 72340 N & 57710 E | | 6951.1 | SUBGRADE |
| 16 | E.5 + 33.5, 72400 N & 57680 E | | 6951.1 | SUBGRADE |
| 17 | F.9 + 34.3, 72240 N & 57730 E | | 6951.3 | SUBGRADE |
| 18 | F.1 + 34.9, 72250 N & 57640 E | | 6951.3 | SUBGRADE |
| 19 | E.5 + 36, 72200 N & 57520 E | | 6951.3 | SUBGRADE |
| 20 | E.8 + 39.8, 72900 N & 57300 E | | 6952.7 | SUBGRADE |
| 21 | F.8 + 39.8, 72820 N & 57370 E | | 6957.0 | SUBGRADE |

Comments: **CB**
* DATUM Elevation of Test = Top of RAC

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

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

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

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

Date of Report **10-17-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450185-17**
Authorized By **E. MORALES** Date **07-28-95**
Tested By **H. KUEBLER/WT** Date **07-28-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

Test Locations Designated By **H. KUEBLER/WT**

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

Calibrated Volume of Sand Cone Apparatus **0.0383 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0355 | 14.6 | 108.0 | 0.0 | 45 | 112.8 | 13.0 | 96 | 13.0 TO 15.0 | 95 | YES |
| 2 | 0.0370 | 13.5 | 107.6 | 0.0 | 45 | 112.8 | 13.0 | 95 | 13.0 TO 15.0 | 95 | YES |
| 3 | 0.0378 | 15.6 | 107.2 | 0.0 | 45 | 112.8 | 13.0 | 95 | 13.0 TO 15.0 | 95 | NO |
| 4 | 0.0329 | 14.8 | 104.0 | 0.0 | 45 | 112.8 | 13.0 | 92 | 13.0 TO 15.0 | 95 | NO |
| 5 | 0.0373 | 14.6 | 108.9 | 0.0 | 45 | 112.8 | 13.0 | 97 | 13.0 TO 15.0 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|---------------------------|-----------------------------|-------------|-----------------|
| | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | C + 37, 72280 N & 57260 E | | 6951.1 | SUBGRADE |
| 2 | C + 35, 72460 N & 57410 E | | 6950.2 | SUBGRADE |
| 3 | C + 33, 72430 N & 57400 E | | 6951.2 | SUBGRADE |
| 4 | C + 31, 72730 N & 57650 E | | 6952.7 | SUBGRADE |
| 5 | C + 29, 72880 N & 57780 E | | 6955.8 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|---------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 45 | 31450185 | CLAY | C+31,72730N&57650E,6952.6 | 13.0 | 112.8 | D698-A |

Comments: **CB**
* **DATUM** Test Elevation = Top of RAC

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

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

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

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

Date of Report **10-17-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450185-18**
Authorized By **E. MORALES** Date **07-28-95**
Tested By **H. KUEBLER/WT** Date **07-28-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**
Test Locations Designated By **H. KUEBLER/WT**

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

Calibrated Volume of Sand Cone Apparatus **0.0387 cu. ft.** Bulk Unit Weight of Sand **94.6 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 6 | 0.0317 | 14.6 | 110.7 | 0.0 | 43 | 113.2 | 14.0 | 98 | 14.0 TO 16.0 | 95 | YES |
| 7 | 0.0354 | 14.3 | 113.4 | 0.0 | 43 | 113.2 | 14.0 | 100 | 14.0 TO 16.0 | 95 | YES |
| 8 | 0.0330 | 14.9 | 108.4 | 0.0 | 42 | 112.4 | 14.0 | 96 | 14.0 TO 16.0 | 95 | YES |
| 9 | 0.0294 | 15.6 | 107.1 | 0.0 | 42 | 112.4 | 14.0 | 95 | 14.0 TO 16.0 | 95 | YES |
| 10 | 0.0336 | 13.0 | 106.7 | 0.0 | 45 | 112.8 | 13.0 | 95 | 13.0 TO 15.0 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|---------------------------|-----------------------------|-------------|-----------------|
| | | Approximate Fill Depth, ft. | Elevation * | |
| 6 | D + 38, 72150 N & 57280 E | | 6951.1 | SUBGRADE |
| 7 | D + 36, 72290 N & 57400 E | | 6951.6 | SUBGRADE |
| 8 | D + 34, 72410 N & 57320 E | | 6950.3 | SUBGRADE |
| 9 | D + 32, 72600 N & 57670 E | | 6951.3 | SUBGRADE |
| 10 | D + 30, 72750 N & 57800 E | | 6950.5 | SUBGRADE |

LABORATORY DATA & COMPACTION CHARACTERISTICS

| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
|---------|--------------------|-------------------------|-----------------------------|---------------------|--|-------------|
| 43 | 31450185 | CLAY | D-38,72150N&57280E,6951.1 | 14.0 | 113.2 | D698-A |
| 42 | 31850185 | CLAY | D + 34,72410N&57320E,6950.3 | 14.0 | 112.4 | D698-A |
| 45 | 31450185 | CLAY | C + 31,72730N&57650E,6952.6 | 13.0 | 112.8 | D698-A |

Comments: CB

* DATUM Test Elevation = Top of RAC

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

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

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

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

Date of Report **10-18-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450243**
Authorized By **E. MORALES** Date **08-02-95**
Tested By **H. KUEBLER/WT** Date **08-02-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**
Test Locations Designated By **CLIENT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**
Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0348 | 14.4 | 109.4 | 0.0 | 45 | 112.8 | 13.0 | 97 | 13.0 TO 15.0 | 95 | YES |
| 2 | 0.0336 | 14.8 | 108.2 | 0.0 | 45 | 112.8 | 13.0 | 96 | 13.0 TO 15.0 | 95 | YES |
| 3 | 0.0334 | 13.7 | 106.7 | 0.0 | 45 | 112.8 | 13.0 | 95 | 13.0 TO 15.0 | 95 | YES |
| 4 | 0.0282 | 13.2 | 111.8 | 0.0 | 45 | 112.8 | 13.0 | 99 | 13.0 TO 15.0 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|---------------------------|--|-----------------------------|-------------|-----------------|
| | | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | C + 43, 71840 N & 56880 E | | | 6955.7 | SUBGRADE |
| 2 | C + 39, 72150 N & 57130 E | | | 6952.2 | SUBGRADE |
| 3 | RETEST OF #3 (07/28/95) | | | 6951.3 | SUBGRADE |
| 4 | RETEST OF #4 (07/28/95) | | | 6952.6 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|-----------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 45 | 31450185 | CLAY | C + 31,72730N&57650E,6952.6 | 13.0 | 112.8 | D898-A |

Comments: **CB**
* **DATUM** Test Elevation = Top of RAC

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

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

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

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

Date of Report **10-18-95**

Job No. **3145JB031**

Page **1** of **1**

Event/Invoice No. **31450243-1**

Authorized By **E. MORALES**

Date **08-02-95**

Tested By **H. KUEBLER/WT**

Date **08-02-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

Test Locations Designated By **H. KUEBLER/WT**

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

Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.8** lbf/cu. ft.

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 5 | 0.0404 | 11.6 | 111.1 | 0.0 | 40 | 117.5 | 11.2 | 95 | 11.2 TO 13.2 | 95 | YES |
| 6 | 0.0381 | 12.3 | 112.4 | 0.0 | 40 | 117.5 | 11.2 | 96 | 11.2 TO 13.2 | 95 | YES |
| 7 | 0.0256 | 12.3 | 114.9 | 0.0 | 40 | 117.5 | 11.2 | 98 | 11.2 TO 13.2 | 95 | YES |
| 8 | 0.0361 | 12.7 | 111.8 | 0.0 | 40 | 117.5 | 11.2 | 95 | 11.2 TO 13.2 | 95 | YES |
| 9 | 0.0229 | 12.1 | 115.3 | 0.0 | 40 | 117.5 | 11.2 | 98 | 11.2 TO 13.2 | 95 | YES |
| 10 | 0.0340 | 11.4 | 111.1 | 0.0 | 40 | 117.5 | 11.2 | 95 | 11.2 TO 13.2 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|---------------------------|--|-----------------------------|-------------|-----------------|
| | | | Approximate Fill Depth, ft. | Elevation * | |
| 5 | B + 38, 72440 N & 57270 E | | | 6953.1 | SUBGRADE |
| 6 | B + 38, 72280 N & 57130 E | | | 6954.1 | SUBGRADE |
| 7 | B + 40, 72120 N & 57000 E | | | 6954.9 | SUBGRADE |
| 8 | B + 42, 71980 N & 57860 E | | | 6956.4 | SUBGRADE |
| 9 | B + 32, 72760 N & 57510 E | | | 6955.0 | SUBGRADE |
| 10 | B + 34, 72610 N & 57400 E | | | 6953.0 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|---------------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 40 | 31450185 | CLAY | B + 32, 72760N & 57510E, 6955.0 | 11.2 | 117.5 | D698-A |

Comments: **CB**

* **DATUM** Test Elevation = Top of RAC

Distribution : **CLIENT - (3)**

FIELD FILE & BILLING (2)

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

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

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

Date of Report **11-15-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450243-2**
Authorized By **E. MORALES** Date **08-03-95**
Tested By **H. KUEBLER/WT** Date **08-03-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

Test Locations Designated By **CLIENT**

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

Calibrated Volume of Sand Cone Apparatus **0.0387 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0309 | 11.0 | 113.0 | 0.0 | 38 | 117.5 | 9.8 | 96 | 9.8 TO 11.8 | 95 | YES |
| 2 | 0.0254 | 10.7 | 116.8 | 0.0 | 38 | 117.5 | 9.8 | 99 | 9.8 TO 11.8 | 95 | YES |
| 3 | 0.0270 | 10.1 | 118.3 | 0.0 | 38 | 117.5 | 9.8 | 100 + | 9.8 TO 11.8 | 95 | YES |
| 4 | 0.0304 | 11.6 | 115.8 | 0.0 | 38 | 117.5 | 9.8 | 99 | 9.8 TO 11.8 | 95 | YES |
| 5 | 0.0318 | 12.1 | 111.4 | 0.0 | 39 | 117.3 | 12.1 | 95 | 12.1 TO 14.1 | 95 | YES |
| 6 | 0.0295 | 12.5 | 111.0 | 0.0 | 39 | 117.3 | 12.1 | 95 | 12.1 TO 14.1 | 95 | YES |
| 7 | 0.0299 | 12.3 | 115.0 | 0.0 | 39 | 117.3 | 12.1 | 98 | 12.1 TO 14.1 | 95 | YES |
| 8 | 0.0309 | 14.1 | 110.5 | 0.0 | 45 | 112.8 | 13.0 | 98 | 13.0 TO 15.0 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|---------------------------|-----------------------------|-------------|-----------------|
| | | Approximate Fill Depth, ft. | Elevation • | |
| 1 | A + 41, 72110 N & 56860 E | | 6956.6 | SUBGRADE |
| 2 | A + 39, 72130 N & 56970 E | | 6956.6 | SUBGRADE |
| 3 | A + 37, 72410 N & 57110 E | | 6956.4 | SUBGRADE |
| 4 | A + 35, 72580 N & 57290 E | | 6956.2 | SUBGRADE |
| 5 | A + 33, 72570 N & 57240 E | | 6956.2 | SUBGRADE |
| 6 | A + 31, 72900 N & 57500 E | | 6956.4 | SUBGRADE |
| 7 | B + 29, 72960 N & 57700 E | | 6953.8 | SUBGRADE |
| 8 | D + 39, 72060 N & 57220 E | | 6951.9 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|---------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 38 | 31450243 | CLAY | A+41,72110N&56860E,6956.6 | 9.8 | 117.5 | D698-A |
| 39 | 31450243 | CLAY | A+31,72900N&57500E,6956.4 | 12.1 | 117.3 | D698-A |
| 45 | 31450185 | CLAY | C+31,72730N&57650E,6952.6 | 13.0 | 112.8 | D698-A |

Comments: **CB**

* **DATUM** Test Elevation = Top of RAC

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

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

REVIEWED BY

A. Neely

(SIGNED COPY ON FILE)



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(505) 327-4966 • fax 327-5293

LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87301

Job No. 3145JB031
Lab/Inv. No. 31450051
Report Date: 04/17/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Clayey Sand Sampled By: H. Kuebler Date: 03/06/95

Source: Composite of S. Cell, Borrow Area Submitted By: H. Kuebler Date: 03/06/95

Authorized By: Client Date: 03/06/95

Coefficient of Permeability, Constant Head

5.7 X 10⁻⁷ cm/sec

0.59 ft/yr

Sample was compacted to 95% of ASTM 698

Copies to: Addressee (3), Billing (1), Field File (1)
362/dn:unc031

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

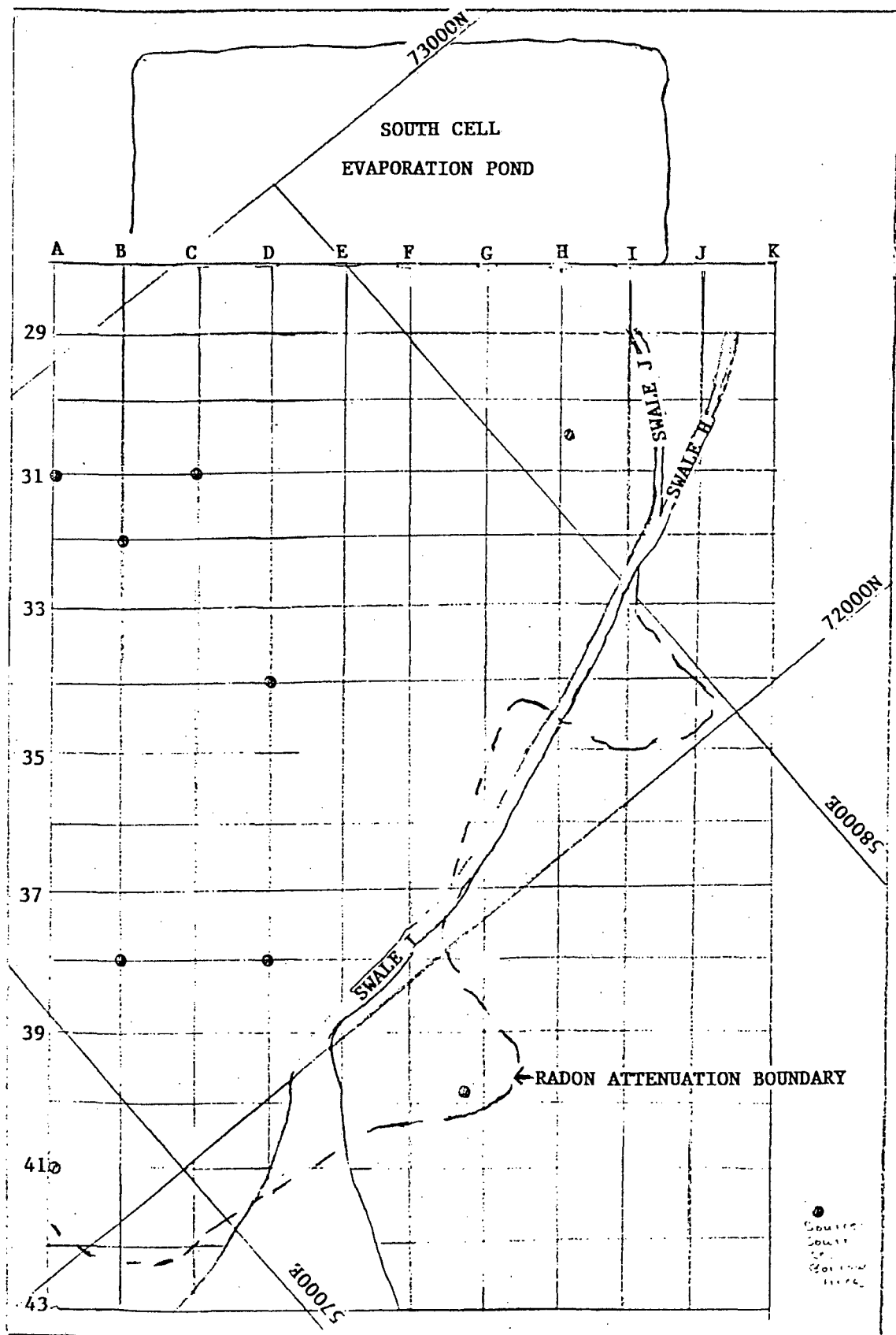
REVIEWED BY

Thomas Whake

**APPENDIX
D**

APPENDIX D

PROCTOR TESTS, RADON ATTENUATION COVER



PROCTOR LOCATION SOUTH CELL

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SOUTH CELL

DATE OF REPORT 12/06/95

HK

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|--------------|--------------|------------|-------------|--------|---------------|--------------|-------------|---------------------|-----------------|-----------------|
| 03/02/95 | Proctor | Composite of | South Cell | Borrow Area | | RAC | 109.0 | 16.6 | | SC | Yes |
| 07/13/95 | Proctor | H.2 + 30.4 | 72450.0 | 58070.0 | 6953.1 | RAC | 108.7 | 15.3 | | CL | Yes |
| 07/13/95 | Proctor | D + 38 | 72150.0 | 57280.0 | 6951.1 | RAC | 113.2 | 14.0 | | CL | Yes |
| 07/18/95 | Proctor | F.8 + 39.8 | 72820.0 | 57370.0 | 6957.0 | RAC | 112.3 | 14.1 | | CL | Yes |
| 07/21/95 | Proctor | C + 31 | 72730.0 | 57650.0 | 6952.6 | RAC | 112.8 | 13.0 | | CL | Yes |
| 07/21/95 | Proctor | D + 34 | 72410.0 | 57320.0 | 6950.3 | RAC | 112.4 | 14.0 | | CL | Yes |
| 07/21/95 | Proctor | B + 38 | 72280.0 | 57130.0 | 6954.1 | RAC | 117.0 | 12.3 | | CL | Yes |
| 07/28/95 | Proctor | B + 32 | 72760.0 | 57510.0 | 6955.0 | RAC | 117.5 | 11.2 | | CL | Yes |
| 08/03/95 | Proctor | A + 31 | 72900.0 | 57500.0 | 6956.4 | RAC | 117.3 | 12.1 | | CL | Yes |
| 08/03/95 | Proctor | A + 41 | 72110.0 | 56860.0 | 6956.4 | RAC | 117.5 | 9.8 | | ML | Yes |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

RAC = Radon Attenuation Cover

cb/UNC.031/11

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

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450051

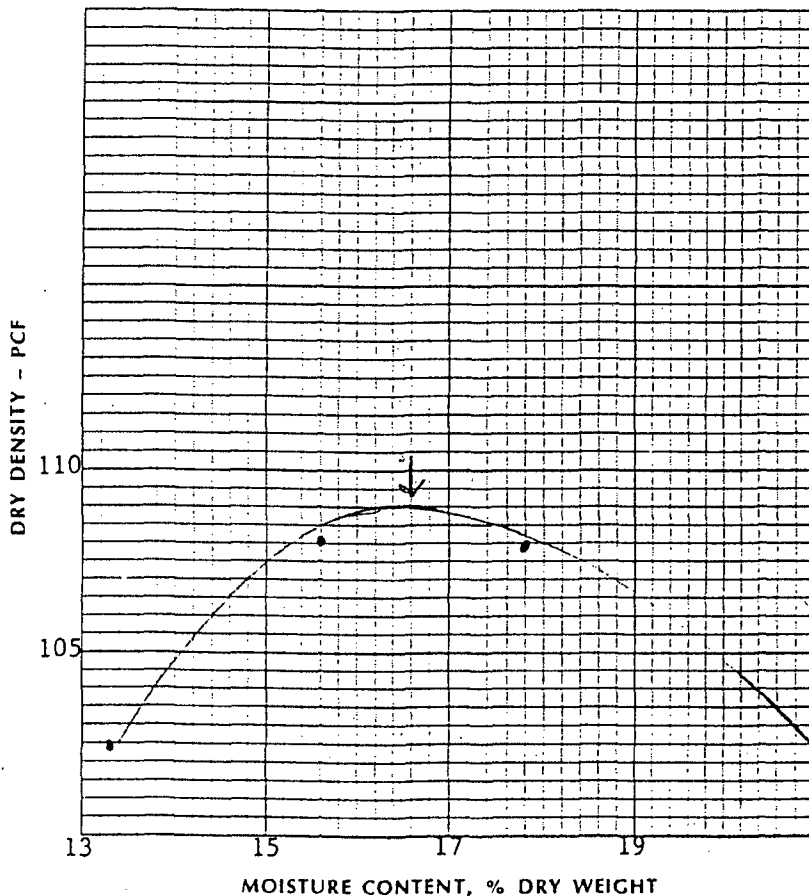
Type of Material Clayey Sand Sampled By H. Kuebler/WT Date 03/02/9

Source of Material Composite of South Cell Borrow Area Submitted By H. Kuebler/WT Date 03/02/9

Tested/Calc. By H. Kuebler/WT Date 03/02/9

Test Procedure ASTM D698A Reviewed By [Signature] Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 100 | 50 | 150 | 0 | | | |
| Sample + Mold Weight, gms | 6177.5 | 6144.9 | 6115.1 | 6011.5 | | | |
| Mold Weight, gms | 4257.9 | 4257.9 | 4257.9 | 4257.9 | | | |
| Wet Sample Weight, gms | 1919.6 | 1887 | 1857.2 | 1753.6 | | | |
| Wet Sample Weight, lbs | 4.232 | 4.160 | 4.094 | 3.866 | | | |
| Wet Density, pcf | 127.0 | 124.8 | 122.8 | 116.0 | | | |
| Moisture Sample Wet, gms | 210.4 | 324.3 | 360.7 | 270.1 | | | |
| Moisture Sample Dry, gms | 178.6 | 280.6 | 299.8 | 238.3 | | | |
| Weight of Water, gms | 31.8 | 43.7 | 60.9 | 31.8 | | | |
| Moisture, % | 17.8 | 15.6 | 20.3 | 13.3 | | | |
| Dry Density, pcf | 107.8 | 108.0 | 102.1 | 102.4 | | | |



Maximum Dry Density, pcf 109.0

Optimum Moisture Content, % 16.6

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450185

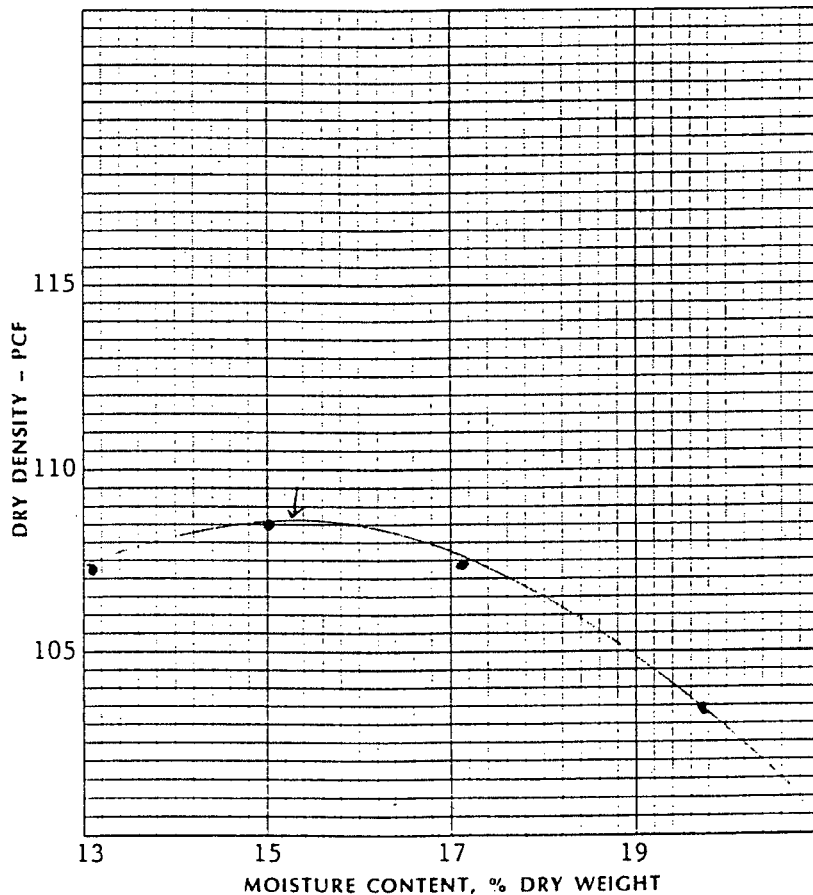
Type of Material Clay Sampled By C. Padilla/WT Date 07/13/95

Source of Material H.2 + 30.4 (72450N & 58070E) Submitted By C. Padilla/WT Date 07/14/95

Elev 6953.1 Tested/Calc. By C. Padilla/WT Date 07/14/95

Test Procedure ASTM D698A Reviewed By [Signature] Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 150 | 100 | 200 | 50 | | | |
| Sample + Mold Weight, gms | 6174.6 | 6159.5 | 6145.2 | 6106.4 | | | |
| Mold Weight, gms | 4273.0 | 4273.0 | 4273.0 | 4273.0 | | | |
| Wet Sample Weight, gms | 1901.6 | 1886.5 | 1872.2 | 1833.4 | | | |
| Wet Sample Weight, lbs | 4.192 | 4.159 | 4.127 | 4.042 | | | |
| Wet Density, pcf | 125.8 | 124.8 | 123.8 | 121.3 | | | |
| Moisture Sample Wet, gms | 367.1 | 355.1 | 379.2 | 368.5 | | | |
| Moisture Sample Dry, gms | 313.6 | 308.9 | 316.7 | 325.8 | | | |
| Weight of Water, gms | 53.5 | 46.2 | 62.5 | 42.7 | | | |
| Moisture, % | 17.1 | 15.0 | 19.7 | 13.1 | | | |
| Dry Density, pcf | 107.4 | 108.5 | 103.4 | 107.3 | | | |



Maximum Dry Density, pcf 108.7

Optimum Moisture Content, % 15.3

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450185

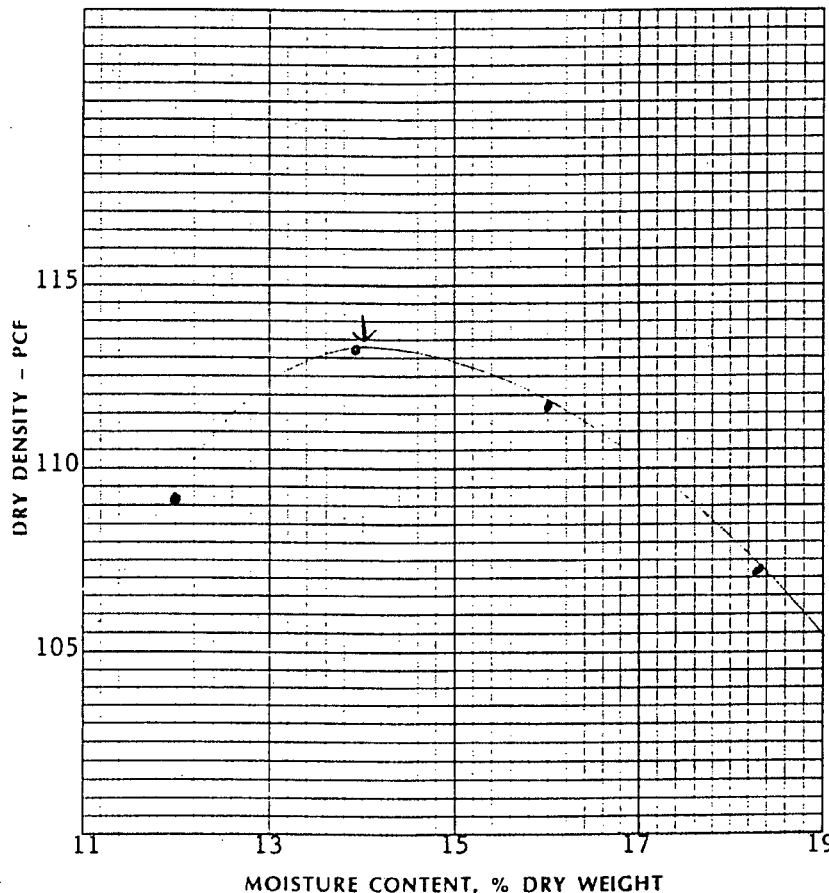
Type of Material Clay Sampled By C. Padilla/WT Date 07/13/9

Source of Material D + 38 (72150N & 57280E) Elev 6951.1 Submitted By C. Padilla/WT Date 07/14/9

Tested / Calc. By N. Smith/WT Date 07/17/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date _____

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 0 | 50 | 100 | 150 | | | |
| Sample + Mold Weight, gms | 6123.8 | 6225.7 | 6230.1 | 6180.0 | | | |
| Mold Weight, gms | 4272.6 | 4272.6 | 4272.6 | 4272.6 | | | |
| Wet Sample Weight, gms | 1851.2 | 1953.1 | 1957.5 | 1907.4 | | | |
| Wet Sample Weight, lbs | 4.081 | 4.306 | 4.315 | 4.205 | | | |
| Wet Density, pcf | 122.4 | 129.2 | 129.5 | 126.2 | | | |
| Moisture Sample Wet, gms | 402.5 | 403.4 | 619.8 | 466.5 | | | |
| Moisture Sample Dry, gms | 359.5 | 354.2 | 534.1 | 394.4 | | | |
| Weight of Water, gms | 43.0 | 49.2 | 85.7 | 72.1 | | | |
| Moisture, % | 12.0 | 13.9 | 16.0 | 18.3 | | | |
| Dry Density, pcf | 109.3 | 113.4 | 111.6 | 106.7 | | | |



Maximum Dry Density, pcf 113.2

Optimum Moisture Content, % 14.0

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450185

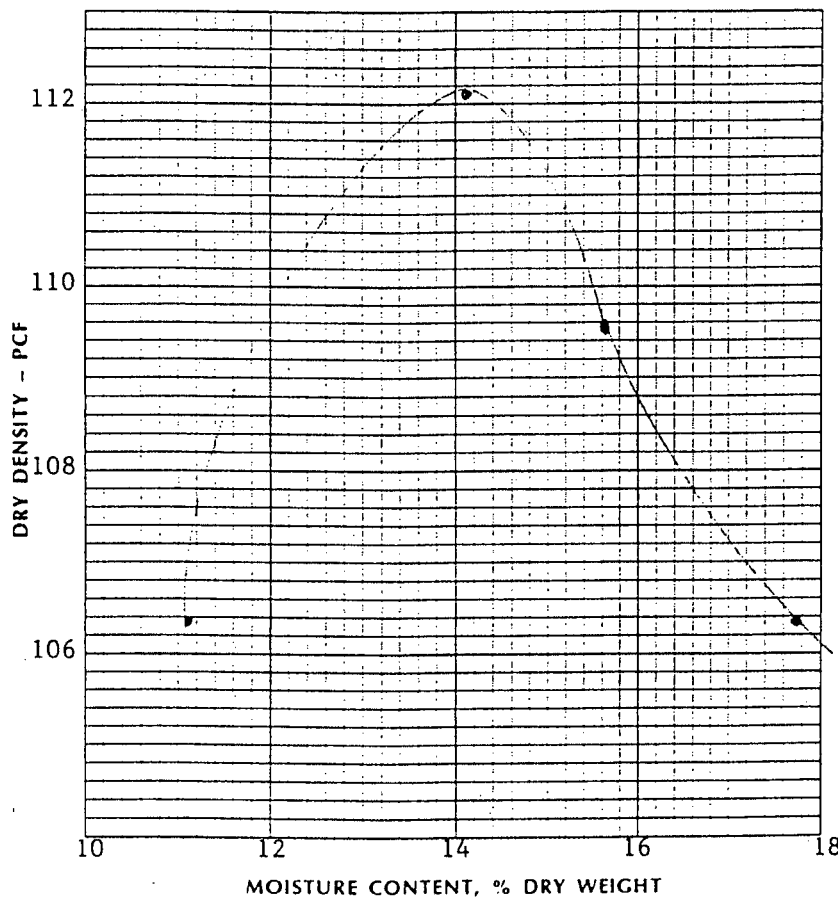
Type of Material Clay Sampled By H. Kuebler/WT Date 07/18/95

Source of Material F.8 + 39.8 (72820N & 57370E) Submitted By H. Kuebler/WT Date 07/18/95

Elev 6957.0 Tested/Calc. By M. Krake/WT Date 07/18/95

Test Procedure ASTM D698A Reviewed By  Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 100 | 150 | 50 | 200 | | | |
| Sample + Mold Weight, gms | 6116.6 | 6082.7 | 5975.8 | 6080.0 | | | |
| Mold Weight, gms | 4179.7 | 4179.7 | 4179.7 | 4179.7 | | | |
| Wet Sample Weight, gms | 1936.9 | 1903.0 | 1796.1 | 1900.3 | | | |
| Wet Sample Weight, lbs | 4.27 | 4.195 | 3.96 | 4.189 | | | |
| Wet Density, pcf | 128.1 | 125.9 | 118.8 | 125.7 | | | |
| Moisture Sample Wet, gms | 424.3 | 419.6 | 459.4 | 429.0 | | | |
| Moisture Sample Dry, gms | 372.0 | 363.1 | 413.5 | 364.4 | | | |
| Weight of Water, gms | 52.3 | 56.5 | 45.9 | 64.6 | | | |
| Moisture, % | 14.1 | 15.6 | 11.1 | 17.7 | | | |
| Dry Density, pcf | 112.3 | 108.9 | 106.9 | 106.8 | | | |



Maximum Dry Density, pcf 112.3

Optimum Moisture Content, % 14.1

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450185

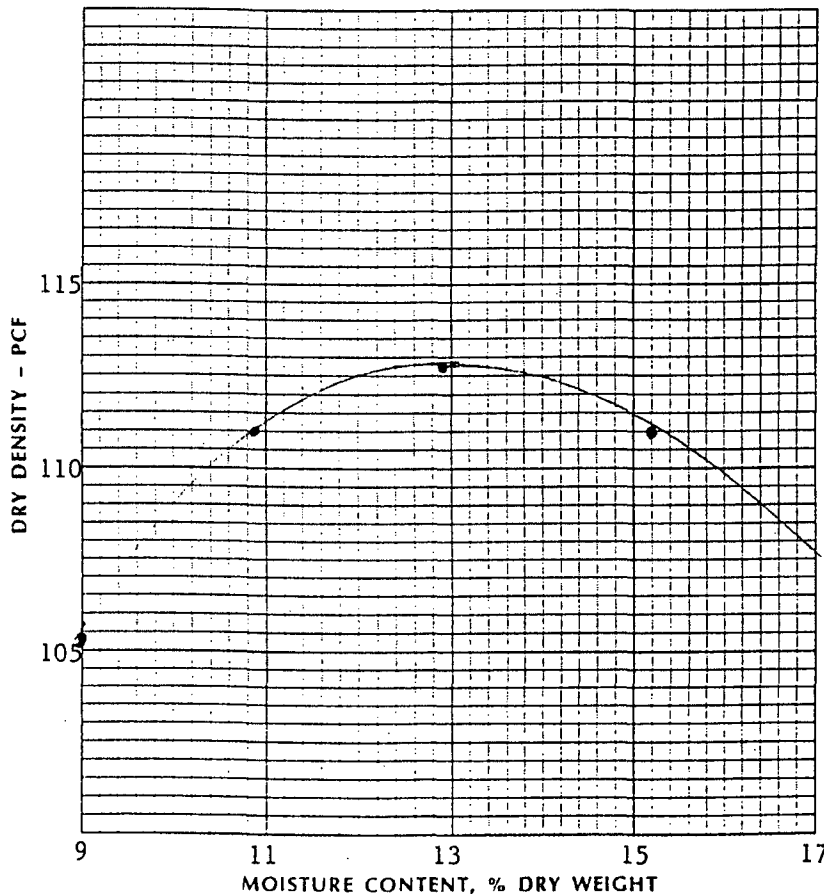
Type of Material Clay Sampled By C. Padilla/WT Date 07/21/9

Source of Material C + 31 (72730N & 57650E) Elev 6952.6 Submitted By C. Padilla/WT Date 07/22/9

Tested / Calc. By N. Smith/WT Date 07/25/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|--------|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 200 | 250 | 300 | 350 | 400 | | |
| Sample + Mold Weight, gms | 5896.3 | 6025.1 | 6086.4 | 6097.2 | 6074.1 | | |
| Mold Weight, gms | 4163.3 | 4163.3 | 4163.3 | 4163.3 | 4163.3 | | |
| Wet Sample Weight, gms | 1733.0 | 1861.8 | 1923.1 | 1933.9 | 1910.8 | | |
| Wet Sample Weight, lbs | 3.870 | 4.104 | 4.240 | 4.263 | 4.213 | | |
| Wet Density, pcf | 114.6 | 123.1 | 127.2 | 127.9 | 126.4 | | |
| Moisture Sample Wet, gms | 414.5 | 468.1 | 432.7 | 478.1 | 428.1 | | |
| Moisture Sample Dry, gms | 380.2 | 422.1 | 383.1 | 414.9 | 364.5 | | |
| Weight of Water, gms | 34.3 | 46.0 | 49.6 | 63.2 | 63.6 | | |
| Moisture, % | 9.0 | 10.9 | 12.9 | 15.2 | 17.4 | | |
| Dry Density, pcf | 105.1 | 111.0 | 112.7 | 111.0 | 107.7 | | |



Maximum Dry Density, pcf 112.8

Optimum Moisture Content, % 13.0

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE - MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450185

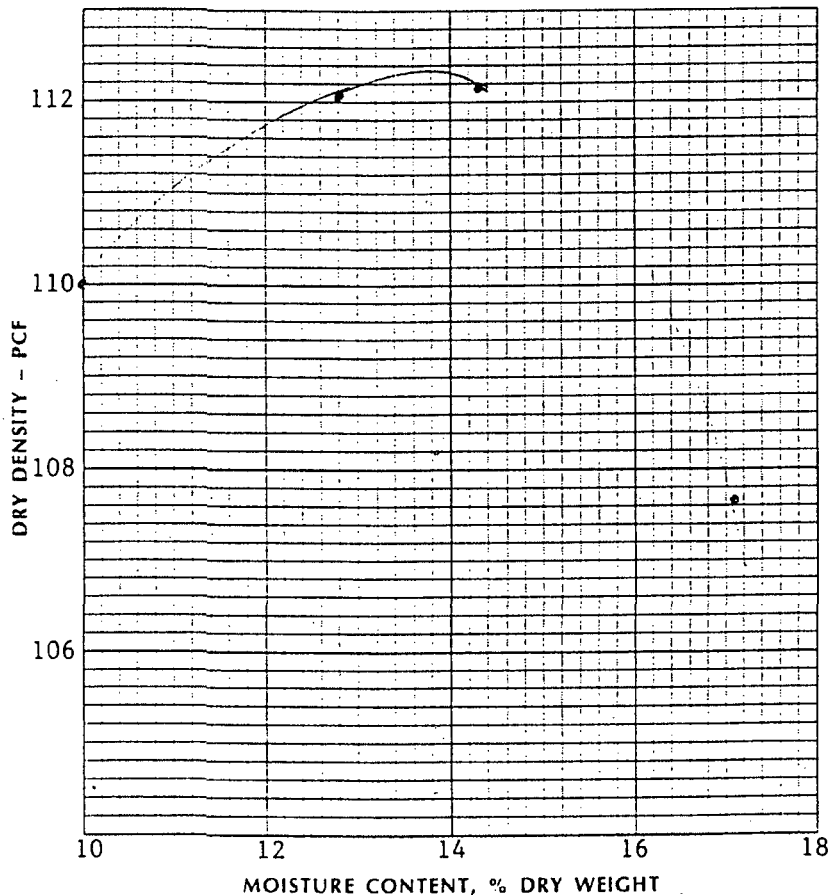
Type of Material Clay Sampled By C. Padilla/WT Date 07/21/95

Source of Material D + 34 (72410N & 57320E) Elev 6950.3 Submitted By C. Padilla/WT Date 07/22/95

Tested/Calc. By R. Griffith/WT Date 07/24/95

Test Procedure ASTM D698A Reviewed By *[Signature]* Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 150 | 200 | 250 | 300 | | | |
| Sample + Mold Weight, gms | 5983.1 | 6074.7 | 6106.7 | 6061.5 | | | |
| Mold Weight, gms | 4163.2 | 4163.2 | 4163.2 | 4163.2 | | | |
| Wet Sample Weight, gms | 1829.9 | 1911.5 | 1943.5 | 1898.3 | | | |
| Wet Sample Weight, lbs | 4.034 | 4.21 | 4.30 | 4.20 | | | |
| Wet Density, pcf | 121.0 | 126.4 | 128.5 | 125.5 | | | |
| Moisture Sample Wet, gms | 490.5 | 382.9 | 379.6 | 430.1 | | | |
| Moisture Sample Dry, gms | 446.1 | 339.6 | 332.0 | 367.0 | | | |
| Weight of Water, gms | 44.4 | 43.3 | 47.6 | 63.1 | | | |
| Moisture, % | 10.0 | 12.8 | 14.3 | 17.2 | | | |
| Dry Density, pcf | 110.0 | 112.1 | 112.4 | 107.1 | | | |



Maximum Dry Density, pcf 112.4

Optimum Moisture Content, % 14.0

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450185

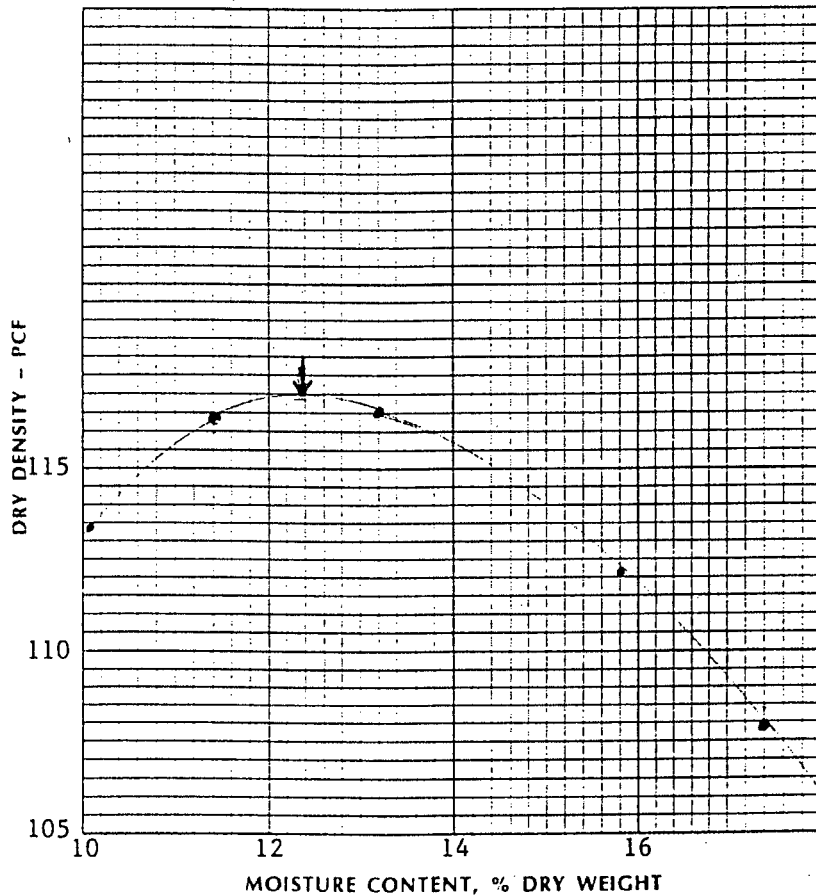
Type of Material Clay Sampled By C. Padilla/WT Date 07/21/95

Source of Material B + 38 (72280N & 57130E) Elev 6954.1 Submitted By C. Padilla/WT Date 07/22/95

Tested / Calc. By N. Smith/WT Date 07/24/95

Test Procedure ASTM D698A Reviewed By [Signature] Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|--------|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 100 | 150 | 200 | 250 | 50 | | |
| Sample + Mold Weight, gms | 6122.8 | 6157.8 | 6127.0 | 6078.1 | 6049.0 | | |
| Mold Weight, gms | 4163.2 | 4163.2 | 4163.2 | 4163.2 | 4163.2 | | |
| Wet Sample Weight, gms | 1959.6 | 1994.6 | 1963.8 | 1914.9 | 1885.8 | | |
| Wet Sample Weight, lbs | 4.320 | 4.397 | 4.329 | 4.221 | 4.157 | | |
| Wet Density, pcf | 129.6 | 131.9 | 129.9 | 126.6 | 124.7 | | |
| Moisture Sample Wet, gms | 494.0 | 674.0 | 432.6 | 489.8 | 447.0 | | |
| Moisture Sample Dry, gms | 443.3 | 595.6 | 373.5 | 417.1 | 405.9 | | |
| Weight of Water, gms | 50.7 | 78.4 | 59.1 | 72.7 | 41.1 | | |
| Moisture, % | 11.4 | 13.2 | 15.8 | 17.4 | 10.1 | | |
| Dry Density, pcf | 116.3 | 116.5 | 112.2 | 107.8 | 113.3 | | |



Maximum Dry Density, pcf 117.0

Optimum Moisture Content, % 12.3

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450185

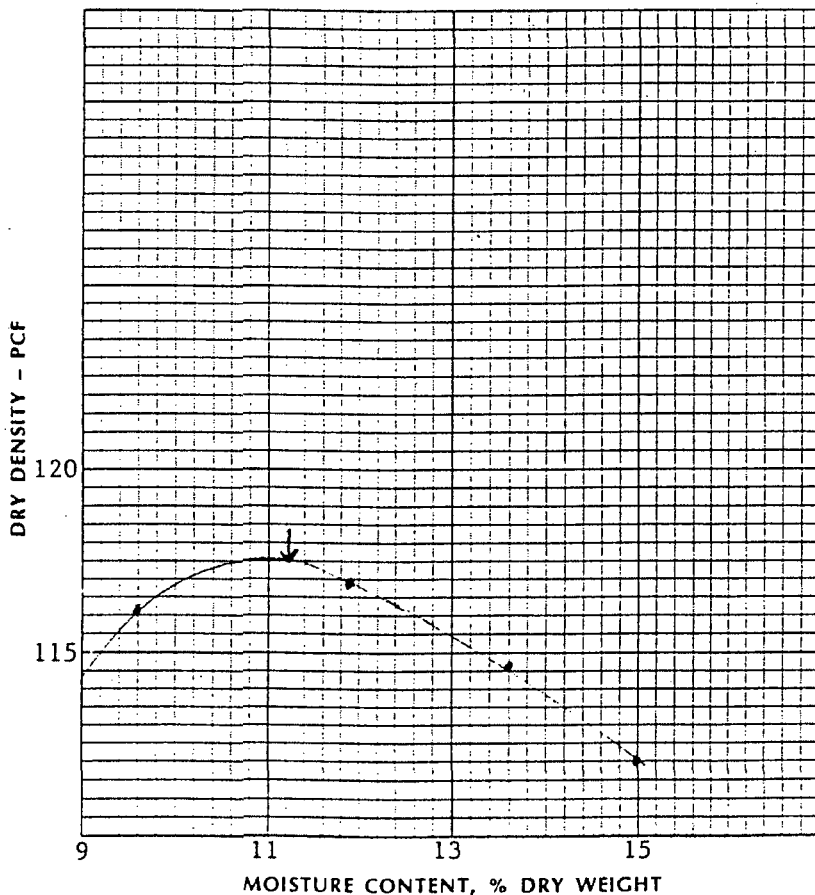
Type of Material Clay Sampled By H. Kuebler/WT Date 07/28/9

Source of Material B + 32 (72760N & 57510E) Elev 6955.0 Submitted By H. Kuebler/WT Date 07/28/9

Tested / Calc. By H. Kuebler/WT Date 07/28/9

Test Procedure ASTM D698A Reviewed By [Signature] Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 150 | 200 | 250 | 300 | | | |
| Sample + Mold Weight, gms | 6180.5 | 6236.0 | 6224.6 | 6202.3 | | | |
| Mold Weight, gms | 4256.4 | 4256.4 | 4256.4 | 4256.4 | | | |
| Wet Sample Weight, gms | 1924.1 | 1979.6 | 1968.2 | 1945.9 | | | |
| Wet Sample Weight, lbs | 4.24 | 4.36 | 4.34 | 4.29 | | | |
| Wet Density, pcf | 127.2 | 130.8 | 130.2 | 128.7 | | | |
| Moisture Sample Wet, gms | 390.4 | 429.1 | 430.0 | 430.6 | | | |
| Moisture Sample Dry, gms | 356.1 | 383.5 | 378.5 | 374.4 | | | |
| Weight of Water, gms | 34.3 | 45.6 | 51.5 | 56.2 | | | |
| Moisture, % | 9.6 | 11.9 | 13.6 | 15.0 | | | |
| Dry Density, pcf | 116.1 | 116.9 | 114.6 | 111.9 | | | |



Maximum Dry Density, pcf 117.5

Optimum Moisture Content, % 11.2

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE - MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450243

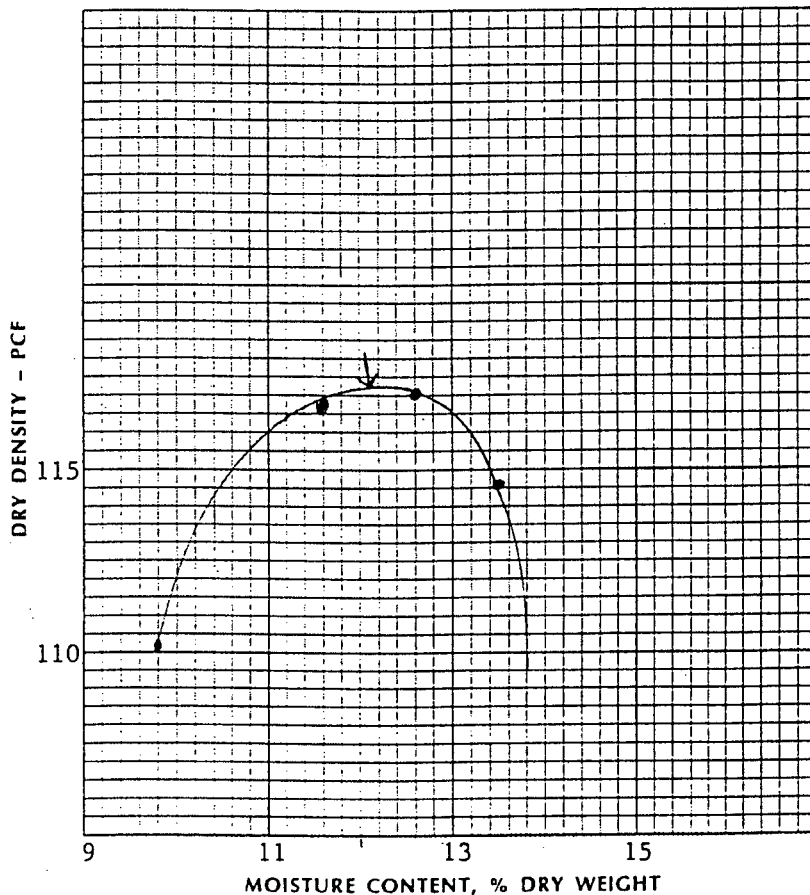
Type of Material Clay Sampled By H. Kuebler/WT Date 08/03/95

Source of Material A + 31 (72900N & 57500E) Elev 6956.4 Submitted By H. Kuebler/WT Date 08/03/95

Tested/Calc. By H. Kuebler/WT Date 08/03/95

Test Procedure ASTM D698A Reviewed By [Signature] Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 200 | 250 | 150 | 225 | | | |
| Sample + Mold Weight, gms | 6223.7 | 6226.1 | 6085.3 | 6247.7 | | | |
| Mold Weight, gms | 4256.4 | 4256.4 | 4256.4 | 4256.4 | | | |
| Wet Sample Weight, gms | 1967.3 | 1969.7 | 1828.8 | 1991.3 | | | |
| Wet Sample Weight, lbs | 4.34 | 4.34 | 4.03 | 4.39 | | | |
| Wet Density, pcf | 130.2 | 130.2 | 120.9 | 131.7 | | | |
| Moisture Sample Wet, gms | 487.5 | 367.3 | 317.5 | 317.9 | | | |
| Moisture Sample Dry, gms | 436.9 | 323.5 | 289.1 | 282.3 | | | |
| Weight of Water, gms | 50.6 | 43.8 | 28.4 | 35.6 | | | |
| Moisture, % | 11.6 | 13.5 | 9.8 | 12.6 | | | |
| Dry Density, pcf | 116.7 | 114.7 | 110.1 | 117.0 | | | |



Maximum Dry Density, pcf 117.3

Optimum Moisture Content, % 12.1

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450243

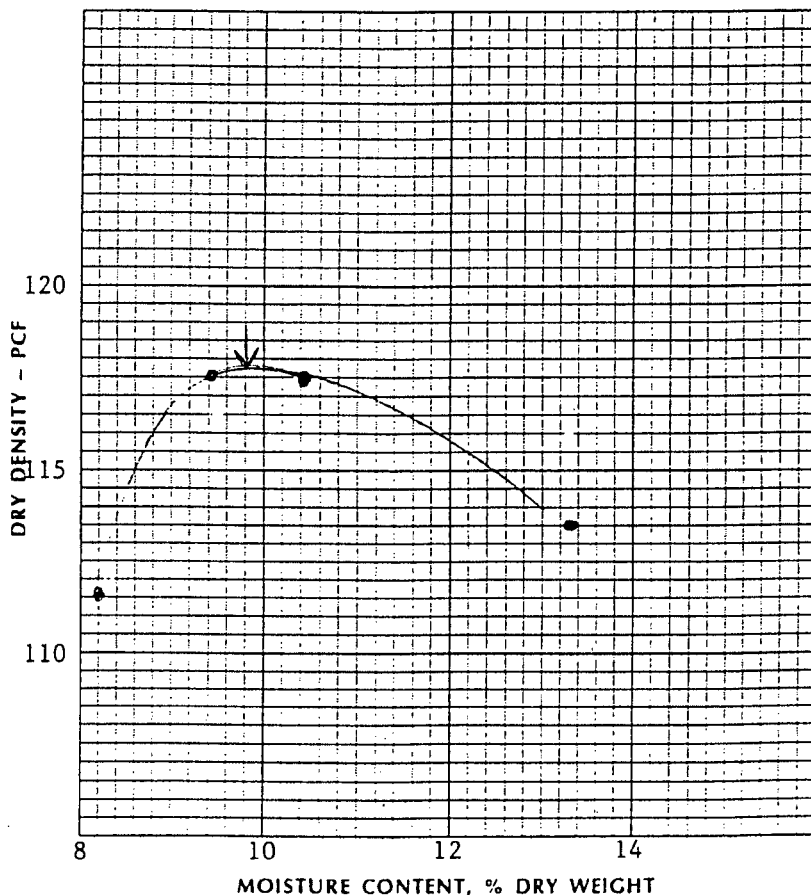
Type of Material Silt Sampled By H. Kuebler/WT Date 08/03/9

Source of Material A + 41 (72110N & 56860E) Elev 6956.6 Submitted By H. Kuebler/WT Date 08/03/9

Tested / Calc. By H. Kuebler/WT Date 08/03/9

Test Procedure ASTM D698A Reviewed By *as* Date _____

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 50 | 100 | 0 | -50 | | | |
| Sample + Mold Weight, gms | 6217.5 | 6201.9 | 6082.0 | 6199.3 | | | |
| Mold Weight, gms | 4256.4 | 4256.4 | 4256.4 | 4256.4 | | | |
| Wet Sample Weight, gms | 1961.1 | 1945.5 | 1825.6 | 1942.9 | | | |
| Wet Sample Weight, lbs | 4.32 | 4.289 | 4.03 | 4.28 | | | |
| Wet Density, pcf | 129.7 | 128.7 | 120.9 | 128.5 | | | |
| Moisture Sample Wet, gms | 353.8 | 293.8 | 310.5 | 311.1 | | | |
| Moisture Sample Dry, gms | 320.5 | 259.4 | 287.0 | 284.4 | | | |
| Weight of Water, gms | 33.3 | 34.4 | 23.5 | 26.7 | | | |
| Moisture, % | 10.4 | 13.3 | 8.2 | 9.4 | | | |
| Dry Density, pcf | 117.5 | 113.6 | 111.7 | 117.5 | | | |



Maximum Dry Density, pcf 117.5

Optimum Moisture Content, % 9.8

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

APPENDIX
E

APPENDIX E

ROCK QUALITY DETERMINATIONS, ROCK MULCH AND RIPRAP



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ROCK QUALITY DETERMINATION

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

Job No. 3145JB031
Inv. No. 31450084
Date of Report 12/05/95
Reviewed By [Signature]

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 04/06/95
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 04/06/95
Material Type: Basaltic 1.5 Aggregate Intended Use

| Property | Value | Score | Weighting Factor | Score x Weight |
|---------------------------|-------|-------|------------------|----------------|
| Specific Gravity (SSD) | 2.735 | 9.4 | 9 | 84.6 |
| Absorption, % | 1.21 | 9.8 | 2 | 11.7 |
| L.A. Abrasion, 100 rev, % | 6 | 7.6 | 1 | 7.6 |
| Sodium Soundness Loss, % | 2.74 | 9.7 | 11 | 106.7 |

Total = 210.6, Rock Quality Score = $210.6/230 \times 100 = 92$

Dist: Client (3) Field File (1)

/cb:RQD.UNC12



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450084

Report Date: 04/24/95

Project: 1996 Reclamation

Location: Church Rock, NM

Material: 1.5 Aggregate

Sampled By: H. Kuebler Date 04/06/95

Source: Hamilton Brothers

Submitted By: H. Kuebler Date 04/06/95

Authorized By: Client Date 04/06/95

Coarse Aggregate, ASTM C127

Weight of Oven-Dry Specimen in Air, gms. - 4369.6

Bulk Specific Gravity 2.703

Bulk Specific Gravity (SSD) 2.735

Apparent Specific Gravity 2.794

Absorption, Percent 1.21

Copies to: Addressee (3), Billing (1)
46.4/dn:unc031

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REVIEWED BY

Thomas B. Buehler



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450084
Report Date: 04/24/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: 1.5 Aggregate Sampled By: H. Kuebler Date 04/06/95

Source: Hamilton Brothers Submitted By: H. Kuebler Date 04/06/95

Supplier: Hamilton Brothers Authorized By: Client Date 04/06/95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 6

Copies to: Addressee (3), Billing (1)
46.2/unc031

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REVIEWED BY

Thomas Maher

LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client: UNC Mining & Milling
Attn: Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450084
Report Date: 04/24/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: 1.5 Aggregate

Sampled By: H. Kuebler Date 04/06/95

Source: Hamilton Brothers

Submitted By: H. Kuebler Date 04/06/95

Procedure: ASTM C88

Authorized By: Client Date 04/06/95

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" | 76 | | 2.48 | 1.88 |
| 1" to 3/4" | | | | |
| 3/4" to 1/2" | 24 | | | .86 |
| 1/2" to 3/8" | | | | |
| 3/8" to No. 4 | | | | |
| Minus No. 4 | | | | |
| Totals | | | | 2.74 |

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

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

Copies to: Addressee (3), Billing (1)
46.3/dn:unc031

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REVIEWED BY

Thomas Kuebler



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ROCK QUALITY DETERMINATION

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

Job No. 3145JB031
Inv. No. 31450145
Date of Report 11/14/95
Reviewed By JR

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 06/07/95
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 06/07/95
Material Type: D50 1.5" Intended Use Swale Aggregate

| Property | Value | Score | Weighting Factor | Score x Weight |
|---------------------------|-------|-------|------------------|----------------|
| Specific Gravity (SSD) | 2.753 | 10 | 9 | 90 |
| Absorption, % | 2.66 | 1.5 | 2 | 3 |
| L.A. Abrasion, 100 rev, % | 3.0 | 9.0 | 1 | 9 |
| Sodium Soundness Loss, % | 3.77 | 8.5 | 11 | 93.5 |

Total = 195.5, Rock Quality Score = $195.5/230 \times 100 = 85$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450145
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

| | | | | | |
|-----------|---|----------------|---------|------|--------|
| Material: | Crushed Basalt D ⁵⁰ 1.5 Aggre. | Sampled By: | H.K./WT | Date | 6-7-95 |
| Source: | Hamilton Brothers | Submitted By: | H.K./WT | Date | 6-7-95 |
| Supplier: | | Authorized By: | Client | Date | 6-7-95 |

L.A. Abrasion, ASTM C535, Grading 2

% Loss at 100 Revs. 3.0

% Loss at 500 Revs. —

Copies to: Addressee (3), Billing (1), Field File (1).
67.2\ha:UN031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ 1.5 Aggre.

Sampled By: H.K./WT Date 6-7-95

Source: Hamilton Brothers

Submitted By: H.K./WT Date 6-7-95

Authorized By: Client Date 6-7-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity 2.682

Bulk Specific Gravity (SSD) 2.753

Apparent Specific Gravity 2.888

Absorption, Percent 2.66

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

SOUNDNESS OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ 1.5 Aggre. Sampled By: H.K./WT Date: 6-7-95

Source: Hamilton Brothers Submitted By: H.K./WT Date: 6-7-95

Procedure: ASTM C88 Authorized By: Client Date: 6-7-95

Solution: Sodium Sulfate (Used) 5 Cycles

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" | 38 | 2015.4 | 1.1 | .41 |
| 1-1/2" to 1" | 46 | 1022.5 | 4.6 | 2.116 |
| 1" to 3/4" | 9 | 508.5 | 10.9 | .981 |
| 3/4" to 1/2" | 4 | 671.8 | 6.6 | .264 |
| 1/2" to 3/8" | 0 | 330.6 | 8.8 | 0 |
| 3/8" to No. 4 Minus No. 4 | 0 | 300.6 | 10.0 | 0 |
| Totals | | | | 3.77 |

*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).
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[Signature]



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ROCK QUALITY DETERMINATION

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

Job No. 3145JB031
Inv. No. 31450243
Date of Report 08/29/95
Reviewed By am

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/05/95
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/05/95
Material Type: Crushed Basalt Intended Use D50 - 1.5"

| Property | Value | Score | Weighting Factor | Score x Weight |
|---------------------------|-------|-------|------------------|----------------|
| Specific Gravity (SSD) | 2.747 | 10 | 9 | 90 |
| Absorption, % | .61 | 7.2 | 2 | 14.4 |
| L.A. Abrasion, 100 rev, % | 5.6 | 7.63 | 1 | 7.63 |
| Sodium Soundness Loss, % | 2.30 | 9.375 | 11 | 103.1 |

Total = 214.5, Rock Quality Score = $214.5/230 \times 100 = 93$

/cb:RQD.UNC2



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ 1.5 Aggregate

Sampled By: H.K./WT

Date 7-5-95

Source: Hamilton Brothers

Submitted By: H.K./WT

Date 7-5-95

Authorized By: Client

Date 7-5-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity 2.730

Bulk Specific Gravity (SSD) 2.747

Apparent Specific Gravity 2.776

Absorption, Percent 0.61

Copies to: Client (3), Billing (1), Field File (1).
75\ha:UN031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: **UNC Mining & Milling**
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. **3145JB031**

Lab/Inv. No. **31450243**

Report Date: **8-28-95**

Project: **1995 Reclamation**

Location: **Church Rock, NM**

Material: **1.5 Aggregate** Sampled By: **HK** Date **7-5-95**

Source: Submitted By: **HK** Date **7-5-95**

Supplier: Authorized By: **Client** Date **7-5-95**

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. **5.6**

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1), Field File (1).
75\ha:UNC031

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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

| | | | |
|------------|---|----------------|---------------------------------|
| Client: | UNC Mining & Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305 | Job No. | 3145JB031 |
| | | Lab/Inv. No. | 31450243 |
| | | Report Date: | 8-29-95 |
| Project: | 1995 Reclamation | | |
| Location: | Church Rock, NM | | |
| Material: | 1.5 Aggregate | Sampled By: | HK Date 7-5-95 |
| Source: | Hamilton Brothers | Submitted By: | HK Date 7-5-95 |
| Procedure: | ASTM C88 | Authorized By: | Client Date 7-5-95 |
| | | Solution: | Sodium Sulfate (Fresh) 5 cycles |

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" | 39 | 2109.7 | 2.803 | 1.093 |
| 1-1/2" to 1" | 61 | 1015.3 | 1.983 | 1.210 |
| 1" to 3/4" | | | | |
| 3/4" to 1/2" | | | | |
| 1/2" to 3/8" | | | | |
| 3/8" to No. 4 Minus No. 4 | | | | |
| Totals | 100 | | | 2.30 |

*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).
75\ha:unc031

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Ant McPherson



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ROCK QUALITY DETERMINATION

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

Job No. 3145JB031
Inv. No. 31450122
Date of Report 11/14/95
Reviewed By _____

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 05/23/95
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 05/23/95
Material Type: D50 .35 Aggregate Intended Use Swale Aggregate

| Property | Value | Score | Weighting Factor | Score x Weight |
|---------------------------|-------|-------|------------------|----------------|
| Specific Gravity (SSD) | 2.756 | 10 | 9 | 90 |
| Absorption, % | 2.1 | 3 | 2 | 6 |
| L.A. Abrasion, 100 rev, % | 2.7 | 9 | 1 | 9 |
| Sodium Soundness Loss, % | 4.93 | 8 | 11 | 88 |

Total = 193.0, Rock Quality Score = $193.0/230 \times 100 = 84$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450122

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ .35 Aggre.

Sampled By: H.K./WT

Date 5-23-95

Source: Hamilton Brothers

Submitted By: H.K./WT

Date 5-23-95

Authorized By: Client

Date 5-23-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity

2.699

Bulk Specific Gravity (SSD)

2.756

Apparent Specific Gravity

2.863

Absorption, Percent

2.1

Copies to: Client (3), Billing (1), Field File (1).
523.1\ha:UN031

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A. Huey



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450122
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

| | | | | | |
|-----------|---|----------------|---------|------|---------|
| Material: | Crushed Basalt D ⁵⁰ .35 Aggre. | Sampled By: | H.K./WT | Date | 5-23-95 |
| Source: | Hamilton Brothers | Submitted By: | H.K./WT | Date | 5-23-95 |
| Supplier: | | Authorized By: | Client | Date | 5-23-95 |

L.A. Abrasion, ASTM C131, Grading

% Loss at 100 Revs. 2.7

% Loss at 500 Revs. —

Copies to: Addressee (3), Billing (1). Field File (1).
523.2\ha:UN031

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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450122

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt

Sampled By: H.K./WT Date 5-23-95

Source: Hamilton Brothers

Submitted By: H.K./WT Date 5-23-95

Procedure: ASTM C88

Authorized By: Client Date 5-23-95

Solution: Sodium Sulfate (Used) 5 Cycles

COARSE AGGREGATE

| Coarse Fraction Size | Grading of Original Sample Percent | Wt. of Test Fractions Before Test, grams | Percentage Passing Designated Sieve | Weighted Percentage Loss, % |
|------------------------------|--|--|---|-----------------------------------|
| 2-1/2" to 2" 2" to 1-1/2" | | | | |
| 1-1/2" to 1" 1" to 3/4" | 28 11 | 1004.3 503.0 | 4.0 5.1 | 1.12 .56 |
| 3/4" to 1/2" 1/2" to 3/8" | 14 7 | 670.1 330.6 | 9.6 12.9 | 1.34 .90 |
| 3/8" to No. 4 Minus No. 4 | 11 | 300.9 | 9.2 | 1.01 |
| Totals | | | | 4.93 |

*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.

Copies to: Addressee (3), Billing (1), Field File (1).
523\ha:UN031

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ROCK QUALITY DETERMINATION

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

Job No. 3145JB031
Inv. No. 31450145
Date of Report 11/14/95
Reviewed By JK

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 06/12/95
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 06/12/95
Material Type: D50 .35 Aggregate Intended Use Swale Aggregate

| Property | Value | Score | Weighting Factor | Score x Weight |
|---------------------------|-------|-------|------------------|----------------|
| Specific Gravity (SSD) | 2.75 | 10 | 9 | 90 |
| Absorption, % | 1.5 | 4 | 2 | 8 |
| L.A. Abrasion, 100 rev, % | 2.6 | 9.0 | 1 | 9 |
| Sodium Soundness Loss, % | 6.38 | 7.0 | 11 | 77.0 |

Total = 184.0, Rock Quality Score = $184.0/230 \times 100 = 80$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ .35 Aggre.

Sampled By: H.K./WT Date 6-12-95

Source: Hamilton Brothers

Submitted By: H.K./WT Date 6-12-95

Authorized By: Client Date 6-12-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity 2.709

Bulk Specific Gravity (SSD) 2.750

Apparent Specific Gravity 2.824

Absorption, Percent 1.50

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

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450145
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

| | | | | | |
|-----------|---|----------------|---------|------|---------|
| Material: | Crushed Basalt D ⁵⁰ .35 aggre. | Sampled By: | H.K./WT | Date | 6-12-95 |
| Source: | Hamilton Brothers | Submitted By: | H.K./WT | Date | 6-12-95 |
| Supplier: | | Authorized By: | Client | Date | 6-12-95 |

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 2.6

% Loss at 500 Revs. —

Copies to: Addressee (3), Billing (1), Field File (1).
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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450145
Report Date: 11-15-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt

Sampled By: H.K./WT Date 6-12-95

Source: D⁵⁰ .35 Aggre.

Submitted By: H.K./WT Date 6-12-95

Procedure: ASTM C88

Authorized By: Client Date 6-12-95

Solution: Sodium Sulfate (Used) Cycles 5

COARSE AGGREGATE

| Coarse Fraction Size | Grading of Original Sample Percent | Wt. of Test Fractions Before Test, grams | Percentage Passing Designated Sieve | Weighted Percentage Loss, % |
|------------------------------|--|--|---|-----------------------------------|
| 2-1/2" to 2" 2" to 1-1/2" | | | | |
| 1-1/2" to 1" 1" to 3/4" | 28 11 | 1007.2 500.8 | 9.1 6.0 | 2.55 .66 |
| 3/4" to 1/2" 1/2" to 3/8" | 14 7 | 670.2 331.3 | 6.9 15.9 | .97 1.11 |
| 3/8" to No. 4 Minus No. 4 | 11 | 300.5 | 9.9 | 1.09 |
| Totals | | | | 6.38 |

*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).
628\h:unc031

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ROCK QUALITY DETERMINATION

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

Job No. 3145JB031
Inv. No. 31450185
Date of Report 12/05/95
Reviewed By *[Signature]*

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/10/95
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/10/95
Material Type: D50 .35 Aggregate Intended Use Swales

| Property | Value | Score | Weighting Factor | Score x Weight |
|---------------------------|-------|-------|------------------|----------------|
| Specific Gravity (SSD) | 2.718 | 9.3 | 9 | 83.7 |
| Absorption, % | 2.07 | 2.9 | 2 | 5.8 |
| L.A. Abrasion, 100 rev, % | 5.4 | 7.6 | 1 | 7.6 |
| Sodium Soundness Loss, % | .99 | 10 | 11 | 110 |

Total = 207.1, Rock Quality Score = $207.1/230 \times 100 = 90$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-27-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ .35 Aggre.

Sampled By: H.K./WT Date 7-10-95

Source: Hamilton Brothers

Submitted By: H.K./WT Date 7-10-95

Authorized By: Client Date 7-10-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity 2.663

Bulk Specific Gravity (SSD) 2.718

Apparent Specific Gravity 2.818

Absorption, Percent 2.07

Copies to: Client (3), Billing (1), Field File (1).
710.1\ha:UN031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450185
Report Date: 11-27-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ .35 Aggre. Sampled By: H.K./WT Date 7-10-95

Source: Hamilton Brothers Submitted By: H.K./WT Date 7-10-95

Supplier: Authorized By: Client Date 7-10-95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 5.4

% Loss at 500 Revs. —

Copies to: Addressee (3), Billing (1), Field File (1).
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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450185
Report Date: 11-27-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Basalt D⁵⁰ .35 Aggre.

Sampled By: H.K./WT Date 7-10-95

Source:

Submitted By: H.K./WT Date 7-10-95

Procedure: ASTM C88

Authorized By: Client Date 7-10-95

Solution: Sodium Sulfate (Used) 5 Cycles

COARSE AGGREGATE

| Coarse Fraction Size | Grading of Original Sample Percent | Wt. of Test Fractions Before Test, grams | Percentage Passing Designated Sieve | Weighted Percentage Loss, % |
|-------------------------|--|--|---|-----------------------------------|
| 2-1/2" to 2" | | | | |
| 2" to 1-1/2" | | | | |
| 1-1/2" to 1" | 17 | 1009.7 | .05 | .01 |
| 1" to 3/4" | 7 | 500.7 | .04 | .00 |
| 3/4" to 1/2" | 14 | 670.3 | .03 | .4 |
| 1/2" to 3/8" | 10 | 330.7 | .36 | .04 |
| 3/8" to No. 4 | 17 | 300.0 | 3.2 | .54 |
| Minus No. 4 | | | | |
| Totals | | | | .99 |

*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).
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ROCK QUALITY DETERMINATION

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

Job No. 3145JB031
Inv. No. 31450243
Date of Report 08/29/95
Reviewed By *AM*

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 06/20/95
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 06/20/95
Material Type: Crushed Basalt Intended Use D50 - 3

| Property | Value | Score | Weighting Factor | Score x Weight |
|---------------------------|-------|-------|------------------|----------------|
| Specific Gravity (SSD) | 2.728 | 9.5 | 9 | 85.5 |
| Absorption, % | 1.45 | 4 | 2 | 8.0 |
| L.A. Abrasion, 100 rev, % | 6.1 | 7.6 | 1 | 7.6 |
| Sodium Soundness Loss, % | 1.85 | 9.6 | 11 | 105.6 |

Total = 206.7, Rock Quality Score = $206.7/230 \times 100 = 90$

/cb:RQD.UNC1



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450243

Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Basalt Rock Sampled By: HK Date: 6-20-95

Source: D50-3 Submitted By: HK Date: 6-20-95

Authorized By: Client Date: 6-20-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity 2.689

Bulk Specific Gravity (SSD) 2.728

Apparent Specific Gravity 2.798

Absorption, Percent 1.45

Copies: Client (3), Billing & Field File (2).
620\ha:UNC031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450243
Report Date: 8-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Basalt Rock Sampled By: HK Date: 6-20-95

Source: D50-3 Submitted By: HK Date: 6-20-95

Supplier: Authorized By: Client Date: 6-20-95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 6.1

% Loss at 500 Revs.

Copies to: Addressee (3), Billing (1), Field File (1).
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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450243
Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Basalt Rock Sampled By: HK Date: 6-20-95

Source: D50-3 Submitted By: HK Date: 6-20-95

Procedure: ASTM C88 Authorized By: Client Date: 6-20-95

Solution: Sodium Sulfate

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" | 64 | 3053.3 | 1.97 | 1.26 |
| 2" to 1-1/2" | | 2018.4 | | |
| 1-1/2" to 1" | 19 | 1015.0 | .60 | .11 |
| 1" to 3/4" | | 509.5 | | |
| 3/4" to 1/2" | 13 | 674.9 | 2.28 | .30 |
| 1/2" to 3/8" | | 332.9 | | |
| 3/8" to No. 4 | 4 | 302.2 | .46 | .18 |
| Minus No. 4 | | | | |
| Totals | | | | 1.85 |

*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).
620\h:unc031

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ROCK QUALITY DETERMINATION

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

Job No. 3145JB031
Inv. No. 31450243
Date of Report 11/14/95
Reviewed By _____

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/19/95
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/19/95
Material Type: D50 -3" Intended Use Swale Aggregate

| Property | Value | Score | Weighting Factor | Score x Weight |
|---------------------------|-------|-------|------------------|----------------|
| Specific Gravity (SSD) | 2.710 | 9 | 9 | 81 |
| Absorption, % | 1.76 | 3.5 | 2 | 7.0 |
| L.A. Abrasion, 100 rev, % | 2.6 | 8.5 | 1 | 8.5 |
| Sodium Soundness Loss, % | 3.78 | 8.5 | 11 | 93.5 |

Total = 190.0, Rock Quality Score = $190.0/230 \times 100 = 83$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ 3 inch

Sampled By: H.K./WT

Date 7-19-95

Source: Hamilton Brothers

Submitted By: H.K./WT

Date 7-19-95

Authorized By: Client

Date 7-19-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity 2.663

Bulk Specific Gravity (SSD) 2.71

Apparent Specific Gravity 2.794

Absorption, Percent 1.76

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

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450185
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ 3 inch Sampled By: H.K./WT Date: 7-19-95

Source: Hamilton Brothers Submitted By: H.K./WT Date: 7-19-95

Supplier: Authorized By: Client Date: 7-9-95

L.A. Abrasion, ASTM C131, Grading A

% Loss at 100 Revs. 2.6

% Loss at 500 Revs. —

Copies to: Addressee (3), Billing (1), Field File (1).
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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-15-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ 3 inch

Sampled By: H.K./WT Date 7-19-95

Source: Hamilton Brothers

Submitted By: H.K./WT Date 7-19-95

Procedure: ASTM C88

Authorized By: Client Date 7-19-95

Solution: Sodium Sulfate (Used) Cycles 5

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" | 20 | 3007.3 | 3.56 | .71 |
| 2" to 1-1/2" | 26 | 2010.2 | 1.9 | .49 |
| 1-1/2" to 1" | 20 | 1003.2 | 11.9 | 2.38 |
| 1" to 3/4" | 2 | 501.2 | 10.0 | .2 |
| 3/4" to 1/2" | 0 | 670.7 | 6.0 | 0 |
| 1/2" to 3/8" | 0 | 330.8 | 14.5 | 0 |
| 3/8" to No. 4 Minus No. 4 | 0 | 300.8 | 8.9 | 0 |
| Totals | | | | 3.78 |

*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).
719.2\h:unc031

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ROCK QUALITY DETERMINATION

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

Job No. 3145JB031
Inv. No. 31450243
Date of Report 11/14/95
Reviewed By _____

Project: 1995 Church Rock Uranium Mill Tailings Reclamation Project
Location: Church Rock, New Mexico Sampled by: H. Kuebler/WT Date 07/26/95
Material Source: Hamilton Brothers Construction Authorized by: E. Morales/Client Date 07/26/95
Material Type: D50 -3" Intended Use Swale Aggregate

| Property | Value | Score | Weighting Factor | Score x Weight |
|---------------------------|-------|-------|------------------|----------------|
| Specific Gravity (SSD) | 2.781 | 10 | 9 | 90 |
| Absorption, % | 1.93 | 3 | 2 | 6 |
| L.A. Abrasion, 100 rev, % | 3.1 | 9 | 1 | 9 |
| Sodium Soundness Loss, % | 2.20 | 9 | 11 | 99 |

Total = 204.0, Rock Quality Score = $204.0/230 \times 100 = 89$

Dist: Client (3) Field File (1)

/cb:RQD.UNC2



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ 3 inch

Sampled By: H.K./WT

Date 7-26-95

Source: Hamilton Brothers

Submitted By: H.K./WT

Date 7-26-95

Authorized By: Client

Date 7-26-95

Coarse Aggregate, ASTM C127

Bulk Specific Gravity 2.728

Bulk Specific Gravity (SSD) 2.781

Apparent Specific Gravity 2.880

Absorption, Percent 1.93

Copies to: Client (3), Billing (1), Field File (1).
726.1\ha:UN031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining and Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031
Lab/Inv. No. 31450185
Report Date: 11-14-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Crushed Basalt D⁵⁰ 3 inch Sampled By: H.K./WT Date: 7-26-95

Source: Hamilton Brothers Submitted By: H.K./WT Date: 7-26-95

Supplier: Authorized By: Client Date: 7-26-95

L.A. Abrasion, ASTM C535, Grading 1

% Loss at 100 Revs. 3.1

% Loss at 500 Revs. —

Copies to: Addressee (3), Billing (1), Field File (1).
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LABORATORY REPORT

SOUNDNESS OF AGGREGATES

| | | | |
|------------|---|----------------|--------------------------------|
| Client: | UNC Mining & Milling Attn: Mr. Ed Morales PO Box 3077 Gallup, NM 87305 | Job No. | 3145JB031 |
| | | Lab/Inv. No. | 31450185 |
| | | Report Date: | 11-15-95 |
| Project: | 1995 Reclamation | | |
| Location: | Church Rock, NM | | |
| Material: | Crushed Basalt D ⁵⁰ 3 inch | Sampled By: | H.K./WT Date 7-26-95 |
| Source: | Hamilton Brothers | Submitted By: | H.K./WT Date 7-26-95 |
| Procedure: | ASTM C88 | Authorized By: | Client Date 7-26-95 |
| | | Solution: | Sodium Sulfate (Used) Cycles 5 |

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" | 25 | 3064.4 | 4.10 | 1.03 |
| 2" to 1-1/2" | 21 | 2025.6 | 3.17 | .67 |
| 1-1/2" to 1" | 7 | 1022.8 | 7.18 | .50 |
| 1" to 3/4" | 0 | 505.3 | 8.41 | 0 |
| 3/4" to 1/2" | 0 | 671.4 | 11.3 | 0 |
| 1/2" to 3/8" | 0 | 330.3 | 23.3 | 0 |
| 3/8" to No. 4 Minus No. 4 | 0 | 300.4 | 18.0 | 0 |
| Totals | | | | 2.20 |

*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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A. Kelly

APPENDIX F

ROCK GRADATION TESTS, ROCK MULCH AND RIPRAP

UNITED NUCLEAR CORPORATION 1995 RECLAMATIONWT JOB NO. 3145JB031**TEST SUMMARY FOR D50 1.5 MATERIAL**DATE OF REPORT 12/07/95

| DATE | SAMPLE LOCATION | % PASS 3" SPEC. 100% | % PASS 1" SPEC. 8-37% | % PASS #4 SPEC. 0-8% | WITHIN SPECS. ? |
|----------|-------------------|----------------------------|-----------------------------|----------------------------|-----------------------|
| 03/09/95 | Hamilton Brothers | 100 | 14 | 1 | Yes |
| 03/14/95 | Hamilton Brothers | 100 | 16 | 1 | Yes |
| 03/21/95 | Hamilton Brothers | 100 | 27 | 1 | Yes |
| 03/31/95 | UNC Stockpile | 100 | 19 | .6 | |
| 04/06/95 | Rock Score | | | | |
| 04/06/95 | Hamilton Brothers | 100 | 40 | 3 | No* |
| 05/23/95 | UNC Windrow | 100 | 15 | .1 | Yes |
| 06/07/95 | Rock Score | | | | Yes |
| 07/05/95 | Rock Score | | | | |
| 07/05/95 | UNC | 100 | 22 | 1 | Yes |
| 09/07/95 | Hamilton Brothers | 100 | 35 | .8 | Yes |
| | | | | | |

*Material was wasted.

cb/1995.UNC/3

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



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 04/04/95

Project: 1995 Reclamation

Location: Chruch Rock, New Mexico

Material: 1.5 Aggregate

Sampled By: H. Kuebler /WT Date 03/09/95

Source: Hamilton Brothers

Submitted By: H. Kuebler /WT Date 03/09/95

Authorized By: Client Date 03/09/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve | % Passing | Specification |
|-------|--------------|---------------|
| Size | Accumulative | (As Required) |
| 2" | 100 | 100 |
| 1" | 14 | 8 - 37 |
| No. 4 | 1 | 0 - 8 |

Copies: Client (3), Billing (1), Field File (1)
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PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 04/04/95

Project: 1995 Reclamation

Location: Chruch Rock, New Mexico

Material: 1.5 Aggregate

Sampled By: P. Christensen/WT Date 03/14/95

Source: Hamilton Brothers Crusher

Submitted By: P. Christensen/WT Date 03/14/95

Authorized By: Client Date 03/14/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|---------------|---------------------------|--------------------------------|
| 2" | 100 | 100 |
| 1" | 16 | 8 - 37 |
| No. 4 | 1 | 0 - 8 |

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PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 04/04/95

Project: 1995 Reclamation

Location: Chruch Rock, New Mexico

Material: 1.5 Aggregate, Sample #83

Sampled By: H. Kuebler /WT Date 03/21/95

Source: Hamilton Brothers Belt Sample

Submitted By: H. Kuebler /WT Date 03/21/95

Authorized By: H. Kuebler /WT Date 03/21/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|---------------------------|--------------------------------|
| 2" | 100 | 100 |
| 1" | 27 | 8 - 37 |
| No. 4 | 1 | 0 - 8 |

Copies: Client (3), Billing (1), Field File (1)
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PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 04/04/95

Project: 1995 Reclamation

Location: Chruch Rock, New Mexico

Material: 1.5 Aggregate, Sample #83

Sampled By: H. Kuebler /WT Date 03/31/95

Source: UNC Stockpile

Submitted By: H. Kuebler /WT Date 03/31/95

Authorized By: H. Kuebler /WT Date 03/31/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|---------------|---------------------------|--------------------------------|
| 2" | 100 | 100 |
| 1" | 19 | 8 - 37 |
| No. 4 | .6 | 0 - 8 |

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PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450084

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: 1.5 Aggregate

Sampled By: H. Kuebler/WT Date 04/06/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 04/06/95

Authorized By: Client Date 04/06/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | 100 | 100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | 40 | 8-37 |
| 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 A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

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PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450122

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ 1.5 Aggregate

Sampled By: H. Kuebler/WT Date 05/23/95

Source: UNC Wind Row

Submitted By: H. Kuebler/WT Date 05/23/95

Authorized By: Client Date 05/23/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | 100 | 100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | 15 | 8-37 |
| 3/4" | | |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 0.1 | 0-8 |
| 8 | | |
| 10 | | |
| 16 | | |
| 30 | | |
| 40 | | |
| 50 | | |
| 100 | | |
| 200 | | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

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PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ 1.5 Aggregate

Sampled By: H. Kuebler/WT Date 07/05/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 07/05/95

Authorized By: Client Date 07/05/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | 100 | 100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | 22 | 8-37 |
| 3/4" | | |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 1 | 0-8 |
| 8 | | |
| 10 | | |
| 16 | | |
| 30 | | |
| 40 | | |
| 50 | | |
| 100 | | |
| 200 | | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

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PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ 1.5

Sampled By: Hamilton Brothers Date 09/07/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 09/07/95

Authorized By: Client Date 09/07/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 4" | | |
| 3" | | |
| 2" | 100 | 100 |
| 1" | 35 | 20-37 |
| 3/4" | | |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 0.8 | 0-8 |
| 8 | | |
| 10 | | |
| 16 | | |
| 30 | | |
| 40 | | |
| 50 | | |
| 100 | | |
| 200 | | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR D50 3" MATERIAL

DATE OF REPORT 12/07/95

JK

| DATE | SAMPLE LOCATION | % PASS 6" SPEC. 100% | % PASS 3" SPEC. 40-50% | % PASS 1" SPEC. 0-22% | WITHIN SPECS. ? |
|----------|-------------------|----------------------------|------------------------------|-----------------------------|-----------------------|
| 06/14/95 | Stockpile | 100 | 45 | .1 | Yes |
| 06/21/95 | Hamilton Brothers | 100 | 18* | 0 | No |
| 06/20/95 | Rock Score | | | | |
| 07/06/95 | Hamilton Brothers | 100 | 21* | .1 | No |
| 07/07/95 | Hamilton Brothers | 100 | 60* | 9 | No |
| 07/10/95 | Hamilton Brothers | 100 | 32* | 2.6 | No |
| 07/11/95 | Hamilton Brothers | 100 | 54 | 2.0 | Yes |
| 07/19/95 | Belt Sample | 100 | 46 | 1.0 | Yes |
| 07/19/95 | Rock Score | | | | |
| 07/26/95 | Belt Sample | 100 | 49 | 1.1 | Yes |
| 07/26/95 | Rock Score | | | | |
| | | | | | |

*MATERIAL WAS DISCARDED

cb/1995.UNC/1

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



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 06/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50 - 3"

Sampled By: H. Kuebler Date 06/14/95

Source: Stock Pile

Submitted By: H. Kuebler Date 06/14/95

Authorized By: Client Date 06/14/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|---------------|---------------------------|--------------------------------|
| 6" | 100 | 100 |
| 4" | | |
| 3" | 45 | 40-50 |
| 1" | .1 | 0-22 |
| 3/4" | | |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | | |
| 8 | | |
| 10 | | |
| 16 | | |
| 30 | | |
| 40 | | |
| 50 | | |
| 100 | | |
| 200 | | |

Copies: Client (3), Billing (1), Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50-3" Aggregate

Sampled By: Jim Golding Date 6-21-95

Source: Hamilton Brothers Crusher

Submitted By: Jim Golding Date 6-21-95

Authorized By: Client Date 6-21-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 6 | | 100 |
| 4 | 100 | |
| 3 | 18 | 40-50 |
| 2 | 18 | |
| 1 1/2 | 18 | |
| 1 1/8 | 18 | |
| 1 | 0 | 0-22 |
| 3/4 | | |
| 1/2 | | |
| 3/8 | | |
| 1/4, 3 | | |
| #4 | | |
| 8 | | |
| 10 | | |
| 16 | | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
621\ha:UNC031

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Chris M. [Signature]



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 07/06/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50 - 3" Aggregate

Sampled By: J. Golding Date 07/05/95

Source: Hamilton Crusher

Submitted By: J. Golding Date 07/05/95

Authorized By: Client Date 07/05/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 6" | 100 | 100 |
| 4" | 100 | |
| 3" | 21 | 40-50 |
| 2" | | |
| 1 1/2" | | |
| 1 1/8" | | |
| 1" | 0.1 | 0-22 |
| 3/4" | | |
| No. 4 | | |
| 8 | | |
| 10 | | |
| 16 | | |
| 30 | | |
| 40 | | |
| 50 | | |
| 100 | | |
| 200 | | |

Copies: Client (3), Billing (1), Field File (1)
7-5/rgo:UNC031

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Thomas Morales



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50-3" Aggregate

Sampled By: HP Date 7-7-95

Source: Hamilton Brothers Crusher

Submitted By: HP Date 7-7-95

Authorized By: Client Date 7-7-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 6 | 100 | |
| 4 | | |
| 3 | 60 | 40-50 |
| 2 | | |
| 1 1/2 | | |
| 1 1/8 | | |
| 1 | 9 | 0-22 |
| 3/4 | 0 | |
| 1/2 | | |
| 3/8 | | |
| 1/4,3 | | |
| #4 | | |
| 8 | | |
| 10 | | |
| 16 | | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
77ha:UNC031

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Chris McLaughlin



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50-3" Aggregate

Sampled By: HD Date 7-10-95

Source: Hamilton Brothers Crusher

Submitted By: HD Date 7-10-95

Authorized By: Client Date 7-10-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 6 | 100 | 100 |
| 4 | | |
| 3 | 32 | 40-50 |
| 2 | | |
| 1 1/2 | | |
| 1 1/8 | | |
| 1 | 2.6 | 0-22 |
| 3/4 | | |
| 1/2 | | |
| 3/8 | | |
| 1/4, 3 | | |
| #4 | | |
| 8 | | |
| 10 | | |
| 16 | | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

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



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D50-3"

Sampled By: WTI Crew Date 7-11-95

Source: Hamilton Brothers Stockpile

Submitted By: WTI Crew Date 7-11-95

Authorized By: Client Date 7-11-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 6 | 100 | |
| 4 | | |
| 3 | 54 | 40-50 |
| 2 | | |
| 1 1/2 | | |
| 1 1/8 | | |
| 1 | 2 | 0-22 |
| 3/4 | | |
| 1/2 | | |
| 3/8 | | |
| 1/4, 3 | | |
| #4 | | |
| 8 | | |
| 10 | | |
| 16 | | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
711\ha:UNC031

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Carrie McHenry



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 8-29-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: 3" Rock

Sampled By: Paul/Hamilton Bro. Date 7-19-95

Source: Belt - 121:45pm

Submitted By: CP Date 7-19-95

Authorized By: Client Date 7-19-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 6 | 100 | 100 |
| 4 | | |
| 3 | 46 | 40-50 |
| 2 | | |
| 1 1/2 | | |
| 1 1/8 | | |
| 1 | 1 | 0-22 |
| 3/4 | | |
| 1/2 | | |
| 3/8 | | |
| 1/4, 3 | | |
| #4 | | |
| 8 | | |
| 10 | | |
| 16 | | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1), Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 07/27/95

Project: 1995 Reclamation

Location: Church Rock, N.M.

Material: D50 - 3inch

Sampled By: H. Kuebler Date 07/26/95

Source: Hamilton Belt Sample

Submitted By: H. Kuebler Date 07/26/95

Authorized By: Client Date 07/26/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|---------------|---------------------------|--------------------------------|
| 6" | 100 | 100 |
| 4" | | |
| 3" | 49 | 40-50 |
| 1" | 1.1 | 0-22 |
| 3/4" | | |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | | |
| 8 | | |
| 10 | | |
| 16 | | |
| 30 | | |
| 40 | | |
| 50 | | |
| 100 | | |
| 200 | | |

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REVIEWED BY

Thomas Kuebler

**APPENDIX
G**

APPENDIX G
ROCK MULCH THICKNESS

D 50 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 place 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 5". 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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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell Haul Road

| Location | Grid Point | Thickness |
|----------|------------|-----------|
| 29 + 00 | A-100' | 3" |
| 29 + 50 | A-50' | 3 1/2" |
| 30 + 00 | A-100' | 2 1/2" |
| 30 + 50 | A-50' | 3 1/4" |
| 31 + 00 | A-100' | 3 3/4" |
| 31 + 50 | A-50' | 3 1/2" |
| 32 + 00 | A-100' | 3 1/2" |
| 32 + 50 | A-50' | 2 1/2" |
| 33 + 00 | A-100' | 5" |
| 33 + 50 | A-50' | 5" |
| 34 + 00 | A-100' | 4" |
| 34 + 50 | A-50' | 3" |
| 35 + 00 | A-100' | 4" |
| 35 + 50 | A-50' | 3 1/2" |

Dist: Client (3) Field File (1) Billing (1)
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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell Haul Road

| Location | Grid Point | Thickness |
|----------|------------|-----------|
| 36 + 00 | A-100' | 3 1/2" |
| 36 + 50 | A-50' | 3 1/2" |
| 37 + 00 | A-100' | 4 1/4" |
| 37 + 50 | A-50' | 3" |
| 38 + 00 | A-100' | 3 1/2" |
| 38 + 50 | A-50' | 4" |
| 39 + 00 | A-100' | 3" |
| 39 + 50 | A-50' | 3 1/4" |
| 40 + 00 | A-100' | 2 1/4" |
| 40 + 50 | A-50' | 3 1/4" |
| 41 + 00 | A-100' | 3" |
| 41 + 50 | A-50' | 3" |
| 42 + 00 | A-100' | 3" |
| | | |

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|----------|-----------|----------|-----------|
| A + 29 | 3" | A + 30 | 4 1/2" |
| A + 31 | 3 1/4" | A + 32 | 3 1/4" |
| A + 33 | 3 3/4" | A + 34 | 3 1/2" |
| A + 35 | 3" | A + 36 | 3 1/2" |
| A + 37 | 4 1/2" | A + 38 | 3 1/4" |
| A + 39 | 4" | A + 40 | 3 3/4" |
| A + 41 | 4 1/2" | A + 42 | 3 3/4" |
| B + 29 | 3" | B + 30 | 3 1/2" |
| B + 31 | 3" | B + 32 | 3" |
| B + 33 | 4" | B + 34 | 4" |
| B + 35 | 4" | B + 36 | 4" |
| B + 37 | 4" | B + 38 | 4" |
| B + 39 | 3 3/4" | B + 40 | 4 1/4" |
| B + 41 | 3" | B + 42 | 3" |

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/cb:031.UNC/11

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J. Kuebler



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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS

South Cell

| Location | Thickness | Location | Thickness |
|----------|-----------|----------|-----------|
| C + 29 | 3 1/2" | C + 30 | 3" |
| C + 31 | 3" | C + 32 | 3 1/2" |
| C + 33 | 4" | C + 34 | 3" |
| C + 35 | 3 1/4" | C + 36 | 3 1/2" |
| C + 37 | 3 3/4" | C + 38 | 4" |
| C + 39 | 3" | C + 40 | 3" |
| C + 41 | 3 1/2" | C + 42 | 3 1/2" |
| D + 29 | 3 1/2" | D + 30 | 4" |
| D + 31 | 3" | D + 32 | 4" |
| D + 33 | 4" | D + 34 | 3 1/2" |
| D + 35 | 3 1/4" | D + 36 | 3 1/4" |
| D + 37 | 3" | D + 38 | 4" |
| D + 39 | 3" | D + 40 | 3 1/2" |
| D + 41 | 3 1/2" | E + 29 | 3 3/4" |

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|----------|-----------|----------|-----------|
| E + 30 | 4 1/4" | E + 31 | 3 1/2" |
| E + 32 | 3 1/4" | E + 33 | 3 1/4" |
| E + 34 | 3 1/4" | E + 35 | 4" |
| E + 36 | 3 3/4" | E + 37 | 3 1/4" |
| E + 38 | 3" | F + 29 | 3 1/4" |
| F + 30 | 4" | F + 31 | 4" |
| F + 32 | 4" | F + 33 | 4" |
| F + 34 | 3 1/2" | F + 35 | 3 3/4" |
| F + 36 | 3 1/2" | F + 37 | 4" |
| F + 38 | 3 1/4" | F + 39 | 3 1/2" |
| F + 40 | 4" | G + 29 | 3 1/4" |
| G + 30 | 3" | G + 31 | 4" |
| G + 32 | 3 1/2" | G + 33 | 3 1/2" |
| G + 34 | 4" | G + 35 | 3 3/4" |

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|------------|-----------|------------|-----------|
| H + 29 | 4" | H + 30 | 4" |
| H + 31 | 3" | H + 32 | 4" |
| H + 33 | 3 1/2" | H + 34 | 3 1/2" |
| I + 29 | 4" | I + 30 | 4" |
| I + 31 | 3" | I + 32 | 4" |
| I + 33 | In Swale | I + 34 | 3 1/2" |
| I + 35 | 4" | H.5 + 32.5 | 3" |
| H.5 + 33.5 | 3 1/2" | H.5 + 34.5 | 3 1/4" |
| I + 33.5 | 3" | I + 34.5 | 3 1/2" |
| E + 39 | 4" | E + 40 | 4" |
| | | | |
| | | | |
| | | | |
| | | | |

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J. Kuelker



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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 11/21/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|------------|-----------|------------|-----------|
| A.5 + 29.5 | 3 1/4" | A.5 + 30.5 | 4 1/4" |
| A.5 + 31.5 | 3 1/4" | A.5 + 32.5 | 4" |
| A.5 + 33.5 | 3 1/4" | A.5 + 34.5 | 4" |
| A.5 + 35.5 | 4" | A.5 + 36.5 | 3 1/2" |
| A.5 + 37.5 | 4" | A.5 + 38.5 | 3" |
| A.5 + 39.5 | 4" | A.5 + 40.5 | 4" |
| A.5 + 41.5 | 3 1/2" | B.5 + 29.5 | 3" |
| B.5 + 30.5 | 3 3/4" | B.5 + 31.5 | 4" |
| B.5 + 32.5 | 4 1/2" | B.5 + 33.5 | 4" |
| B.5 + 34.5 | 4" | B.5 + 35.5 | 4" |
| B.5 + 36.5 | 3" | B.5 + 37.5 | 3" |
| B.5 + 38.5 | 3" | B.5 + 39.5 | 3 3/4" |
| B.5 + 40.5 | 4" | B.5 + 41.5 | 3 1/2" |
| C.5 + 29.5 | 4" | C.5 + 30.5 | 4" |

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J. Kuebler



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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 11/21/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|------------|-----------|------------|-----------|
| C.5 + 31.5 | 3 1/2" | C.5 + 32.5 | 3 1/4" |
| C.5 + 33.5 | 3 1/2" | C.5 + 34.5 | 4 1/2" |
| C.5 + 35.5 | 3 3/4" | C.5 + 36.5 | 3 1/4" |
| C.5 + 37.5 | 3" | C.5 + 38.5 | 3 3/4" |
| C.5 + 39.5 | 3" | C.5 + 40.5 | 3 1/2" |
| C.5 + 41.5 | 4" | D.5 + 29.5 | 3 1/2" |
| D.5 + 30.5 | 3 1/2" | D.5 + 31.5 | 3 1/2" |
| D.5 + 32.5 | 3 1/4" | D.5 + 33.5 | 3 3/4" |
| D.5 + 34.5 | 3" | D.5 + 35.5 | 3 1/4" |
| D.5 + 36.5 | 3 1/4" | D.5 + 37.5 | 3 1/4" |
| D.5 + 38.5 | 3 1/4" | D.5 + 39.5 | 3 1/4" |
| D.5 + 40.5 | 3" | E.5 + 29.5 | 3 3/4" |
| E.5 + 30.5 | 3 1/4" | E.5 + 31.5 | 5" |
| E.5 + 32.5 | 3" | E.5 + 33.5 | 3 1/4" |

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 11/21/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|------------|-----------|------------|-----------|
| E.5 + 34.5 | 3 1/2" | E.5 + 35.5 | 3" |
| E.5 + 36.5 | 4 1/2" | E.5 + 37.5 | 3 1/4" |
| E.5 + 38.5 | 3" | E.5 + 39.5 | 3" |
| E.5 + 40.5 | 3" | F.5 + 29.5 | 4" |
| F.5 + 30.5 | 4" | F.5 + 31.5 | 4" |
| F.5 + 32.5 | 3" | F.5 + 33.5 | 4" |
| F.5 + 34.5 | 4" | F.5 + 35.5 | 3" |
| F.5 + 36.5 | 4" | F.5 + 37.5 | 4" |
| G.5 + 29.5 | 3" | G.5 + 30.5 | 3 1/2" |
| G.5 + 31.5 | 3" | G.5 + 32.5 | 3 1/2" |
| G.5 + 33.5 | 3 1/4" | G.5 + 34.5 | 3 1/2" |
| H.5 + 29.5 | 3 1/2" | H.5 + 30.5 | 3" |
| H.5 + 31.5 | 4" | | |
| | | | |

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/cb:031.UNC/10

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[Signature]

**APPENDIX
H**

APPENDIX H
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 South Cell Borrow Area. 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 2" of D50 1.5 aggregate with an addition 3" to 4" placed on top of the D50 1.5 aggregate. Isolated areas were thickened to provide adequate drainage. WT performed thickness measurements to assist in determining penetration depth and thickness of soil material on top of the D50 1.5 aggregate.





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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|----------|-----------|----------|-----------|
| A + 29 | 3 3/4" | A + 30 | 3 1/4" |
| A + 31 | 3" | A + 32 | 4 1/2" |
| A + 33 | 3" | A + 34 | 4 1/2" |
| A + 35 | 3 1/2" | A + 36 | 4 1/2" |
| A + 37 | 4 1/2" | A + 38 | 3" |
| A + 39 | 3 1/2" | A + 40 | 5" |
| A + 41 | 4 1/4" | A + 42 | 6" |
| B + 29 | 3 1/2" | B + 30 | 5" |
| B + 31 | 5 3/4" | B + 32 | 4 1/2" |
| B + 33 | 4 1/2" | B + 34 | 6" |
| B + 35 | 5" | B + 36 | 5 1/4" |
| B + 37 | 3" | B + 38 | 5" |
| B + 39 | 5" | B + 40 | 5" |
| B + 41 | 3" | B + 42 | 5" |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.UNC/15

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|----------|-----------|----------|-----------|
| C + 29 | 3" | C + 30 | 4 3/4" |
| C + 31 | 3 3/4" | C + 32 | 3" |
| C + 33 | 4 1/2" | C + 34 | 8" |
| C + 35 | 9" | C + 36 | 5" |
| C + 37 | 5" | C + 38 | 5" |
| C + 39 | 5 1/2" | C + 40 | 6" |
| C + 41 | 3 1/2" | C + 42 | 3" |
| D + 29 | 3 1/4" | D + 30 | 8 3/4" |
| D + 31 | 3 1/2" | D + 32 | 4 1/2" |
| D + 33 | 4 1/2" | D + 34 | 4 1/2" |
| D + 35 | 3 1/2" | D + 36 | 5" |
| D + 37 | 3 1/4" | D + 38 | 8" |
| D + 39 | 3 1/4" | D + 40 | 3" |
| D + 41 | 3 1/2" | E + 29 | 3" |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.UNC/16

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|----------|-----------|----------|-----------|
| E + 30 | 3" | E + 31 | 3" |
| E + 32 | 3" | E + 33 | 3 1/2" |
| E + 34 | 3" | E + 35 | 3 3/4" |
| E + 36 | 7" | E + 37 | 3 3/4" |
| E + 38 | 3 3/4" | F + 29 | 4 1/2" |
| F + 30 | 4" | F + 31 | 3" |
| F + 32 | 5 1/2" | F + 33 | 3 1/2" |
| F + 34 | 7" | F + 35 | 3" |
| F + 36 | 3" | F + 37 | 3" |
| F + 38 | 3" | F + 39 | 3" |
| F + 40 | 5" | G + 29 | 3 1/2" |
| G + 30 | 3" | G + 31 | 4 1/2" |
| G + 32 | 5" | G + 33 | 4" |
| G + 34 | 4" | G + 35 | 4" |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.UNC/17

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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|------------|-----------|------------|-----------|
| G + 36 | 4" | H + 29 | 4" |
| H + 30 | 6" | H + 31 | 8" |
| H + 32 | 8 1/2" | H + 33 | 4 1/2" |
| H + 34 | 4 1/2" | I + 29 | 3 1/2" |
| I + 30 | 9" | I + 31 | 7" |
| I + 32 | 6" | I + 33 | In Swale |
| I + 34 | 5" | I + 35 | 4" |
| H.5 + 32.5 | 10" | H.5 + 33.5 | 4" |
| H.5 + 34.5 | 4" | I + 33.5 | 3 3/4" |
| I + 34.5 | 3 1/2" | | |
| | | | |
| | | | |
| | | | |
| | | | |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.UNC/18

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REVIEWED BY

J. Kuehl



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WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS

South Cell

| Location | Thickness | Location | Thickness |
|------------|-----------|------------|-----------|
| A.5 + 29.5 | 4" | A.5 + 30.5 | 5" |
| A.5 + 31.5 | 5 1/4" | A.5 + 32.5 | 5 1/2" |
| A.5 + 33.5 | 5 1/4" | A.5 + 34.5 | 6" |
| A.5 + 35.5 | 5" | A.5 + 36.5 | 4 1/2" |
| A.5 + 37.5 | 3 1/2" | A.5 + 38.5 | 6" |
| A.5 + 39.5 | 3 1/2" | A.5 + 40.5 | 3" |
| A.5 + 41.5 | 7 1/2" | B.5 + 29.5 | 5" |
| B.5 + 30.5 | 4" | B.5 + 31.5 | 4" |
| B.5 + 32.5 | 4" | B.5 + 33.5 | 3" |
| B.5 + 34.5 | 3" | B.5 + 35.5 | 3 1/2" |
| B.5 + 36.5 | 5 1/2" | B.5 + 37.5 | 3" |
| B.5 + 38.5 | 3" | B.5 + 39.5 | 3" |
| B.5 + 40.5 | 5" | B.5 + 41.5 | 4" |
| C.5 + 29.5 | 3 3/4" | C.5 + 30.5 | 3" |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.UNC/19

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|------------|-----------|------------|-----------|
| C.5 + 31.5 | 6" | C.5 + 32.5 | 3 1/2" |
| C.5 + 33.5 | 3 3/4" | C.5 + 34.5 | 4 1/2" |
| C.5 + 35.5 | 3" | C.5 + 36.5 | 3" |
| C.5 + 37.5 | 3 1/4" | C.5 + 38.5 | 3" |
| C.5 + 39.5 | 5 1/2" | C.5 + 40.5 | 4" |
| C.5 + 41.5 | 3 1/4" | D.5 + 29.5 | 6" |
| D.5 + 30.5 | 3" | D.5 + 31.5 | 3" |
| D.5 + 32.5 | 4 1/2" | D.5 + 33.5 | 3" |
| D.5 + 34.5 | 3 3/4" | D.5 + 35.5 | 4 1/4" |
| D.5 + 36.5 | 3 1/4" | D.5 + 37.5 | 5" |
| D.5 + 38.5 | 5" | D.5 + 39.5 | 4 1/2" |
| D.5 + 40.5 | 3" | E.5 + 29.5 | 4 1/2" |
| E.5 + 30.5 | 4" | E.5 + 31.5 | 3" |
| E.5 + 32.5 | 4 1/2" | E.5 + 33.5 | 4 1/2" |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.UNC/20

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/05/95

SOIL ON MULCH PLACEMENT THICKNESS South Cell

| Location | Thickness | Location | Thickness |
|------------|-----------|------------|-----------|
| E.5 + 34.5 | 4 1/2" | E.5 + 35.5 | 3" |
| E.5 + 36.5 | 4 1/2" | E.5 + 37.5 | 4 1/4" |
| E.5 + 38.5 | 4" | E.5 + 39.5 | 3 1/2" |
| E.5 + 40.5 | 5 1/2" | F.5 + 29.5 | 4 1/2" |
| F.5 + 30.5 | 4" | F.5 + 31.5 | 3" |
| F.5 + 32.5 | 5 1/2" | F.5 + 33.5 | 3 1/2" |
| F.5 + 34.5 | 7" | F.5 + 35.5 | 3" |
| F.5 + 36.5 | 3" | F.5 + 37.5 | 4" |
| F.5 + 38.5 | 4" | F.5 + 39.5 | 6" |
| G.5 + 29.5 | 3 1/2" | G.5 + 30.5 | 6 1/4" |
| G.5 + 31.5 | 6" | G.5 + 32.5 | 10" |
| G.5 + 33.5 | 3 1/2" | G.5 + 34.5 | 4" |
| H.5 + 29.5 | 5" | H.5 + 30.5 | 5" |
| H.5 + 31.5 | 8" | | |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.UNC/21

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REVIEWED BY

APPENDIX

I

APPENDIX I
FIELD MODIFICATIONS, SOUTH CELL SWALES

June 26, 1995

86-060-20

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

Transmittal
Field Design Modifications
Central and South Cell Reclamation

Dear Ed:

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

Branch Swales B and C

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

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



Mr. Edward M. Morales

2

June 26, 1995

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

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

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

Branch Swales H, I and J

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

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

South Cell Drainage Channel

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

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

Bedding Layer 2

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

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

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

Very truly yours,



Frank J. Filas, P.E.
Project Engineer

FJF/wde

Enclosures

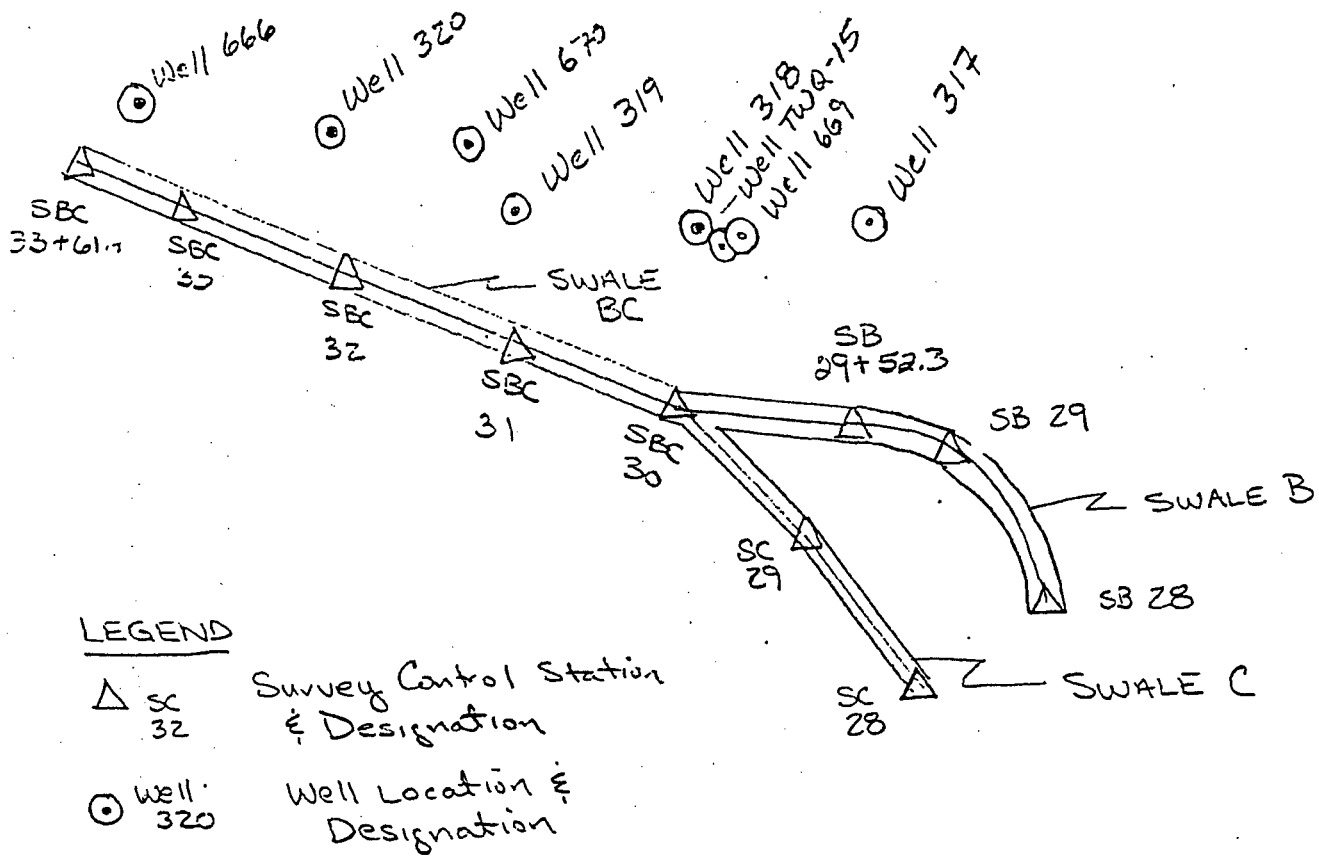
cc: Mr. Juan Velasquez, United Nuclear Corporation

SMITH

CALCULATIONS

BRANCH SWALES B AND C

CHURCH ROCK SITE
CENTRAL CELL RECLAMATION



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

RIPRAP DETERMINATION B. SAFETY FACTOR METHOD

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

LOCATION: UNC -- DRAINAGE SWALE B FIELD MODIFICATION

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

CHANNEL BOTTOM

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

CHANNEL SIDE SLOPES

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

Design values

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

Design Modification

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

REFERENCE: FILE RIPSF105.WR1

RIPRAP DETERMINATION L. SAFETY FACTOR METHOD

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

LOCATION: UNC -- DRAINAGE SWALE B + C

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

CHANNEL BOTTOM

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

CHANNEL SIDE SLOPES

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

Design values

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

REFERENCE: FILE RIPS103.WR1

RIPRAP DETERMINATION B. SAFETY FACTOR METHOD

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

LOCATION: UNC -- DRAINAGE SWALE B + C

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

CHANNEL BOTTOM

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

CHANNEL SIDE SLOPES

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

Design values

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

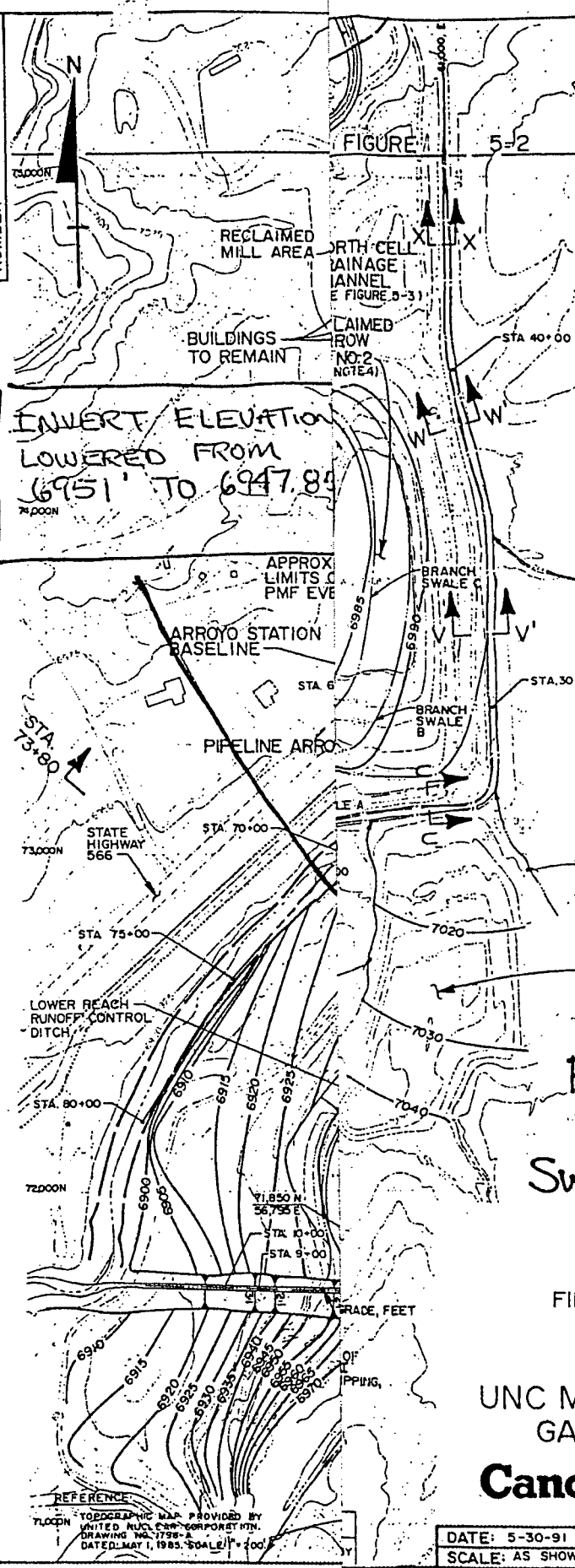
REFERENCE: FILE RIPS113.WR1

SMTH

CALCULATIONS

BRANCH SWALES H, I AND J

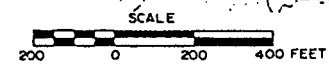
86-060-E439
DRAWING 86-060-E544
NUMBER
E639



NOTES:

1. DESIGN ELEVATION CONTOURS ON THE TAILINGS IMPOUNDMENT ALLOW FOR A 1.5 FOOT RADOM BARRIER AND A 8 INCH SOIL/ROCK MATRIX EROSION PROTECTION LAYER OVER REGRADED TAILINGS SEE FIGURE 5-3 FOR SOIL COVER PROFILE.
2. CROSS SECTIONS ARE SHOWN ON FIGURES 5-3 AND 5-6.
3. DETAILS ARE SHOWN ON FIGURES 5-3, 5-4, AND 5-9.
4. BORROW PIT NO. 2 WILL BE RECLAIMED BY BACKFILLING WITH MILL DEMOLITION DEBRIS, ORE PAD MATERIALS, CATCH BASIN MATERIALS AND SOIL EXCAVATION FROM THE SOIL STOCKPILE, IF NECESSARY.
5. THE AREA SURROUNDING THE CATCH BASINS WILL BE RECLAIMED BY STRIPPING THE UPPER SIX INCHES OF SOIL. ALL REMAINING ORE AND TAILINGS MATERIAL WILL BE EXCAVATED TO A MINIMUM DEPTH OF 5 FEET IN THE CATCH BASINS. ALL MATERIALS WILL BE USED AS BACKFILL WITHIN THE BORROW PIT NO. 2. THE ENTIRE CATCH BASIN AREA WILL THEN BE REGRADED TO THE LINES AND GRADES SHOWN.
6. ACCESS ROADS WHICH CURRENTLY EXIST OR WHICH HAVE BEEN ADDED FOR THE CONVENIENCE OF THE CONTRACTOR WILL BE RECLAIMED IN ACCORDANCE WITH THE SPECIFICATIONS.
7. THE EXISTING SOIL STOCKPILE WILL BE USED AS A SOURCE OF BACKFILL FOR BORROW PIT NO. 2. SUBSEQUENT TO BACKFILLING, THE STOCKPILE AREA WILL BE REGRADED TO MEET THE CONTOURS SHOWN.
8. AFTER DRAWING No. 86-060-E499 (FIGURE 2-21) IN THE MARCH 4, 1991 RESPONSE TO NRC COMMENTS.

**FIELD DESIGN
MODIFICATION
SWALES H, I & J**



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

REFERENCE
TOPOGRAPHIC MAP PROVIDED BY
UNITED NUCLEAR CORPORATION
DRAWING NO. 1798-A
DATED MAY 1, 1983. SCALE 1" = 200'

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

RIPSF106.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

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

LOCATION: UNC -- DRAINAGE SWALE I FIELD MODIFICATION

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

CHANNEL BOTTOM

D50 (ASSUM) = 0.25 FT
n = 0.031
d = 2.42 FT -
A = 65.97 FT²
R = 1.87 FT
Q (CALC) = 388.3 CFS -
v = 5.89 FPS
t = 1.01 PSF
nb = 0.792
SFb = 1.25

CHANNEL SIDE SLOPES

D50 (ASSUM) = 0.25 FT
n = 0.031
d = 1.90 FT -
A = 48.83 FT²
R = 1.53 FT
Q (CALC) = 251.0 CFS -
v = 5.14 FPS
t = 0.60 PSF
nb = 0.47
Beta = 28.96
n' = 0.35
SFs = 1.33

Design values

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

DESIGN MODIFICATION

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

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

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

LOCATION: UNC -- DRAINAGE SWALE H FIELD MODIFICATION

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

CHANNEL BOTTOM

| | | |
|---------------|-----------------------|---|
| D50 (ASSUM) = | 0.25 FT | |
| n = | 0.031 | |
| d = | 1.82 FT | - |
| A = | 46.34 FT ² | |
| R = | 1.47 FT | |
| Q (CALC) = | 284.0 CFS | - |
| v = | 6.13 FPS | |
| t = | 1.14 PSF | |
| nb = | 0.889 | |
| Sfb = | 1.11 | |

CHANNEL SIDE SLOPES

| | | |
|---------------|-----------------------|---|
| D50 (ASSUM) = | 0.25 FT | |
| n = | 0.031 | |
| d = | 1.90 FT | - |
| A = | 48.83 FT ² | |
| R = | 1.53 FT | |
| Q (CALC) = | 306.7 CFS | - |
| v = | 6.28 FPS | |
| t = | 0.89 PSF | |
| nb = | 0.70 | |
| Beta = | 39.43 | |
| n' = | 0.57 | |
| SFs = | 1.06 | |

Design values

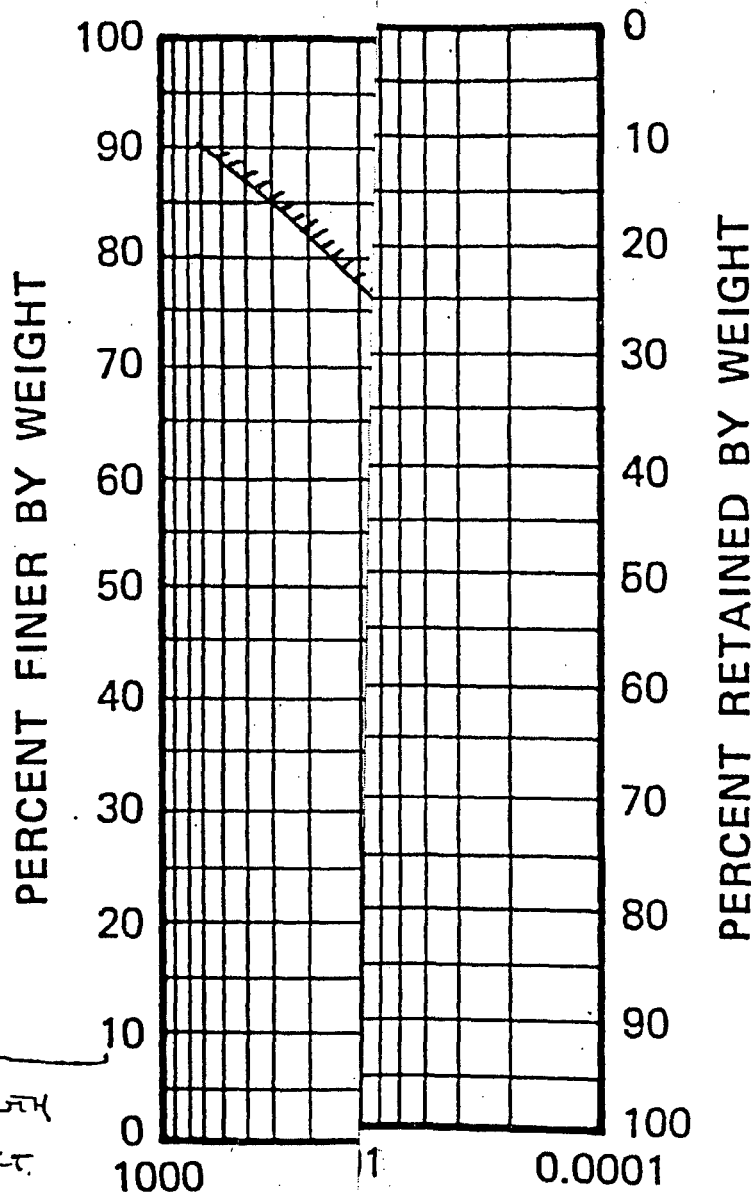
Channel Depth 2.32 FT Depth from top of freeboard to top of riprap
 Dmax 0.50 FT = 2* D50
 Layer Thickness 0.50 FT = 2* D50

DESIGN MODIFICATION

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

SMITH

FIGURE 1
BEDDING LAYER GRADATIONS



) UPPER SECTION SOUTH
CELL DRAINAGE SECT.

) NORTH CELL DRAINAGE.

) NORTH DIVERSION DITCH,
BURIED JETTY

) SWALES H.I., LOWER
REACH OF RUNOFF CONTROL

SOIL/ROCK MATRIX,
SWALES, UPPER REACH
RUNOFF CONTROL DITCH.

COBBACTION

TYPIC

GRAIN

BOUND OF FILTER CRITERIA
RESPECT TO 5 RIPRAP SIZES

FIGURE 1



CALCULATIONS

SOUTH CELL DRAINAGE CHANNEL

RIPSF109.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

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

LOCATION: South Cell Drainage Channel

| | | | |
|-----------------|---------|--------------------|---------------|
| DISCHARGE = | 694 CFS | | |
| BOTTOM WIDTH = | 10 FT | | |
| Z (SIDE SLOPE) | 3 | Alpha = | 18.43 Degrees |
| CHANNEL SLOPE = | 0.0174 | Theta = | 1.00 Degrees |
| RIPRAP S.G. = | 2.7 | Phi = | 37.00 Degrees |
| COEF FOR t = | 0.75 | see Fig 3.16, ref. | |

CHANNEL BOTTOM

| | | |
|---------------|-----------------------|---|
| D50 (ASSUM) = | 0.83 FT | |
| n = | 0.038 | |
| d = | 3.70 FT | - |
| A = | 78.07 FT ² | |
| R = | 2.34 FT | |
| Q (CALC) = | 703.9 CFS | - |
| v = | 9.02 FPS | |
| t = | 4.02 PSF | |
| nb = | 0.958 | |
| SFb = | 1.02 | |

CHANNEL SIDE SLOPES

| | | |
|---------------|-----------------------|---|
| D50 (ASSUM) = | 0.83 FT | |
| n = | 0.038 | |
| d = | 3.70 FT | - |
| A = | 78.07 FT ² | |
| R = | 2.34 FT | |
| Q (CALC) = | 703.9 CFS | - |
| v = | 9.02 FPS | |
| t = | 3.01 PSF | |
| nb = | 0.72 | |
| Beta = | 40.15 | |
| n' = | 0.60 | |
| SFs = | 1.04 | |

Design values

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

RIPSF110.WR1

RIPRAP DETERMINATION BY SAFETY FACTOR METHOD

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

LOCATION: South Cell Drainage Channel

| | | | |
|-----------------|---------|--------------------|---------------|
| DISCHARGE = | 694 CFS | | |
| BOTTOM WIDTH = | 12 FT | | |
| Z (SIDE SLOPE) | 3 | Alpha = | 18.43 Degrees |
| CHANNEL SLOPE = | 0.0174 | Theta = | 1.00 Degrees |
| RIPRAP S.G. = | 2.72 | Phi = | 37.00 Degrees |
| COEF FOR t = | 0.75 | see Fig 3.16, ref. | |

CHANNEL BOTTOM

| | | |
|---------------|-----------------------|---|
| D50 (ASSUM) = | 0.75 FT | |
| n = | 0.038 | |
| d = | 3.45 FT | - |
| A = | 77.11 FT ² | |
| R = | 2.28 FT | |
| Q (CALC) = | 695.4 CFS | - |
| v = | 9.02 FPS | |
| t = | 3.75 PSF | |
| nb = | 0.977 | |
| SFb = | 1.00 | |

CHANNEL SIDE SLOPES

| | | |
|---------------|-----------------------|---|
| D50 (ASSUM) = | 0.75 FT | |
| n = | 0.038 | |
| d = | 3.45 FT | - |
| A = | 77.11 FT ² | |
| R = | 2.28 FT | |
| Q (CALC) = | 695.4 CFS | - |
| v = | 9.02 FPS | |
| t = | 2.81 PSF | |
| nb = | 0.73 | |
| Beta = | 40.70 | |
| n' = | 0.61 | |
| SFs = | 1.02 | |

Design values

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

APPENDIX

J

APPENDIX J

TEST RESULTS, SWALES H, I, AND J

SWALES

Swales designed H, I and J were constructed to Station 11 + 25 in 1995 Reclamation project. Nielson's, Inc. contoured the existing native materials to excavated grade. Field density tests taken in conjunction with maximum unit weight values were performed to assist in determining if native soils were compacted to a minimum of 90% of ASTM D698. Upon completion, UNC personnel monitored swales for radon emissions and areas were determined where radon attenuation cover would be placed. Areas where RAC were omitted are sections of Swale I from Station 2 + 00 to Station 7 + 00, Swale H from Station 7 + 00 to Station 11 + 25 and Swale J from Station 8 + 00 to Station 11 + 25. Nielson's, Inc. placed radon attenuation cover to the specified elevations provided by UNC. RAC 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%. Field densities, proctor values, and soil classifications were completed to assist in determining if RAC layer met project specifications.

Specified aggregate sizes used as erosion control were placed to minimum thickness determined by project requirements.

Bedding material (D50 .02) ranging from 3" to 3 1/2" thick were placed upon RAC material. 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 met project specifications at the specific test locations.

D50 .35 aggregate ranging from 3" to 4 1/2" was placed upon D50 .02 aggregate material. Nielson's, Inc. placed D50 .35 aggregate by manual means. WT measured in the in-placed D50 .35 aggregate for thickness at various locations to indicate conformance to project requirements.

D50 1.5 aggregate was placed on in-placed bedding material. D50 1.5 aggregate ranged from 3" to 4 1/2" thick. Nielson's, Inc. used manual means in an effort to meet project requirement thickness. WT measured in-place D50 1.5 aggregate for thickness to determine whether the material met the project requirements for thickness at the specific test locations.

D50 3" aggregates ranging from 6" to 7 1/2" were placed when specified by Reclamation plan. Nielson's, Inc. used a track hoe as a method of placement. WT measured in-place D50 3" for thickness at various locations to indicate if thickness met project requirements.

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

UNITED NUCLEAR CORPORATION 1995 RECLAMATION**WT JOB NO. 3145JB031****TEST SUMMARY FOR SWALE J****DATE OF REPORT 12/06/95**

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|---------------------|---------|------------|----------|--------|------------------|-----------------|----------------|------------------------|-----------------------|-----------------------|
| 06/19/95 | Proctor | Swale J | Sta. 10+00 | | 6955.6 | Subgrade | 112.0 | 14.0 | | CL | Yes |
| 06/19/95 | Soil Classification | Swale J | Sta. 10+00 | | 6955.6 | Subgrade | | | | CL | Yes |
| 07/12/95 | Sandcone | Swale J | Sta. 11+00 | W. Slope | 6956.3 | Subgrade | 106.8 | 14.2 | | CL | Yes |
| 07/12/95 | Sandcone | Swale J | Sta. 9+00 | Bottom | 6953.5 | Subgrade | 98.8 | 17.2 | | CL | Yes |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

cb/UNC.031/30

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

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450145

Type of Material Sandy Lean Clay Sampled By H. Kuebler/WT Date 6-19-95

Source of Material Swale J Station 10+00 Subgrade Submitted By H. Kuebler/WT Date 6-19-95

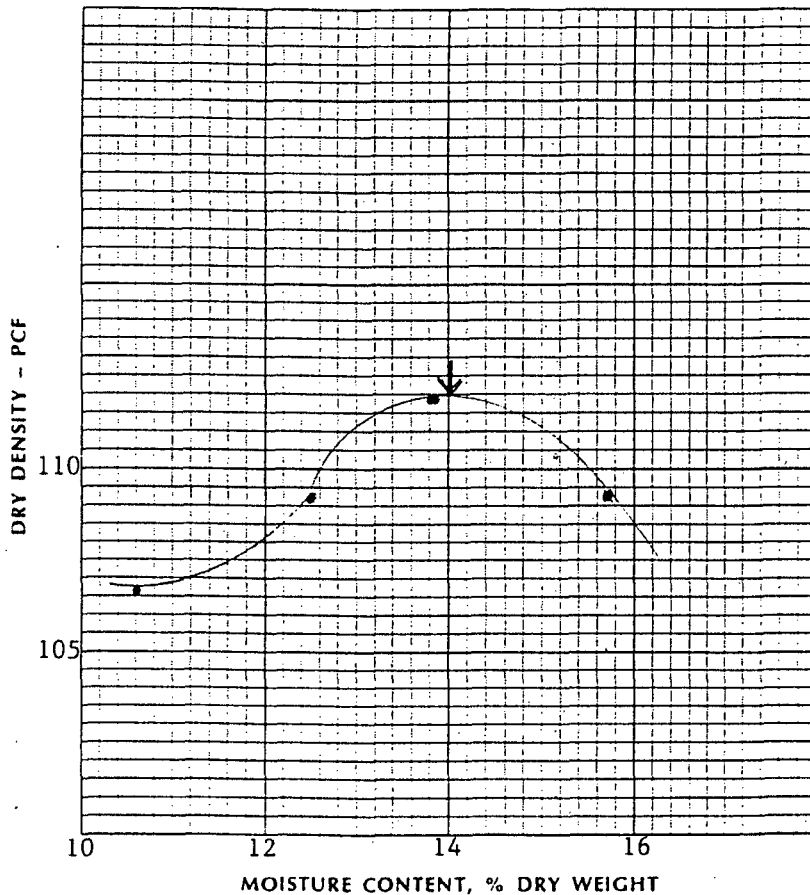
Elev. 6955.6

Tested / Calc. By H. Kuebler/WT Date 6-19-95

Test Procedure ASTM 698 A

Reviewed By [Signature] Date _____

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 100 | 150 | 50 | 0 | | | |
| Sample + Mold Weight, gms | 6188 | 6179 | 612.5 | 6047 | | | |
| Mold Weight, gms | 4264.0 | 4264.0 | 4264.0 | 4264.0 | | | |
| Wet Sample Weight, gms | 1924 | 1915 | 1861 | 1783 | | | |
| Wet Sample Weight, lbs | 4.24 | 4.22 | 4.10 | 3.93 | | | |
| Wet Density, pcf | 127.2 | 126.6 | 123.0 | 117.9 | | | |
| Moisture Sample Wet, gms | 426.0 | 428 | 474.5 | 410.6 | | | |
| Moisture Sample Dry, gms | 374.5 | 370 | 421.8 | 371.2 | | | |
| Weight of Water, gms | 51.5 | 58 | 52.7 | 39.4 | | | |
| Moisture, % | 13.8 | 15.7 | 12.5 | 10.6 | | | |
| Dry Density, pcf | 111.8 | 109.3 | 109.3 | 106.6 | | | |



Maximum Dry Density, pcf 112.0

Optimum Moisture Content, % 14.0

Diameter of Mold, in. 4 inch

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12 inch

Material Used 4 material



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Farmington, New Mexico 87401
(505) 327-4966 • fax 327-5293

LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
P.O. Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 06/22/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H. Kuebler Date 06/19/95

Source: Swale J

Submitted By: H. Kuebler Date 06/19/95

Authorized By: Client Date 06/19/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | | |
| 2" | | |
| 1 1/2" | | |
| 1" | | |
| 3/4" | | |
| 1/2" | 100 | |
| 3/8" | 99.6 | |
| 1/4" | | |
| No. 4 | 98 | |
| 8 | 96 | |
| 10 | 96 | |
| 16 | 94 | |
| 30 | 92 | |
| 40 | 91 | |
| 50 | 89 | |
| 100 | 70 | |
| 200 | 47.6 | |

Copies: Client (3), Billing (1), Field File (1)
6-19/rgo:UNC031

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

REVIEWED BY

Thomas Huake



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

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

Date of Report **08-23-95**
Job No. **3145JB031** Page **1** of **1**
Event/Invoice No. **31450185-6**
Authorized By **E. MORALES** Date **07-12-95**
Tested By **H. KUEBLER/WT** Date **07-12-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

Test Locations Designated By **H. KUEBLER/WT**

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

Calibrated Volume of Sand Cone Apparatus **0.0387** cu. ft. Bulk Unit Weight of Sand **94.6** lbf/cu. ft.

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0369 | 14.2 | 106.8 | 0.0 | 22 | 112.0 | 14.0 | 95 | 14.0 TO 16.0 | 95 | YES |
| 2 | 0.0373 | 17.2 | 98.8 | 0.0 | 33 | 103.8 | 17.1 | 95 | 17.1 TO 19.1 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|-------------------------------|--|-----------------------------|-------------|-----------------|
| | | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | SWALE J, STA. 11+00, W. SLOPE | | | 9656.3 | SUBGRADE |
| 2 | SWALE J, STA. 9+00, BOTTOM | | | 6953.5 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|-----------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 22 | 31450145 | SANDY LEAN CLAY | SWALE J, STA. 10+00, 6955.6 | 14.0 | 112.0 | D698-A |
| 33 | 31450185 | SILT, SUBGRADE | SWALE J, STA. 5+00, 6951.2 | 17.1 | 103.8 | D698-A |

Comments: **CB**

* DATUM Elevation of Test = Top of RAC

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

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

REVIEWED BY

T. Krake

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SWALES H and I

DATE OF REPORT 12/06/95

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|-----------------------------|------------|----------|---------|--------|---------------|--------------|-------------|---------------------|-----------------|-----------------|
| 06/06/95 | Proctor - Swale I | Sta. 2+00 | Bottom | | | Subgrade | 116.0 | 12.4 | | CL | Yes |
| 06/06/95 | Soil Classification Swale I | Sta. 2+00 | Bottom | | | Subgrade | | | | CL | Yes |
| 06/14/95 | Proctor - Swale H | Sta. 11+50 | | | 6956.7 | Subgrade | 116.5 | 12.4 | | CL | Yes |
| 06/14/95 | Proctor - Swale I | Sta. 7+00 | | | 6952.5 | Subgrade | 110.3 | 16.5 | | CL | Yes |
| 06/20/95 | Soil Classification Swale I | Sta. 7+00 | | | 6952.5 | Subgrade | | | | SM | Yes |
| 06/20/95 | Soil Classification Swale H | Sta. 11+50 | | | 6956.0 | Subgrade | | | | CL | Yes |
| 07/06/95 | Sandcone - Swale I | Sta. 0+00 | | | 6945.3 | Subgrade | 110.1 | 9.1 | 95 | CL | Yes |
| 07/06/95 | Sandcone - Swale I | Sta. 2+00 | W. Slope | | 6950.1 | Subgrade | 98.6 | 4.6 | 85 | CL | No* |
| 07/06/95 | Sandcone - Swale I | Sta. 1+00 | | | 6947.5 | Subgrade | 106.9 | 7.6 | 92 | CL | Yes |
| 07/06/95 | Sandcone - Retest Swale I* | Sta. 2+00 | W. Slope | | 6950.1 | Subgrade | 105.7 | 7.3 | 91 | CL | Yes |
| 07/12/95 | Sandcone | Sta. 7+00 | E. Slope | | 6955.0 | Subgrade | 93.6 | 14.1 | 90 | CL | Yes |
| 07/12/95 | Sandcone | Sta. 5+00 | Bottom | | 6951.2 | Subgrade | 99.4 | 18.7 | 96 | CL | Yes |

cb/UNC.031/33
*Revised 02/14/96

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

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR SWALES H and I

DATE OF REPORT 12/06/95

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------------------------|--------------------------------|------------|----------|---------|--------|------------------|-----------------|----------------|------------------------|-----------------------|-----------------------|
| 07/12/95 | Sandcone - Swale I | Sta. 3+00 | Bottom | | 6949.9 | Subgrade | 101.7 | 18.0 | 98 | ML | Yes |
| 07/12/95 | Sandcone - Swale I | Sta. 2+00 | W. Slope | | 6952.4 | RAC | 104.6 | 17.4 | 100 | ML | Yes |
| 07/13/95 | Proctor - Swale I | Sta. 5+00 | | | 6951.2 | Subgrade | 103.8 | 17.1 | | ML | Yes |
| 07/13/95 | Soil Classification Swale I | Sta. 5+00 | | | 6951.2 | Subgrade | | | | ML | Yes |
| 07/13/95 | Sandcone - Swale H | Sta. 11+00 | Bottom | | 6956.5 | Subgrade | 110.5 | 12.6 | 95 | CL-ML | Yes |
| 07/13/95 | Sandcone - Swale H | Sta. 9+00 | Bottom | | 6954.5 | Subgrade | 98.8 | 17.2 | 95 | CL | Yes |
| 07/17/95 | Sandcone - DC-SC | Sta. 0+00 | W. Slope | | 6951.3 | RAC | 102.9 | 17.2 | 99 | CL | Yes |
| 07/17/95 | Soil Classification DC-SC | Sta. 0+00 | W. Slope | | 6951.3 | RAC | | | | CL | Yes |
| 07/20/95 to 09/27/95 | Aggregate Placement | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

AC = Radon Attenuation Cover

b/UNC.031/34

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

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS


Job No. 3145JB031

Lab / Invoice No. 31450145

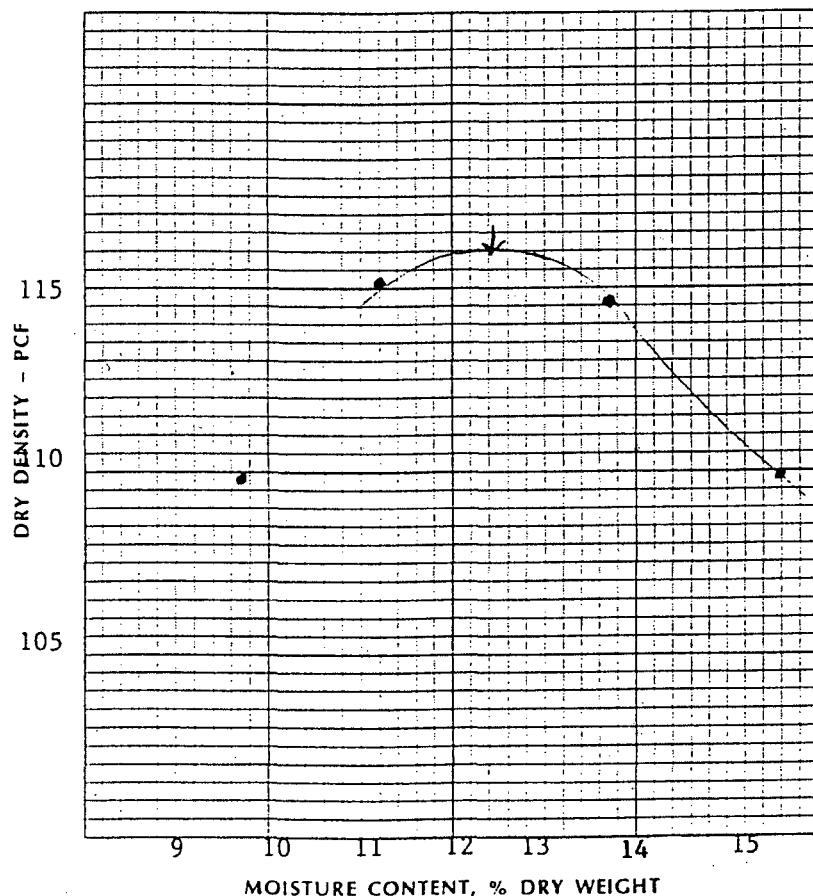
Type of Material Clayey Silt Sampled By H. Kuebler/WT Date 06/06/95

Source of Material Native Subgrade Swale I 2+00 Submitted By H. Kuebler/WT Date 06/06/95

Tested / Calc. By H. Dickson/WT Date 06/07/95

Test Procedure ASTM D698A Reviewed By  Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 0 | 50 | 100 | 150 | | | |
| Sample + Mold Weight, gms | 6419.4 | 6535.0 | 6571.4 | 6520.8 | | | |
| Mold Weight, gms | 4600.0 | 4600.4 | 4600.4 | 4600.0 | | | |
| Wet Sample Weight, gms | 1819.4 | 1935.0 | 1971.4 | 1920.8 | | | |
| Wet Sample Weight, lbs | 4.01 | 4.27 | 4.35 | 4.23 | | | |
| Wet Density, pcf | 120.3 | 128.0 | 130.4 | 127.0 | | | |
| Moisture Sample Wet, gms | 401.3 | 406.5 | 403.1 | 407.9 | | | |
| Moisture Sample Dry, gms | 365.8 | 365.4 | 354.4 | 353.0 | | | |
| Weight of Water, gms | 35.5 | 41.1 | 48.7 | 54.9 | | | |
| Moisture, % | 9.7 | 11.2 | 13.7 | 15.6 | | | |
| Dry Density, pcf | 109.7 | 115.1 | 114.7 | 109.9 | | | |



Maximum Dry Density, pcf 116.0

Optimum Moisture Content, % 12.4

Diameter of Mold, in. 4 inch

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12 inch

Material Used -4 material



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450415

Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Lean Clay

Sampled By: H. Kuebler /WT Date June 1995

Source: Swale I, 2 + 00

Submitted By: H. Kuebler /WT Date June 1995

Native Subgrade

Authorized By: Client Date June 1995

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | | |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 100 | |
| 8 | 99 | |
| 10 | 98 | |
| 16 | 97 | |
| 30 | 96 | |
| 40 | 96 | |
| 50 | 95 | |
| 100 | 75 | |
| 200 | 60.9 | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit 32

Plasticity Index 13

Copies: Client (3), Billing (1), Field File (1)
1/dn:unc031

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REVIEWED BY 

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450145

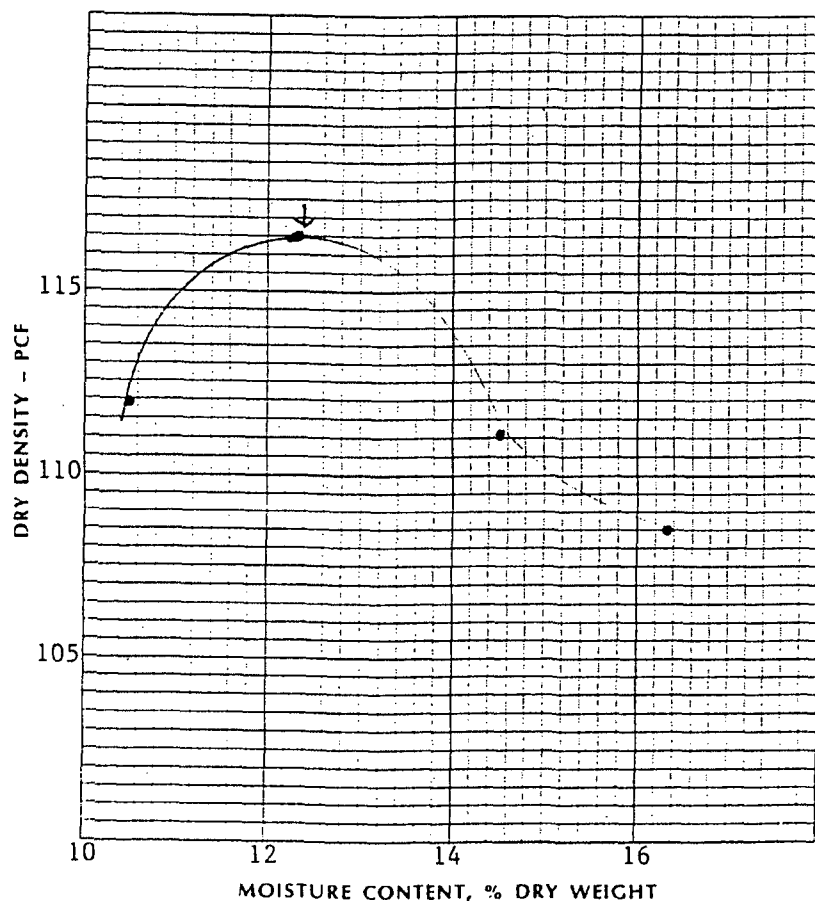
Type of Material Sandy Lean Clay Sampled By H. Kuebler/WT Date 06/14/95

Source of Material Swale H Sta. 11+50 subgrade Submitted By H. Kuebler/WT Date 06/14/95

Elev 6956.7 Tested/Calc. By H. Kuebler/WT Date 06/14/95

Test Procedure ASTM D698A Reviewed By [Signature] Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 100 | 150 | 50 | 0 | | | |
| Sample + Mold Weight, gms | 6240.0 | 6186.0 | 6135.0 | 6173.7 | | | |
| Mold Weight, gms | 4264.0 | 4264.0 | 4264.0 | 4264.0 | | | |
| Wet Sample Weight, gms | 1976.0 | 1922.0 | 1871.0 | 1909.7 | | | |
| Wet Sample Weight, lbs | 4.36 | 4.24 | 4.12 | 4.21 | | | |
| Wet Density, pcf | 130.8 | 127.2 | 123.6 | 126.2 | | | |
| Moisture Sample Wet, gms | 400.8 | 400.1 | 399.9 | 410.1 | | | |
| Moisture Sample Dry, gms | 357.0 | 349.6 | 361.9 | 352.6 | | | |
| Weight of Water, gms | 43.8 | 50.5 | 38.0 | 57.5 | | | |
| Moisture, % | 12.3 | 14.5 | 10.5 | 16.3 | | | |
| Dry Density, pcf | 116.5 | 111.1 | 111.9 | 108.5 | | | |



Maximum Dry Density, pcf 116.5

Optimum Moisture Content, % 12.4

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450145

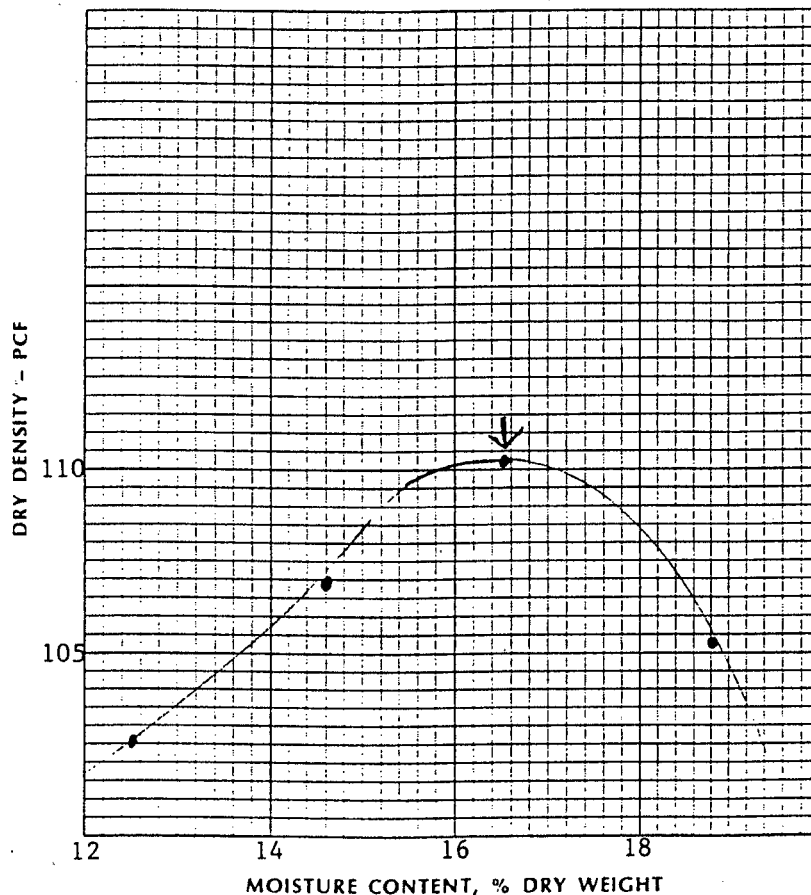
Type of Material Sandy Lean Clay Sampled By H. Kuebler/WT Date 06/14/9

Source of Material Swale I Sta. 7+00 Subgrade Elev. 6952.5 Submitted By H. Kuebler/WT Date 06/14/9

Tested / Calc. By H. Kuebler/WT Date 06/14/9

Test Procedure ASTM D698A Reviewed By [Signature] Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 50 | 100 | 0 | -50 | | | |
| Sample + Mold Weight, gms | 6205 | 6156 | 6114 | 6007.5 | | | |
| Mold Weight, gms | 4264.0 | 4264.0 | 4264.0 | 4264.0 | | | |
| Wet Sample Weight, gms | 1941 | 1892 | 1850 | 1743.5 | | | |
| Wet Sample Weight, lbs | 4.279 | 4.17 | 4.08 | 3.84 | | | |
| Wet Density, pcf | 128.4 | 125.1 | 122.4 | 115.3 | | | |
| Moisture Sample Wet, gms | 337.4 | 353.4 | 394.8 | 400.0 | | | |
| Moisture Sample Dry, gms | 289.6 | 297.5 | 344.6 | 355.6 | | | |
| Weight of Water, gms | 47.8 | 55.9 | 50.2 | 44.4 | | | |
| Moisture, % | 16.5 | 18.8 | 14.6 | 12.5 | | | |
| Dry Density, pcf | 110.2 | 105.3 | 106.8 | 102.5 | | | |



Maximum Dry Density, pcf 110.3

Optimum Moisture Content, % 16.5

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450243

Report Date: 8-23-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silty Sand

Sampled By: H.K. Date 6-20-95

Source: Swale I 7+00/Subgrade

Submitted By: H.K. Date 6-20-95

Authorized By: Client Date 6-20-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 100 | 100 |
| 1/2" | 97 | |
| 3/8" | 97 | |
| 1/4" | | |
| No. 4 | 94 | 90-100 |
| 8 | 91 | |
| 10 | 90 | 85-100 |
| 16 | 88 | |
| 30 | 87 | |
| 40 | 86 | 65-100 |
| 50 | 84 | |
| 100 | 73 | 50-100 |
| 200 | 51.3 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NV

Plasticity Index NP

Copies: Client (3), Field File (1), Billing (1).
Wha:UNC031

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

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450122

Report Date: 11/21/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy Lean Clay

Sampled By: H. Kuebler/WT Date 06/20/95

Source: Swale H 11+50/Subgrade

Submitted By: H. Kuebler/WT Date 06/20/95

Elev. 6956.0

Authorized By: Client Date 06/20/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | | |
| 2" | | |
| 1 1/2" | | |
| 1" | | |
| 3/4" | 100 | 100 |
| 1/2" | 98 | |
| 3/8" | 97 | |
| 1/4" | | |
| No. 4 | 94 | 90-100 |
| 8 | 91 | |
| 10 | 90 | 85-100 |
| 16 | 89 | |
| 30 | 87 | |
| 40 | 86 | 65-100 |
| 50 | 85 | |
| 100 | 72 | 50-100 |
| 200 | 50.6 | 40-85 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit 25

Plasticity Index 7

Copies: Client (3), Billing (1) Field File (1)
0.1/cb:UNC.031

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[Signature]



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

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

Date of Report **08-22-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450185-1**
Authorized By **E. MORALES** Date **07-06-95**
Tested By **H. KUEBLER/WT** Date **07-06-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**
Test Locations Designated By **UNC**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**
Calibrated Volume of Sand Cone Apparatus **0.0387 cu. ft.** Bulk Unit Weight of Sand **94.6 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0332 | 9.1 | 110.1 | 0.0 | 3 | 116.0 | 12.4 | 95 | | 90 | YES |
| 2 | 0.0408 | 4.6 | 98.6 | 0.0 | 3 | 116.0 | 12.4 | 85 | | 90 | NO |
| 3 | 0.0405 | 7.6 | 106.9 | 0.0 | 3 | 116.0 | 12.4 | 92 | | 90 | YES |
| 4 | 0.0341 | 7.3 | 105.7 | 0.0 | 3 | 116.0 | 12.4 | 91 | | 90 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|------------------------------|-----------------------------|-------------|-----------------|
| | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | SWALE I, STA. 0+00 | | 6945.3 | SUBGRADE |
| 2 | SWALE I, STA. 2+00, W. SLOPE | | 6950.1 | SUBGRADE |
| 3 | SWALE I, STA. 1+00 | | 6947.5 | SUBGRADE |
| 4 | RETEST OF #2 (07/06/95) | | 6950.1 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|-----------------------|-------------------------|-------------------------|------------------------|---|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lb/ cu. ft. | TEST METHOD |
| 3 | 31450145 | CLAYEY SILT | STATION 2 + 00, SWALE 1 | 12.4 | 116.0 | 698-A |

Comments: CB

* DATUM Elevation of Test = Top of Subgrade Prior to RAC Placement

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

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

REVIEWED BY

T. Krake



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

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

Date of Report **08-28-95**
Job No. **3145JB031**
Event/Invoice No. **31450185-7**
Authorized By **E. MORALES**
Tested By **H.K./C.P./WT**

Page 1 of 1

Date **07-12-95**
Date **07-12-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

Test Locations Designated By **H. KUEBLER/C. PADILLA/WT**

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

Calibrated Volume of Sand Cone Apparatus **0.0383 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0400 | 14.1 | 93.6 | 0.0 | 33 | 103.8 | 17.1 | 90 | | 90 | YES |
| 2 | 0.0576 | 18.7 | 99.4 | 0.0 | 33 | 103.8 | 17.1 | 96 | | 90 | YES |
| 3 | 0.0376 | 18.0 | 101.7 | 0.0 | 33 | 103.8 | 17.1 | 98 | | 90 | YES |
| 4 | 0.0343 | 17.4 | 104.6 | 0.0 | 33 | 103.8 | 17.1 | 100+ | 17.1 TO 19.1 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|------------------------------|-----------------------------|-------------|-----------------|
| | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | SWALE I, STA. 7+00, E. SLOPE | | 6955.0 | SUBGRADE |
| 2 | SWALE I, STA. 5+00, BOTTOM | | 6951.2 | SUBGRADE |
| 3 | SWALE I, STA. 3+00, BOTTOM | | 6949.9 | SUBGRADE |
| 4 | SWALE I, STA. 2+00, W. SLOPE | | 6952.4 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|----------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 33 | 31450185 | SILT, SUBGRADE | SWALE I, STA. 5+00, 6951.2 | 17.1 | 103.8 | D698-A |

Comments: CB

* DATUM Elevation of Test = Top of Subgrade prior to Bedding Placmt.

Distribution : CLIENT - (3)

FIELD FILE & BILLING (2)

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REVIEWED BY

A. McHaney

(SIGNED COPY ON FILE)

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450185

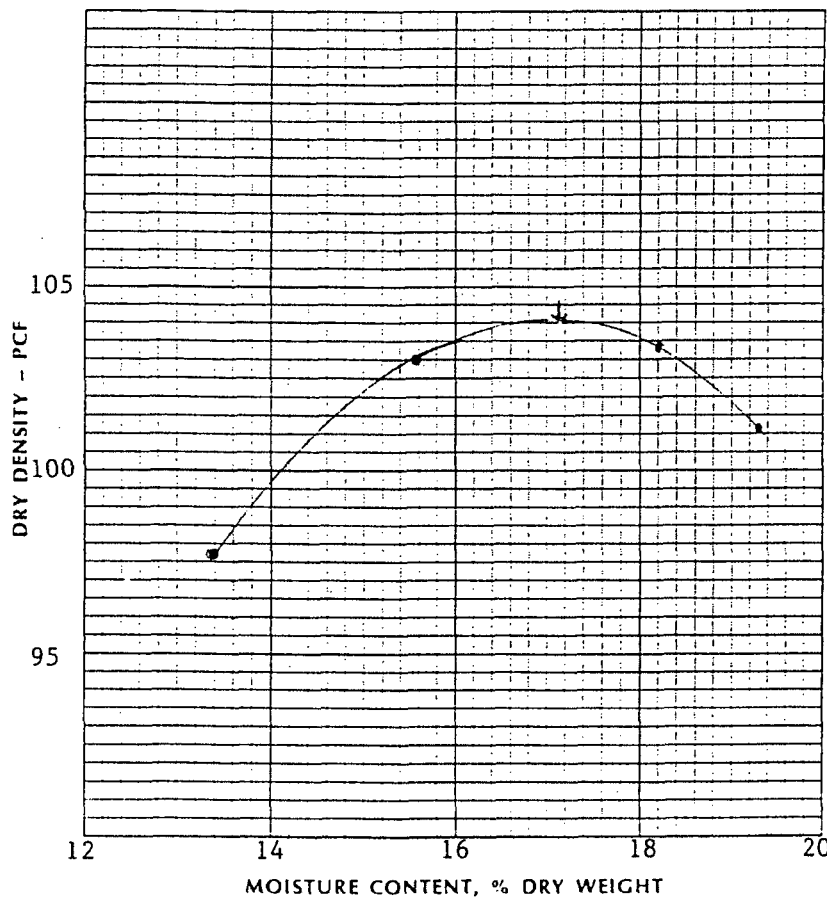
Type of Material Silt Sampled By C. Padilla/WT Date 07/13/9

Source of Material Swale I Sta. 5+00 Elev. 6951.2 Submitted By C. Padilla/WT Date 07/13/9

Tested / Calc. By C. Padilla/WT Date 07/13/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 50 | 100 | 150 | | | | |
| Sample + Mold Weight, gms | 5980.3 | 6025.5 | 6003.4 | 5853.0 | | | |
| Mold Weight, gms | 4179.7 | 4179.7 | 4179.7 | 4179.7 | | | |
| Wet Sample Weight, gms | 1800.6 | 1845.8 | 1823.7 | 1673.3 | | | |
| Wet Sample Weight, lbs | 3.970 | 4.069 | 4.021 | 3.689 | | | |
| Wet Density, pcf | 119.1 | 122.1 | 120.6 | 110.7 | | | |
| Moisture Sample Wet, gms | 317.1 | 328.4 | 318.1 | 392.7 | | | |
| Moisture Sample Dry, gms | 274.2 | 277.9 | 266.7 | 346.3 | | | |
| Weight of Water, gms | 42.9 | 50.5 | 51.4 | 46.4 | | | |
| Moisture, % | 15.6 | 18.2 | 19.3 | 13.4 | | | |
| Dry Density, pcf | 103.0 | 103.3 | 101.1 | 97.6 | | | |



Maximum Dry Density, pcf 103.8

Optimum Moisture Content, % 17.1

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450185

Report Date: 8-28-95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Silt

Sampled By: CP & HK Date 7-13-95

Source: Swale I Station 5+00

Submitted By: CP Date 7-14-95

Authorized By: Client Date 7-13-95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | | |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | | |
| 8 | 100 | |
| 10 | 99 | |
| 16 | 98 | |
| 30 | 97 | |
| 40 | 93 | |
| 50 | 89 | |
| 100 | 64 | |
| 200 | 34 | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf NA

Optimum Moisture, % NA

Plasticity Index, ASTM D4318

Liquid Limit NV

Plasticity Index NP

Copies: Client (3), Billing (1), Field File (1).
713\ha:UNC031

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REVIEWED BY

Chris McHugh



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

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

Date of Report **08-28-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450185-8**
Authorized By **E. MORALES** Date **07-13-95**
Tested By **C. PADILLA/WT** Date **07-13-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**
Test Locations Designated By **C. PADILLA/WT**

Test Procedures In-Place Unit Weight : **ASTM D1556** Moisture Content : **ASTM D4944**
Calibrated Volume of Sand Cone Apparatus **0.0383 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0384 | 12.6 | 110.5 | 0.0 | 3 | 116.0 | 12.4 | 95 | | 90 | YES |
| 2 | 0.0414 | 17.2 | 98.8 | 0.0 | 33 | 103.8 | 17.1 | 95 | | 90 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|-----------------------------|--|-----------------------------|-------------|-----------------|
| | | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | SWALE H, STA. 11+00, BOTTOM | | | 6956.5 | SUBGRADE |
| 2 | SWAHE H, STA. 9+00, BOTTOM | | | 6954.5 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|----------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 3 | 31450145 | CLAYEY SILT | STATION 2 + 00, SWALE I | 12.4 | 116.0 | 698-A |
| 33 | 31450185 | SILT, SUBGRADE | SWALE I, STA. 5+00, 6951.2 | 17.1 | 103.8 | D698-A |

Comments: **CB**

* DATUM Elevation of Test = Top of Subgrade prior to Bedding Placmt

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

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

REVIEWED BY

A. McHaney

am



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450415

Report Date: 12/04/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Sandy Silty Clay

Sampled By: H. Kuebler /WT Date August 1995

Source: DC - SC Swale

Submitted By: H. Kuebler /WT Date August 1995

Native Subgrade

Authorized By: Client Date August 1995

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 98 | |
| 1/2" | --- | |
| 3/8" | 98 | |
| 1/4" | --- | |
| No. 4 | 97 | |
| 8 | 96 | |
| 10 | 95 | |
| 16 | 94 | |
| 30 | 93 | |
| 40 | 92 | |
| 50 | 91 | |
| 100 | 73 | |
| 200 | 53.6 | |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit 27

Plasticity Index 6

Copies: Client (3), Billing (1), Field File (1)
1/dn:unc031

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

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

Date of Report **08-28-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450185-11**
Authorized By **E. MORALES** Date **07-17-95**
Tested By **H. KUEBLER/WT** Date **07-17-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

Test Locations Designated By **CLIENT**

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

Calibrated Volume of Sand Cone Apparatus **0.0387 cu. ft.** Bulk Unit Weight of Sand **94.6 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0361 | 17.2 | 102.9 | 0.0 | 33 | 103.8 | 17.1 | 99 | 17.1 TO 19.1 | 95 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|---------------------------|-----------------------------|-------------|-----------------|
| | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | DC-SC, SWALE, STA. 0+00 | | 6951.3 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|----------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 33 | 31450185 | SILT, SUBGRADE | SWALE I, STA. 5+00, 6951.2 | 17.1 | 103.8 | D698-A |

Comments: **CB**

* DATUM Test Elevation = Top of RAC

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

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A. McHaney



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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SWALE J - D50 .02 SAND AGGREGATE THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|---------------|------------|-----------------|-----------|
| Station 8+00 | 3 1/2 | 3 1/2 | 3 1/2 |
| Station 9+00 | 3 | 3 1/2 | 3 1/2 |
| Station 10+00 | 3 1/2 | 3 1/2 | 3 |
| Station 11+00 | 3 1/4 | 3 1/2 | 3 1/4 |
| | | | |
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Dist: Client (3) Field File (1) Billing (1)
/cb:031.SWE/19

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 08/17/95

SWALE H & I - .02 SAND THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|-----------------|------------|-----------------|-----------|
| Station 11 + 50 | 3 | 3 1/4 | 3 1/2 |
| Station 11 + 00 | 3 1/4 | 3 1/2 | 3 |
| Station 10 + 00 | 3 1/2 | 3 1/2 | 3 1/4 |
| Station 9 + 00 | 3 | 3 | 3 1/2 |
| Station 8 + 00 | 3 | 3 1/2 | 3 1/2 |
| Station 7 + 00 | 3 1/4 | 3 1/4 | 3 |
| Station 6 + 00 | 3 1/2 | 3 1/4 | 3 1/2 |
| Station 5 + 00 | 3 1/2 | 3 1/4 | 3 1/4 |
| Station 4 + 00 | 3 1/4 | 3 | 3 1/4 |
| Station 3 + 00 | 3 1/2 | 3 1/2 | 3 1/2 |
| Station 2 + 00 | 3 1/2 | 3 1/2 | 3 1/2 |
| Station 1 + 00 | 3 1/2 | 3 1/2 | 3 1/2 |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.SWE/8

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 08/17/95

SWALE H & I - .35 AGGREGATE THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|-----------------|------------|-----------------|-----------|
| Station 11 + 50 | 4 | 4 | 3 1/4 |
| Station 11 + 00 | 3 1/2 | 4 | 3 3/4 |
| Station 10 + 00 | 4 | 3 1/2 | 4 |
| Station 9 + 00 | 3 | 4 | 4 |
| Station 8 + 00 | 3 | 3 1/4 | 3 1/2 |
| Station 7 + 00 | 3 3/4 | 3 | 4 |
| Station 6 + 00 | 3 3/4 | 4 | 3 |
| Station 5 + 00 | 4 | 3 1/2 | 3 1/2 |
| Station 4 + 00 | 3 | 3 | 4 |
| Station 3 + 00 | 4 | 4 | 4 |
| Station 2 + 00 | 4 | 4 | 3 |
| Station 1 + 00 | 4 | 3 3/4 | 3 |

Dist: Client (3) Field File (1) Billing (1)
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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SWALE J - D50 1.5 AGGREGATE THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|---------------|------------|-----------------|-----------|
| Station 8+00 | 3 1/2 | 3 | 4 |
| Station 9+00 | 3 1/4 | 4 | 3 1/2 |
| Station 10+00 | 3 1/2 | 3 1/4 | 3 |
| Station 11+00 | 4 | 4 | 3 1/2 |
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Dist: Client (3) Field File (1) Billing (1)
/cb:031.SWE/20

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J. Kueller



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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SWALES H AND I - D50 3 INCH AGGREGATE THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|-----------------|------------|-----------------|-----------|
| Station 11 + 50 | 6 | 6 | 6 |
| Station 10 + 50 | 6 3/4 | 6 1/4 | 6 |
| Station 9 + 50 | 6 3/4 | 6 3/4 | 6 1/2 |
| Station 8 + 50 | 6 | 6 1/2 | 6 1/2 |
| Station 7 + 50 | 6 1/4 | 6 1/4 | 6 1/2 |
| Station 6 + 50 | 6 3/4 | 6 | 6 3/4 |
| Station 5 + 50 | 7 | 6 1/2 | 6 |
| Station 4 + 50 | 6 1/4 | 6 | 6 3/4 |
| Station 3 + 50 | 6 1/2 | 6 | 6 1/2 |
| Station 2 + 50 | 6 | 6 | 6 |
| Station 1 + 50 | 6 | 6 | 6 1/4 |
| | | | |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.SWE/18

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**APPENDIX
K**

APPENDIX K
BEDDING MATERIAL GRADATION TESTS

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR BEDDING MATERIAL

DATE OF REPORT 12/07/95

| 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% | WITHIN SPECS. ? |
|----------|-------------------|----------------------------|---------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-----------------------|
| 03/13/95 | Hamilton Brothers | 100 | 100 | 96 | 73 | 47 | 26.0 | Yes |
| 05/23/95 | UNC Stockpile | 100 | 100 | 100 | 73 | 39 | 18.0 | Yes |
| 06/20/95 | UNC Stockpile | 100 | 100 | 96 | 76 | 48 | 21.5 | Yes |
| | | | | | | | | |
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .02 Aggregate

Sampled By: P. Christensen/WT Date 03/13/95

Source: Hamilton Brothers Crusher

Submitted By: P. Christensen/WT Date 03/13/95

Authorized By: Client Date 03/13/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 2" | | |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 100 | 85-100 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 96 | 65-100 |
| 8 | | |
| 10 | 73 | 47-94 |
| 16 | | |
| 30 | | |
| 40 | 47 | 23-70 |
| 50 | | |
| 100 | | |
| 200 | 26.0 | 15-30 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450122

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .02 Aggregate

Sampled By: H. Kuebler/WT Date 05/23/95

Source: UNC Stockpile

Submitted By: H. Kuebler/WT Date 05/23/95

Authorized By: Client Date 05/23/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|---------------|---------------------------|--------------------------------|
| 3" | 100 | 100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 100 | 85-100 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 100 | 65-100 |
| 8 | | |
| 10 | 73 | 47-94 |
| 16 | | |
| 30 | | |
| 40 | 39 | 23-70 |
| 50 | | |
| 100 | | |
| 200 | 18.0 | 15-30 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .02 Aggregate

Sampled By: H. Kuebler/WT Date 06/20/95

Source: UNC

Submitted By: H. Kuebler/WT Date 06/20/95

Authorized By: Client Date 06/20/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 100 | 100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 100 | 85-100 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 96 | 65-100 |
| 8 | | |
| 10 | 76 | 47-94 |
| 16 | | |
| 30 | | |
| 40 | 48 | 23-70 |
| 50 | | |
| 100 | | |
| 200 | 21.5 | 15-30 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)
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UNITED NUCLEAR CORPORATION 1995 RECLAMATION**WT JOB NO. 3145JB031****TEST SUMMARY FOR D50 .35 MATERIAL****DATE OF REPORT 12/07/95**

| 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% | WITHIN SPECS. ? |
|----------|-------------------|-------------------------------|--------------------------------|------------------------------|-------------------------------|------------------------------|------------------------------|-----------------------|
| 03/09/95 | Hamilton Brothers | 100 | 98 | 49 | 32 | 19 | 10.7 | No |
| 03/13/95 | Hamilton Brothers | 100 | 94 | 41 | 26 | 14 | 7.5 | No |
| 05/19/95 | Hamilton Brothers | 100 | 90 | 41 | 29 | 19 | 8.8 | No |
| 05/23/95 | Rock Score | | | | | | | |
| 05/25/95 | Hamilton Brothers | 100 | 80 | 31 | 22 | 14 | 6.9 | No |
| 05/25/95 | Hamilton Brothers | 100 | 75 | 34 | 24 | 14 | 8.1 | No |
| 06/12/95 | Rock Score | | | | | | | |
| 06/12/95 | Hamilton Brothers | 100 | 68 | 27 | 18 | 10 | 6.7 | Yes |
| 06/22/95 | Hamilton Brothers | 100 | 73 | 39 | 17 | 10 | 7.4 | Yes |
| 07/10/95 | Rock Score | | | | | | | |
| 07/10/95 | Hamilton Brothers | 100 | 67 | 33 | 15 | 10 | 6.1 | Yes |
| | | | | | | | | |

NOTE: Material that did not meet specifications was discarded.

cb/1995.UNC/4

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



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: H. Kuebler/WT Date 03/09/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 03/09/95

Authorized By: Client Date 03/09/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 100 | 65-100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 98 | 43-80 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 49 | 22-60 |
| 8 | | |
| 10 | 32 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 19 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 10.7 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)
9/cb:UNC.031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Material

Sampled By: P. Christensen/WT Date 03/13/95

Source: Hamilton Brothers Crusher

Submitted By: P. Christensen/WT Date 03/13/95

Authorized By: Client Date 03/13/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|---------------|---------------------------|--------------------------------|
| 3" | 100 | 65-100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 94 | 43-80 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 41 | 22-60 |
| 8 | | |
| 10 | 26 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 14 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 7.5 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)
13.1/cb:UNC.031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450122

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: H. Kuebler/WT Date 05/19/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 05/19/95

Authorized By: Client Date 05/19/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 100 | 65-100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 90 | 43-80 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 41 | 22-60 |
| 8 | | |
| 10 | 29 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 19 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 8.8 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

opies: Client (3), Billing (1) Field File (1)
19/cb:UNC.031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450122

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: D⁵⁰ .35 Aggregate

Sampled By: H. Kuebler/WT Date 05/23/95

Source: Hamilton Yard

Submitted By: H. Kuebler/WT Date 05/23/95

Authorized By: Client Date 05/23/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 100 | 65-100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 70 | 43-80 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 26 | 22-60 |
| 8 | | |
| 10 | 20 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 14 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 7.7 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)
3.3/cb:UNC.031

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450122

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: H. Kuebler/WT Date 05/25/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 05/25/95

Authorized By: Client Date 05/25/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 100 | 65-100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 80 | 43-80 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 31 | 22-60 |
| 8 | | |
| 10 | 22 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 14 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 6.9 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450122

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: H. Kuebler/WT Date 05/25/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 05/25/95

Authorized By: Client Date 05/25/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 100 | 65-100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 75 | 43-80 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 34 | 22-60 |
| 8 | | |
| 10 | 24 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 14 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 8.1 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: H. Kuebler/WT Date 06/12/95

Source: Hamilton Brothers

Submitted By: H. Kuebler/WT Date 06/12/95

Authorized By: Client Date 06/12/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 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 | 18 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 10 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 6.7 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: J. Golding/WT Date 06/22/95

Source: Hamilton Brothers Crusher

Submitted By: J. Golding/WT Date 06/22/95

Authorized By: Client Date 06/22/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 100 | 65-100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 73 | 43-80 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 39 | 22-60 |
| 8 | | |
| 10 | 17 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 17 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 7.4 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

| | | | |
|-----------|--|----------------|-----------------------------|
| Client: | UNC Mining & Milling Attn: Mr. Ed Morales Post Office Box 3077 Gallup, NM 87305 | Job No. | 3145JB031 |
| | | Lab/Inv. No. | 31450145 |
| | | Report Date: | 11/16/95 |
| Project: | 1995 Reclamation | | |
| Location: | Church Rock, NM | | |
| Material: | .35 Aggregate | Sampled By: | J. Golding/WT Date 06/22/95 |
| Source: | Hamilton Brothers Crusher | Submitted By: | J. Golding/WT Date 06/22/95 |
| | | Authorized By: | Client Date 06/22/95 |

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 100 | 65-100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 70 | 43-80 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 37 | 22-60 |
| 8 | | |
| 10 | 15 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 15 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 6.8 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

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

Plasticity Index, ASTM D4318

| | |
|------------------|-----|
| Liquid Limit | N/A |
| Plasticity Index | N/A |

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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
Post Office Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450145

Report Date: 11/16/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: .35 Aggregate

Sampled By: J. Golding/WT Date 07/10/95

Source: Hamilton Brothers Crusher

Submitted By: J. Golding/WT Date 07/10/95

Authorized By: Client Date 07/10/95

SIEVE ANALYSIS, ASTM C136 & C117

| Sieve Size | % Passing Accumulative | Specification (As Required) |
|------------|------------------------|-----------------------------|
| 3" | 100 | 65-100 |
| 1-1/2" | | |
| 1-1/8" | | |
| 1" | | |
| 3/4" | 67 | 43-80 |
| 1/2" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 33 | 22-60 |
| 8 | | |
| 10 | 15 | 15-38 |
| 16 | | |
| 30 | | |
| 40 | 10 | 5-12 |
| 50 | | |
| 100 | | |
| 200 | 6.1 | 0-10 |

Moisture Density Relations, pcf (ASTM D698 Method A)

Maximum Dry Density, pcf N/A

Optimum Moisture, % N/A

Plasticity Index, ASTM D4318

Liquid Limit N/A

Plasticity Index N/A

Copies: Client (3), Billing (1) Field File (1)
J0/cb:UNC.031

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APPENDIX
L

APPENDIX L

TEST RESULTS, RUNOFF CONTROL DITCH

SOUTH CELL WEST CONTROL RUNOFF DITCH

West control ditch was to be contoured to 1995 Reclamation plan specifications. Nielson's, Inc. worked on the west control ditch periodically, with final completion of the control ditch on September 27, 1995. 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 1995 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 3" to 3 1/2" thick. Nielson's, Inc. graded material by manual means (rake and shovel). Thickness measurements were performed to determine if 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 1/2" thick. Thickness measurements were performed to determine if the material met project specifications for thickness at the specific locations.

UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

TEST SUMMARY FOR WEST CONTROL DITCH

DATE OF REPORT 12/06/95

HK

| DATE | TYPE OF TEST | GRID | NORTHING | EASTING | ELEV. | MATERIAL TYPE | DENSITY, PCF | MOISTURE, % | RELATIVE COMPACTION | USCS SOIL CLASS | WITHIN SPECS. ? |
|----------|---------------------|--------------|-------------|---------|--------|---------------|--------------|-------------|---------------------|-----------------|-----------------|
| 03/02/95 | Soil Classification | South End | | | | | | | | CL | Yes |
| 03/02/95 | Soil Classification | North End | | | | | | | | CL | Yes |
| 03/02/95 | Soil Classification | South End | of Drainage | Channel | | | | | | SC | Yes |
| 03/02/95 | Proctor | Composite | of West | Control | Ditch | | 109.8 | 15.8 | | CL | Yes |
| 07/24/95 | Proctor | South End | of Control | Ditch | | Native | 112.5 | 11.2 | | SM | Yes |
| 09/12/95 | Sandcone | Sta. 25 + 00 | West Berm | | 6952.3 | Native | 103.7 | 12.6 | 94 | CL | Yes |
| 09/12/95 | Sandcone | Sta. 26 + 50 | East Berm | | 6952.1 | Native | 104.0 | 12.1 | 95 | CL | Yes |
| 09/12/95 | Sandcone | Sta. 28 + 50 | Bottom | | 6949.4 | Native | 105.9 | 13.9 | 96 | CL | Yes |
| 09/12/95 | Sandcone | Sta. 30 + 50 | West Berm | | 6949.6 | Native | 99.9 | 11.4 | 91 | CL | Yes |
| 09/12/95 | Sandcone | Sta. 32 + 50 | Bottom | | 6947.6 | Native | 112.3 | 10.7 | 100 | CL | Yes |
| 09/12/95 | Sandcone | Sta. 34 + 50 | West Berm | | 6945.0 | Native | 103.2 | 4.1 | 94 | CL | Yes |
| 09/12/95 | Sandcone | Sta. 36 + 50 | East Berm | | 6943.2 | Native | 104.8 | 6.7 | 93 | SM | Yes |

RAC = Radon Attenuation Cover

cb/UNC.031/4

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

WT JOB NO. 3145JB031DATE OF REPORT 12/06/95

RAC = Radon Attenuation Cover

cb/UNC.031/5

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



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy/lean Clay

Sampled By: H. Kuebler Date 03/02/95

Source: S of run off control ditch

Submitted By: H. Kuebler Date 03/02/95

Authorized By: Client Date 03/02/95

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" | 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 | 84 | 50-100 |
| 200 | 62.0 | 40-85 |

Plasticity Index, ASTM D4318

Liquid Limit 31

Plasticity Index 13

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In:unc.031

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Thomas Huels



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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, NM

Material: Sandy/lean Clay

Sampled By: H. Kuebler Date 03/02/95

Source: N of run off control ditch

Submitted By: H. Kuebler Date 03/02/95

Authorized By: Client Date 03/02/95

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" | | |
| 3/8" | | |
| 1/4" | | |
| No. 4 | 100 | 90-100 |
| 8 | 96 | |
| 10 | 95 | 85-100 |
| 16 | 94 | |
| 30 | 93 | |
| 40 | 92 | 65-100 |
| 50 | 91 | |
| 100 | 79 | 50-100 |
| 200 | 64.0 | 40-85 |

Plasticity Index, ASTM D4318

Liquid Limit 32

Plasticity Index 13

Copies: Client (3), Billing (1), Field File (1)
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LABORATORY REPORT

PHYSICAL PROPERTIES OF AGGREGATES

Client: UNC Mining & Milling
Attn: Mr. Ed Morales
PO Box 3077
Gallup, NM 87305

Job No. 3145JB031

Lab/Inv. No. 31450051

Report Date: 03/07/95

Project: 1995 Reclamation

Location: Church Rock, New Mexico

Material: Silty/Clay Sand

Sampled By: H. Kuebler Date 03/02/95

Source: North of Drainage Channel, East of

Submitted By: H. Kuebler Date 03/02/95

Gravel Road

Authorized By: Client Date 03/02/95

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" | 99 | |
| 3/8" | 96 | |
| 1/4" | --- | |
| No. 4 | 92 | 90-100 |
| 8 | 89 | |
| 10 | 89 | 85-100 |
| 16 | 88 | |
| 30 | 84 | |
| 40 | 81 | 65-100 |
| 50 | 73 | |
| 100 | 56 | 50-100 |
| 200 | 38.0 | 40-85 |

Plasticity Index, ASTM D4318

| | |
|------------------|----|
| Liquid Limit | 23 |
| Plasticity Index | 7 |

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REVIEWED BY

H. Kuebler

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab/Invoice No. 31450051

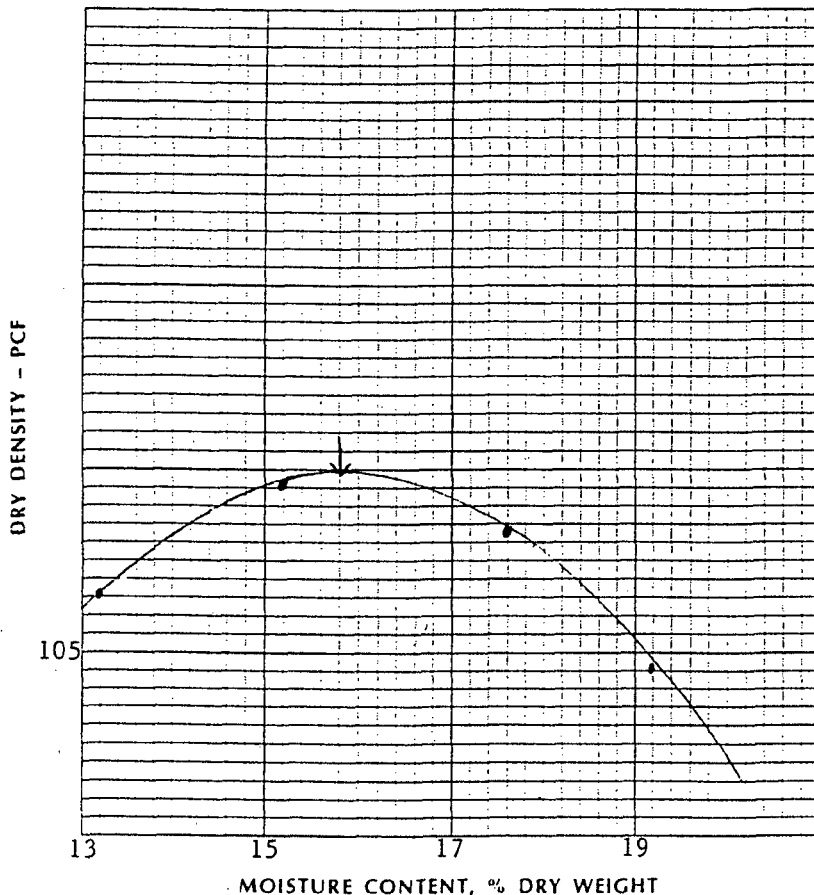
Type of Material Sandy Lean Clay Sampled By H. Kuebler/WT Date 03/02/9

Source of Material Composite of West run off Submitted By H. Kuebler/WT Date 03/02/9

Control Ditch Tested/Calc. By H. Kuebler/WT Date 03/02/9

Test Procedure ASTM D698A Reviewed By *[Signature]* Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|--------|--------|--------|--------|---|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 50 | 100 | 0 | 150 | | | |
| Sample + Mold Weight, gms | 6169.0 | 6183.0 | 6081.2 | 6144.6 | | | |
| Mold Weight, gms | 4257.9 | 4257.9 | 4257.9 | 4257.9 | | | |
| Wet Sample Weight, gms | 1911.1 | 1925.1 | 1823.3 | 1886.7 | | | |
| Wet Sample Weight, lbs | 4.213 | 4.244 | 4.02 | 4.159 | | | |
| Wet Density, pcf | 126.4 | 127.3 | 120.6 | 124.8 | | | |
| Moisture Sample Wet, gms | 302.3 | 326.7 | 345.4 | 315.2 | | | |
| Moisture Sample Dry, gms | 262.5 | 277.9 | 305.2 | 264.5 | | | |
| Weight of Water, gms | 39.8 | 48.8 | 40.2 | 50.7 | | | |
| Moisture, % | 15.2 | 17.6 | 13.2 | 19.2 | | | |
| Dry Density, pcf | 109.7 | 108.3 | 106.5 | 104.7 | | | |



Maximum Dry Density, pcf 109.8

Optimum Moisture Content, % 15.8

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4

SOIL / AGGREGATE – MOISTURE DENSITY RELATIONS

Job No. 3145JB031

Lab / Invoice No. 31450185

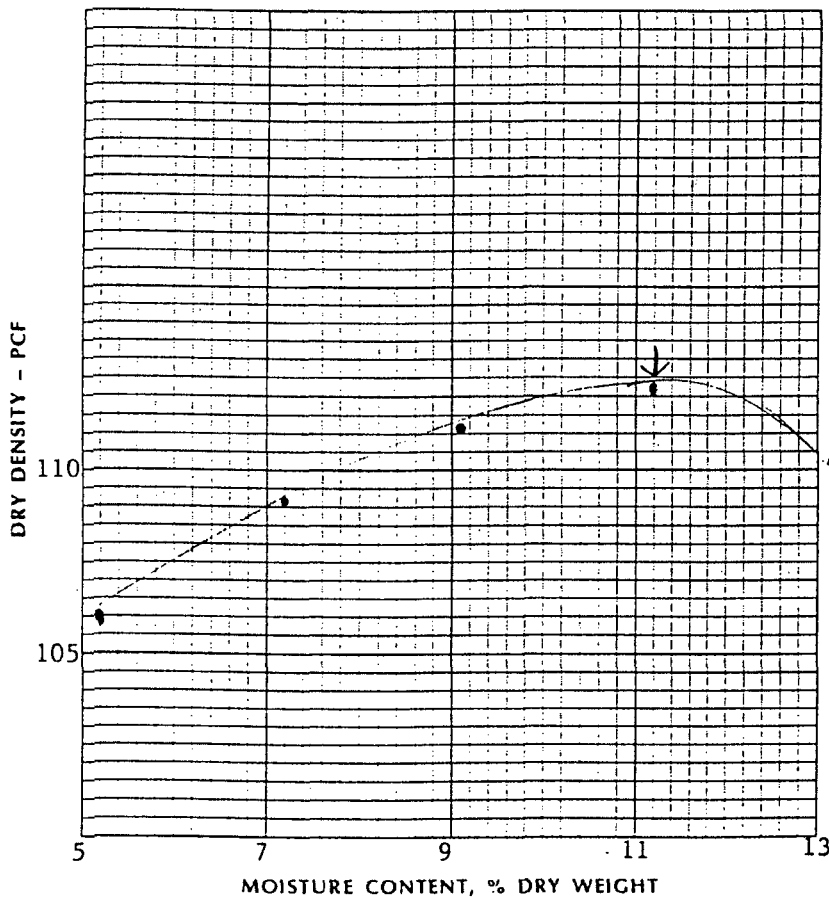
Type of Material Silty Sand (buff color) Sampled By H. Kuebler/WT Date 07/24/95

Source of Material South Cell Control Ditch Submitted By H. Kuebler/WT Date 07/24/95

Tested / Calc. By H. Kuebler/WT Date 07/24/95

Test Procedure ASTM D698A Reviewed By [Signature] Date

| Trial No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------------|-------|-------|-------|-------|-------|---|---|
| Water, Estimated % | | | | | | | |
| Water, cc | 0 | 50 | 100 | 150 | 200 | | |
| Sample + Mold Weight, gms | 5941 | 6025 | 6089 | 6142 | 6139 | | |
| Mold Weight, gms | 4257 | 4257 | 4257 | 4257 | 4257 | | |
| Wet Sample Weight, gms | 1684 | 1768 | 1832 | 1885 | 1882 | | |
| Wet Sample Weight, lbs | 3.71 | 3.90 | 4.04 | 4.16 | 4.15 | | |
| Wet Density, pcf | 111.3 | 117.0 | 121.2 | 124.8 | 124.5 | | |
| Moisture Sample Wet, gms | 315.2 | 316.1 | 316.3 | 316.4 | 316.7 | | |
| Moisture Sample Dry, gms | 299.5 | 295.0 | 289.8 | 284.5 | 280.0 | | |
| Weight of Water, gms | 15.7 | 21.1 | 26.5 | 31.9 | 36.7 | | |
| Moisture, % | 5.2 | 7.2 | 9.1 | 11.2 | 13.1 | | |
| Dry Density, pcf | 105.8 | 109.1 | 111.1 | 112.2 | 110.1 | | |



Maximum Dry Density, pcf 112.5

Optimum Moisture Content, % 11.2

Diameter of Mold, in. 4"

Height of Mold, in. 4.584

No. of Layers 3

Blows Per Layer 25

Weight of Hammer, lbs 5.5

Height of Drop 12"

Material Used -#4



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

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

Date of Report **11-16-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450292**
Authorized By **E. MORALES** Date **09-12-95**
Tested By **H. KUEBLER/WT** Date **09-12-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

Test Locations Designated By **CLIENT**

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

Calibrated Volume of Sand Cone Apparatus **0.0387 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 1 | 0.0363 | 12.6 | 103.7 | 0.0 | 2 | 109.8 | 15.8 | 94 | | 90 | YES |
| 2 | 0.0330 | 12.1 | 104.0 | 0.0 | 2 | 109.8 | 15.8 | 95 | | 90 | YES |
| 3 | 0.0336 | 13.9 | 105.9 | 0.0 | 2 | 109.8 | 15.8 | 96 | | 90 | YES |
| 4 | 0.0350 | 11.4 | 99.9 | 0.0 | 2 | 109.8 | 15.8 | 91 | | 90 | YES |
| 5 | 0.0334 | 10.7 | 112.3 | 0.0 | 2 | 109.8 | 15.8 | 100 + | | 90 | YES |
| 6 | 0.0364 | 4.1 | 103.2 | 0.0 | 2 | 109.8 | 15.8 | 94 | | 90 | YES |
| 7 | 0.0363 | 6.7 | 104.8 | 0.0 | 15 | 112.5 | 11.2 | 93 | | 90 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|--|-----------------------------|-------------|-----------------|
| | | Approximate Fill Depth, ft. | Elevation * | |
| 1 | S. CELL CONTROL DITCH, STA. 25+00, WEST BERM | | 6952.3 | SUBGRADE |
| 2 | S. CELL CONTROL DITCH, STA. 26+50, EAST BERM | | 6952.1 | SUBGRADE |
| 3 | S. CELL CONTROL DITCH, STA. 28+50, BOTTOM | | 6949.4 | SUBGRADE |
| 4 | S. CELL CONTROL DITCH, STA. 30+50, WEST BERM | | 6949.6 | SUBGRADE |
| 5 | S. CELL CONTROL DITCH, STA. 32+50, BOTTOM | | 6947.6 | SUBGRADE |
| 6 | S. CELL CONTROL DITCH, STA. 34+50, WEST BERM | | 6945.0 | SUBGRADE |
| 7 | S. CELL CONTROL DITCH, STA. 36+50, EAST BERM | | 6943.2 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|---------------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 2 | 31450051 | SANDY LEAN CLAY | COMP. OF W. RUN OFF CONTD | 15.8 | 109.8 | D698-A |
| 15 | 31450185 | SILTY SAND (BUFF COLOR) | W. CONTROL DITCH | 11.2 | 112.5 | D698-A |

Comments: **CB**

* DATUM Elevation of Test = Top of Subgrade

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

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

REVIEWED BY

A. Neely



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

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

Date of Report **12-05-95**
Job No. **3145JB031** Page 1 of 1
Event/Invoice No. **31450292-1**
Authorized By **E. MORALES** Date **09-12-95**
Tested By **H. KUEBLER/WT** Date **09-12-95**

Client **UNC MINING AND MILLING**
Project **1995 RECLAMATION**
Location **CHURCH ROCK, NM**

Test Locations Designated By **CLIENT**

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

Calibrated Volume of Sand Cone Apparatus **0.0387 cu. ft.** Bulk Unit Weight of Sand **94.8 lbf/cu. ft.**

| TEST NO. | IN-PLACE CHARACTERISTICS | | | | LAB CHARACTERISTICS | | | COMPACTION | REQUIREMENTS | | |
|----------|--------------------------|-------------------------------|-------------------------------|------------|---------------------|---------------------------------------|--------------------|------------------------------|--------------|--------------|-----------------------|
| | Hole Volume cu. ft. | Moisture % of Dry Unit Weight | Dry Unit Weight lbf / cu. ft. | Oversize % | ID | Maximum Dry Unit Weight lbf / cu. ft. | Optimum Moisture % | % of Maximum Dry Unit Weight | Moisture % | Compaction % | CONFORMANCE INDICATED |
| 8 | 0.0379 | 7.2 | 106.8 | 0.0 | 15 | 112.5 | 11.2 | 95 | | 90 | YES |
| 9 | 0.0367 | 6.4 | 104.7 | 0.0 | 15 | 112.5 | 11.2 | 93 | | 90 | YES |
| 10 | 0.0398 | 8.6 | 101.8 | 0.0 | 15 | 112.5 | 11.2 | 90 | | 90 | YES |

| TEST NO. | TEST LOCATION, HORIZONTAL | | TEST LOCATION, VERTICAL | | MATERIAL TESTED |
|----------|---|--|-----------------------------|-------------|-----------------|
| | | | Approximate Fill Depth, ft. | Elevation * | |
| 8 | S. CELL CONTROL DITCH, STA. 39+00, EAST SLOPE | | | 6942.0 | SUBGRADE |
| 9 | S. CELL CONTROL DITCH, STA. 41+00, BOTTOM | | | 6937.8 | SUBGRADE |
| 10 | S. CELL CONTROL DITCH, STA. 42+50, WEST BERM | | | 6935.0 | SUBGRADE |

| LABORATORY DATA & COMPACTION CHARACTERISTICS | | | | | | |
|--|--------------------|-------------------------|--------------------|---------------------|--|-------------|
| LAB ID. | EVENT/ INVOICE NO. | DESCRIPTION OF MATERIAL | SOURCE OF MATERIAL | OPTIMUM MOISTURE, % | MAXIMUM DRY UNIT WEIGHT, lbf / cu. ft. | TEST METHOD |
| 15 | 31450185 | SILTY SAND (BUFF COLOR) | W. CONTROL DITCH | 11.2 | 112.5 | D698-A |

Comments: * DATUM Elevation of Test = Top of Subgrade

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

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REVIEWED BY A. Neely

(SIGNED COPY ON FILE)



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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF DITCH - D50 .02 SAND THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|-----------------|------------|-----------------|-----------|
| Station 25 + 00 | 3 | 3 1/2 | 3 |
| Station 26 + 00 | 3 1/4 | 3 | 3 1/2 |
| Station 27 + 00 | 3 | 3 | 3 |
| Station 28 + 00 | 3 1/4 | 3 | 3 |
| Station 29 + 00 | 3 | 3 | 3 1/4 |
| Station 30 + 00 | 3 1/2 | 3 1/4 | 3 |
| Station 31 + 00 | 3 | 3 1/4 | 3 1/2 |
| Station 32 + 00 | 3 1/4 | 3 1/2 | 3 1/4 |
| Station 33 + 00 | 3 1/2 | 3 1/2 | 3 1/2 |
| Station 34 + 00 | 3 1/4 | 3 1/4 | 3 |
| Station 35 + 00 | 3 1/2 | 3 1/2 | 3 |
| Station 36 + 00 | 3 1/2 | 3 | 3 |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.SWE/21

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REVIEWED BY

L. Kuebler



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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF DITCH - D50 .02 SAND THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|-----------------|------------|-----------------|-----------|
| Station 37 + 00 | 3 | 3 1/4 | 3 1/4 |
| Station 38 + 00 | 3 1/2 | 3 | 3 1/4 |
| Station 39 + 00 | 3 | 3 | 3 |
| Station 40 + 00 | 3 1/2 | 3 1/2 | 3 |
| Station 41 + 00 | 3 1/2 | 3 | 3 1/4 |
| Station 42 + 00 | 3 1/2 | 3 | 3 1/2 |
| Station 43 + 00 | 3 1/2 | 3 1/2 | 3 1/4 |
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Dist: Client (3) Field File (1) Billing (1)
/cb:031.SWE/22

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF CONTROL DITCH - D50 .35 AGGREGATE THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|-----------------|------------|-----------------|-----------|
| Station 38 + 50 | 3 | 3 1/2 | 3 1/2 |
| Station 39 + 50 | 3 1/2 | 3 | 4 |
| Station 40 + 50 | 4 | 3 | 4 |
| Station 41 + 50 | 4 | 4 | 3 3/4 |
| Station 42 + 50 | 3 1/2 | 4 | 4 |
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Dist: Client (3) Field File (1) Billing (1)
/cb:031.SWE/25

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J. Kueller



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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF CONTROL DITCH - D50 1.5 AGGREGATE THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|-----------------|------------|-----------------|-----------|
| Station 25 + 00 | 3 3/4 | 3 3/4 | 3 1/4 |
| Station 26 + 00 | 4 | 3 | 3 |
| Station 27 + 00 | 3 | 3 1/2 | 3 1/2 |
| Station 28 + 00 | 3 3/4 | 4 | 3 |
| Station 29 + 00 | 4 | 4 | 4 |
| Station 30 + 00 | 3 1/4 | 3 | 4 |
| Station 31 + 00 | 3 1/2 | 3 1/4 | 3 1/2 |
| Station 32 + 00 | 3 1/2 | 3 | 3 1/2 |
| Station 33 + 00 | 3 1/2 | 3 1/4 | 3 1/4 |
| Station 34 + 00 | 3 1/2 | 3 3/4 | 3 1/2 |
| Station 35 + 00 | 3 3/4 | 3 1/2 | 3 1/4 |
| Station 36 + 00 | 4 | 3 1/2 | 3 1/2 |
| Station 37 + 00 | 3 3/4 | 3 1/2 | 3 1/2 |

Dist: Client (3) Field File (1) Billing (1)
/cb:031.SWE/23

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 11/21/95

D50 1.5 AGGREGATE PLACEMENT THICKNESS South Cell Control Ditch - East Slope

| Location | Thickness | Location | Thickness |
|------------|-----------|------------|-----------|
| Sta. 42+00 | 4" | Sta. 41+00 | 4" |
| Sta. 40+00 | 3 1/2" | Sta. 39+00 | 4" |
| Sta. 38+00 | 3 1/2" | Sta. 37+00 | 5 1/2" |
| Sta. 36+00 | 4" | Sta. 35+00 | 3 3/4" |
| Sta. 34+00 | 4 3/4" | Sta. 33+00 | 4" |
| Sta. 32+00 | 6 1/2" | Sta. 32+00 | 5 1/4" |
| Sta. 31+00 | 3 1/4" | Sta. 30+00 | 3 1/4" |
| Sta. 29+00 | 3 1/2" | Sta. 28+00 | 3" |
| Sta. 27+00 | 3" | | |
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Dist: Client (3) Field File (1) Billing (1)
/cb:031.UNC/7

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UNITED NUCLEAR CORPORATION 1995 RECLAMATION

WT JOB NO. 3145JB031

DATE OF REPORT 12/06/95

SOUTH CELL RUNOFF CONTROL DITCH - D50 3 INCH AGGREGATE THICKNESS

| LOCATION | RIGHT BERM | BOTTOM OF SWALE | LEFT BERM |
|-----------------|------------|-----------------|-----------|
| Station 38 + 00 | 6 3/4 | 6 3/4 | 6 1/4 |
| Station 39 + 00 | 7 | 7 | 7 |
| Station 40 + 00 | 6 1/2 | 6 1/2 | 7 |
| Station 41 + 00 | 7 | 6 1/2 | 7 |
| Station 42 + 00 | 7 | 7 | 6 3/4 |
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Dist: Client (3) Field File (1) Billing (1)
/cb:031.SWE/24

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REVIEWED BY

J. Kuckler