40-2259

PATHFINDER

April 21, 2005

Mr. Gary Janosko, Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety and Safeguards
U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, Maryland 20852-2738

Dear Mr. Janosko:

Enclosed please find the Lucky Mc Mine Tailings Reclamation Project Completion Report as required by Condition 54P of Source Material License SUA-672.

Sincerely,

Tom Hardgrove

T. W. Hardgrove
Manager, Reclamation Operations

Enclosure

Cc: J. Lusher, USNRC
J. Whitten, USNRC Region IV w/o encl.
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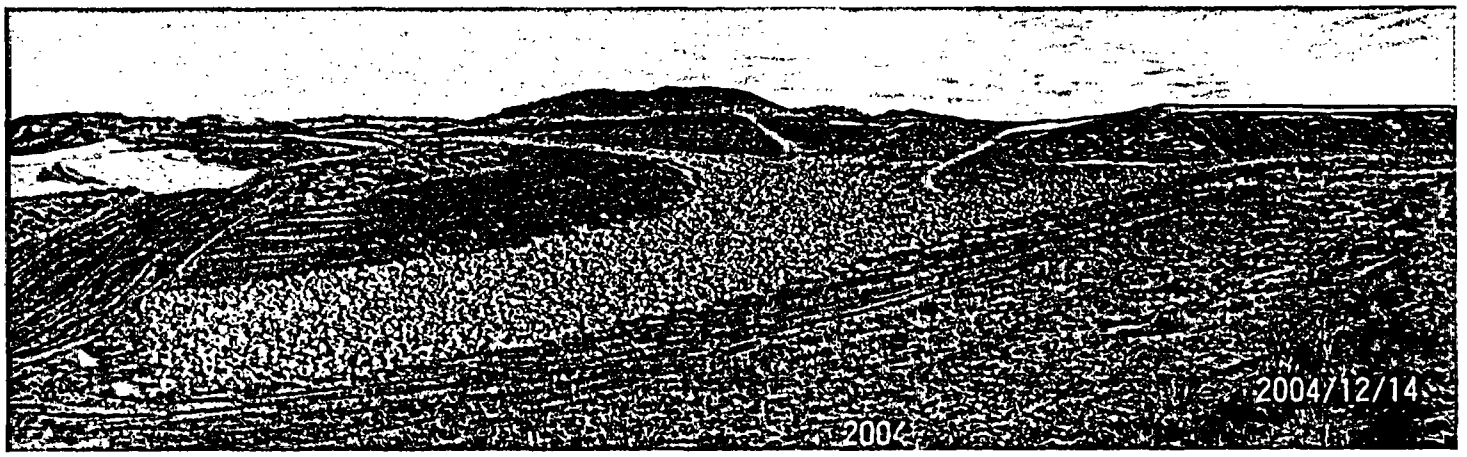
Lucky Mc Mine

Tailings Reclamation Project

Completion Report

Source Material License SUA-672

April, 2005



PATHFINDER Mines Corporation

Mills, Wyoming

Volume 1

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April 21, 2005

PATHFINDER MINES CORPORATION
LUCKY Mc MINE TAILINGS RECLAMATION
PROJECT COMPLETION REPORT

1.0 SUMMARY

The Lucky Mc tailings area was reclaimed pursuant to the NRC-approved reclamation plan (approved September 17, 1993, and March 24, 1996, and as subsequently amended) as referenced in Source Material License SUA-672, Docket Number 40-2259. The plan (Lucky Mc Mine Tailings Reclamation Plan, July, 1992) was amended at various times, typically to address modifications to the quality assurance/quality control portion of the plan. The most significant plan modification was Addendum I, Revised Solution Pond Area Reclamation Design, (April, 1997) which changed the status of the solution ponds from a decontamination scenario to one of encapsulation and erosion protection, prompted by the greater extent of contamination than originally anticipated. Addendum I was approved by the NRC on July 24, 1998. The approved reclamation plan as amended met the requirements of 10 CFR 40 Appendix A, and the NRC final staff technical position (NRC, 1990). The reclamation plan was designed to meet the requirements of Criterion 6 of Appendix A to 10 CFR 40 for radon emissions and gamma radiation, and the requirement of tailings isolation from erosive intrusion for up to 1,000 years without active maintenance. The achievement of these objectives was accomplished by grading to slopes compatible with the design top cover (either topsoil or rock), the creation of multiple sub-basins to control the length of overland flow and the peak discharge to individual design channels, the placement of varying thicknesses of radon barrier clay material (depending upon individual areas source term characterization), the placement of erosion protection as required on the majority of the tailings surface, and the completion of design rock protection in channels to accommodate the runoff from the design event, the probable maximum flood (PMF).

2.0 INTRODUCTION

The Lucky Mc tailings and mill site is located approximately 45 miles south-southeast of Riverton, Wyoming in the Gas Hills Mining District. Besides uranium mining, the immediate area was utilized for livestock grazing and wildlife habitat. The mill was owned and operated by Pathfinder Mines Corporation or its corporate predecessors. Milling operations commenced in 1958 and ran with occasional interruptions until 1988. A total of approximately 11.6 million tons of uranium ore were processed at the facility. The facilities consisted of the ore pad and mill buildings at the very south end with a series of three solid tailings ponds constructed in the basin of Reid Draw. North of the three tailings ponds were three distinct solution ponds which held barren process water but no solid tailings. The north end of the site was defined by the No. 4 tailings embankment which acted as the failsafe containment structure for the entire tailings system.

Interim cover had been placed over the solid tailings in Pond No. 2 prior to the cessation of milling operations. Subsequent to mill closure, Ponds 1 and 2A also received interim cover. The mill was dismantled and buried along the south end of the No. 2 dam toe in 1993. Mill decommissioning documentation is found in the report Lucky Mc Mill Decommissioning Report, May, 1994. Wind blown tailings primarily to the east of the solid tailings ponds 1 and 2 were retrieved and placed in the tailings system during May-November, 1996. The documentation of the wind blown tailings cleanup is found in the report, Lucky Mc Mill Site Completion Report, February, 1999. Interim cover was placed over the solution ponds intermittently from late 1998 to early 2001. This report covers the final reclamation activities for the tailings site, covering the period 1995-2004.

3.0 KEY ASPECTS OF THE COMPLETED RECLAMATION PLAN

The grading plan was based on the concept of utilizing the existing tailings topography as much as possible, thus avoiding excessive cuts and fills on the tailings. The overall gradient change from the south end of the mill site to the north end of the tailings system is some -350 vertical feet. Such a significant elevation change supported the idea of incorporating the existing topography into the plan. The plan also incorporated the subdivision of the overall drainage, resulting in shorter slope runs, and smaller design peak flows that would have to be accommodated by channels. While the plan envisioned consolidating contaminated material in the solution ponds area to minimize the footprint of the capped area, it proved to be too difficult to move the peripheral contaminated material due to ground instability caused by excessive moisture content. This resulted in virtually no reduction in the capped area compared to the area defined by the historical solution high water line.

Because of the designed drainage sub-basins, the plan entailed the construction of numerous channels to convey runoff from the reclaimed tailings surface to the periphery. Exhibit 3.0-1 to this report illustrates the locations of these various channels; the designated names of the channels are provided on the exhibit. The channel designations were a PMC internal nomenclature developed to facilitate communication during construction between PMC, contract surveyors, and the construction crew. The names are not reflected in the formal plan submitted to the NRC. The nomenclature is provided here because the chronological summary of construction activities presented in this report refers to these designations. Channels for the most part are armored with rip rap, the sizing of which was done consistent with NRC staff guidance. Utilized rock for the channels all met NRC durability criteria. The primary channels that convey runoff away from the tailings system and mill site are CH100 at the south end which carries runoff from the mill site and the southern half of Pond 1 to the east toward Frazer Draw, CH108 which directs runoff from the north half of Pond 1 and the east portion of Pond 2 to the east of the tailings, CH111 which carries runoff from the southwest corner of Pond 2 to the west, CH114 which drains the southern portion of Pond 2A to the west, and combined channels CH112, CH116, CH117, and CH4PN that convey runoff from the central portion of Pond 2 and the northeast portion of Pond 2A and all of the solution ponds to the north into Reid Draw. All channels running across capped areas were armored with a rock product, the size of which

depended upon the hydraulic characteristics of each channel. Rip rap D_{50} sizes specified in the design were one foot, 0.8 foot, 0.5 foot, and 0.33 foot.

The design of the radon barrier was variable, depending upon the source term of the underlying contaminated materials. Generally, the solid tailings at Lucky Mc exhibit a diminishing radium-226 content from south to north. This is due to the fact that the southerly Ponds 1 and 2 received tailings from the processing of higher average grade ore than did Pond 2A. The mill site required less radon barrier material as did the solution ponds. The ore pad was covered with one foot of clay; the mill site received two feet of clay; areas adjacent to the mill site proper received 1.5 feet of clay; Ponds 1 and 2 received three feet of clay; Pond 2A received two feet of clay; re-graded dam outslopes typically received 1.5 feet of radon barrier clay; and the solution ponds received 13 inches of clay (with the exception of the No. 3 dam outslope which was covered with a 26 inch thick radon barrier). The radon barrier clay was borrowed from sites on the east and west sides of the solution ponds. This entire area is under laid by a thick bed of Cody shale, an ideal material for radon barrier construction.

Final cover in the design also was variable, depending upon design gradients for overland flow in the different areas. Limited areas in the northeast corners of both Ponds 1 and 2, and most of the top of the 2A tailings were covered with a minimum of eight inches of topsoil due to the designed flat terrain. All other areas were covered with rock mulch (consisting of a sized crushed limestone) with a D_{50} of one inch, 1.63", or 2.17", depending upon gradient. Overall, a total of 61 acres were covered with topsoil and seeded, and 435 acres were covered with rock.

The Cody shale borrow areas on either side of the solution ponds were incorporated into the drainage design by utilizing the created depressions as holding basins to dampen runoff events and to aid in diverting runoff outside of the tailings area away from the encapsulated area. Exhibit 3.0-2 presents an overview of the Lucky Mc tailings reclamation design. A more detailed discussion of the tailings reclamation design can be found in Volume I of the Lucky Mc Mine Tailings Reclamation Plan and Addendum I.

4.0 TAILINGS SETTLEMENT

PMC demonstrated attainment of the license-required degree of settlement for each of the three solid tailings ponds. The NRC approved the demonstrations of settlement in license amendment actions dated October 28, 1997 (for Ponds 1 and 2), October 10, 1999 (for most of Pond 2A), and April 20, 2001 (for the balance of 2A).

5.0 CONSTRUCTION SPECIFICATIONS

The construction specifications for the project are presented in Volume II of the Lucky Mc Mine Tailings Reclamation Plan, July, 1992, as subsequently revised. Sections 10 and 11 from Volume II are included with this report for convenient reference purposes (see Appendix A). No exhibits from Volume II or Addendum I (the revised solution ponds area) are included in

Appendix A; see Exhibit 3.0-2 for the overall design. The reader is referred to the previously submitted and approved tailings reclamation plan for the entire set of plan exhibits.

6.0 CHRONOLOGICAL SUMMARY OF CONSTRUCTION ACTIVITIES

See Exhibit 6.0-1 for the locations of certain site features that are referenced in this summary of construction activities.

1995-1997

During this period preliminary work toward the tailings reclamation was done. The east extension of the mill ore pad was excavated and hauled to the 2A tailings pond as fill material. The old heap leach ore pile that was located at the south edge of the No. 1 tailings pond was also excavated and hauled to 2A. During 1996 most of the cleanup of the windblown tailings, primarily located to the east of tailings ponds 1 and 2, was done. Residual work extended into 1997. The windblown tailings cleanup generated a significant volume of material that went to the 2A and 3 ponds. During 1997 the excavation of the main south end channel in the design (CH100) was started. This material became part of the grading fill that went into the 2A basin. With the completion of the wind- blown tailings cleanup in late 1997, efforts were then directed toward the placement of interim cover over the mill ore pad. In December, 1997, the last mill-related building, the mill warehouse/shop, was demolished and buried in the mill refuse disposal area along the outslope of the No. 2 dam.

1998

January. The development of the limestone quarry, located on the mine property, was initiated. The quarry would be the source of all the smaller sized rock products (rock mulch and small rip rap) utilized for erosion protection over the reclaimed tailings. A limited amount of larger rip rap also came from the quarry. The quarry also was the source of most of the –1" filter bed utilized under the placed rock.

February. The grading of the mill site and No. 1 tailings pond was started. The construction of a temporary solution pond, the No. 4 evaporation pond, was also started with the removal of saturated material and general grading at the pond location (within the footprint of the historical high water line of the No. 4 tailings solution pond). This pond would hold the residual tailings solution still sitting in Ponds 3, 3A, and 4, allowing reclamation work to proceed on those ponds. Development of the limestone quarry continued.

March. Grading on the No. 1 tailings pond and No. 4 evaporation pond construction continued. Limestone rock production continued at the quarry site.

April. Construction of the No. 4 evaporation pond continued; minimal grading on the adjacent No. 4 basin was also done. Limestone rock production continued, and product haulage to the

tailings area for stockpile was done. Drilling and sampling of the Cody shale borrows was accomplished in order to identify acceptable clay material prior to the initiation of radon barrier construction.
May. Grading, primarily in the vicinity of the mill site and ore pad was done; some backfilling in the No. 4 solution pond basin also occurred. Construction on the No. 4 evaporation pond progressed. Topsoil was stripped and stockpiled from the west Cody shale borrow. Limestone products haulage to stockpile in the restricted area continued.

June. Tailings grading at the south end of the site progressed. Evaporation pond construction continued. Rock haulage from the quarry continued. The installation of a pump and pipeline from the flooded 5E mine pit to the tailings area Cody shale borrow areas was started and nearly completed by month end. The pipeline would provide water for the pre-wetting of the borrow clay to be used in radon barrier construction.

July. Radon barrier clay placement commenced with the construction of test pads on tailings ponds 1 and 2, followed by clay placement on the mill ore pad (began on 7/13). Evaporation pond construction continued. There were 11,400 CY of topsoil salvaged from borrows and peripheral areas. Limestone quarry production and haulage to the restricted area continued.

August. Clay radon barrier placement over the mill site (46,400 CY) was done. Quarry rock production and haulage to the restricted area continued. No. 4 evaporation pond construction continued.

September. Radon barrier clay placement over the mill site and the No. 1 tailings progressed (48,600 CY) -before month end 23 acres were completed and tested for radon flux. Evaporation pond construction continued.

October. Some 37,400 CY of radon barrier clay were placed on the mill site and the No. 1 tailings. Radon barrier construction was suspended near month end due to the onset of colder weather. Minimal tailings grading occurred. Construction of the evaporation pond neared completion. There was some minor windblown tailings cleanup work done (476 CY) on peripheral areas in order to address NRC concerns. Limestone quarry production and haulage continued.

November. With the completion early in the month of the evaporation pond in the northwest corner of the No. 4 basin, the transfer of solution from the No. 4 pond to the evaporation pond was started. Grading in the form of backfill occurred on the east side of the 3A solution pond. Upon receipt of NRC approval of the plan to partially dismantle the No. 4 dam as part of the site reclamation sequencing, the salvage of D_{50} one foot granite from the interior face of the dam was started. Quarry rock production and haulage continued.

December. Some backfilling of the 3A solution pond occurred. Limestone quarry production and haulage continued. Filter bed material was directly hauled and placed on areas of completed

radon barrier (mill ore pad). Granite rip rap salvage from the face of the No. 4 dam continued. Solution transfer from the tailings solution ponds to the evaporation pond continued.

1999

January. Quarry production and haulage continued, both to stockpile (all products) and direct placement (filter bed) in the restricted area. Grading in the form of 43,700 CY of backfill in pond 3A was done. The fill source was the No. 4 dam where granite rip rap salvage continued.

February. Haulage of No. 4 dam material continued with the dirt being placed as backfill in the 3A and 4 solution ponds (107,500 CY). Additional No. 4 pond internal cut and fill as part of the grading plan was 91,800 CY. Granite salvage from the No. 4 dam face was completed. Limestone quarry production and haulage continued. Direct haul and placement of filter bed on completed radon barrier was 1,200 CY for the month.

March. The first production run from the limestone quarry was completed on 3/10. Filter bed haulage from the quarry for direct placement on completed radon barrier was limited to 405 CY. The hauling of No. 4 dam material as backfill in the 3A/4 basin continued with total production of 209,200 CY. Other solution ponds grading production was 79,900 CY. Additional solution was transferred from the No. 4 basin into the evaporation pond. In preparation for the upcoming construction season, additional drilling and sampling of the Cody shale borrows for QA/QC purposes was done. The west Cody shale borrow also was ripped in preparation for pre-wet/borrowing operations. The pre-wet pipeline from the 5E pit to the clay borrows was re-constructed- aluminum irrigation pipe used for the trunkline was replaced with HDPE fusible pipe in order to eliminate chronic leakage problems.

April. Topsoil (55,300 CY) was salvaged primarily from the Cody shale borrow areas. Topsoil was stockpiled for later use. Using No. 4 dam material, backfill of the 3A/4 basin continued. The backfilling crowded remaining solution to a location where it was feasible to pump it to the evaporation pond. The clay pre-wet water delivery pipeline work was nearing completion. The drilling and sampling of the clay borrow was completed. Radon barrier clay placement for the month was 4,200 CY, all on the mill site or Pond No. 1.

May. Backfilling/grading efforts continued on Ponds 1, 3A, and 4, and the general mill site area. Solution transfer from the No. 4 basin to the evaporation pond continued. Additional topsoil was stripped for stockpile from the west clay borrow. The water pipeline from the 5E pit to the clay borrows was completed and put into operation. Test results from the earlier clay borrow sampling indicated that some isolated shallow material associated with minor draws was unacceptable-plans were formulated to insure that the material was not used in radon barrier construction. Radon barrier clay placement occurred on the mill site area and the No. 1 pond.

June. Currently planned backfilling of the No. 4 pond was completed. The last of the recoverable solution in the No. 4 pond was transferred to the evaporation pond. Grading was

also done on Ponds 1 and 2. Radon barrier construction was done on the mill site area and Pond 1. Filter bed and rock mulch were hauled from the quarry for direct placement on the mill ore pad. Additional drilling and sampling of the west clay borrow was done. Ted Johnson, USNRC, inspected the large limestone rip rap- he expressed concerns about its durability due to shale-like seams and fractures. Further evaluation of the material was requested.

July. Grading continued in Ponds 1, 2, and 4. Radon barrier construction continued on Ponds 1 and 2. The hauling of rock products from the quarry to the restricted area occurred through the entire month.

August. Grading activity occurred on Ponds 2 and 3A. Radon barrier construction was done on Pond 2. Filter bed and rock mulch were hauled from the quarry for direct placement on Pond 1. The first channel rock placement was completed with the installation of D_{50} 2.17" rock in the upper portion of Channel 104 located on the mill ore pad. Forty-six additional sample holes were drilled on the west Cody shale borrow to further characterize the clay source.

September. Grading was done on Ponds 1, 2, and 3A. Radon barrier clay was placed on Ponds 1 and 2. Filter bed and rock mulch were placed on Ponds 1 and 2. Channel construction was done on the mill ore pad. The NRC approved a plan for the segregation of inferior large limestone rip rap. The radiological source term of the entire solution ponds area was re-characterized by drilling and sampling twenty systematically located holes over the area. This was done in an effort to re-evaluate the radon barrier design for the solution ponds.

October. Grading was done on the north end of Pond 2A and on Pond 3A. Radon barrier clay was placed on the north end of 2A. Filter bed and rock mulch were hauled from the quarry for direct placement on Pond 2. Topsoil was placed on 9.5 acres of available area on Ponds 1 and 2.

November. Grading activity occurred on Ponds 2 and 3A. Limited radon barrier placement occurred on Pond 2. Favorable weather allowed radon barrier clay placement – frost penetration overnight was minimal, and any frozen material was dozed from the borrow before the start of daily loading. Filter bed and rock mulch were hauled from the quarry for direct placement on Pond 2. Some of the D_{50} one inch rock mulch was hauled from restricted area stockpiles for placement on Pond 2.

December. Grading activity occurred on Ponds 2, 2A, and 4. Very mild weather permitted limited radon barrier clay placement on Pond 2. Filter bed and rock mulch were directly hauled and placed from the quarry, or were hauled from stockpiles on site; all of these materials were placed on Pond 2.

2000

January. Grading activity on Pond 2A totaled 154.5K CY for the month. Minimal filter bed and rock mulch placement was done on Pond 2. The Nos. 2 and 3 temporary evaporation ponds,

located on the east end of the No. 2 tailings, were excavated and hauled as backfill along the toe of the No. 3 solution pond. Activities were suspended on 1/21 with the lay off of all hourly equipment operators and maintenance personnel.
February. No activity.

March. No activity.

April. Tailings reclamation activities were restarted with grading for channels construction on Pond 1 and with excavation in the old heap leach area to create Channel (CH) 100.

May.

- Approximately six acres of radon barrier were completed to final grade at a depth of 18 inches on an area to the south of the east end of CH100.
- Emphasis was placed on the completion of the final grade cutting of channels on the area south of CH100. Approximately 3,000 linear feet of channel were ready for radon barrier placement at month end. Significant progress on the final grading of CH100 was also accomplished.
- Contaminated dirt excavated from the above channel construction for the most part was placed as fill on Pond 2A. The material also served to super load areas on Pond 2A that had not reached consolidation.
- Final grade survey staking was completed on the outslope of the 2A dam, and the final grading was progressing at month end.
- Grade staking was accomplished over approximately fifty percent of the solution ponds north of Pond 3, and finish grading was underway by month end.

June.

- With the exception of a short section of channel in the vicinity of the scales, all channels south of CH100 received the final lift of clay and were ready for filter bed and rock placement.
- Final grading was completed on CH100 and it was ready for radon barrier placement.
- The CH106 side channel from the No. 1 tailings into CH100 was at final grade, awaiting clay placement.
- Two lifts (twelve inches) of clay were placed on the available area of the Dam No. 2A outslope.
- The CH111 exit channel cut from the south end of the No. 2 tailings through the dam was nearly completed. That material was used as productive fill in the immediately adjacent south end of the 2A tailings basin.
- The primary construction of the main channel CH4PN through the solution ponds area advanced from near the toe of the No. 3 dam well into the No. 4 basin (approximately 3200

feet). Excessively moist soil conditions hampered the effort. Regrading of areas peripheral to the channel was also initiated.

- Areas of unacceptably thin filter bed layer thickness on the east side of Pond 1 were corrected by removing the overlying rock mulch and applying the required additional filter bed.
- The demolition of the scales was accomplished, clearing the way for completion of channel work in that area.
- Finish grading of the rock mulch on the mill ore pad area was done to eliminate wind rows left after earlier placement.
- Additional areas were identified on the east side of the tailings system for Cody shale characterization by drilling.

July.

- The radon barrier was completed on CH100. With the exception of the vicinity of the demolished mill scales, all areas from CH100 south were covered by radon barrier. Final survey verification of these areas was needed prior to any filter bed/rock placement.
- Rough channel cuts were completed in the area of the scales. The refuse from the demolition of the scales was hauled to the mine for burial. The scales were surveyed for release.
- Regrading was completed on approximately sixteen acres on top of Pond 2A at the south end. Radon barrier placement had commenced there by month end.
- The north end of the dam 2 outslope was re-graded, and the south end was verified for the start of clay placement.
- Radon barrier placement was started on the 2A outslope at the very south end.
- The remaining dikes from the evaporation ponds on the east side of Pond 2 were graded out, and interim cover placement was completed over the remainder of the ponds. The grading plan for the area then was be re-evaluated to minimize the earth moving required.
- The main channel CH4PN through the solution ponds area was brought to final grade from below the toe of the No. 3 dam well into the No. 4 basin (approximately 3200 feet). Ripping the channel bottom and allowing it to dry out has mitigated excessive moist soil conditions, allowing completion of the grading.
- The grading plan in the solution ponds (north of the current progress of the main channel and in other peripheral areas where the main channel is to grade) was evaluated in order to minimize the volume of remaining earth moving.
- The channel cut for CH111 through the south end of dam 2 was brought to final grade, preparatory to clay placement.
- The balance of the channel cut for CH106 was competed on Pond 1.
- Additional clay borrow drilling on the east side of the tailings system was completed. The area drilled consisted of a mild slope below the previously drilled knobs.
- A short demonstration section of large limestone riprap channel placement was completed in CH101 in the vicinity of the mill ore pad. The riprap placement was examined by Ted Johnson of the NRC on July 18. Despite our efforts at removing unacceptable rock prior to

placement, he was very critical of the rock quality in the channel. The inspection prompted a re-evaluation of the selection method for the large limestone used in channel construction.

August.

- The completed radon barrier in the area of CH100 was verified relative to thickness and grade acceptability. Excepting the mill scales area, the entire area was ready for erosion protection cover.
- Channel construction (grading) was nearly complete in various locations: CH104 in the vicinity of the mill scales, CH105 across Pond 1, CH111 (through the No. 2 dam), and CH114 (through the west end of the No. 2A dam). Radon barrier placement would proceed in all these areas in September.
- Radon barrier placement was completed on approximately sixteen acres on top of 2A at the south end.
- Radon barrier placement was completed on the south ends of the dams 2 and 2A outslopes.
- The re-grading of the entire dam 2 outslope was completed (excepting one channel cut), and radon barrier placement on the middle slope and adjacent flat areas of 2A (a total of about 19 acres) was commenced.
- A re-design of the grading plan for the 3A and 4 solution pond basins was completed and informally submitted to Ted Johnson of the NRC to get some feedback on its acceptability. He indicated that the plan was conceptually acceptable. While the subsequent formal submittal would undoubtedly result in minor modifications relating to the nature of the rock protection, the grading itself could be accomplished in the interim. Accordingly, the area was staked according to the modified plan, and re-grading would commence in September.
- Additional fill was placed in the 2A basin to promote consolidation in the unconsolidated area. The fill came from re-grading efforts elsewhere.
- Re-grading of the windblown tailings material located below the 2A dam was accomplished, using it as interim cover over non-flooded areas of Pond 3.
- The placed large limestone rip rap in the test section of Channel 101 (which was deemed unacceptable by the NRC) was removed and about 250 feet of the same channel received granite rip rap.

September.

- Filter bed placement was completed on the radon barrier in the area of CH100. Verification of bed thickness had just started at month end.
- Channel construction (grading) was complete or nearly complete in various locations: CH106 on Pond 1, CH111 (through the No. 2 dam), and CH112 (through the north end of the No. 2 dam).
- Radon barrier placement was completed in CH104 at the mill scales site, and was well underway in CH105 (on Pond 1).

- Radon barrier placement was completed on the outslope of dam 2 (except the very north end) and the adjacent 2A areas, encompassing about nineteen acres.
- Filter bed placement was nearing completion on the south end of the No. 2 dam outslope.
- The re-design of the grading plan for the 3A and 4 solution pond basins was completed in detail and field staking was planned for early October.
- Additional filter bed material was hauled from the limestone quarry site to the restricted area.

October.

- Filter bed placement was completed on the radon barrier in the area of the mill scales and the balance of the CH100 area. Verification of bed thickness continued.
- Radon barrier placement was 80% complete in CH105 and CH106, both located on Pond 1. Re-grading progressed in CH108 on Pond 2.
- Radon barrier placement was completed on the north end of the dam 2 outslope, completing all clay placement on dam 2 (excepting the two channels that run down the slope), and on a small area of Pond 2A. A snow storm on 10/31 ended further clay placement for the balance of the year. Snow cover and cold weather precluded further activity.
- Filter bed placement was completed on the south end of dam 2.
- Additional filter bed and small rock (1.63") was hauled from the limestone quarry to the restricted area, primarily to stockpiles with some filter bed directly placed. A total of 30,000 CY went into restricted area stockpiles.
- Limited regrading was continued in the solution pond basins. Verification of subgrade topography was completed on the northeastern portion of Pond 4 and the east side of 3A, in preparation for clay placement.
- Construction of the pipeline on grade from Pond 3 to the No. 4 evaporation pond continued. Water transfer from Pond 3 to Pond 4 was planned for November.

November.

- Planned placement of filter bed, rock mulch, and riprap for the most part did not occur because of the poor weather. Significant snow cover throughout the month prevented these activities. There was some 1" rock mulch placement late in the month on a six acre area southeast of CH100. The area was one of the few locations where the wind blew the snow off the surface.
- In lieu of the placement of rock products or clay, efforts were re-directed when it was possible to work at all (there were 11.5 days lost to poor weather) to the hauling and dozing of interim cover over Pond 3. Most of the fill came from needed stripping of unacceptable material to expose clay in the east borrow areas.
- Stripping operations started on the last phase of the limestone quarry. Stripping started on 11/15, and 59% of the budgeted stripping was accomplished despite the late start. The sales contract with the BLM for more limestone was pursued.

- The pipeline from Pond 3 to the No. 4 evaporation pond was completed, and the transfer of solution to the No. 4 evaporation pond commenced at mid-month. All tailings dewatering solution also was going to the No. 4 evaporation pond.

December.

- Overburden stripping in the limestone quarry was 62,628 CY for the month compared to a budgeted 54,530 CY. Limestone mined was 16,265 CY. The stripping and mining results were good with much of the available limestone already exposed by the stripping accomplished to date.
- There were 16,900 CY of re-grading accomplished on tailings solution pond No. 3. The poor weather in November and much of December necessitated an abandonment of the planned rock and filter bed placement for December. In lieu of those activities, the interim cover placement over pond 3 continued.
- A minimal amount of one inch rock was placed south of CH100 to complete the rock placement in an area that was started in November.
- The transfer of solution from pond 3 to the No. 4 evaporation pond was essentially completed. There would be additional water transferred later as the covering of pond 3 forced residual water into the sump area.

2001

January.

- The primary activity for the month was the placement of interim cover (re-grading) over Pond 3. Progress was very good for the month with 89,742 CY placed as cover. By the end of the month approximately one acre was left that required covering.
- Regrading was accomplished on Pond 2 with the start of the channel cut from the Pond 1 dam then out the east side of Pond 2; a total of 6,020 CY was moved. The cut material went either to Pond 2A for eventual use as cover over the unconsolidated area of that pond, or as fill on Pond 3.
- The planned placement of 5,950 CY of large riprap did not occur due to the harsh winter weather. Blowing snow filled the channels where rock placement had been planned.
- There was limited activity in the limestone quarry, consisting of the mining of 1,908 CY of rock.

February.

- Interim cover placement over Pond 3 continued with a total production of 21K CY.
- There was regrading or backfill activity on Ponds 1, 2, and 3A totaling 46K CY.
- Overburden stripping and limited rock mining continued in the limestone quarry.

March.

- Tailings reclamation was devoted to channel construction (excavation) efforts on Ponds 2, 2A, and 3. CH108 was essentially completed on the east side of Pond 2. Due to saturated tailings, the channel required substantial over-excavation and then backfilling with competent, dry material to form an acceptable base for radon barrier placement. CH111A on Pond 2A was started, requiring the same over-excavation and backfill. CH116 adjacent to Pond 3 was started on native ground, providing backfill for CH108. Total re-grade volume was 38,592 CY.
- There were 30,750 CY of limestone mined.
- 13,916 CY of overburden were stripped in the limestone quarry. Much of this material was marginal quality rock lying on top of the limestone.
- Crushing and screening operations commenced at the limestone quarry on March 6; by month end 31,795 CY of product had been produced, based on load counts.

April.

- Tailings reclamation involved channel construction (excavation) efforts on Ponds 2, 2A, and 3. CH108 on Pond 2 was extended through the east side haul road. CH109 was started at the southwest end of Pond 2. CH111A was excavated at the south end of Pond 2A (considerable additional excavation and backfill with clay was required due to saturated conditions). CH116 was constructed from the toe of the 2A dam to the east edge of Pond 3.
- A significant amount of backfill was placed on the downstream face of Dam 3. This material established at least a 5:1 outslope, but substantial amounts of additional material were placed due to the high levels of Ra226 and Th230 that exist in the dam toe seepage area (see below). The extra fill buffered the surface from this source term, justifying less radon barrier thickness below the dam.
- Also accomplished was the finish grading of some 25 acres in solution pond area 4. Total re-grade volume for the month was 54,420 CY. Source term analytical data on Pond 3 received from the laboratory indicated that 13" of clay barrier would be required on the pond itself. The higher count seepage area below the dam would require further sampling and evaluation after additional fill placement.
- There were 36,211 CY of limestone mining. By month end all material needed to generate the additional required limestone products was in place adjacent to the processing plant.
- The targeted volumes of 1.63" and 2.17" limestone products had been produced by month end. Some 62,900 CY of filter bed had been produced by month end. A total of 3,405 CY of 0.5' rock had been produced by month end, based on the latest survey of the pile.

May.

- Carr Construction began mobilizing to the site on May 7. Initial earth moving occurred on May 8. Work by Carr for the month consisted of re-grading in CH108, CH109, and CH112

on Pond 2, and CH115 on Pond 2A. Re-grading was also accomplished on the previously unconsolidated area of Pond 2A where adjacent truck dumped material was dozed over the area, and below the No. 3 dam where considerable additional fill was placed. Total re-grade volume by Carr for the month was 67,469 CY. PMC personnel had accomplished 26,001 CY of regrading, primarily below the No. 3 dam, earlier in May. Total re-grade volume for May was 93,470 CY.

- Radon barrier placement was initiated by Carr on May 22 in the northeast corner of Pond 4. Clay placement was also done in CH105 and CH106 on Pond 1. The clay placed in CH105 and CH106 was for the last couple of six inch lifts. Total clay placement for the month was 17,402 CY. Radon barrier placement was hampered by startup problems with the clay borrow pre-wet program (greater areas of daily pre-wet were needed), and the clay conditioning in the placement areas (better mixing through disking were needed). Moisture content was somewhat spotty with some areas too dry and others too wet. Efforts were initiated by the contractor to eliminate clay moisture conditioning problems.
- Operations in the limestone quarry were concluded on May 22 with the crushing of the last of the filter bed. Total filter bed produced during this latest campaign was 85,700 CY, based upon a survey of the stockpiles at the quarry done on May 23.
- All Pathfinder hourly equipment operators and maintenance personnel were laid off by month end due to the decision to utilize a contractor to complete the tailings reclamation. Fifteen hourly personnel were laid off, leaving only three hourly PMC personnel on site.

June.

- Carr Construction progressed on re-grading, primarily in the form of channel construction, on all areas except Pond 3. Re-grading on Pond 2A was mainly related to backfill in the previously unconsolidated area. Re-grading volume in channels beyond that anticipated was necessitated by the need to over-excavate and then backfill with dry clay in order to create a stable surface for radon barrier clay placement. Many of the channel excavations have been hampered by wet ground that limited heavy equipment traffic.
- Radon barrier clay placement occurred mainly in the northeast corner of Pond 2, on various channels on Ponds 1 and 2, and the Pond 4 basin. Carr's pace at clay placement improved significantly over the previous month.

July.

- Carr Construction continued re-grading, primarily in the form of bridging fill in Pond 3 where 63% of the re-grading volume was placed. Much of the cover placed over Pond 3 last winter was partially saturated, necessitating the additional cover in order to support heavy equipment. Cover was also placed over a partially saturated area on the west side of Pond 4. The balance of the re-grading was related to channel construction.
- Radon barrier clay placement was 128% of the technical plan for the month and 96% of the plan, year to date. Most of the clay placement occurred in Ponds 1 and 2 in channels and the far east side of Pond 2. Additional clay was placed in the Pond 4 basin.

August.

- Carr Construction completed re-grading in Pond 3 where 57% of the re-grading volume was placed. Additional re-grading relating to the slimes area of Pond 2A was also done. By month end that area was ready for minor design modification to allow finish grading and clay placement in September. The balance of re-grading involved completion of channels in various locations.
- Radon barrier clay placement was 155% of the technical plan for the month and 90% of the plan, year to date. Clay placement occurred in Ponds 1 and 2 in channels, the southwest area of Pond 2A and the 2A dam outslope (completed except for the northeast outlet channel), Pond 3, and Pond 4.
- Limited rock mulch placement occurred in the vicinity of the mill ore pad area and CH100.
- Limited filter bed placement also occurred, primarily in the form of a test area where a Jersey spreader attached to a D8N dozer was used. Results with the spreader were good – it put down a uniform layer meeting the prescribed thickness.
- Topsoil was placed at the south end of Pond 2A and on the northeast corner of Pond 2.

September.

- There was re-grading in Pond 2A in preparation for the placement of clay over the last major area requiring a radon barrier. A side channel area on the southwest side of Pond 4 was also subject to re-grading.
- Radon barrier clay placement was 135% of the technical plan for the month and 112% of the plan, year to date. Clay placement occurred in Ponds 2A, 3, and 4.
- Filter bed placement began in earnest during the month with most of Ponds 3 and 4 being completed by month end. Filter bed placement on the outslope of the 2A dam was also well along by month end. The use of the Jersey spreader pushed by a D8N dozer proved to be efficient for filter bed placement with minimal over-consumption of material.
- Rock mulch placement also was well under way during September with major areas of rock placement in the Pond 4 basin completed. Additional rock mulch was also placed in Ponds 2 and 3. The Jersey spreader also proved to be efficient at rock mulch placement.
- Topsoil was placed on the northeast corner of Pond 2.

October.

- There was limited finish grading accomplished in Pond 2A, below 3, and in Pond 4.
- Radon barrier clay placement was 184% of the technical plan for the month and 124% of the plan, year to date. Clay placement occurred primarily in Pond 2A, the Ponds 2, 2A, and 3 breach channels, and below Dam 3. By month end almost all clay placement was done, leaving only some minor work to be done in the first few days of next month (exclusive of the No. 4 evaporation pond).

- Filter bed placement continued throughout the month with total production at 117% of the monthly plan. Filter bed placement occurred on the outslopes of the 2, 2A, and 3 dams, the south end of 2A, in Pond 4, and in various channels.
- Rock mulch placement also was accomplished during October with rock placement on the outslopes of dams 2 and 2A, and the south end of the 2A pond.
- Topsoil was placed on Pond 2A, representing 97% of the plan for the month.

November.

- Minimal finish grading was accomplished in Ponds 1 and 2, 2A, below 3, and 4. All were minor activities relating to channel finish construction, the access road through the mill yard and various edges of the design area.
- Radon barrier clay placement was completed (exclusive of the No. 4 evaporation pond) on 11/9 with the final lift of clay at the lower end of CH114 that exits the southwest end of the 2A dam. Just under 20K CY of clay were placed during the month.
- Filter bed placement continued throughout the month with total production at 116% of the monthly plan and 132% of the technical plan, YTD. Filter bed placement occurred on the outslopes of the 2 and 2A dams, various locations on top of the tailings, and in various channels.
- Rock mulch placement also was accomplished during November with rock placement on the outslopes of dams 2 and 2A, and sizeable expanses of Ponds 1and 2, 2A, and smaller areas on 3 and 4. Placed rock mulch was 70% of the monthly plan. Rock mulch placement for the YTD is 107% of the plan.
- Small rip rap (D_{50} 0.5') was placed in the main solution pond channel (4PN). All available channels in the solution ponds (excepting CH117 on the east side of Area 3) were completed by month end. Limited amounts of large rip rap were also placed in order to complete a flow control "pinch" structure at the location of the 3A dam.
- Topsoil was placed on Ponds 1 and 2, 2A, and on a small area below the 2A dam. Topsoil placement was 81% of the technical plan YTD.
- Late in the month topsoiled areas were seeded. Seeding was done on Ponds 1, 2, and 2A.

December.

- Minimal residual grading was accomplished in Pond 2A, relating to channel finish construction.
- Filter bed placement occurred in various areas of Ponds 1, 2, and 2A, relating to channel construction and completion of peripheral areas for rock mulch placement. Reasonably favorable weather conditions allowed material placement to continue. YTD filter bed placement is 139% of the technical plan, primarily due to a continuation of work beyond the planned termination of the construction season.

- Rock mulch placement was also accomplished during the month on Ponds 1, 2, and 2A. YTD rock mulch placement is 151% of the technical plan, primarily due to the completion of work not scheduled until 2002.
- Rip rap placement occurred in Ponds 1, 2, and 2A. Production was 125% of the technical plan for the month and 525% YTD of the plan. Work was accomplished that was scheduled for next year.
- Limited topsoil placement occurred on a west borrow area adjacent to a rock mulch covered area.

2002

January.

- Favorable field conditions allowed a continuation of tailings area channel rock placement. 16,930 CY of rock were placed in channels; 4,580 CY of the total were 0.33' rock and 12,350 CY were the 1.0' granite. At this point all rock-lined channels were complete with the exception of the segments requiring 0.8' rock, the lower end of CH111, and the dam No. 4 breach channel and its related tributary channels. Channel end protection structures also have to be built. The accomplished channel rip rap placement was not scheduled in the technical plan until May-June.
- Filter bed (5,722 CY) and rock mulch (10,410 CY) placement was also accomplished. The placement was done in various small areas of the tailings proper as well as peripheral off-tailings areas in order to preclude head-cutting back into the radon barrier. Most of the remaining rock mulch placement related to access routes that must be maintained until the 0.8' rock channels are completed.
- There were 4,860 CY of re-grading related to the construction of the lower end of CH111 located off the tailings. Some contaminated material was encountered that required removal. That material was hauled and placed adjacent to the No. 4 evaporation pond for eventual covering when that pond is reclaimed. Limited radon barrier clay would be required on the lower end of CH111 next spring.
- At month end a contract was finalized with Rice Enterprises to deliver 26,000 tons of 0.8' rock to the tailings site from South Pass. Delivery would commence next month with the haul anticipated to run until June.
- A design was completed for the extension of CH114 to drain to the west outside the restricted area. The route skirts an archeologically sensitive area; excavation was delayed until a consulting archeologist could survey the channel route.

February.

- The primary on-site activity during the month was the screening of 1' stockpiled granite in order to remove fines. By month end a total of 8,750 CY of granite had been cleaned and re-stockpiled.

- Rice Enterprises began the delivery of 0.8' rock hauled from South Pass. By month end a total of 4,335 tons of rock had been delivered to the tailings site. Initial rock sizing problems were resolved after further testing and the subsequent agreement by Rice to enlarge the openings on the upper and lower screens, increasing the effective D_{100} and eliminating excess smaller rock.

March.

- Carr Construction placed 4,434 CY of 0.8' rock in tailings reclamation channels during the month. Rock was placed in CH108, CH112, and CH117. Available supplies of delivered 0.8' rock were exhausted.
- Rice Enterprises continued the delivery of 0.8' rock hauled from South Pass. During March a total of 6,115 tons of rock were delivered to the tailings site. Year-to-date delivered 0.8' rock totaled 10,542 tons, representing 40.6 percent of the contract amount.
- Design detail work continued for various remaining channel features in the tailings area.
- Inberg-Miller surveyors continued as weather permitted with the verification of rock mulch placement thickness.

April.

- Rice Enterprises continued the delivery of 0.8' rock hauled from South Pass. During April a total of 3,209 tons of rock were delivered to the tailings site. Year-to-date delivered 0.8' rock totals 13,751 tons, representing 52.9 percent of the contract amount. Delivery was hampered in April by a break down of Rice's screening plant.
- J. Savini conducted a field archeological survey for the proposed route of the CH114B channel on the west side of the tailings where the channel leaves the restricted area. No archeological resources were identified, clearing the way for construction to begin on the channel.
- Inberg-Miller surveyors continued as weather permitted with the verification of rock mulch placement thickness.

May.

- Ted Johnson, NRC, inspected the site reclamation work on May 1. He expressed concern about the apparent presence of excessive amounts of fine material within the matrix of the one foot rip rap placed in channels. The problem rock was the granite that had been salvaged from the face of the No. 4 dam.
- Rice Enterprises continued the delivery of 0.8' rock hauled from South Pass. During May a total of 4,130 tons of rock were delivered to the tailings site. Year-to-date delivered 0.8' rock totals 17,881 tons, representing 68.8 percent of the contract amount.
- Tailings production during the month primarily related to the excavation of the CH114B channel on the west side of the tailings where the channel leaves the restricted area. The

channel cut was completed, and salvaged topsoil was stockpiled adjacent to the channel. End protection rock was placed and backfilled, and topsoil application commenced.

- Rock mulch placement was accomplished to fill small areas of thinly placed material, primarily on the outslopes of the 2 and 2A dams.

June.

- Rice Enterprises continued the delivery of 0.8' rock hauled from South Pass. During June a total of 3,874 tons of rock were delivered to the tailings site. Year-to-date delivered 0.8' rock totaled 21,979 tons, representing 84.5 percent of the contract amount.
- Tailings production during the month consisted of limited filter bed placement in preparation for rip rap placement, and 0.8' rock placement in CH109, CH112, and CH114. At the end of the month the remaining channels requiring 0.8' rock were CH106, CH100, and a short section in CH108 (exclusive of the dam 4 area).
- There was some topsoil placement in area 2A relating to the completion of the west exit channel (CH114A) from the 2A pond.
- Some rock mulch was hauled from the quarry to stockpiles in the restricted area for eventual final placement. Stockpiles within the restricted area that had been built the previous month by Carr were utilized to spread additional rock mulch over thin placement areas.
- Sampling of rock mulch thickness was completed on a 200' centered sampling grid throughout the tailings system.

July.

- Rice Enterprises completed the delivery of 0.8' rock hauled from South Pass. The final delivered amount was 26,041 tons.
- Tailings production during the month included a significant amount of re-grading in the borrow areas to create diversion channels that will keep excess runoff away from the protected tailings areas. Carr also started the channel cut through the No. 4 dam. Ted Johnson gave a verbal okay to proceed with most of that work. The breach channel would be completed this year. The end protection structure north of the dam was also completed.
- There was some limited radon barrier clay placement that was necessitated by the exposure of unanticipated contaminated material at the end of CH111 when the excavation of that channel was advanced late last year.
- Some additional filter bed and rock mulch were placed generally to remediate various areas that were not adequately covered.
- Additional 0.8 foot rip rap was placed in various channels. By month end there was only one channel left (exclusive of the No. 4 dam area) that required 0.8 foot rock placement.
- To address NRC concerns expressed during the May 1 inspection regarding excessive fine materials in one foot rock channels, a sampling program was undertaken to ascertain if adequate amounts of rock were present despite the presence of dirt. Unfortunately, the amount of rock indeed was deficient. In response a remediation program was initiated to

remove the rock contaminated with fines from the channels, screen it, replace the clean rock, and augment as necessary from existing clean rock stockpiles. That program began just before the end of the month.

August.

- Tailings production during the month included a significant amount of re-grading of the No. 4 dam, creating the breach channel and tributary channels, and in the east clay borrow area to create diversion channels.
- Additional re-grading was associated with the placement of fill in the No. 4 evaporation pond in order to eliminate the deeper holes and force water over the beaches at the shallow end. This was done to help the evaporation process without resorting to more spraying.
- Filter bed was placed, primarily in the No. 4 dam channels. Additional filter bed was placed at the ends of CH100, CH111 and CH114 in preparation for their completion.
- Rock mulch was hauled from the quarry for eventual placement in areas such as access roads.
- 0.8 foot rip rap was placed in the east diversion channel at the No. 4 dam. Additional 0.8 foot rock was also placed in CH111 at the lower end.
- The 1.0 foot rock cleaning program was completed during the month. Eleven channel segments were subject to rock excavation, screening, and replacement of the cleaned rock. Deficiencies in replaced rock volume were made up by hauling from stockpile. Stockpiled 1.0 foot rock was also cleaned as needed prior to hauling to remove residual fines contamination. Ted Johnson, NRC, inspected some of the completed remedial work on July 31, and he was pleased with the outcome.
- The remaining stockpiles of 1.0 foot granite on site were exhausted by month end with most of the rock going into the east diversion channel at the No. 4 dam and the main No. 4 breach channel. The remaining requirement for 1.0 foot rock was an estimated 5,500 tons. Some of that deficiency would be made up by using large limestone rip rap which was successfully screened to remove fines and the flatter, undesirable rocks. The balance would be purchased from Rice-Kilroy. An order for the additional rock was placed at month end.

September.

- Tailings production during the month included completion of re-grading in the vicinity of the No. 4 dam, creating the breach channel, tributary channels, approach to the breach, and the east borrow area diversion channels.
- All remaining channel construction grading was completed (with the exception of some minor work in the east borrow). This included CH100, CH108, CH111, and CH114A. There would be some additional minor grading work in channel areas where still utilized access roads were located.
- The balance of the fill placement was completed in the No. 4 evaporation pond in order to eliminate the deeper holes and force water over the beaches at the shallow end. This was done to help the evaporation process without resorting to more spraying.

- All available large rip rap was placed in channels. Further large rip rap placement awaits delivery of one foot rock from South Pass by Rice-Kilroy. By month end the remaining channel rock placement consisted of short sections in CH100 and CH108, the balance of the No. 4 breach channel, and the balance of the west tributary to the breach channel. Some of the latter could not be accomplished until the evaporation pond is reclaimed in 2004.
- By month end all end protection structures were complete.
- All available previously cleaned 0.8 foot limestone rip rap on site was placed in the west tributary channel at the No. 4 dam breach. This channel is located away from the radon barrier protected pond area.
- Additional rock mulch was placed on peripheral areas and in stockpiles along access roads for eventual spreading.

October.

- There was additional tailings re-grading in Area 4 relating to the completion of the upper end of the west diversion channel adjacent to the No. 4 dam. The channel was advanced upgradient to the point where future evaporation pond reclamation begins.
- Topsoil was placed on slopes and adjacent disturbance created during the excavation of the breach through the No. 4 dam.
- The one foot rock haul from South Pass began on the first work day of the month. By month end 3,267 tons had been delivered, representing 59% of the order.
- Farming activity in the tailings area commenced late in the month with the disking and fertilizing of borrow areas and other adjacent disturbance.

November.

- There was additional tailings re-grading in Area 1&2 relating to the covering of channel end protection rock, minor finish work peripheral to Pond 2A, and the preparation of the east clay borrow area for final reclamation.
- Rock mulch was placed on various areas that previously could not be completed due to access considerations.
- The one foot rock haul from South Pass was completed and the delivery of additional 0.8 foot rock commenced. A total of 3,559 tons of large rip rap were delivered during the month.
- Large rip rap was placed in the west diversion channel adjacent to the No. 4 dam.
- Topsoil was placed on reclaimed access routes to the east clay borrow and areas in the vicinity of the No. 4 dam.
- Some maintenance work was done on the east access road to the tailings area. With the closure of the central access route across ponds 1 and 2, the east road required some work to assure access for rock delivery during marginal weather.
- The application of commercial fertilizer and the seeding of all tailings clay borrow areas and other peripheral disturbance continued.

December.

- Rock mulch was placed on various tailings areas that previously could not be completed due to access considerations.
- Large rip rap was placed in the remainder of the west diversion channel adjacent to the No. 4 dam. By month end all large rip rap placement was complete for the tailings project (exclusive of work related to the No. 4 evaporation pond).
- The 0.8 foot rock haul from South Pass was completed; this rock was stockpiled on site in anticipation of the completion of the evaporation pond reclamation in 2004. A total of 2,140 tons of large rip rap were delivered during the month.
- The application of commercial fertilizer and the seeding of all available tailings clay borrow areas and other peripheral disturbance was complete at month end.
- By month end virtually all tailings reclamation work was complete, exclusive of the evaporation pond area and the access routes to the pond.

2003

- There were no tailings reclamation activities during the year. There was some limited work done relating to the closure of sump 2A-11 (off the southwest toe of the No. 2 dam). The sump was part of the ground water control program. The remaining solution in the No. 4 evaporation pond continued to decrease due to evaporation through the year. By fall the pond was dry.

2004

January-June.

- There were no tailings reclamation activities during this period.

July.

- Rapid Construction, contractor for the last phase of tailings reclamation (closure of the No. 4 evaporation pond), initiated work on the pond.
- Old tires that had been placed as erosion protection along the berms inboard to the evaporation pond were removed and placed in an excavated hole to the east of the evaporation pond. The site would be under the radon barrier/erosion protection system.

August.

- A D-9 dozer pushed the surrounding berm material into the pond as an initial cover. By month end approximately half of the pond area had been covered. The loading of the pond

area by the dozed fill squeezed water out of the pond bottom, resulting in standing water in the remaining pool area of the pond.

- A seepage problem in the vicinity of the closed 2A-11 sump was corrected. The capped pipe that was at the terminus of the No. 2 dam toe drain (it fed the 2A-11 sump) was excavated, and the pipeline was continued northward and into the 2A tailings basin where a drain field was installed to receive the seepage water. Tailings area disturbance was subsequently reclaimed with replacement of the radon barrier and topsoil. The details of 2A-11 sump area corrective activity are addressed in Appendix B of this report.

September.

- Scrapers hauled additional borrow fill to the evaporation pond area. The fill was then dozed out over the pool area of the pond.
- Due to the earlier seepage from the 2A-11 sump area there was apparent contamination in a low area adjacent to the 2A-11 sump (immediately off the end of channel CH111). The seepage reacted with the limestone rock cover in the area, resulting in an orange colored iron precipitate. The color made it very apparent where the seepage had run. The sediments in the discolored low area were sampled, and the laboratory data are presented in Appendix B. All Ra-226 levels were below the site standard of 9.5 pCi/g. Regardless, most of this material was excavated with a track excavator and hauled to the No. 4 evaporation pond for use as fill.

October.

- The filling operations continued. The remaining pool area measured approximately fifty feet by fifty feet. The last of the standing water was removed from the pool and dispersed on the adjacent fill. After allowing this solution to soak in or dry up, the pool area was backfilled. By month end the No. 4 evaporation pond area was entirely covered and to grade.
- The diversion channel immediately to the west of the evaporation pond was excavated to subgrade.
- The CH4PC channel which will carry runoff from the No. 4 evaporation pond area to the east into the main exit channel CH4PN and through the remnants of the No. 4 dam was excavated to its rough subgrade elevations.
- The topsoiled areas of all tailings reclamation were re-seeded with the plan-specified seed mix. The previous seeding on these areas had for the most part failed due to drought conditions. Commercial fertilizer was applied to the seeded areas.

November.

- All re-grading operations relating to the No. 4 evaporation pond were completed, including the final grading on the channels. The total evaporation pond re-grade volume was 67,950 CY.

- A radiological survey of areas peripheral to the solution ponds was completed by PMC personnel. For the most part the survey indicated no contamination problems. There were a few small areas identified that required some soils cleanup. The soil material collected from that cleanup effort was deposited within the evaporation pond area for covering with radon barrier clay. The details of the radiological survey and cleanup are presented in Appendix I of this report.
- Radon barrier construction commenced on 11/9/04. By the end of the month all of the radon barrier placement was completed. Unusually favorable weather aided the completion of the clay placement. Water for moisture conditioning was hauled from the 5E pit in the mine. This was the same source used for all previous tailings reclamation moisture conditioning, both as pre-wet addition in the borrow and directly on placed clay. The total evaporation pond area radon barrier clay volume was 43,224 CY.
- Filter bed was placed on approximately one half of the evaporation pond area.
- Topsoil was placed on the west slope of the west clay borrow area. The slope was then seeded. This work was done in order to stabilize the slope against erosion.

December.

- The remainder of the filter bed placement over the evaporation pond area, including the associated channels, was completed.
- All of the designed rock mulch placement was completed on the evaporation pond area. The expanse of the coverage of filter bed and rock mulch was increased in some adjacent areas where it was evident there was potential for erosion back toward the capped area.
- A berm was constructed along the east edge of channel CH116 just above where it breaches through the No. 3 dam. The berm was added to assure that no flow could leave the channel area and cause erosion damage on unprotected areas to the immediate east.
- The access roads along the east side of Pond 2 and across Pond 3 were covered with rock mulch.
- The D_{50} 0.8 foot rip rap stockpiled on site was placed in the west diversion channel, adjacent to the evaporation pond. The D_{50} 0.5 foot rip rap was placed in the upper end of CH4PC where it extends into the evaporation pond area.
- The Lucky Mc mill tailings site reclamation was completed on December 14, 2004.

7.0 DESIGN MODIFICATION

There was only one modification of the approved design (as formally amended) that warrants discussion. The approved design for the No. 4 evaporation pond included a channel (CH4PC) which essentially bisected the pond area. The approved grading plan for the evaporation pond area envisioned a fair amount of relief from the edges of the pond to the center where the channel would be located. In fact, when the evaporation pond was covered additional fill was required in order to support heavy equipment. Consequently, the entire re-graded surface was near a uniform elevation. It was concluded that the graded surface was more conducive to the

construction of a swale with a relatively flat gradient that would report to a shortened channel CH4PC that originates at the north end of the evaporation pond area. The surface was graded to allow sheet flow to the upper end of the channel. This approach made more sense than incising a channel across the entire area that would then require additional grading work to force water to the channel across the entire pond surface.

8.0 QUALITY ASSURANCE / QUALITY CONTROL

The following descriptions provide an overview of the construction QA/QC process. The reader is referred to Appendix A for details of the construction QA/QC process. The rock sources for the various rip rap and rock mulch products (limestone quarry and offsite) were subject to periodic durability testing. Rock sizing was also monitored consistent with the TRP requirements.

Grade Control

Grade control was accomplished through a coordinated effort between Pathfinder technical staff and the contract surveying firm, Inberg-Miller Engineers. With the exception of settlement monument surveys done by level loops with total station survey equipment, all project surveying was accomplished using global positioning system (GPS) technology. The GPS survey equipment allowed a more efficient handling of vast amounts of survey input and output data, resulting in timely and accurate grade control. The grade control process started with the PMC staff generating location/design elevation files based upon the approved reclamation plan. The electronic files created were downloaded into the GPS survey computer hardware. The surveyor would then find each discrete location in the field, the GPS would then determine the pre-construction elevation at the location, and calculate the amount of cut or fill required to reach design elevation. The survey assistant would place a grade stake with the appropriate cut or fill amount indicated on the stake.

After the removal or addition of material to an area, the grading progress would be checked, and new staking provided as needed if final subgrade elevations were not realized. Upon confirmation of final subgrade elevation, the final grade stake would be so marked ("0/0"). Once an area was at final subgrade, the placement of subsequent layers of cap material could commence. See Exhibit 8.0-1 of this report for the as-built elevation contours.

Radon Barrier Clay Borrow Characterization

The first QA/QC consideration in clay placement was the determination of the acceptability of the clay material based on particle size. The Cody shale borrow areas used as a source of the radon barrier clay were located on site to the east and west of the solution ponds area. The borrow areas were drilled and sampled in advance of any borrowing. The drill hole spacing and thickness of sample intervals was dictated by the particle size testing frequency specified in the TRP. Particle size (percent passing the #200 mesh screen) was determined for each sample,

consistent with the requirements of the QA/QC program in the TRP. The plan specified at least 90% passing the #200 sieve if the material was to be used as radon barrier clay. See Appendix C for the summary reports of all sieve analyses of the clay borrow samples.

When the clay borrow pre-drilling and sampling program identified areas that did not meet the clay specification, those areas were flagged in the field in advance of borrowing operations. Material from such flagged areas was removed from the borrow and used as grading fill. Typically, the unacceptable materials were associated with minor surface draw features where sedimentation had deposited more sandy material. These areas were localized, facilitating the segregation process. After removal of the failed zone of material in a given area of the clay borrow, routine clay borrowing then could continue.

Radon Barrier Clay Placement

For the most part acceptable moisture content in the clay was accomplished by pre-wetting the borrow prior to clay removal. Water was pumped from the flooded 5E mine pit south of the tailings area via a pipeline to the clay borrow areas. Arrays of irrigation pipe with sprinkler heads were placed on top of the pre-ripped clay in an area, and the area received sprayed water typically for eight hours the day prior to borrowing. The irrigation system was then moved to the next borrow location for wetting, and borrowing commenced in the already wetted area. In this manner the wetting process rotated through the borrow area. Occasionally, placed clay testing indicated a deficiency in percent moisture. When that occurred, water trucks were used to apply water directly on the placed radon barrier clay, bringing the moisture content within specifications. The notable exception to the pre-wet approach to clay placement was the completion of the radon barrier over the No. 4 evaporation pond and adjacent areas, accomplished in late 2004. Because of the relatively limited amount of clay involved, it was more practical to rely exclusively on placement of water directly on the placed clay instead of any borrow pre-wetting.

Since radon barrier clay was placed in incremental lifts of a nominal six inches, fill stakes were placed with a six inch fill designation. Placed clay was compacted by the wheel weight of the scrapers and/or a sheeps foot compactor. Most of the placed clay was conditioned by disking with water addition as needed. Upon reaching the six inch fill lift elevation and meeting compaction/moisture specifications, the next lift was staked and similarly built. Radon barrier construction was complete in an area upon placing the last prescribed lift with any adjustments to meet the designed top of clay elevation. Numerous spot checks of completed radon barrier by hand augering indicated that the actual overall clay layer thickness exceeded design in most cases. Exceedance of the design thickness was further supported by the fact that the overall clay volume utilized in construction amply exceeded the theoretical required volume. Exhibit 8.0-2 is a radon barrier clay thickness map which represents a condensation of the voluminous clay placement survey data. Note that there were localized radon barrier areas on the mill ore pad, mill site proximity, and Ponds 1, 2, and 2A (see Exhibit 8.0-2) where the survey data indicated the radon barrier was not built to the specified thickness. Since the construction protocol for clay

lifts was iterative with a final confirmation of final lift placement before any subsequent material placement, it was suspected that some limited problems with the survey data base were falsely indicating deficiencies. Confirmatory test holes were drilled in the questioned areas, and the sample sites are designated as "RB Sample __" with the verified clay thicknesses on Exhibit 8.0-2. Test holes were drilled beyond the design depths but not necessarily all the way through the clay interval. In all cases the clay thickness was demonstrated to exceed the TRP requirements.

Each lift of placed clay was tested for compaction and percent moisture content consistent with the QA/QC program of the TRP. Acceptable compaction and moisture content had to be demonstrated before the placement of any new material on top of a given clay lift. See Appendix D for the summary reports for each construction season of the radon barrier compaction, moisture content, and Atterberg Limits testing.

Radon Barrier Flux Testing

Upon completion of the final clay lift for an area, the area was ready for radon flux testing. Typically, the radon flux testing was conducted when sufficiently large areas were available to allow placement of a number of LAAC canisters at one time. The radon flux field tests were conducted by PMC personnel, utilizing equipment and analytical services provided by Energy Laboratories, Casper, Wyoming. At the time of radon flux testing, an unshielded gamma radiation reading was taken at each flux test location using a calibrated Ludlum Model 19 uR meter. After completion of the radon flux testing, an area was available for placement of the balance of the cover system, be it filter bed/rock or topsoil. One significant exception to this was the No. 4 evaporation pond which was completed in November-December, 2004. Because of the late date of completion it was impossible to conduct the flux tests before rock placement (overnight temperatures were typically below 32 degrees F). The few tests required on the evaporation pond will be conducted as soon as weather permits during the spring of 2005. The resulting data will be amended to this report and submitted to the NRC as soon as available, consistent with the requirement of Criterion 6(4) of Appendix A to 10 CFR 40. Appendix E of this report contains the laboratory reports for the radon flux testing and a sample location map showing the flux value for each sample site. A total of 188 tests have been conducted to date on completed radon barrier. The overall average radon flux from the completed barrier was <0.8 pCi/m²/sec. Note that most of the measured radon flux values were less than the detection limit of 0.5 pCi/m²/sec. To calculate an average the <0.5 values were conservatively entered as 0.5. Also illustrated on the sample location map are the gamma values recorded at the flux test sites. The overall average gamma reading was 10 uR/hr. Site background gamma radiation is 10-20 uR/hr, depending upon location (peripheral to the tailings system).

Also presented in Appendix E are laboratory reports of Ra-226 levels for the Cody shale radon barrier material and a representative sample of the limestone filter bed material utilized in the TRP construction. Ra-226 levels of the materials were acceptably low.

Filter Bed Placement

The placement of the prescribed thickness of filter bed in each area, either under rock mulch or in rock protected channel reaches, was controlled by the placement of so-called "blue tops" or regular fill stakes. Confirmatory elevation checks with the GPS survey equipment were then utilized.

Rock Mulch Placement

Rock mulch placement was also controlled by the placement of blue tops or fill stakes. Confirmatory checks with GPS equipment were also utilized. Much of the rock mulch placement was done utilizing a Jersey spreader, a material spreading and leveling implement that connects to a dozer in place of the conventional blade. The spreader can be adjusted to leave a precise thickness of rock mulch. The dozer lined up on windrows of rock mulch dropped by belly dump trucks, and then traveled the length of the windrow, spreading the material. Once calibrated, the minimum specified rock bed thickness is almost totally assured by the implement. In order to further verify the rock mulch placement to design specifications, a grid pattern on 200 feet centers was field staked throughout all rock mulch placement areas. At each staked grid point the rock mulch bed thickness was verified by excavating to the top of the filter bed and measuring the rock mulch interval. The results of that verification sampling are presented in Appendix F, including an analysis of the collected data. The data demonstrate that, overall, the rock mulch bed thickness specifications were met.

Rip Rap Placement

Rip rap bed thickness in channels was controlled by the placement of appropriately marked fill stakes along the channel toes and crests. Survey verification was then used to assure adequate bed thickness. The placement was then physically checked by walking each channel rip rap segment, looking for gaps or voids with inadequate rock cover or individual rocks projecting significantly above the surrounding rip rap bed. Any voids were filled with additional rock, and projecting rocks were typically pushed down into the bed, or otherwise re-arranged to eliminate the projection.

Topsoil Placement

Topsoil thickness was controlled by fill stakes and post-placement survey checks. Scraper-placed topsoil was uniformly bladed by a grader.

Rock Products QA/QC – Sizing

There were three sources of the rock products utilized in the project: limestone quarried from a site on the Lucky Mc mine property, granite retrieved from the face of the No. 4 tailings dam, and material hauled from the former South Pass iron mine site. The limestone provided the vast

majority of the rock products placed in the reclamation since it was the source for most of the filter bed (a limited amount of Dry Coyote conglomerate fines was used in a dual filter in two channels), all of the rock mulch (three different sizes), all of the small rip rap (two sizes), and some of the larger rip rap (two sizes). The recycled granite from the No. 4 dam face is an excellent quality rock that was quarried near Jeffrey City, Wyoming, sized D_{50} 12 inches, as specified for its original use on the No. 4 dam. The rock screening process described below under "Rip Rap Problems" that the recycled granite underwent resulted in some over-sizing from the original 12" D_{50}. The South Pass rock is a dense, excellent quality material extracted from waste rock piles at the former iron mine site. Rock in two sizes (D_{50} 9.6 inches and 12 inches) was purchased.

Appendix G includes the results of the rock sizing determinations done for the different rock products (filter bed through D_{50} 12 inch rip rap) from the various sources as described above.

Rock Products QA/QC – Durability

The different rock sources were subject to laboratory evaluation of the quality or durability of the rock products at a frequency of one test for each 10,000 cubic yards. In the cases of the No. 4 dam granite and the South Pass iron mine rock, past tests were utilized as an augment to tests ordered by Pathfinder. In both cases the rock is of uniform quality with an established record of performance. Appendix H presents all durability test results for the different rock types. Also included is a correspondence from Hydro-Engineering summarizing many of the durability test results for the limestone.

Rip Rap Problems

There was a significant problem with the larger rip rap (D_{50} 9.6 inches and 12 inches) produced from the limestone quarry. Some of the larger rip rap was a platy material consisting of limestone interbedded with shale. This material was inferior to the blocky rip rap produced from the thicker beds of limestone. This platy material was identified as a problem during a NRC site inspection conducted by Ted Johnson on June 23, 1999. In an effort to address the problem, a protocol was developed for segregating the inferior rock from stockpiles as the stockpile was being consumed. That protocol was approved by the NRC as an amendment to the TRP dated September 23, 1999. In practice it was found to be very difficult to accomplish the segregation and maintain any semblance of a reasonable production rate for the hauling of the acceptable rock. As a consequence, use of the existing, intermixed (good and inferior) stockpiles of larger limestone rip rap was suspended. In 2002 these stockpiles were run through a six or nine inch grizzly (screen) which was effective in eliminating the platy material. The resulting product which came off the top of the grizzly (the larger rock) was of good quality with minimal contamination by the inferior rock. Much of this screened rock was then used to construct portions of the P4W channel which is the northern end of the primary west diversion channel that flows into the north exit channel through the No. 4 dam breach.

The second noteworthy problem relating to rip rap placement concerned the large granite rip rap salvaged from the No. 4 dam. During a site inspection on May 1, 2002, Ted Johnson observed the placement of the recycled granite in various channels. He was critical of the amount of fines intermixed with the rip rap. After further evaluation of the extent of the problem, it was decided to extract the granite rip rap from the channels and clean it by running it over a grizzly. This was accomplished for all channel segments containing the granite rip rap. Additionally, any remaining stockpiles of the granite were also screened to remove fines. The cleaned rock was then replaced in channels. In a follow up inspection Ted Johnson was satisfied with the cleanliness and overall placement of the rip rap.

The third rip rap problem concerned the initial shipments of D_{50} 9.6" South Pass rock during 2002. The rock delivered during the first two weeks of February, 2002, was significantly undersized. By February 15 appropriate adjustments to the screens had been accomplished, and the sizing was acceptable. In order to make the already delivered but undersized rock useable, shipments of intentionally oversized rock were made. The undersized and oversized rocks were then blended in the stockpile. The composited rocks were sampled after placement in channels to confirm their acceptability. Samples taken on March 12, 2002, and May 20, 2002, generally met the 9.6" size specification (based on weight). There were some oversized rocks that required careful placement in order to avoid their protrusion above the channel bottom surface. By exercising such care, the composited rock was acceptable.

9.0 ADDITIONAL SURVEYS FOR CONTAMINATED SOILS ADJACENT TO THE SOLUTION PONDS AND OTHER AREAS IN 2004 AND 2005

As noted in the introduction to this report, the vast majority of the survey and cleanup of windblown tailings and other contaminated soils around the site was completed in 1996 with additional work accomplished in 1997 and as late as 1998. The soils cleanup was reported to the NRC in the document titled Lucky Mc Mill Site Completion Report, February, 1999. After review of that report, the NRC staff amended license SUA-672, approving the cleanup. However, section 2.3.3 of the report stated a commitment to survey for and remove any residual contamination associated with the solution ponds area that was not removed or encapsulated with radon barrier clay during the solution ponds area reclamation. This was formalized as condition 54R in the license. A gamma survey was conducted over peripheral areas to the solution ponds in late 2004 and early 2005 to fulfill that requirement. This section discusses the results of that survey and related cleanup work.

Seven days were spent during November, 2004, conducting a gamma survey of ground adjacent to the solution ponds which was not covered in the original survey/cleanup cited above. The survey focused on areas that had not been subject to significant grading or borrowing as part of the tailings reclamation. For instance, there are large areas to the west and east of the reclaimed solution ponds where the Cody shale was excavated for radon barrier material. Many vertical feet of material were removed in the process; any potential surface contamination was removed for use as grading fill prior to clay borrowing. The potential for contamination in these borrow

areas was nil. Other peripheral areas to the north of the clay borrows were subject to extensive borrowing to provide grading fill in Pond 4. This process removed any potential near-surface contamination.

The survey methods were kept as consistent as possible with those employed in the original cleanup, but of necessity the methods were modified to allow conducting the survey with hand held Ludlum Model 19 uR gamma meters without benefit of GPS technology. The Ludlum Model 19 gamma action level for this site had been established during the original cleanup verification plan development (see the Lucky Mc Mine Tailings Reclamation Plan, Vol. II, Appendix H, "Soil Cleanup Verification Survey and Sampling Plan for the Lucky Mc Mill Tailings Site", December, 1995). That action level, 60 uR/hr with an unshielded detector, would prompt soil cleanup of a 10m. x 10m. area.

The survey technique consisted of two technicians walking a transect approximately five meters apart, each using a Model 19 meter held about one half meter above the ground. Any location with a gamma reading approaching the action level prompted a closer survey of the proximate area in order to ascertain the lateral extent of the elevated readings. Areas of elevated gamma were flagged for subsequent cleanup. Cleanup was accomplished with scrapers; contaminated soil was hauled to the No. 4 evaporation pond for disposal since this was the last available location for such disposal. After soil removal an area was re-surveyed to determine the adequacy of the cleanup. Exhibit 9.0-1 illustrates the areas that were surveyed, utilizing color coding to demonstrate the initial gamma levels generally observed. The initial survey identified five locations where the gamma levels warranted cleanup activity (see Exhibit 9.0-1). Going from south to north the five sites that were decontaminated were: 1) along the road immediately north of the office, 2) an area just northeast of the No. 3 tailings dam, 3) two small areas at the east end of the No. 4 tailings dam, and 4) the east end of an old topsoil stockpile located northwest of the No. 4 dam. Post-cleanup gamma readings at these locations fell to near background levels with the exception of a portion of the road bed north of the office. The road bed is in an area of naturally occurring radioactive deposits as documented in the Lucky Mc Mill Site Completion Report, February, 1999.

Exhibit 9.0-1 also identifies locations where confirmatory soil sampling was accomplished during November, 2004. The soil sampling provided data on measured Ra-226 levels for comparison against measured gamma levels. Sample sites were biased toward locations with relatively elevated gamma levels, although some were also taken in areas of lower gamma levels in order to provide a range of data to confirm the appropriateness of the 60 uR/hr action level. Additionally, some samples were also analyzed for uranium and Th-230, consistent with the methodology of the earlier survey.

Twenty-one composite samples were collected during the November, 2004, survey. The sampling followed the protocol in the original survey/cleanup plan. Five point composite soil samples were collected from each $100m^2$ sample site. Gamma readings were taken directly above each of the five points where the upper fifteen cm. of soil were sampled using a hand

auger. Four other gamma readings were taken uniformly from points between the soil sample points, giving a total of nine gamma readings to be averaged for each test plot. Appendix I contains the data from the soil sampling. The Ra-226 analytical data raised questions about the applicability of the 60 uR/hr action level to the current site conditions. Seven of the twenty-one samples exhibited Ra-226 levels in excess of the 9.5 pCi/g site standard, despite the fact that all of the samples displayed average gamma levels below 60 uR/hr. Figure I-1 in Appendix I is a plot of the November 2004 data (Ra-226 versus gamma, see Table I-1 in Appendix I) compared to the earlier relationship. It is apparent that the extensive site cleanup and encapsulation of adjacent tailings accomplished since the establishment of the earlier relationship has eliminated most of the gamma shine which undoubtedly influenced the early Ra-226/gamma relationship. Under current site conditions it appears that 33 uR/hr with the Ludlum Model 19 approximately equates to the 9.5 pCi/g site standard. Fortunately, most of the recently surveyed areas fell well below the 33 uR/hr level.

In light of the revised Ra-226/gamma relationship, additional site cleanup was initiated in February, 2005. Soil was removed in the vicinity of sample sites 12, 14, 15, 16, 19, 20, and 21. See Exhibit 9.0-2 which illustrates the post-cleanup gamma levels for the locations that were subject to decontamination, including those that were cleaned up in November, 2004. With one exception all of the sites cleaned up to gamma levels well under 30 uR/hr. The exception was site No. 21, north of the present office on the west side of the road. Similar to the earlier discussed nearby road bed, this area is immediately contiguous to a previously documented area of naturally occurring radioactive material. It was concluded that site 21 was the same type of material. Additional confirmatory five-point soil samples were collected from sites 12, 14, and 16 after cleanup. All re-samples were 2.6 or less pCi/g Ra-226. See Appendix I.

10.0 COMPLETED PROJECT PHOTOGRAPHS

Presented in Appendix J are various digital photographs of the completed Lucky Mc tailings site reclamation with identifying labels. Also included are photographs documenting the installation of the five buried channel end protection structures.

10.0 REFERENCES

Pathfinder Mines Corporation, April, 1997, Addendum I, Revised Solution Pond Area Reclamation Design.

Pathfinder Mines Corporation, May, 1994, Lucky Mc Mill Decommissioning Report.

Pathfinder Mines Corporation, February, 1999, Lucky Mc Mill Site Completion Report.

Pathfinder Mines Corporation, July, 1992, Lucky Mc Mine Tailings Reclamation Plan, Volumes I and II.

U. S. Nuclear Regulatory Commission (NRC), August, 1990, Final Staff Technical Position: Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites.

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"Exhibit 3.0-1
Channel Nomenclature"

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Tailings Reclamation Design"

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"Exhibit 6.0-1
Tailings Area Features"

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"Exhibit 8.0-1
As-Built Map Tailings
Reclamation Project"

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"Exhibit 8.0-2
Radon Barrier Thickness"

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"Exhibit 9.0-1
2004-2005 Gamma Soil Survey and Sampling Before Cleanup"

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"Exhibit 9.0-2
2004-2005 Gamma Soil Survey
and Sampling After Cleanup

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D-07

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3.0-2 TAILINGS RECLAMATION DESIGN

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B 2A-11 SUMP AREA REMEDIATION

C RADON BARRIER CLAY SIEVE ANALYSES

D RADON BARRIER CLAY PLACEMENT QC

E RADON FLUX TEST RESULTS

F ROCK MULCH THICKNESS VERIFICATION

G ROCK SIZING

H ROCK DURABILITY

I 2004-2005 SOIL SURVEY DATA

J PROJECT PHOTOGRAPHS

APPENDIX

A

LUCKY MC MINE
TAILINGS RECLAMATION PLAN

SOURCE MATERIAL LICENSE NO. SUA-672

VOLUME II

SUBMITTED TO:

U.S. NUCLEAR REGULATORY COMMISSION
JULY, 1992

REVISION NO. 1
JUNE, 1993

REVISION NO. 2
APRIL, 1994

REVISION NO. 3
DECEMBER, 1994

REVISION NO. 4
SEPTEMBER, 1995

REVISION NO. 5
JANUARY, 1996

REVISION NO. 6
MAY, 1998

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10.0 CONSTRUCTION SPECIFICATIONS AND DRAWINGS

10.1 INTRODUCTION

The construction specifications and drawings include a general description of the methods and procedures to be used in construction of the mill, tailings and solution pond area remedial action plan. This section serves the dual purposes of: (1) providing necessary construction information to the NRC for their evaluation, and (2) providing a specifications document which can be used by Pathfinder Mines Corporation in soliciting interest by contractors for the construction work, or providing guidance in construction should the work be done in-house. The general format of this section is patterned after a typical construction specifications document with all contractual information eliminated. The term Contractor refers to the person or persons performing the actual construction and may include Pathfinder Mines Corporation personnel or a private contractor. Likewise, the terms Engineer and Engineer's representative refer to those overseeing the construction process and may include Pathfinder Mines Corporation personnel. The Owner described in the text is Pathfinder Mines Corporation.

Pathfinder expects that during construction, minor alterations to the plan will likely occur due to unanticipated conditions in the field. Pathfinder will evaluate such plan alterations to assure that they do not impact the adequacy of the approved plan relative to erosion protection or radon barrier design. If such alterations do not impact the erosion protection or radon barrier design, the alterations will be documented in the as-built construction report. However, if any proposed changes to the approved plan do appear to impact the approved erosion protection or radon barrier design, Pathfinder will submit the evaluation and a revised design to the NRC for review and approval prior to implementing such significant changes.

10.2 DESCRIPTION OF WORK

The major components of work to be accomplished under these specifications include the following:

a. Excavation, haulage and placement of contaminated soil and un-processed ore in the solid tailings area as directed by the Engineer.

b. Excavation, haulage and placement of contaminated materials from the areas east of the tailings and mill which are designated as being contaminated by windblown tailings or other mill related activities.

c. Excavation, haulage and placement of contaminated materials from the solution pond area to the No. 2A Pond.

d. Placement and compaction of clay radon/seepage barrier on areas designated as tailings or requiring protection as tailings.

e. Excavation and placement of cover materials/topsoil from designated stockpiles and borrow areas. Placement and grading of cover material shall be along the contour.

f. Construction of channels and berms to provide for stable drainage including the placement of riprap and filter where required.

g. Crushing, screening and haulage of limestone rock to produce an appropriate rock mulch, riprap or filter material.

h. Haulage and placement of bedding material and rock mulch erosion protection on designated areas of the mill and tailings area.

e. Seeding of areas with designated seed mixes.

f. All miscellaneous work required to construct the project and final project clean up.

All construction to be performed under these specifications shall be confined within the right-of-ways and limits of operation shown on the construction drawings or as directed by the Engineer's Representative. All construction performed under these specifications shall be subject to inspection and approval by the Owner or its representatives. Estimated volumes and areas included in the scope of the reclamation are presented below.

Item No.	Item	Unit	Estimated Quantity
1	Contaminated Material Excavation	CY	1,610,000
2	Radon/Seepage Barrier Cover Material	CY	1,010,000
3	Topsoil	CY	110,000
4	Angular Riprap for Channel Erosion Control	CY	20,700
5	Crushed Limestone Riprap for Channel Erosion Control	CY	31,100
6	Rock Filter	CY	45,400
7	Limestone Rock Mulch	CY	83,100

8	Rock Mulch Filter	CY	82,100
9	Disking	AC	305
10	Drill Seeding	AC	305

A series of plans are included in this document. The plans indicate the existing surface and design reclamation surface discussed in this document, as well as locations and details of the reclamation features. The plans include:

Title	Exhibit No.
LOCATION MAP OF THE LUCKY Mc MILL AND TAILINGS AREA	10-1
SOLUTION POND AREAS WITH ESTIMATED ELEVATIONS BELOW SOLUTION	10-2
ROCK MULCH AND ROCK CHANNEL AREAS AND CHANNEL CROSS-SECTION LOCATIONS FOR THE MILL AND TAILINGS WITH LIMIT OF WIND BLOWN CONTAMINATION	10-3
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SETTLEMENT MONUMENTS LOCATION & CONSTRUCTION DETAILS	10-8
LOCATIONS OF STREAM PROFILES	10-9
STREAM PROFILES A THROUGH L	10-10
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PROFILE DETAILS FOR CHANNELS G AND I	10-13
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The plans also include the following:

Title	Figure No.
TYPICAL CHANNEL CROSS SECTION	10-1
SKETCH OF CHANNEL CROSS SECTION XC2AW-9	10-2
SKETCH OF CHANNEL CROSS SECTION XC2-2	10-3
SKETCH OF CHANNEL CROSS SECTIONS XC2A-3 AND XC2A-5	10-4
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LOCATION OF FILTER STOCKPILE AND LIMESTONE QUARRY AREAS	10-6
LIMESTONE QUARRY LOCATION MAP	10-7
SCHEMATIC OF A TYPICAL BERM CROSS SECTION	10-8
NO. 4 DAM OUTLET DETAIL (Deleted)	10-9
OVERLAND FLOW ROCK TOE STRUCTURE	10-10

10.3 LOCATION OF THE PROJECT

The project is located approximately 44 miles east of Riverton approximately 3/4 mile east of the terminus of State Road 136, eastern Fremont County, Wyoming (see Figure 10-6). The primary access roads are State Highway 136 and Natrona County Road 212 from Waltman. The access roads shall be maintained in their present condition by the Contractor. The Contractor shall maintain those existing private access and haul roads indicated on the plans so that private access can occur at all times. The Contractor shall

provide all signs, barricades, guards, flag persons, construction warnings and night lights in order to protect the public at all times from injury as a result of his operations.

10.4 DEFINITIONS

General

The following definitions are given to help the Contractor interpret and understand the meaning of some of the specialty work involved. They are for information only.

a. Unsuitable Materials - soil or other earthen materials which contain Radium 226 in concentration exceeding 9.5 pCi/gm; or material which may contain other deleterious constituents, or as directed by the Engineer's Representative. Unsuitable material shall not be used as cover material or topsoil.

b. Cover Materials - earthen material which exhibits low levels of radioactivity and other contaminants, which is suitable for use as an engineered cover material.

c. Engineer's Representative - the authorized representative of the Engineer or the Owner who is assigned to the Project site or any part thereof.

d. Ground Controlman - an individual or individuals provided by the Engineer trained in the use of and equipped with a hand held scintillation counter, working with the excavation and placement equipment to assure that the various levels of radioactive materials encountered during construction are properly identified and not placed as cover material or topsoil.

e. Overburden - the term overburden is used in these specifications in reference to any unconsolidated materials lying above bedrock. It shall include both natural formations, fill and all rubble stones or boulders.

f. Mine Waste Materials - any earthen material which has been left at the surface as a result of past mining activities. Certain mine waste material at the site may contain low levels of radioactivity.

g. Original Surface - generally that portion of material beneath any imported materials which exhibits characteristics of being the original undisturbed natural formation.

h. Radioactivity - the spontaneous release of energy or atomic particles from an unstable atom as it decays or changes to a more stable elemental form. For this project, radioactivity is

measured in terms of gamma energy levels and pico curies per gram (pCi/gm) Radium 226 (Ra226).

i. Scintillation Counter - a hand held device which measures the gamma energy. Common devices measure gamma energy in terms of Micro R/hr or Counts Per Second (CPS). The Micro R/hr meter is preferred. Any metering device used by the Contractor must be properly calibrated and approved by the Engineer's Representative.

j. Subsoil - generally, that portion of the overburden below the topsoil extending down to unaltered shale or sandstone, to be specifically defined by the Engineer's Representative for all soil salvage and/or borrow area. Subsoil is classified as Cover Material and may be encountered within the excavation of unclassified soil material.

k. Topsoil - generally, the uppermost 0" to 6" of overburden to be specifically defined by the Engineer's Representative for all soil salvage and/or stripping. Topsoil material is considered suitable material, but may be stockpiled separately at the direction of the Engineer's Representative.

l. Clay Radon/Seepage Barrier Soil - Earthen material excavated from designated borrow areas and is placed on tailings areas or areas designated as requiring tailings protection. This material will be placed to stringent compaction standards to assure integrity as a barrier material.

m. Unclassified Material - unclassified material is defined to include rock, sand, soil, wet or dry , that does not exceed the standards set for unsuitable material, that is removed from its present location and is hauled and placed in a new position or location to recontour the land. This material is not suitable for use as clay radon/seepage barrier material unless specifically designated as such, but can be used as a cover material for non-tailings areas.

10.5 EARTHWORK

Excavation for earth fill shall be made in accordance with this section. The materials are classified into the three major categories described in Section 10.5.1. Excavation shall include all material classifications removed from within the designated areas to the required grades as provided in the plans or as directed by the Engineer's Representative. Excavation for all categories of materials shall consist of the excavation and disposal of all material encountered in the work including the removal and disposal of rocks, boulders, and other detached stones to the required grades shown on the drawings, or as directed by the Engineer's Representative. This work shall also include hauling, placing and grading of embankment fill (categorized as unsuitable

materials, cover material and topsoil). Embankment construction consists of: placing approved materials in tailing piles, covering unsuitable materials, along with hauling and placing of approved materials within the designated areas and to the required grades. Selective handling of unsuitable materials, cover material and topsoil during excavation and embankment construction is required.

Material excavated and placed prior to monitoring by the Engineer's ground controlman shall not relieve the Contractor from his obligations to perform the work in accordance with the requirements of the specifications.

If the Contractor wishes to supply ground control personnel they shall be trained in the following subjects:

Radiological Safety

1. Principles and practices of radiation protection.
2. Mathematics and calculations basic to the use and measurement of radioactivity.
3. Biological effects of radiation.
4. Radioactivity measurement standardization, monitoring techniques, and instruments.
5. Accidents and incident procedures.
6. General safety precaution.

Instrument Operation

1. Instrument theory.
2. Operating procedures.
3. Maintenance.
4. Field application.
5. Instrument calibration.

Any metering device used by the Contractor must be properly calibrated and approved by the Engineer's Representative.

Accurate trimming of the slopes will not be required except where specifically stated or in drainageways, channels, ditches, and roads. However, all slopes will be bladed uniformly to provide continuity of and between the various slopes. Excavation and final grading for drainage channels and cover materials on slopes adjacent to the channels shall be within ±8% of the design slope and shall be within ±0.3 feet of the design elevation in areas where the channels merge with existing channels. In general, embankment and excavation areas shall be constructed to minimize deviation of slope from those shown on the plans. For areas under tailings protection which will not be covered with rock mulch, the required grade control is very rigid. The following grade control is prescribed only for the non-rock mulch areas under tailings protection criteria. For slopes less than or equal to 0.005 ft/ft, maximum allowable deviation is 0.001 ft/ft. For slopes greater than 0.005 ft/ft and less than or equal to 0.025 ft/ft, maximum

allowable deviation is 0.002 ft/ft. For slopes greater than 0.025 ft/ft and less than or equal to 0.05 ft/ft, maximum allowable deviation is 0.003 ft/ft. For slopes greater than 0.05 ft/ft, maximum allowable deviation is 0.004 ft/ft. Excavation of the pre-disturbance land surface, topsoil, final grading for pilot channel and suitable material encountered in the excavation or other excavation requiring a high degree of selectivity will only be conducted during daylight hours or as directed by the Engineer's Representative. Placing cover material and topsoil shall be performed during daylight hours.

10.5.1 Excavation and Placement

The Contractor shall excavate, haul, place, and grade the materials as shown on the grading plans or as directed by the Engineer's Representative. The materials to be excavated are categorized as follows:

1. Unsuitable Materials
2. Cover Material
3. Topsoil

The rock riprap, rock mulch, and filter materials are discussed in a following section.

Periodically, during the excavation and placement of material, a ground controlman supplied by the Engineer's Representative will monitor the level of radioactivity and other properties of the materials being excavated and assist Contractor personnel by identifying the materials. Selective excavation and placement of these materials to the lines and grades shown on the drawings and as directed by the Engineer's Representative is the sole responsibility of the Contractor. Material excavated and placed without monitoring by the ground controlman shall <u>not</u> relieve the Contractor from his obligations to perform the work in accordance with the requirements of the specifications.

Topsoil shall be obtained from existing stockpiles. Classification of other soils suitable for topsoil will be at the discretion of the Engineer's Representative.

10.5.1.1 Unsuitable Materials

Unsuitable materials may result from natural concentrations of radioactive elements from spillage, leaching, etc. of radioactive materials into existing surficial materials. Material will be considered unsuitable for cover material or topsoil if the level of radioactivity exceeds 4.5 pCi/gm radium 226 or as directed by the Engineer's Representative. Excavation of these materials shall be completed in a very selected manner so as to excavate only the

unsuitable materials with minimal disruption to suitable materials surrounding or underlying the unsuitable materials. Excavation shall be as accurate as possible and shall be within ±0.3 feet where an accurate boundary can be established in the field.

Unsuitable materials encountered within the required excavation areas shall be handled in accordance with the following procedures.

a. All unsuitable materials encountered shall be identified with pin flags and documented by size, location, gamma energy, etc.

b. Unsuitable material will be removed and placed in an approved disposal area or stockpiled for later disposal as directed by the Engineer's Representative. Stockpiling for the Contractor's convenience of scheduling work shall not be measured.

c. The Engineer's ground controlman will inform the Contractor of any area which meets the parameters stated in Item b prior to excavation of said area.

10.5.1.2 Cover Material

Cover material is Cody shale which does not exhibit unacceptable levels of radioactivity. The suitability of this material, encountered during the excavation of a borrow area, for cover will be determined by the Engineer's Representative. Specific materials properties are discussed in Section 11.2.

Estimated boundaries for cover material borrow area are shown on the plans; actual boundaries of cover material will be defined in the field by the Engineer's Representative and/or the Contractor. Prior to the start of excavation the Contractor and Engineer's Representative shall make exploratory excavations for the purpose of identifying sources and depths of cover material. Cover material shall be excavated by the Contractor and placed at the locations and to the lines and grades shown on the drawings and as directed by the Engineer's Representative. Excavation shall be as accurate as possible and shall be within ±0.3 feet where an accurate boundary can be established in the field. Final contours in borrow areas will vary depending on volumes of materials required.

Cover material shall not be wantonly wasted or contaminated by the Contractor's construction activities. The Contractor is responsible to obtain the Engineer Representative's approval prior to wasting or stockpiling potential cover material. Cover material contaminated and declared unsuitable for replacement as cover

material as a result of the Contractor's construction activities shall be replaced at the Contractor's expense.

10.5.1.3 Topsoil

Topsoil consists of any soil suitable for the growth of grass or other cover crops reasonably free from hard dirt, rocks, and materials which inhibit the germination of seeds or growth of cover crops. Classification of soils suitable for topsoil will be at the discretion of the Engineer's Representative.

Topsoil placement locations include all areas on the tailings surfaces that are planned for topsoil cover. The actual locations of topsoil stockpiles are shown on the plans or will be defined by the Engineer's Representative and the Contractor.

Topsoil shall not be wantonly wasted or contaminated by the Contractor's construction activities. The Contractor is responsible to obtain the Engineer Representative's approval prior to wasting or stockpiling potential topsoil. Topsoil contaminated and declared unsuitable for replacement as topsoil as a result of the Contractor's construction activities shall be replaced at the Contractor's expense.

10.5.2 Placement and Construction Methods

10.5.2.1 Unsuitable Material

The unsuitable material shall be excavated to the neat lines and elevations in accordance with radiometric surveys and the grading plans prior to placement of cover material.

The unsuitable material can be placed in the tailings areas below the cover material elevation. Grading and related operations shall be conducted such that terrain outside the slope limits and designated haul routes are not disturbed.

Density requirements will not apply to areas of fill in the tailings and for placement of the topsoil. In all areas, each lift shall be placed in approximately horizontal layers, leveled and smoothed using suitable leveling equipment to a thickness of 12± inches uncompacted. The Contractor shall conduct the placement in such a manner, as approved by the Engineer, to obtain the maximum wheel rolling by earth hauling equipment as practical. Equipment shall be routed over these layers to distribute the equipment traffic evenly over the entire fill areas. Accurate trimming of these fill areas will not be required but the slopes shall be constructed reasonably close (±0.5 feet) to the established lines and grades as shown on the plans or staked by the Engineer.

Finish work shall be done in proper sequence with other operations involved. Cut slopes shall be blended with adjacent terrain by rounding the top of slopes, erosion control ditches constructed, and inslopes and backslopes trimmed to eliminate unsightly humps or hollows.

10.5.2.2 Cover Material

Additional thicknesses of cover material of 2, 2.5 and 1.5 feet have been designed for the Tailings No.1, 2 and 2A, respectively. The total radon/barrier cover required for each pond is 3, 3 and 2 feet for the Tailings No.1, 2 and 2A, respectively. Up to 1 foot of existing cover may be salvaged on the No. 1 Tailings and up to 0.5 feet of cover may be salvaged on the No. 2 and 2A Tailings. If the interim cover is utilized in the radon barrier, it will be required to meet specifications for the remaining radon barrier. In these areas, the thickness of the interim cover will be verified with borings at a density of no less than one boring/acre. Each boring subsequently will be backfilled with dampened clay, and the clay will be recompacted. The mill area planned with rock mulch will be covered 2 feet of radon/seepage barrier. The ore pad will be covered with 1 foot of radon/seepage barrier.

All cover material placement shall be constructed with moisture and density control. For those areas requiring moisture density control, the moisture content of the soil at the time of compaction shall be within plus 4 or minus 2 percentage points of the optimum moisture content as determined by ASTM D-698 (Standard Proctor). Field Density tests will be made in accordance with ASTM D-1556 (Sand Cone Method) or ASTM D-2922 (Nuclear Method) by the Engineer's Representative. Frequency of testing and calibration/ correlation tests are discussed in Section 11.2.

Where cover material is currently in place on the tailings, the thickness of cover will be documented. The Contractor will be required to till and recompact the in-place cover to the same specifications as that of the emplaced cover.

Cover material requiring moisture density control shall be constructed of approved materials compacted to not less than 95 percent of maximum density (Standard Proctor). Compaction will be by sheepsfoot roller or other methods as approved by the Engineer's Representative.

Cover material requiring moisture density control shall only be placed when ambient temperatures permit the placement and compaction of the materials to specified densities without frost damage. Sustained periods of freezing that induce frost into previously placed materials or material being placed shall be cause for suspending work on such embankments.

Those areas where moisture density control for cover material is required shall be placed in horizontal layers of approximately six inch thickness, thoroughly mixed to provide uniform moisture distribution and compacted as specified before the next layer is placed. Effective spreading equipment shall be used on each lift to obtain a uniform thickness prior to compacting. As the compaction of each layer progresses, continuous leveling and manipulation will be required to insure uniform density. Water

(Revised 6-4-1993)
(Revised 5-4-1998)

shall be added or removed, if necessary, in order to obtain the required density. Moisture conditioning will be performed in the borrow area to the extent practicable. Construction equipment shall be routed uniformly over the entire surface of each layer.

10.5.2.3 Topsoil

The characteristics of the soil at the final graded surface along with the quantities of cover and topsoil encountered will be evaluated by the Engineer's Representative to determine the final combined depths of topsoil to be replaced. All topsoil, except that which is salvaged during reclamation, shall come from existing stockpiles.

Areas used as haul routes during execution of grading shall be scarified prior to placement of cover material/topsoil.

Stripping and Storing Topsoil. Stripping of topsoil shall be conducted in excavation areas as directed by the Engineer's Representative. This material will be stockpiled as directed by the Engineer's Representative.

Placing Topsoil. Topsoil shall be taken from existing stockpiles or piles stockpiled during excavation and placed in approximately horizontal layers parallel with the contours on sloping areas over the reclamation surface to a maximum depth of eight (8) inches or as directed by the Engineer's Representative. Topsoil will not be excavated or spread when excess moisture is present in the soil which may result in clodding, rutting or excess moisture conditions. Frozen topsoil shall not be placed and shall be cause for suspending work of topsoil placing.

10.5.3 Construction Sequence and Special Requirements

This section describes the general construction sequence for each individual area considered necessary to achieve the overall reclamation goals for the project. This section is not intended to release the Contractor of any obligation to provide a comprehensive schedule of work, but is rather provided to increase the Contractor's understanding of the project.

The general sequence of events for this project are as follows:

1. Clean up mill area that is not to be reclaimed in place, solution ponds, east ore pad and windblown areas to remove all unsuitable materials and place them in the tailings or mill areas below the bottom cover material grade.

2. Complete grading operations to achieve subgrades before placement of cover material in the tailings and mill areas.

3. Placement of cover material.

4. Erosion control ditch and berm construction.

5. Installation of all required riprap, rock mulch and topsoil.

6. Disking to prepare seedbed.

7. Seeding & Mulching.

The following paragraphs are not intended to reflect a specific sequence of construction.

10.5.4 Tailings

The grading overview for the project area is to stabilize the tailings through placement of a rock mulch protection layer or through construction of low slopes to form a stable site drainage pattern. An area of salvageable cover material exists within the disturbance limits as shown on the plans.

As shown on the volume and area summary table presented in section 10.2, an estimated 1,010,000 CY of cover material is needed to form an adequate cap on the tailings and mill area.

The Contractor shall coordinate his grading activities to control and prevent soil erosion that will adversely affect construction operations or damage adjacent properties. Temporary erosion control measures may involve the construction of temporary berms, dikes, dams, sediment basins, silt fences, and other temporary control devices or methods as necessary to control erosion along with limiting the surface area exposed to erosion.

The Contractor shall incorporate all permanent erosion control features into the project at the earliest practicable time. Permanent erosion control features include ditches and berms, disking, seeding, and riprap installation. All areas disturbed during grading of the mill, tailings and solution pond areas shall have permanent erosion control features.

The Contractor will be required to install, maintain, and provide dust control for haul roads, excavation and embankment areas, and maintain site drainages for the project duration. Haul roads shall be removed upon completion of final grading and acceptance by the Engineer's Representative.

10.5.5 Dust Control

The Contractor shall provide dust control measures for health, safety and convenience, the reduction of the dust nuisance to adjacent ongoing projects, and to minimize wind erosion. The measures shall consist of the application of water to the disturbed surfaces. Water shall be uniformly applied in a fine spray by means of controllable pressure and spray bars or nozzles; and in such a manner that will avoid ponding or overwetting.

The Owner will be responsible for furnishing the construction water source.

10.6 EROSION CONTROL

This work shall consist of mining, crushing (if required), screening (if required), hauling and installing rock mulch erosion protection, permanent erosion control ditches and berms, rock-lined channels, and riprap aprons at the locations shown on the plans or as directed by the Engineer's Representative. Figures 10-1 through 10-5 and the plans present detail of the rock channels. Exhibit 10-9 shows the location of the profile with station numbers for positioning on the profiles. Exhibits 10-10 and 10-11 present the channel profiles. Exhibits 10-12 through 10-15 present details of channel plan views and profiles for major channels. The profile of each channel is presented to show the general slope and location of rock transitions for the channels. Revisions in the solution pond area as detailed in Addendum I has resulted in changes in the alignment and configuration of channels that extend between the tailings and solution pond areas. There are also very minor adjustments in alignment and elevations for channels in tailings and mill area that are not reflected in these exhibits. However, the critical channel slope, rock size, and channel slope parameters have been preserved or made slightly more conservative. Exhibits 10-3, 10-3A, 10-4, 10-6, and 10-7 present the locations of the end protection that is shown on Figure 10-5. End protection was placed at the downstream rock areas below XCM-10, XC2-5, and SHC-22. The slopes of the channels downstream of the remainder of the rock sections are small and, therefore, head cutting into these rock channels should not develop. A rock mulch "key" will be used as toe protection to prevent gully intrusion into rock mulch areas. The location of these toe protection structures is shown on Exhibits 10-3, 10-3A, 10-6, and 10-7. The rock key will be 3' deep and will be constructed with the small crushed limestone. A typical rock key configuration is shown in Figure 10-10. Figure 10-6 presents the location of the filter material and limestone quarry. Figure 10-7 presents a more detailed location map of the limestone quarry area. The angular riprap will be hauled from the face of the No. 4 dam. The limestone rock mulch and a portion of the filter will be mined, crushed, screened (if required), and hauled from the limestone quarry. Figure 10-8 presents the dimensions of a typical berm. Exhibits 10-3, 10-3A, 10-6, and 10-7 show the locations of the berms. These berms will be covered with rock mulch to ensure their long-term stability. The exact length and location of erosion control ditches and berms, and all riprap

structures shall be at the direction of the Engineer's Representative.

10.6.1 Riprap for Erosion Control

10.6.1.1 Materials

Rock used for riprap shall be sound and durable, free from organic material, clay or shale seams, cracks, or other structural defects. Rock may be angular or sub-angular, but must be examined, approved, and placed in locations as specified by the Engineer. Broken concrete shall not be acceptable. Inferior quality rock that is identified in stockpiles shall be segregated and rejected. In-place rock will be inspected, and inferior rock or unacceptable material will be removed and replaced. The identification of inferior quality rock will be the responsibility of the Engineer. See the following Standard Operating Procedure concerning suitable rock selection. Rock with a measurable fraction of stones with a greatest dimension/smallest dimension ratio greater than 3 will be placed in a manner that orients individual stones to provide a reasonably uniform surface. The rock wll be free of protruding stones.

The rock must be obtained from a source which has legally procured a DEQ/LQD Mine Permit. The Owner shall furnish the Engineer and Contractor with a copy of this permit prior to riprap placement.

10.6.1.2 Material Testing

The suitability of material for use as riprap shall be determined by the Engineer's Representative prior to construction of riprap structures.

Additional rock durability testing will be required during construction and will be based on rock volume from each source and for each gradation. The Owner will be responsible for the rock testing.

A sample of at least 200 pounds of the stockpiled material shall be provided to the Engineer for testing. The costs of required testing shall be borne solely by the Owner. The rock will then be scored by the Engineer's Representative according to NRC durability scoring criteria. Based upon this scoring, the rock may be subject to approval for placement, restrictions on where the rock can be placed, additional processing and durability testing, or rejection.

PATHFINDER MINES CORPORATION
Lucky Mc Mill Tailings Site
Gas Hills, Wyoming
STANDARD OPERATING PROCEDURE
FOR SUITABLE ROCK SELECTION IN LARGER SIZES

Date: 08-06-99

1. Purpose:

The purpose of this standard operating procedure is to assure that the limestone rock in size categories D50 1.0 feet, D50 0.8 feet, and D50 0.5 feet that is placed in design channels during tailings/mill site reclamation is free of unsuitable, inferior quality rock. Existing stockpiles of these rock size products are contaminated with inferior quality rock that must be segregated from the acceptable rock in the stockpiles in order to accomplish the purpose of this SOP.

2. Scope:

The scope of this procedure shall include all existing stockpiles of limestone in size categories D50 1.0 feet, D50 0.8 feet, and D50 0.5 feet.

3. Equipment:

A. Rock hammer
B. Bright colored marking spray paint
C. 35 mm still camera with color print film

4. Training:

The purpose of this procedure will be accomplished by utilizing an onsite QA/QC inspector to examine the relevant rock piles while rock is being removed from the piles for placement in channels. The inspector plays the critical role in exercising judgement as to the acceptability of individual rocks. As such the inspector must receive training in this procedure to assure an understanding of the procedure's goal and the inspection techniques to assure the proper segregation of inferior rocks. The training will be provided by a qualified engineer's representative who is a licensed professional geologist.

The training will entail a classroom presentation of the contents of this SOP including a discussion of the reasons behind avoiding placement of inferior quality rock in channels: namely, that such rock is subject to deterioration over time, compromising the performance of the riprap channel.

The training will include selection of acceptable material by observing for lack of prominent fractures, indentifying uncracked seams, consistency in grain size, porosity, cementing, and durability. Emphasis will be placed on the recognition in acceptable rocks of no joints or planes of weakness with a spacing of less than the required D50. Recognition of shale/mudstone seams in the rock will be covered.

The training will include a field exercise in which the trainee(s) and instructor will visit relevant stockpiles, carefully examine the different types of rock quality present, and conduct the procedures herein to assure familiarity with the inspection methods.

5. Procedure:

A. No rock will be removed from the D50 1.0, 0.8, and 0.5 feet limestone stockpiles for channel placement without a trained inspector present to supervise the process.

B. The inspector will examine the rock in a stockpile to ascertain its acceptability. Color and shape will play an important role in distinquishing acceptable from unacceptable rock. Typically, the acceptable rock will be a brownish-gray to cream color with a generally blocky appearance. In contrast, the unacceptable rock will be a bluish-gray color and have a more platy appearance. See the attached photographs for examples. Periodic testing with a rock hammer may be utilized to evaluate the competence of cementation in seams.

C. Unacceptable individual rocks in size categories D50 1.0 and 0.8 feet will be prominently marked with brightly colored spray paint. The marking will be sufficient to allow a front-end loader operator to readily distinguish marked rock while operating the loader. Because of practical considerations, marking of individual unacceptable D50 0.5 feet rocks will not be required. Examination of the existing D50 0.5 feet stockpiles indicates that general areas or portions of the piles with unacceptable rock can be readily segregated on a larger scale versus removal of individual or isolated rocks.

D. Unacceptable rock will be segregated from the stockpile and placed to the side so as not to re-contaminate the stockpile in the future. The unacceptable rock will be periodically removed from the project area for disposal or reprocessing to other acceptable uses (such as further crushing/screening to rock mulch).

E. After placement of acceptable rock in a channel, the QA/QC inspector will examine the placed rock, looking for any unacceptable rock that passed through the first inspection at the stockpile. Such placed unacceptable rock will be removed from the channel and replaced with acceptable rock.

F. Photographs will be taken of completed channels with records maintained of the channel identification and date. Such photographs will be utilized in the construction completion report for submittal to the USNRC.

6. References:

A. Lucky Mc Mine Tailings Reclamation Plan, Volume II, Pathfinder Mines Corporation, July 1992 and as revised.
B. Design of Erosion Protection for Long-Term Stabilization (Appendix D), draft NUREG-1623, U.S. Nuclear Regulatory Commission, February, 1999.
C. "Riprap Material - Lucky Mc Mine", an internal Pathfinder Mines Corporation correspondence from T. Nicholson to T. Hardgrove, July 12, 1999.

Bluish-Gray "Slabs"

Brownish-Gray/Cream colored "blocks"

10.6.1.3 Gradation

A total of seven (7) rock gradations are specified for Lucky Mc Mine mill, tailings and solution pond areas. The largest riprap specified has a D_{50} of 1.0 ft and will be taken from the face of the No. 4 solution pond dam, a small stockpile in the solution pond area, and stockpiles of limestone. The second riprap gradation has a minimum D_{50} of 0.80 ft and will consist of angular granite or crushed limestone. The quality of this limestone is such that slight oversizing might be required. The third and fourth gradations will have minimum D_{50}'s of 0.50 ft and 0.33 ft and will be crushed limestone. The fifth gradation is intended for rock mulch areas requiring larger rock and will have a minimum D_{50} of 0.181 ft and will be taken from the limestone quarry area. The sixth

gradation is an intermediate rock mulch size and will have a minimum D_{50} of 0.136 ft and will be taken from the limestone quarry area. The last gradation is a smaller rock mulch and will have a design D_{50} of 0.083 ft and will be taken from the limestone quarry area. Larger rock gradations may be substituted for smaller rock if the gradation criteria discussed in a following section are met. Slight adjustments in riprap specifications and placement thickness may be necessary based on availability.

General riprap gradations are subject to the availability of materials. The design D_{50} is the specification of primary concern and all rock must meet or exceed the specific D_{50} for a channel or mulch area as designated by the Engineer. The design D_{50}'s presented above are target D_{50}'s to enable general use of the rock gradation in specified areas. Failure to meet the design D_{50} as indicated may place restrictions on where the rock can be used. The rock thickness will be equal to or greater than 1.5 times the D_{50} or the D_{100}, whichever is greater. For rock with a D_{50} less than 6 inches, the thickness will be at least two times the D_{50}. For rock mulch areas, the thickness requirement based on the D_{100} may be waived if a relatively smooth, contoured surface can be produced with the available rock. The minimum rock placement thickness is 3 inches. Rock mulch with a D_{50} less than 6 inches will be screened to a gradation which will allow placement in thin layers. The rock will be screened to produce a relatively uniform rock size.

Control of gradation will be by visual inspection and periodic testing as specified in section 11.5. The Contractor shall provide a sample of each size of riprap at the stockpile site of at least five (5) cubic yards meeting the specified gradation and typical of stockpiled material and the sample shall be used as a reference for judging the gradation of the riprap supplied.

10.6.1.4 Construction Requirements

No riprap material shall be placed until the foundation has been excavated, prepared and has been approved by the Engineer's Representative. Slopes on which riprap is to be placed shall be accurately cut to grade. The slopes shall be free of brush, trees, stumps, and other objectionable material and shall be dressed to a smooth surface. All soft and spongy material shall be removed as directed by the Engineer's Representative and replaced with approved materials. The approved slope shall be thoroughly scarified and compacted to no less than 95% of the maximum dry unit weight of the Standard Proctor curve with approved compaction equipment (ASTM D-698).

10.6.1.5 Riprap and Rock Mulch Placement

All Structures - General.

Stone for riprap or rock mulch shall be placed by methods that will produce a compact uniform mass of riprap having a reasonably uniform surface. Riprap shall be placed to its full thickness in one operation and in a manner to avoid displacing the underlying material. Placing of riprap materials by end dumping on the slope or by other methods likely to cause segregation or damage to the slope will not be permitted. Damage or displacement of the aggregate filter blanket shall be repaired prior to riprap placement.

A survey will be conducted prior to placement of filter, rock riprap or rock mulch. This survey will also be used to verify the cover thickness. A conventional or Global Positioning System (GPS) survey may be used and will have a horizontal resolution of less than ±0.03' and a vertical resolution less than ±0.075'. Prior to placement of rock or filter, the survey results will be compared to design topography. Any significant deviation from design topography will be evaluated in terms of adequacy of the erosion protection. If additional analysis of rock sizing is needed, this analysis will be documented and submitted to the NRC prior to placement of the rock in question.

The density of survey points is dependent on the survey method used, but will not be less than one point/2500 ft^2 (50-foot by 50-foot if a grid system is used). Additional survey points will be placed along channel center-lines at a minimum density of one point/100 feet, and at channel control sections at a density of no less than 10 points/channel control. Surveys will be taken after placement of individual layers of filter or rock. Two methods may be used to verify rock and filter thickness with surveys. The first of these requires establishment of fixed survey point locations where elevations are surveyed following placement of each layer. These elevations allow computation of the thickness of each layer at the fixed location. The second alternative uses a greater survey point density to allow actual contouring of the surface for each layer. Comparison of the surfaces following layer placement allows development of a thickness map for individual layers. This second alternative requires GPS survey methods in order to achieve sufficient coverage, but does not require a return to the same precise locations for each subsequent survey. A combination of both techniques may also be used. If the fixed survey point location is used, the density will be as described above. If the surface contouring method is used, the density of points will be such that the contour resolution is less than ±0.125 feet.

Channel filter and riprap thickness will be verified by use of surveys in the construction process. Following placement of a single layer of filter or rock, a survey will be used to verify the layer thickness. Experience has shown that, as the size of the placed material increases, the difficulty in surveying increases. As an example, rock riprap with a maximum diameter of 2 feet will have a surface relief of 1 foot or more over a very small horizontal distance. For this reason, averaging techniques will be used in verifying rock thickness for channel rock. The minimum average thickness for channel filter or riprap over an area of 1000 ft^2 is 100% of design thickness. The maximum thickness over the same area is 120% of design thickness. Local minimum thickness, (over 10 square feet), is 90% of design thickness minus survey resolution.

Rock mulch and filter thickness will be verified by the use of surveys during the construction process. Like channel rock and filter, an averaging approach will be used to verify the layer thickness. Following placement of a single layer of rock mulch or filter, a survey will be used to verify that the minium average thickness over an area of 1000 ft^2 is 100% of design thickness. Local minimum thickness, (over 10 square feet), is 90% of design thickness minus survey resolution. The survey will also be used to insure that overthickening does not create any flow-diverting or flow-concentrating features. If the total thickness is measurably greater than design thickness, the depth of excess fill will be recorded and compared with thickness at adjacent locations. There is no upper limit on rock mulch or filter thickness, but adjacent thickness measurements will be compared to assure that excess fill is uniform and that no undulations in the surface are present. Allowable deviations in fill thickness will be evaluated on the basis of differences in thickness between adjacent sites. Assuming that the survey locations are 50' apart, the allowable difference in thickness between locations will be limited to a maximum of 40% of the design thickness. Allowable differences in thickness at other distances will be linearly scaled. It should be noted that the limitations apply only to the differences or deviations in thickness between adjacent locations, not to the thickness itself. As an example, if measurements indicate that excess fill for a 3 inch thick rock mulch layer at one location is 2.4 inches (180% of required), excess fill at locations 50 feet from the original location must be in the range of 1.2 to 3.6 inches (140% to 220% of required). When applied to the entire rock mulch surface, this method will not limit placement of excess rock, but will assure that it is done in a relatively uniform manner.

10.6.1.6 Aggregate Filter Blanket

A sand and gravel filter material will be placed as bedding for all rock. The sand and gravel filter may consist of a dual

filter or single filter design. Minimum placement thickness for the sand and gravel filter is 3 inches/filter layer.

The sand and gravel filter material would be placed at a minimum thickness equivalent to the rock mulch thickness for rock mulch areas, a minimum thickness of nine inches for channel riprap depths of up to 1.0 ft, and at a thickness of 1.0 ft for channel riprap thickness greater than 1.0 ft.

If a dual filter design is specified, the lower filter material may consist of < 1 1/4" Dry Coyote Conglomerate screenings or other specified material and will not be subject to a maximum fines content or quality considerations. If a material other than the Dry Coyote Conglomerate screenings is considered, the material will be characterized and this information will be submitted to the NRC for approval. The upper filter material will consist of crushed and processed limestone and will be subject to gradation criteria as discussed in section 11.4 and will be subject to quality considerations. Maximum placement thickness for the lower filter material will be 4 inches with the remainder of the required filter thickness consisting of the crushed and processed limestone.

All material comprising the upper filter of a dual filter design or a single filter design shall be composed of tough durable particles reasonably free of thin, flat or elongated particles, and shall not contain any organic matter.

10.6.1.7 Placement of Aggregate Filter

Aggregate filter blankets shall be one or more layers of gravel, crushed stone, rocks or sand as shown on the plans. The aggregate filter blanket shall conform to the gradation limits given in Section 11.4.

10.6.2 Erosion Control Berms

Berms shall be constructed so that they conduct water safely to areas of low slope or as directed by the Engineer. Berms are included as integral parts of the drainage system and should be constructed according to criteria for the surrounding area. Berms are considered subsidiary to surface contouring and are not separated for the purpose of measurement.

Berms shall be constructed in maximum six inch lifts and compacted to 95% Standard Proctor within ±2% of optimum moisture. Berms will be covered with topsoil or rock mulch and filter as presented in the plans and specifications.

10.7 REVEGETATION

This work shall consist of furnishing all labor, equipment, and materials necessary to complete the rough grading, seedbed preparation, and seeding of the topsoiled surface as required by these specifications. Disking will be done prior to seeding.

Areas disturbed during construction, including cut and fill areas, will be reclaimed and revegetated in accordance with these specifications and in conformance to the plans. Exceptions to the above areas such as roads, trails, and operating areas may be broadcast seeded as directed by the Engineer's Representative.

10.7.1 Materials

Materials shall meet the requirements listed in this section.

10.7.1.1 Grass Seed

Seed must be purchased through a dealer licensed with the Wyoming Department of Agriculture. Proof must be provided of such licensing.

All seeds shall be furnished in containers and shall be plainly labeled showing:

a. The commonly accepted name of the kind and variety of seed.
b. The full name and address of the supplier.
c. The percentage of pure seed, crop seed, inert matter, weed seeds by weight, germination and hard seed.
d. The month and year of the germination test.
e. Origin of the seed.
f. Lot number.

g. Name and number of each kind of secondary noxious weed seeds as listed in Wyoming Seed Law. Seed shall not contain any of the primary noxious weed seeds as designated by the Wyoming Seed Law.
h. Net weight of seed in each container.
i. The words "poisonous treated" shall appear in bold print on the label of seeds treated with chemicals which are toxic to either humans or livestock.

Prior to seeding, the Contractor shall furnish to the Engineer duplicate copies of a certification signed by the vendor, certifying that each lot of seed has been tested by a recognized State Seed Testing Laboratory or by a commercial laboratory employing a certified seed analysis technician(s). The seed must have been tested not more than nine months prior to the date of seeding on the project.

The Contractor shall also furnish to the Engineer duplicate copies of the seed analysis reports as prepared by the respective Seed Testing Laboratory. A Tetrazolium Viability Test will be accepted in lieu of the germination portion of the Service Sample Seed Analysis Report as prepared by the respective testing laboratory.

The total percentage of "crop seed" shall not exceed three (3%) percent by weight.

All seed must be certified, and planting rates stated are for the pure live seed (PLS). Bag tags shall be submitted to the Engineer from all seed bags used on the project.

All seed must be in good condition prior to planting.

10.7.1.2 Seed Mixture

	PLS/ACRE (lbs.)
Western wheatgrass (Agropyron smithii) "Rosana"	2.0
Thickspike wheatgrass (Agropyron dasystachyum) "Critana"	2.0
Streambank wheatgrass (Agropyron riparium) "Sodar"	2.0
Bluebunch wheatgrass (Agropyron spicatum) "Secor"	2.0
Beardless wheatgrass (Agropyron inerme) "Whitmar"	2.0
Green needlegrass "Lodorm"	2.0
Basin wild rye (Elymus cinereus) "Magnar"	2.0
Smooth brome (Bromus inermis) "Manchar"	2.0
	16.0 lbs

10.7.1.3 Pure Live Seed (PLS) Calculation

This is a method of calculating an amount of seed to be planted which takes into account the variation of seed germination and purity of the seed source.

Pure live seed (PLS) = % Germination x % Purity

Example:
A recommended seed mixture requires that 5 lbs. (PLS) of Intermediate Wheatgrass be planted
Intermediate wheatgrass germination = 80%
Intermediate wheatgrass purity = 90%
80% x 90% (PLS) = 0.72

$$\frac{\text{5 lbs. (PLS) to be planted}}{\text{0.72 (PLS factor)}} = \text{Approximately 7 lbs of bagged seed should be included in the mixture so that 5 lbs of PLS will be planted}$$

10.7.1.4 Rate of Seed Application

Prior to general seeding activities, test plots shall be established for the initial seeding in order to calibrate the mechanical seeders and insure the proper seed application rate. Calibration shall be accomplished in the presence of the Engineer's Representative and recalibration may be required as directed by the Engineer's Representative. Maintaining the proper seed application rate shall be the responsibility of the Contractor.

10.7.1.5 Mulch

Dry mulch shall consist of small grain straw or native hay. All dry mulch shall be free of noxious weeds or other seed-bearing weeds that would be detrimental to the seeded area.

10.7.2 Construction Requirements

Prior to seeding, the slopes to be seeded shall be completed to the designated line and grade. Topsoil shall be uniformly spread on the prepared slopes in accordance with Section 10.5.2. Prior to seeding, the entire seed bed shall be disked horizontally (level to the eye) to a depth of approximately 8 inches, leaving definite furrows, and left in an uncompacted, workable condition for seeding. If any damage by erosion or other causes before beginning reclamation activities, the Contractor shall repair such damage. This may include filling gullies, smoothing

irregularities, and repairing other incidental damage. Agronomic activities shall only be done when the soil and environmental conditions provide an acceptable seed bed for plant growth. This may necessitate delaying seeding and mulching until soil and environmental conditions are suitable.

10.7.2.1 Time of Seeding

Seeding shall be completed in dry weather between September 1 and November 30, or during spring when moisture conditions will allow. In no case shall seeding be conducted when the soil moisture is high enough to allow excessive compaction of the soil during the seeding operations as determined by the Engineer's Representative.

10.7.2.2 Seeding Methods

A rangeland drill shall be used for all seeding. Rangeland drills equivalent to Laird or Metal Master range drills are required. Lighter duty "rangeland" drills, grain drills, and grass drills, are not acceptable. The drill shall have individual drill row assemblies with spacing not to exceed eight inches and down pressure of one hundred fifty (150 lbs) pounds or greater, an angle of approximately thirty (30°) degrees from a line parallel to drill movement for each disk, and shall accurately place seed to a depth of one-half (0.5") inch, plus or minus one-quarter (0.25") inch. It shall be equipped with cover chains to cover seed after drilling.

10.7.2.3 Mulching

Mulch shall be applied at the rate of 2 tons per acre. Mulch shall be immediately anchored after application and shall not be applied on windy days. Crimping shall be performed on the contour (perpendicular to the drainage slope) and crimped into the surface at a depth of at least 0.2 feet. The crimping device shall not cut the mulch.

10.7.2.4 Preservation of Seeded Areas

The Contractor shall protect seeded areas from damage by traffic or construction equipment through to final acceptance. Any area damaged by these activities or causes will be repaired.

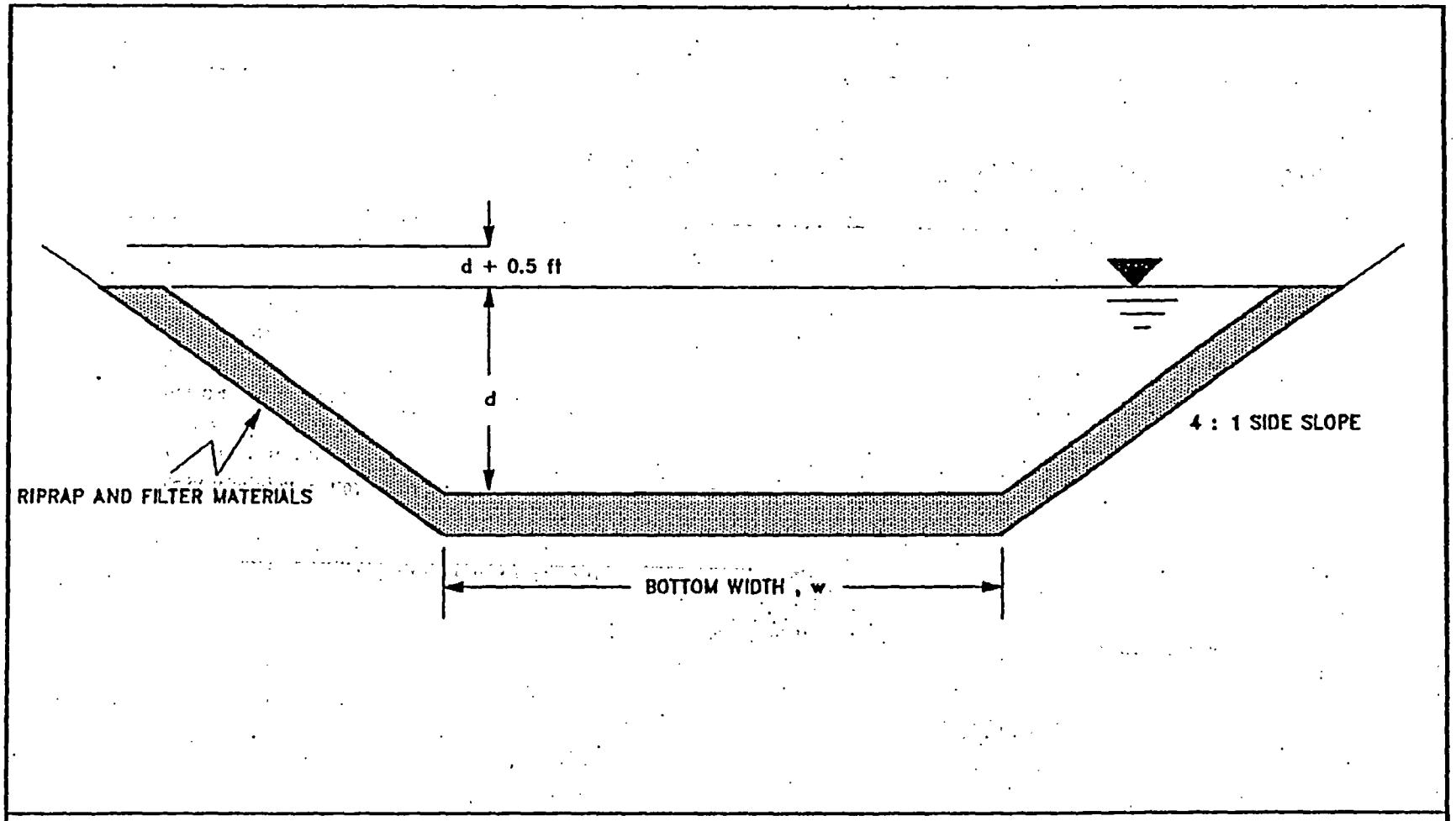
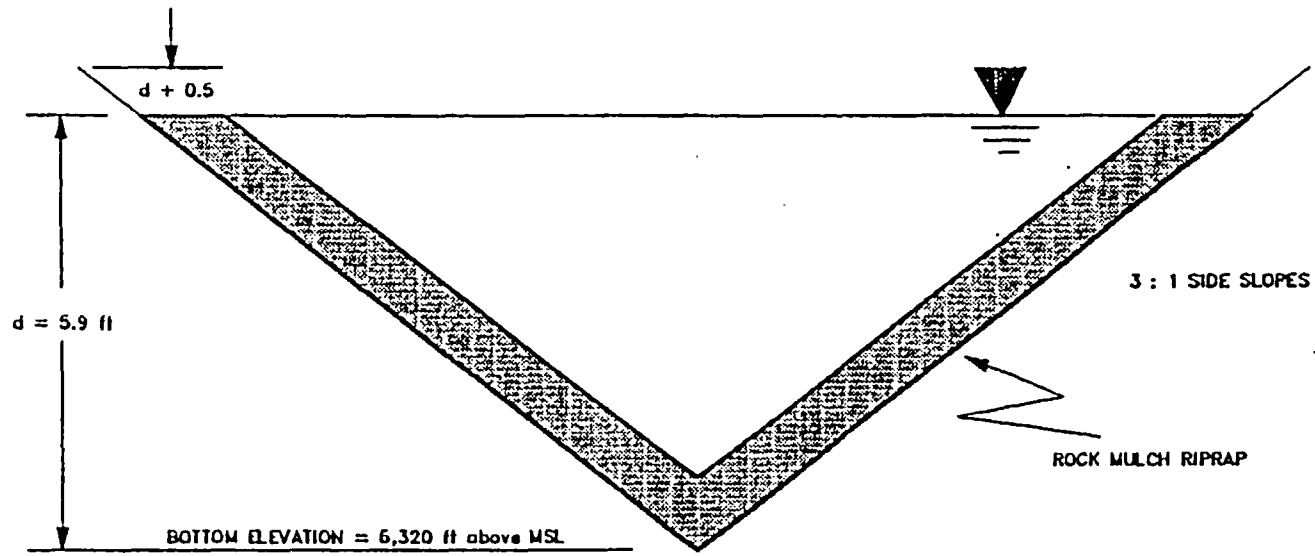


FIGURE 10-1. TYPICAL CHANNEL CROSS SECTION.



PEAK DISCHARGE = 1,034 cfs

VELOCITY = 10.0 ft/sec

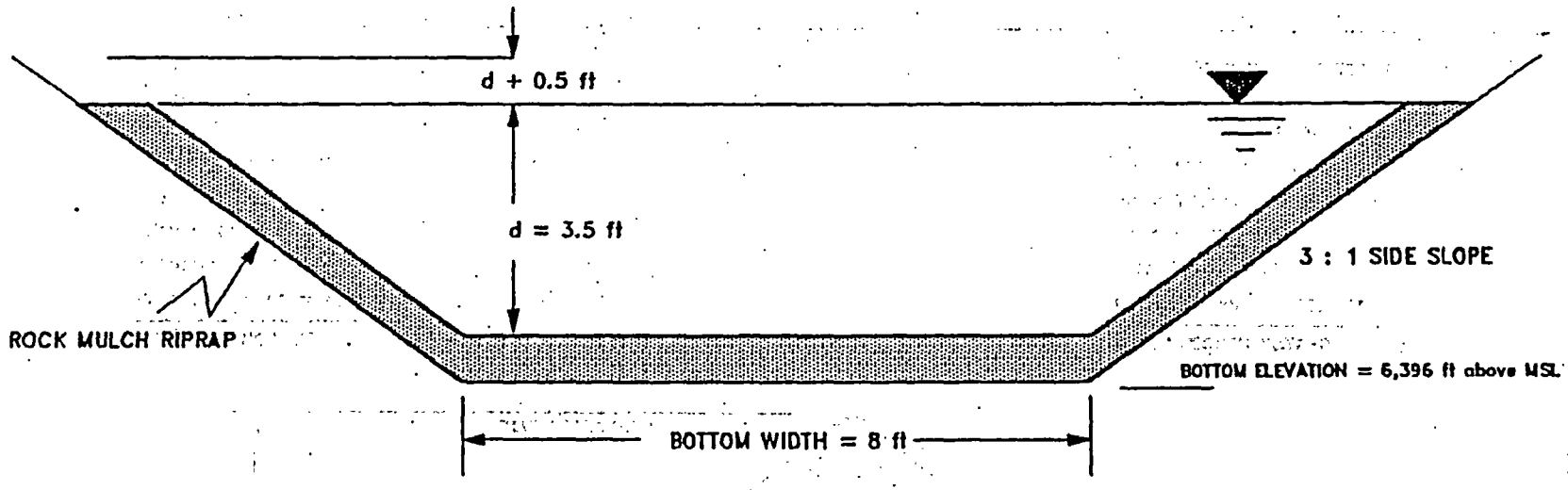
AREA = 103.3 sq ft

BOTTOM SLOPE = 0.008 ft/ft

MANNING'S n = 0.026

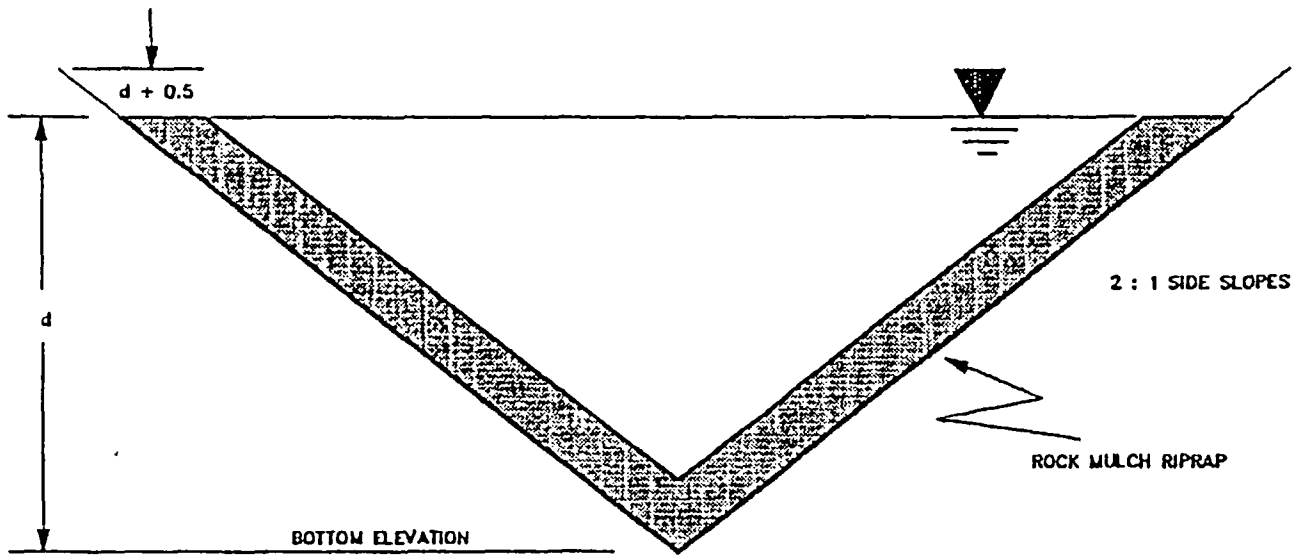
REQUIRED RIPRAP D50 = 0.29 ft

FIGURE 10-2. SKETCH OF CHANNEL CROSS SECTION XC2AW-9.



PEAK DISCHARGE = 471 cfs
VELOCITY = 7.2 ft/sec
AREA = 65.4 sq ft
BOTTOM SLOPE = 0.003 ft/ft
MANNING'S n = 0.017
REQUIRED RIPRAP D50 = 0.07 ft

FIGURE 10-3. SKETCH OF CHANNEL CROSS SECTION XC2-2.



CROSS SECTION XC2A-3

PEAK DISCHARGE = 938 cfs

VELOCITY = 8.6 ft/sec

AREA = 109.2 sq ft

BOTTOM SLOPE = 0.002 ft/ft

MANNING'S n = 0.017

REQUIRED RIPRAP D50 = 0.10 ft

DEPTH = 7.39 ft

BOTTOM ELEVATION = 6,284 ft above MSL

CROSS SECTION XC2A-5

PEAK DISCHARGE = 563 cfs

VELOCITY = 7.8 ft/sec

AREA = 72.7 sq ft

BOTTOM SLOPE = 0.002 ft/ft

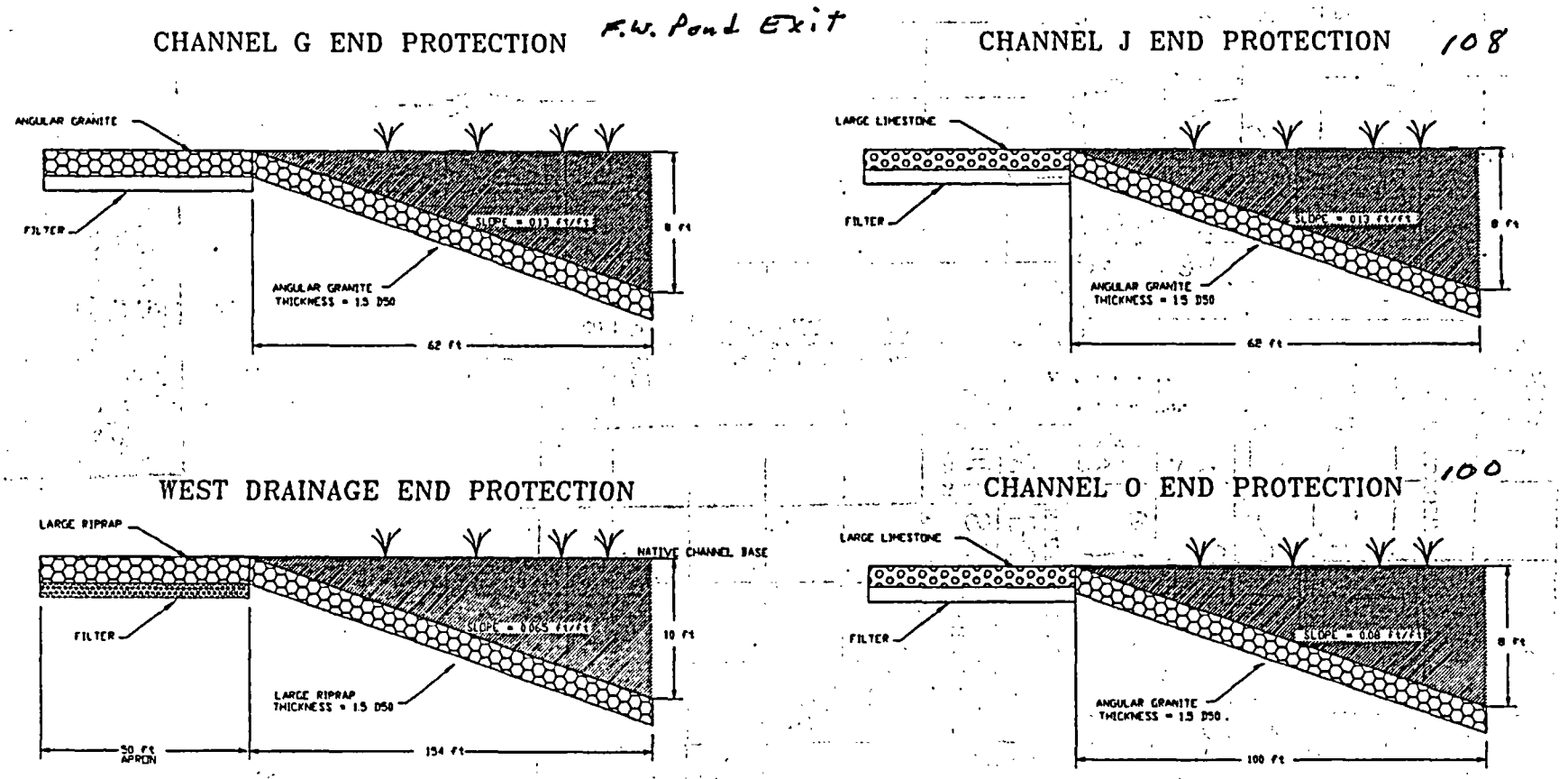
MANNING'S n = 0.017

REQUIRED RIPRAP D50 = 0.07 ft

DEPTH = 6.03 ft

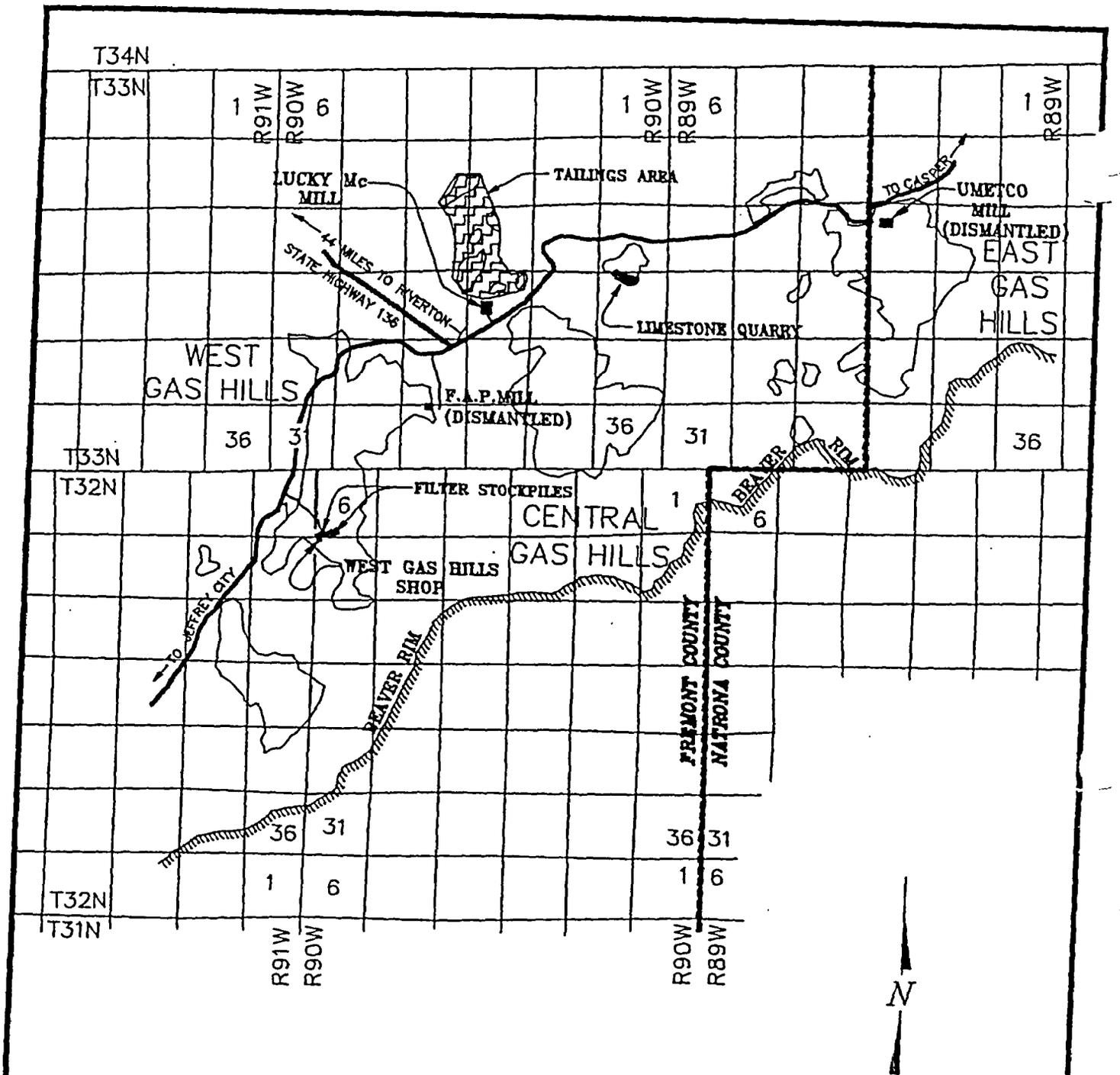
BOTTOM ELEVATION = 6,256 ft above MSL

FIGURE 10-4. SKETCH OF CHANNEL CROSS SECTIONS XC2A-3 AND XC2A-5.



(NOT TO SCALE)

FIGURE 10-5. RIPRAPPED END PROTECTION STUCTURES.



GAS HILLS MINING DISTRICT

SCALE OF MILES

0 1 2 3

PAVED HIGHWAY

MAJOR ROAD

ROAD

FILTER STOCKPILE AREA

LIMESTONE QUARRY AREA

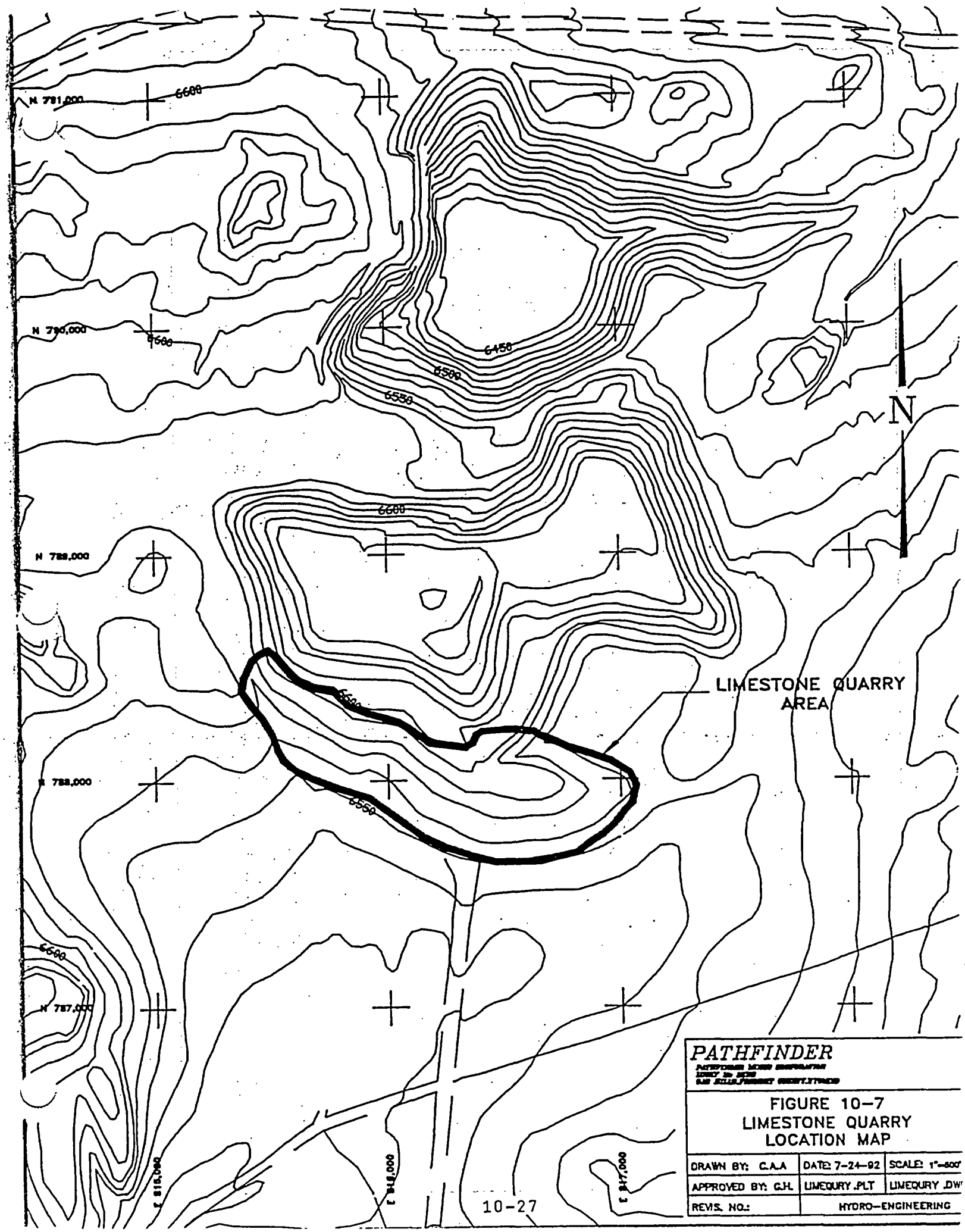
TAILINGS AREA

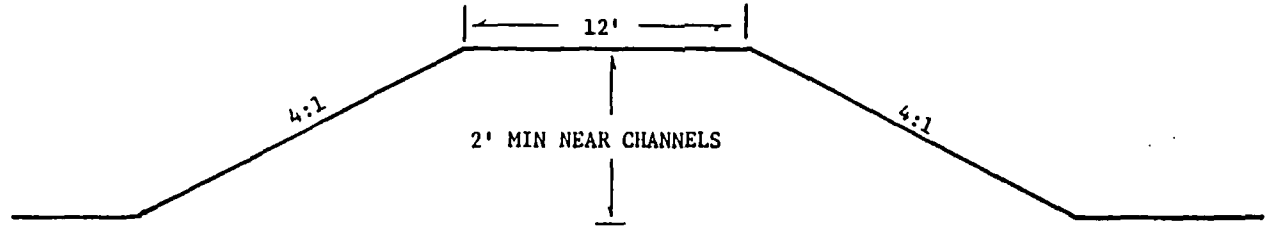
PATHFINDER

PATHFINDER MINES CORPORATION
LUCKY McMINE
GAS HILLS, FREMONT COUNTY, WYOMING

FIGURE 10-6
LOCATION OF FILTER STOCKPILE AND LIMESTONE QUARRY AREAS

DRAWN BY: A.A.H.	DATE: 6-1-93	SCALE: 1"=11,500'
APPROVED BY: J.F.C.	FIG-10-6 .PLT	FIG-10-6 .DWG
REVIS. NO.: 1	HYDRO-ENGINEERING	


N 791,000
N 790,000
N 789,000
N 788,000
N 787,000
6600
6550
6500
6450
N
LIMESTONE QUARRY
AREA
PATHFINDER
FIGURE 10-7
LIMESTONE QUARRY
LOCATION MAP
DRAWN BY: C.A.A
DATE: 7-24-92
SCALE: 1"=600'
APPROVED BY: G.H.
LIMEQURY.PLT
LIMEQURY.DWG
REVIS. NO.:
HYDRO-ENGINEERING



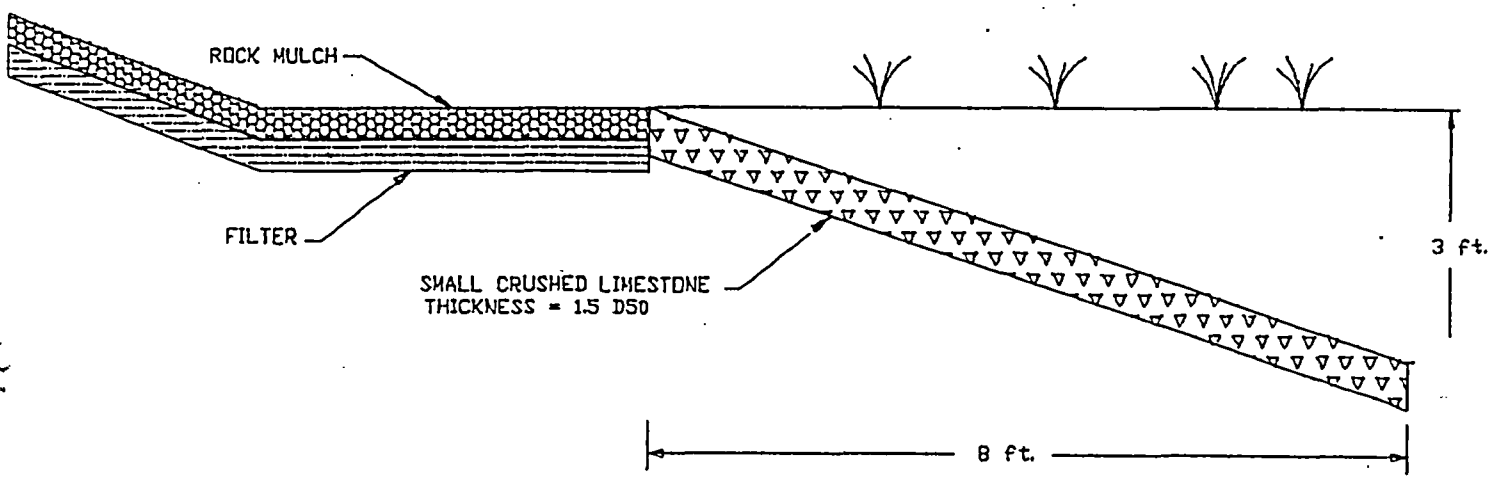
TYPICAL BERM CROSS SECTION

HOR. 1" = 10'
VER. 1" = 5'

FIGURE 10-8. SCHEMATIC OF A TYPICAL BERM CROSS SECTION.

Figure 10-9 has been deleted.

See Addendum I for revisions to the No. 4 Dam reclamation.



(NOT TO SCALE)

FIGURE 10-10. OVERLAND FLOW ROCK TOE STRUCTURE.

11.0 QUALITY ASSURANCE/CONTROL

11.1 General Considerations

Large volumes of materials are designated for excavation, relocation, and construction as an engineered fill or cover material. Periodic inspection and testing of these materials is necessary to assure compliance with design specifications and design objectives. The following testing frequencies and criteria are presented as a means of evaluating quality control during construction of the mill, tailings, and solution pond reclamation plan.

11.2 Radon/Seepage Barrier

The radon/seepage barrier will consist of various combinations of Cody shale and Lower Wind River Clay. Some of this material is in place as interim cover on the tailings area. Cody shale is expected to comprise the majority of the remaining cover. Placement of cover will be delayed until settlement monitoring indicates that t_{90} has been reached. A minimum of four settlement monuments for each of the three impoundments will be used to verify that t_{90} has been reached. Construction of the cover on each of the tailings impoundments (1, 2, and 2A) may begin when t_{90} has been reached for the individual impoundment. Testing of the Cody shale radon/seepage barrier materials during construction will include: gradation, Atterberg limits, in-place density and moisture, and Proctor compaction tests.

The Cody shale formation in this area is a massive unit with reasonably consistent materials properties. An extensive sampling program for the Cody shale in the solution pond area was undertaken prior to construction of the No. 4 Pond Dam, and the results indicate that the pertinent physical properties of the Cody shale are consistent through the unit and with properties of current borrow areas. Guidelines presented in the Nuclear Regulatory Commission's "Staff Technical Position on Testing and Inspection Plans During Construction of DOE's Remedial Action at Inactive Uranium Mill Tailings Sites" were employed in developing the

sampling regime. Some reduction in sampling frequency may be allowed if materials properties do not deviate from specified values. If unacceptable or anomalous results occur during testing, the sampling frequency will be increased to that recommended by the NRC. Inferior material will not be used in the construction of the radon/seepage barrier. If testing indicates portions of the radon/seepage barrier are constructed from inferior material, the affected area will be reworked and the material replaced with acceptable material.

Compaction testing frequencies of the radon/seepage barrier testing are as follows: A minimum of one moisture/density field test will be taken per 500 cubic yards of compacted radon/seepage barrier. A minimum of one test will be taken for every day that at least 150 cubic yards of compacted barrier material is placed, and at least one test per lift or one test per shift of compaction operations will be conducted. The specified compaction standard is at least 95% standard Proctor density at optimum moisture content -2% to optimum moisture content +4%.

Approved methods will be used for determining the moisture content and density. If a nuclear density gauge is used (ASTM D-2922 for density and ASTM D-3017 for moisture content), a correlation test with the sand cone method (ASTM D-1556) and oven drying method (ASTM D-2216) will be conducted at a frequency of one per ten nuclear gauge tests. The moisture contents may also be determined using the microwave oven method (ASTM D-4643 or the speedy moisture meter (AASHTO T217). If ASTM D-4643 is used, a verification series of 10 tests will be conducted using both the oven drying method and microwave oven method every time there is a correlation failure. A correlation failure is a deviation greater than plus or minus one percent moisture content. An additional oven drying test will be conducted at the frequency of one per ten microwave oven tests with the same definition of a correlation failure. An oven drying calibration/correlation test will also be conducted at the rate of one per ten speedy moisture meter tests,

or more frequently if the speedy moisture meter requires recalibration after every ten tests.

For barrier material sampled from the borrow cut or from stockpiles or from placed material, initial frequency of gradation testing of the radon/seepage barrier material will be one test per 1000 cubic yards of material. A minimum of 1 test will be conducted if total emplaced volume for the day exceeds 150 cubic yards. The gradation testing will be by sieve analysis only to the #200 sieve. The gradation sampling frequency may be reduced to one test per 2500 cubic yards of radon/seepage barrier material following 50 consecutive tests with no rejection of material. If radon/seepage barrier material is subsequently rejected based on gradation testing or Atterberg limits test results, the gradation testing frequency will be increased to one test per 1000 cubic yards of material until another 50 consecutive successful tests have been conducted.

If the barrier material is sampled using borings in the borrow area, a different sampling procedure for gradation will be used. Initial sampling frequency will not be less than one sample per 2500 cubic yards of material. The material will be sampled on a grid system of borings with a corresponding depth interval to give the desired sample frequency. If the sample meets gradation specification, the borrow material in the area represented by the sample will be acceptable as barrier material. The same area will be visually inspected during the borrowing process to insure that there are no noticeable changes in the nature of the borrow material. If a boring sample fails a gradation test, several options may be employed concerning the failed material. First of these options will be complete exclusion of the area from borrow for barrier material. A second option will be additional investigation to determine the horizontal and vertical extent of the inferior material. Such investigations may include: additional borings with sampling at an increased frequency of one sample/1000 cubic yards or more refinement in the vertical interval of sampling

to identify intervals of inferior material. The third option would include additional testing in the affected area when the borrow cut reaches it. If either the second or third option is used, and it is found that the inferior material can be isolated and excluded from the barrier, the sampling frequency for the affected area will not be less than one sample/1000 cubic yard and the inferior material will be selectively removed for disposal as non-specified fill. Material that can be identified as inferior by visual inspection may be removed from borrow area prior to testing.

The gradation of the material will be considered acceptable if 90% of the material passes a #200 sieve. Inferior gradation material may be placed as general fill but not as part of the radon/seepage barrier.

Atterberg limits tests will be conducted at a frequency of at least one per day when emplaced volume exceeds 150 cubic yards. If the combination of liquid limit and plasticity index indicate a clay material of medium to high plasticity or the liquid limit is greater than 40 and the plasticity index is greater than 16, the material will be considered acceptable.

One-point Proctor tests will be conducted at a frequency of one test per five field density tests. A complete Proctor density test will be conducted at a frequency of one test per 15 field density tests. The frequency will be increased if there is excessive variation in test results. The material will be considered acceptable if maximum dry density is greater than or equal to 99 lb/ft^3. Rejection of radon/seepage barrier material based on results of proctor density tests will only occur if the performance in radon attenuation is suspect. This condition could arise if a significant volume of radon/seepage barrier material has a maximum dry density less than 99 lb/ft^3 and additional radon

emanation modeling indicates that the barrier cannot be overthickened to offset reduced density.

Daily inspections and construction records will document thicknesses and volumes of radon/seepage barrier placed.

11.3 Other Cover and Fill Materials

The topsoil material for non-rock protected areas is primarily a weathered Cody shale. This material will be placed without compactive effort beyond that occurring in normal construction. It is not considered part of the radon/seepage barrier. Topsoil to be placed over tailings/mill site areas will be selected primarily from existing stockpiles and will be tested at a frequency of one test per 10000 cubic yards for Atterberg limits and gradation by sieve analysis. The material selected will be a medium to high plasticity clay and this will be placed on selected areas of Ponds 1, 2, and 2A. Testing data from laboratory samples indicates that the majority of the stockpiled topsoil in the mill and tailings area should be adequate as a tailings cover material. If the percentage of material passing a #200 sieve falls below 80%, or the material is of low plasticity, the topsoil will be rejected for use on tailings areas.

There is no specified testing program for general fill materials or contaminated materials to be placed in the tailings area. The bulk of the contaminated materials will be placed on nearly saturated and consolidating areas of the tailings where compaction would be difficult if not impossible. The expected settlement in fill materials should be insignificant in comparison to that which will occur in the tailings. Other fill areas are non-critical zones where compaction occurring as a result of normal construction practices should provide a stable subgrade material. No compaction specifications are provided for general subgrade materials as the settlement monitoring program should assure stable subgrade prior to construction of the cover.

11.4 Rock and Filter

Testing of rock quality and characteristics will follow guidelines established by the NRC. Laboratory durability tests which have already been conducted will be considered sufficient for the initial durability testing. Durability tests will include specific gravity, absorption, sodium sulfate soundness, and L.A. abrasion. Substitute tests such as a Schmidt Hammer test may also be used. Testing frequency will be one test for every 10,000 cubic yards of each type of rock. For small volumes of rock (less than 30000 cubic yards), a minimum of three tests will be conducted. These tests will be performed following mining of approximately 1/6, 1/2, and 5/6 of the volume. These intervals were selected so that the entire rock volume would be represented by testing and adjustments in processing could be made if necessary. For the purposes of durability testing, a total of three rock type/gradation combinations will be considered. The angular granite is considered one rock/gradation type. The limestone crushed to produce channel riprap is considered one rock/gradation type, although it will likely be crushed to produce two different gradations. This is done because the total volume of crushed limestone channel riprap is not expected to exceed 23000 cubic yards. The large rock mulch used in channels will be included with the rock mulch for testing purposes. Likewise, the crushed limestone for rock mulch will be considered one rock/gradation type. Construction limitations may dictate the number of gradations produced for rock mulch, but up to three target D_{50}'s are specified. Gradation sampling will be conducted at the same frequency as durability testing, with additional tests whenever crushing or mining techniques are changed appreciably. There will be a minimum of three gradation tests for each rock gradation produced and these will be conducted at intervals to represent the entire gradation volume.

Rock quality scores will be evaluated following testing and, if necessary, adjustments in design criteria or restrictions on rock placement will be mandated. NRC rock quality scoring criteria

provides a concise method of assessing acceptability of the rock or determining the need for oversizing, and judgments on rock quality will be based on these criteria. Rock gradation will be acceptable if; the rock D_{50} meets or exceeds the design D_{50}, the rock D_{100} is less than the maximum for thickness considerations or can be placed to achieve the desired surface, and the gradation for rock with a D_{50} greater than six inches meets the criteria presented below .

* Lower limit of $W_{100} > 1.5W_{50}$
* Upper limit of $W_{100} < 8W_{50}$
* Lower limit of $W_{15} > 1/16$ upper limit of W_{100}
* Upper limit of $W_{15} < W_{50}$
* W_0 through W_{25} can be used instead of W_{15} in the preceding criteria if better suited to available rock.

The criteria presented above may be converted to an equivalent rock diameter. If the rock D_{50} is six inches or less, the gradation criteria will not apply. Smaller rock (D_{50} less than 6 inches) will be progressively screened to produce a relatively uniform material. Target size ratios for this material are D_{50}/D_{30} less than or equal to 1.6 and D_{100}/D_{50} less than or equal to 1.6. These are target ratios only, and some minor deviation from the ratios will be tolerated. Screenings may be used for filter material or smaller rock gradations.

The filter may consist of a dual or single filter design. If the dual filter design is employed, the lower filter will be required to meet the following criteria:

$$d_{15}/d_{85} < 25$$

where: d_{15} is the screen diameter through which 15% of the lower filter material passes

d_{85} is the screen diameter through which 85% of the base material passes

The upper filter will be required to meet the following criteria:

$$d_{15}/d_{85} < 15$$

where: d_{15} is the screen diameter through which 15% of the upper filter material passes

d_{85} is the screen diameter through which 85% of the lower filter material passes

$D_{15}/D_{85} < 15$

where: D_{15} is the screen diameter through which 15% of the rock passes

D_{85} is the screen diameter through which 85% of the upper filter passes

The dual filter system will consist of a lower filter composed of <1 1/4" Dry Coyote conglomerate screenings, or other suitable material after adequately being characterized. The upper filter will consist of crushed and processed limestone. If a single filter system is selected, the following criteria will apply:

$D_{15}/D_{85} < 30$

where: D_{15} is the screen diameter through which 15% of the rock passes

D_{85} is the screen diameter through which 85% of the filter material passes

Gradation sampling frequency will be the same as that for rock gradation sampling.

11.5 Organic Matter

Very little organic material will be placed in the tailings area, and the majority of this will be placed in the area designated for mill rubble. The volume of organic material which will be placed outside of the mill rubble area is inconsequential. The placement and compaction of mill rubble is addressed in the mill decommissioning plan. It should be noted that the area designated for mill rubble is under rock mulch cover at intermediate slopes, thus reducing the effects of differential settlement on the drainage system.

11.6 Reporting

Construction and inspection records will detail construction activities on a daily basis. Progress and adequacy of the construction will be presented, as well as results of all inspections, measurements and tests. Weekly reports will include a summarization of daily activities and a summary of emplaced volumes. Testing will be by approved methods and will be documented in construction records. All pertinent information will be included in the reporting of testing, including; sample description, date, name of tester, description of testing method or reference to previously documented methods, results of the test, equipment description (if applicable) and interpretation of the results (acceptability, etc.). Deviations, nonconformances and stop work order situations will be documented per DOE procedures as presented in the Remedial Action Inspection Plan. An as-built construction report will be submitted to the NRC within 6 months following completion of construction.

11.7 Post Reclamation Contamination Cleanup Confirmation

During the retrieval of contaminated material in the vicinity of the east ore pad, windblown tailings areas, the solution ponds, and any other isolated areas of contamination not planned for reclamation with a radon barrier and erosion stability for 1000 years, field gamma surveys will be utilized to define materials requiring removal. These surveys will provide an extension of the information already gained from the preliminary gamma survey done in conjunction with this submittal.

The gamma survey procedures and the soil cleanup verification survey and sampling plan are detailed in Appendix H found at the end of this volume (Vol. II) of the tailings reclamation plan. Refer to Appendix H for the specifics of the soil cleanup and verification.

APPENDIX

B

PATHFINDER

October 18, 2004

Mr. Gary Janosko, Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, Maryland 20852

Ref: Docket No. 40-2259, Source Material License No. SUA-672

Dear Mr. Janosko:

As part of the general tailings dewatering effort at the Lucky Mc Mill tailings site, Pathfinder pumped water for a number of years from a sump designated 2A-11, located near the toe of the No. 2 tailings dam at its south end (see Exhibit 1.0-1 from Ground-Water Hydrology, Fresh-Water Injection and Tailings Seepage Collection Systems Near Tailings Reservoir No. 1, December, 2002). The sump received water from a horizontal drain system installed along the toe of the dam. Historically, the area had exhibited seepage which prompted the drain/sump installation. With the conclusion of CAP activities and the near completion of the tailings reclamation, operation of the sump was terminated a year ago. At that time it was felt that by capping the drain pipe to the sump, the sump could be decommissioned and the surface area reclaimed since years of dewatering effort had eliminated any surface seepage. That work was accomplished during October, 2003. Unfortunately, the capping of the pipe resulted in a buildup of head pressure that forced the seepage water to the surface in the general proximity of the 2A-11 sump site. This became evident during the spring of 2004.

After further evaluation it was concluded that there was sufficient gradient to make it feasible to transfer seepage water from the 2A-11 sump to pond 2A via a new pipeline feeding a drain field that would be installed within the 2A sandy tailings. This approach would resolve the surface seepage problem and provide a means of continuing the No. 2 dam toe area dewatering without compromising the tailings reclamation. The No. 2 pond toe seepage water would be absorbed by the 2A tailings using a passive, zero maintenance system. .

During August-September of this year the installation of the drain system was completed. The 2A-11 sump area was excavated and the capped end of the drain pipe was found without breaking the PVC pipe. A trench was excavated on a uniform grade from the 2A-11 drain pipe to the 2A tailings. A 450 foot long trench (five feet wide) was excavated into the 2A tailings. The area of tailings excavation penetrated a fairly

PATHFINDER Mines Corporation
935 Pendell Blvd., P.O. Box 730, Mills, WY 82644 - Tel. : (307) 234-5019 - Fax : (307) 473-7306

A

uniform seven foot layer of compacted Cody shale (a minimum of two feet of radon barrier clay are specified for Pond 2A- the balance of the clay is due to local fill placement). The lower three vertical feet of trench intercepted a consistent layer of sandy tailings. The tailings were slightly damp with no evidence of free flowing water, even after leaving the trench open for a number of days.

A six inch diameter thick-walled fusible polyethylene (PE) pipe was installed from the 2A-11 sump drain pipe to the 2A tailings. The solid PE pipe was connected to a four inch diameter perforated corrugated PE drain pipe laid the entire length of the tailings portion of the trench. This trench section was excavated on a slight gradient to assure the distribution of water throughout the 450 foot length of the trench. The perforated pipe was laid directly on top of the sand tailings. A three foot deep layer of crushed rock was placed on top of the drain pipe; a layer of geotextile then was placed on top of the rock. The trench was backfilled with clean Dry Coyote conglomerate bedding material, leaving sufficient space to replace the radon barrier clay and topsoil. Enclosed is a map (two copies) illustrating the location of the pipeline and drain system on 2A.

As of this date the system is functioning very well. The 2A drain field is absorbing all water flowing from the 2A-11 sump collection system. Because production from the sump area is only on the order of 1-2 gpm, the drain field installed in the 2A sandy tailings should have a virtually unlimited capacity to readily accommodate the flow.

Contaminated soils due to the earlier seepage have been excavated and placed in the No. 4 evaporation pond as part of its closure fill. Some additional decontamination and soil sampling is planned for a low area that received runoff from Channel 111, located immediately adjacent to the 2A-11 sump location. Snow melt runoff into that area transported some of the seepage residue from the 2A-11 area. That work will be completed this fall.

These activities were discussed with Elaine Brummett and Dan Rom of your staff during their inspection of the Lucky Mc tailings reclamation on October 13, 2004. It is Pathfinder's intent to further document this activity in the tailings reclamation completion report. If your staff has any questions, please let us know.

Sincerely,

Tom Hardgrove

T. W. Hardgrove
Manager, Reclamation Operations

Enclosure

Cc: J. E. Whitten, U.S. NRC Region IV
D. Wichers

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE, THAT CAN BE VIEWED AT THE RECORD TITLED:

"Exhibit F-1
2A-11 Sump Area Drain
Layout and Location"

WITHIN THIS PACKAGE OR BY SEARCHING USING

D-08

ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

LABORATORY ANALYTICAL REPORT

Client: Pathfinder Mines Corp
Project: Lucky Mc Mine

Lab Order: C04100920
Report Date: 11/10/04

Lab ID: C04100920-001
Client Sample ID: 2A-11 Muck #1 0-6"
Matrix: SOIL

Collection Date: 10/19/04 15:00
DateReceived: 10/20/04

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Radium 226	2.1	pCi/g-dry		0.2		E903.0	11/02/04 15:00 / df
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	11/02/04 15:00 / df

Lab ID: C04100920-002
Client Sample ID: 2A-11 Muck #1 6-12"
Matrix: SOIL

Collection Date: 10/19/04 15:00
DateReceived: 10/20/04

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Radium 226	2.1	pCi/g-dry		0.2		E903.0	11/02/04 15:00 / df
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	11/02/04 15:00 / df

Lab ID: C04100920-003
Client Sample ID: 2A-11 Muck #2 0-6"
Matrix: SOIL

Collection Date: 10/19/04 15:00
DateReceived: 10/20/04

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Radium 226	2.0	pCi/g-dry		0.2		E903.0	11/02/04 15:00 / df
Radium 226 precision (±)	0.2	pCi/g-dry				E903.0	11/02/04 15:00 / df

RECEIVED
NOV 1 7 2004
By TW

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Pathfinder Mines Corp
Project: Lucky Mc Mine

Lab Order: C04100920
Report Date: 11/10/04

Lab ID: C04100920-004
Client Sample ID: 2A-11 Muck #3 12-18"
Matrix: SOIL

Collection Date: 10/19/04 15:00
DateReceived: 10/20/04

Analyses	Result	Units	Qual	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES - TOTAL							
Radium 226	7.2	pCi/g-dry		0.2		E903.0	11/02/04 15:00 / df
Radium 226 precision (±)	0.3	pCi/g-dry				E903.0	11/02/04 15:00 / df

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

APPENDIX

C

CLAY BORROW
DRILL SAMPLES
SIEVE ANALYSES

1998

SUBJECT 200 wash results PROJECT NO. 8152 RX PAGE 1

CLIENT Pathfinder Mines DATE 4-30-98 BY

PROJECT Lucky Mc Mine CHECKED BY

N	E	Depth	-200
600	2600	10-15	95.1
600	2600	5-10	95.1
600	2600	0-5	77.2
600	2600	15-20	98.0
675	2675	0-12	98.5
750	2675	0-12	98.4
1050	2600	15-20	96.7

Reported Verbally to Jim Crouch 4-30-98 [illegible]

SUMMARY SHEET No. 1

7 TESTS

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 2

CLIENT Pathfinder Mines DATE BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1275	2600	15-20	98.2	525	2675	48-50	93.8
1275	2600	10-15	97.2	525	2675	36-48	98.5
1275	2600	5-10	97.8	525	2675	24-36	96.9
1350	2600	15-20	98.2	525	2675	12-24	96.1
1350	2600	10-15	94.6	525	2675	0-12	98.5
1350	2600	5-10	95.2	750	2675	36-37	98.8
1350	2600	0-5	95.4	750	2675	24-36	97.9
1425	2600	12-20	95.9	750	2675	12-24	98.8
1425	2600	0-12	95.9	1050	2600	10-15	97.6
600	2675	36-46	98.3	1050	2600	5-10	98.2
600	2675	24-36	98.8	1125	2600	15-20	97.7
600	2675	12-24	95.9	1125	2600	10-15	98.4
600	2675	0-12	94.5	1125	2600	5-10	96.1
675	2675	36-42	97.6	1200	2600	10-15	98.4
675	2675	24-36	97.9	1200	2600	5-10	98.2
675	2675	12-24	95.4				
450	675	48-55	97.5				
450	675	36-48	98.8				
450	675	24-36	97.3				
450	675	12-24	98.1				
450	675	0-12	98.4				

SUMMARY SHEET No. 2 MAY 4, 1998
FAXED TO JIM CROUCH

INBERG-MILLER ENGINEERS

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 3

CLIENT Pathfinder Mines DATE MAY 15, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1050	2600	36-37	95.4	525	2600	10-15	98.5
675	2600	0-5	56.6	525	2600	0-5	90.2
675	2600	10-15	93.3	525	2600	5-10	95.7
675	2600	15-20	95.3	525	2600	15-20	97.6
675	2600	5-10	91.3	825	2600	15-20	98.2
975	2600	0-5	93.0	825	2600	10-15	98.1
975	2600	5-10	97.4	825	2600	5-10	98.4
975	2600	15-20	97.4	825	2600	0-5	95.1
975	2600	10-15	95.8	750	2600	0-5	77.2
1125	2600	0-5	94.6	750	2600	5-10	92.3
1200	2600	15-20	98.8	750	2600	15-20	95.5
1200	2600	0-5	95.8	750	2600	10-15	96.2
450	2600	5-10	96.8	9925	2675	20-23	98.9
450	2600	10-15	98.7	9925	2675	15-20	94.0
450	2600	15-20	97.5	9925	2675	10-15	98.4
450	2600	0-5	96.5	9925	2675	5-10	97.4
1275	2600	0-5	92.8	9925	2675	0-5	99.5
900	2600	0-5	93.3	150	2675	0-5	99.3
900	2600	5-10	96.7	150	2675	20-25	95.8
900	2600	10-15	98.1	150	2675	25-26	98.9
900	2600	15-20	98.6	150	2675	10-15	96.6

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 4

CLIENT Pathfinder Mines DATE MAY 15, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
150	2675	5-10	96.6	750	2900	24-35	92.7
150	2675	15-20	93.5	1050	2825	0-12	94.8
9700	2675	10-15	95.8	1050	2855	12-19	96.4
9700	2675	5-10	97.3	450	2750	0-12	95.6
9700	2675	20-21	97.5	450	2750	12-24	98.1
9700	2675	15-20	97.2	450	2750	36-48	95.6
9700	2675	0-5	97.7				
9550	2675	0-5	96.6				
9550	2675	5-10	97.5				
9550	2675	10-15	98.6				
9550	2675	15-20	98.2				
9550	2675	20-21	97.0				
900	2825	0-12	96.0				
900	2825	12-24	98.3				
900	2825	24-27	97.6				
975	2825	0-12	97.1				
975	2825	12-24	97.4				
1125	2825	0-12	95.3				
1125	2825	12-17	96.2				
1200	2825	0-12	95.8				

file Exts

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 5

CLIENT Pathfinder Mines DATE MAY 26, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1200	2825	12-16	94.3	1125	2900	12-15	97.4
450	2750	46-51	92.6	1125	2900	0-12	97.6
525	2750	0-12	97.8	9775	2675	0-5	96.1
525	2750	12-24	98.1	9775	2675	5-10	97.0
525	2750	24-36	97.7	9775	2675	10-15	98.5
525	2750	36-50	95.6	9775	2675	15-20	95.9
525	2750	48-49	99.3	375	2675	0-5	96.8
450	2825	0-12	91.1	375	2675	5-10	98.7
225	2675	20-25	97.4	375	2675	10-15	98.1
225	2675	15-20	94.2	375	2675	15-20	97.9
225	2675	25-30	95.3	375	2675	20-25	97.7
225	2675	10-15	98.4	375	2675	25-30	97.2
225	2675	5-10	97.0	375	2675	30-35	95.0
225	2675	0-5	97.9	375	2675	35-40	91.3
900	2900	15-22	97.1	375	2675	40-43	94.0
900	2900	0-12	94.5	525	3050	0-12	93.0
975	2900	0-12	97.4	525	3050	12-24	97.2
975	2900	12-20	96.0	525	3050	24-31	98.6
1050	2900	0-12	97.1	300	2675	5-10	94.8
1050	2900	12-18	97.5	300	2675	10-15	94.0
9775	2675	20-22	97.7	300	2675	15-20	97.5

43 TESTS

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 6

CLIENT Pathfinder Mines DATE MAY 26, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
300	2675	0-5	98.0	1200	3050	0-12	96.1
300	2675	30-35	97.5	1125	3050	0-12	83.3
300	2675	25-30	92.3	1125	3050	12-16	97.4
300	2675	20-25	96.9	1050	3125	12-17	97.7
750	2900	0-12	96.3	9625	2675	5-10	95.5
750	2900	12-24	95.7	9625	2675	20-21	97.0
825	2900	24-30	97.7	9625	2675	15-20	96.6
825	2900	12-24	94.3	9625	2675	0-5	96.3
825	2900	0-12	95.3	9625	2675	10-15	97.2
750	3050	24-28	95.8	1425	2825	12-14	93.2
675	3050	12-24	96.7	1425	2900	0-8	96.1
825	3050	24-28	95.7	1425	2825	0-12	87.8
675	3050	24-29	96.7	1350	2875	12-15	96.4
825	3125	0-12	95.6	1350	2900	0-9	96.5
900	3125	12-24	94.7	1275	2825	0-12	97.5
825	3125	12-23	97.9	1275	2825	12-16	96.7
900	3125	0-12	95.1	1350	2825	0-12	93.2
975	3125	0-12	98.2	675	2900	0-12	90.8
1200	3050	12-14	97.5	675	2900	24-36	91.9
975	3125	12-21	95.4	675	2900	36-38	94.6
1050	3125	0-12	95.2	600	2900	0-12	92.5

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 7

CLIENT Pathfinder Mines DATE MAY 26, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
600	2900	12-24	95.8	1050	2675	0-12	97.6
600	2900	24-36	95.8	1050	2675	24-28	96.2
600	2900	36-38	96.4	1200	2675	0-12	96.5
525	2900	0-12	93.1	1200	2675	12-24	96.6
525	2900	12-24	91.6	1200	2675	24-26	98.3
525	2900	24-36	92.6	1125	2675	0-12	98.3
525	2900	36-40	93.9	975	2675	0-12	98.4
450	2900	0-12	95.7	1125	2675	12-24	98.1
450	2900	12-24	91.8	975	2675	12-24	97.6
450	2900	0-12	91.3	1125	2675	24-28	98.3
450	2900	24-36	92.0	1425	2675	0-12	97.4
450	2900	36-41	91.6	1350	2675	12-24	96.3
450	2975	12-24	94.1	1350	2675	0-12	95.9
450	2750	24-36	96.8	1275	2675	24-25	95.1
900	2675	0-12	93.1	1425	2675	12-24	98.2
900	2675	12-24	96.8	1275	2675	12-24	95.7
825	2675	0-12	97.2	1350	2675	24-25	95.7
900	2675	24-30	96.1	1275	2675	0-12	97.1
825	2675	24-32	99.0	450	2975	24-36	92.8
825	2675	12-24	94.5	1275	2750	12-24	95.9
1050	2675	12-24	97.7	1275	2750	0-12	97.3

INBERG-MILLER ENGINEERS

4.2 TESTS

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 8

CLIENT Pathfinder Mines DATE MAY 26, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1350	2750	12-20	96.6				
1350	2750	0-12	97.2				
1425	2750	0-12	90.5				

INBERG-MILLER ENGINEERS

3 TESTS

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 9

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
450	2600	15-20	97.4	975	2750	12-22	96.8
1425	2750	12-19	96.5	1200	2750	12-20	94.8
825	2750	0-12	97.0	1125	2750	12-21	95.4
675	2750	36-40	95.4	1125	2750	0-12	96.0
750	2750	12-24	97.5	1050	2750	12-22	95.9
750	2750	24-37	92.9	1050	2750	0-12	96.5
750	2750	0-12	96.5	675	2825	0-12	96.1
825	2750	24-34	98.6	600	2825	36-43	98.8
825	2750	12-24	98.4	600	2825	24-36	94.9
675	2750	0-12	93.7	525	2825	36-45	96.3
675	2750	24-36	98.6	525	2825	0-12	93.4
675	2750	12-24	96.3	525	2825	24-36	94.5
600	2750	12-24	96.8	525	2825	12-24	97.4
600	2750	0-12	97.2	450	2825	36-46	95.7
600	2750	24-36	98.8	450	2825	24-36	96.6
600	2750	36-44	96.4	450	2825	12-24	94.6
900	2750	12-24	98.5	600	2825	0-12	96.2
900	2750	24-28	98.1	600	2825	12-24	96.3
900	2750	0-12	93.7	675	2825	12-24	97.2
975	2750	0-12	92.8	675	2825	24-36	94.6
1200	2750	0-12	97.6	675	2825	36-38	90.7

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 10

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
750	2825	0-12	96.3	1275	2975	0-6	90.1
750	2825	12-24	95.9	1350	2975	0-6	84.0
750	2825	24-33	93.5	750	2975	12-24	98.0
825	2825	0-12	93.1	675	2975	24-33	93.8
825	2825	12-24	96.9	600	2975	0-12	95.0
825	2825	24-30	97.8	750	2975	24-32	96.8
375	2900	35-40	98.3	675	2975	0-12	98.0
375	2900	0-5	90.8	600	2975	12-24	95.4
375	2900	5-10	96.9	750	2975	0-12	91.2
375	2900	15-20	93.9	675	2975	12-24	96.7
375	2900	30-35	91.6	600	2975	24-33	92.9
375	2900	10-15	96.5	525	2975	24-32	97.8
375	2900	25-30	97.5	525	2975	12-24	96.6
375	2900	40-43	98.5	525	2975	0-12	94.5
375	2900	20-25	95.2	900	2975	12-24	97.6
1200	2900	0-12	97.3	1200	2975	0-12	96.7
1275	2700	0-11	99.2	1050	2975	12-17	91.7
825	2975	0-12	96.1	1125	2975	12-16	98.9
825	2975	12-24	97.0	1125	2975	0-12	96.6
825	2975	24-31	97.1	900	2975	24-27	98.7
1425	2975	0-4	94.4	1200	2975	12-13	98.3

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 Rx PAGE 11

CLIENT Pathfinder Mines DATE JUNE 8, 1993 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1050	2975	0-12	97.3	90000	2675	15-20	95.7
975	2975	0-12	98.2	90000	2675	10-15	97.0
900	2975	0-12	95.7	90000	2675	0-5	98.1
975	2975	12-21	97.5	075	2675	10-15	97.6
9225	2750	0-5	91.4	075	2675	20-24	97.4
9225	2750	10-15	95.1	075	2675	15-20	97.6
9225	2750	20-25	98.3	075	2675	0-5	97.8
9225	2750	15-20	97.1	075	2675	5-10	97.3
9225	2750	5-10	96.6	675	3050	6-12	96.9
9225	2750	25-28	97.9	750	3050	12-24	97.9
9700	2750	0-5	95.1	750	3050	0-12	97.1
9700	2750	10-15	95.5	600	3050	12-24	93.7
9700	2750	15-20	95.7	600	3050	24-30	96.8
9700	2750	20-21	96.4	600	3050	0-12	87.4
9850	2675	0-5	98.3	600	3125	12-25	97.7
9850	2675	5-10	97.9	675	3125	0-12	94.5
9850	2675	10-15	97.9	750	3125	12-23	96.5
9850	2675	15-20	97.9	675	3125	12-25	97.7
9850	2675	20-22	96.3	600	3125	0-12	98.3
90000	2675	5-10	97.5	750	3125	0-12	97.6
90000	2675	20-24	88.3	975	3050	12-23	97.6

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 12

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
975	3050	12-23	97.6	300	2975	20-25	98.5
90000	2750	0-5	97.8	1200	3275	0-12	95.9
90000	2750	5-10	97.3	1200	3275	12-24	98.3
90000	2750	15-20	95.2	1275	3275	0-12	97.1
90000	2750	20-21	96.8	1125	3275	12-14	97.2
90000	2750	10-15	96.6	1125	3275	0-12	97.4
9850	2750	5-10	97.0	375	3050	12-24	97.0
9850	2750	0-5	97.9	300	3050	24-28	97.4
9850	2750	10-15	97.1	450	3050	0-12	96.9
9850	2750	15-21	97.3	450	3050	12-24	97.9
9925	2825	5-10	96.9	450	3050	24-33	97.3
9925	2825	10-15	96.5	300	3050	0-12	96.5
9400	2750	10-15	96.8	375	3050	24-30	97.7
9400	2250	0-5	98.6	300	3050	12-24	97.0
9400	2750	5-10	97.4	375	3050	12-24	98.4
9400	2750	20-22	97.4	900	3050	24-26	96.3
9400	2750	15-20	97.5	1050	3050	0-12	97.1
9925	2875	15-17	98.7	900	3050	12-24	97.1
9925	2825	0-5	99.0	1050	3050	12-19	97.6
300	2975	5-10	98.5	975	3050	0-12	97.3
300	2975	0-5	99.5	875	3050	12-24	95.6

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 13

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
900	3050	0-12	97.7	975	3200	12-19	96.6
825	3050	0-12	96.5	1125	3200	12-14	97.4
300	2975	15-20	98.9	1125	3200	0-12	97.2
300	2975	25-30	97.2	975	3200	0-12	96.11
300	2975	30-34	98.1	1050	3200	12-17	97.6
300	2975	10-15	95.7	1050	3200	0-12	97.5
375	2975	35-37	98.7	1200	3350	12-18	98.7
375	2975	5-10	90.5	150	2900	0-5	96.3
375	2975	10-15	95.9	1275	3350	12-16	96.7
375	2975	30-35	99.8	1200	3350	0-12	97.1
375	2975	25-30	96.3	1275	3350	0-12	96.6
375	2975	0-5	96.5	150	2900	15-20	96.1
375	2975	15-20	82.2	150	2900	10-15	96.6
375	2975	20-25	96.1	150	2900	20-22	98.0
300	2900	0-5	95.3	150	2900	5-10	97.2
300	2900	5-10	96.2	9325	2825	0-5	97.2
300	2900	20-25	97.8	9325	2825	5-10	95.5
300	2900	15-20	97.1	9325	2825	15-20	98.3
300	2900	25-30	94.7	9325	2825	10-15	95.5
300	2900	10-15	93.8	225	2900	10-15	95.2
300	2900	30-35	97.1	225	2900	0-5	94.6

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 14

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
225	2900	20-25	97.0	9625	2825	15-17	97.1
225	900	5-10	95.0	9375	2750	0-5	97.0
225	2900	15-20	98.1	9375	2750	5-10	97.8
300	2825	0-5	96.9	9375	2750	10-15	98.1
300	2825	30-33	97.9	9375	2750	15-20	98.0
300	2825	5-10	95.3	9375	2750	20-25	95.6
300	2825	25-30	97.7	9375	2750	25-30	96.9
300	2825	10-15	95.3	9375	2750	30-35	96.0
300	2825	15-20	97.5	9375	2750	35-40	97.8
300	2825	20-25	98.0	9375	2750	40-45	97.4
9425	2825	5-10	96.9	9375	2750	45-47	97.2
9425	2825	0-5	98.3	150	2825	0-5	99.3
9425	2825	15-18	95.8	150	2825	5-10	98.5
9475	2825	10-15	96.7	150	2825	10-15	95.5
90000	2825	15-17	97.6	150	2825	20-22	99.0
90000	2825	10-15	95.9	150	2825	15-20	98.7
90000	2825	5-10	95.4	9475	2750	15-20	97.2
90000	2825	0-5	96.5	9475	2750	0-5	97.4
9625	2825	0-5	96.4	9475	2750	5-10	99.2
9625	2825	5-10	97.3	9475	2750	10-15	98.9
9625	2825	10-15	96.9	9850	2825	5-10	95.4

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 15

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
9925	2750	5-10	98.6	9150	2750	10-15	92.7
9925	2750	0-5	98.1	9150	2750	0-5	96.6
9925	2750	10-15	91.4	9150	2750	15-20	98.4
9925	2750	15-19	97.7	9775	2825	10-15	97.6
9325	2750	10-15	97.1	9775	2825	0-5	98.9
9325	2750	20-23	90.8	9775	2825	5-10	95.2
9325	2750	0-5	96.1	9550	2750	15-20	98.8
9325	2750	5-10	96.4	9550	2750	0-5	97.3
9325	2750	15-20	90.6	9550	2750	5-10	97.4
9700	2825	15-17	96.7	9550	2750	10-15	96.6
9700	2825	10-15	95.7	9075	2750	20-21	96.2
9700	2825	5-10	95.6	9075	2750	0-5	95.9
9700	2825	0-5	95.5	9075	2750	10-15	95.4
75	2825	15-20	98.4	9075	2750	15-20	96.0
75	2825	5-10	97.6	9075	2750	5-10	97.2
75	2825	10-15	98.6	9550	2825	0-5	97.9
75	2825	0-5	93.3	9550	2825	10-15	95.3
9300	2750	30-35	96.7	9550	2825	15-17	97.0
9300	2750	0-5	96.8	9550	2825	5-10	97.4
9300	2750	20-25	91.5	9850	2825	0-5	88.9
9300	2750	5-10	94.0	9850	2825	10-15	93.1

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 16

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
9850	2825	15-17	95.9	9300	2750	15-20	96.3
225	2825	20-25	96.8	9300	2750	10-15	93.5
225	2825	5-10	98.5	9300	2750	25-30	94.6
225	2825	10-15	99.3	1425	5400	10-15	97.4
225	2825	15-20	97.9	1425	5400	5-10	91.8
3075	2825	45-48	98.6	1425	5400	15-16	97.9
3075	2825	20-25	96.6	1425	5400	0-5	96.6
3075	2825	25-30	98.9	1500	5400	10-14	93.1
3075	2825	0-5	95.5	1500	5400	0-5	97.1
3075	2825	40-45	99.0	1500	5400	5-10	95.7
3075	2825	35-40	96.4	1575	5400	0-12	97.8
3075	2825	30-35	98.1	1575	5400	12-17	98.0
3075	2825	15-20	96.5	9625	2750	0-5	96.9
3075	2825	5-10	96.4	9625	2750	5-10	98.1
3075	2825	10-15	94.7	9625	2750	15-20	97.3
9775	2750	0-5	97.4	9625	2750	10-15	97.9
9775	2750	15-20	97.6	1650	5400	15-20	97.8
9775	2750	5-10	97.11	1650	5400	0-5	97.5
9775	2750	10-15	96.3	1650	5400	5-10	97.9
9150	2750	20-23	98.8	1725	5400	10-15	97.0
9150	2750	5-10	97.7	1725	5400	5-10	97.9

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 17

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1650	5400	10-15	95.2	1500	5475	5-10	98.0
1725	5400	0-5	92.6	1500	5475	15-20	98.3
1800	5400	10-15	98.2	1500	5475	0-5	96.5
1800	5400	5-10	97.6	1875	5475	5-10	99.2
1800	5400	0-5	97.8	1800	5475	10-15	97.7
1275	5401	5-10	98.9	1725	5475	0-5	98.3
1125	5400	0-5	97.5	1650	5475	5-10	97.6
1125	5400	5-10	97.7	1650	5475	10-15	98.5
1125	5400	15-18	98.2	225	2825	0-5	97.5
1125	5400	10-15	98.3	1425	5475	10-15	95.8
1200	5400	0-5	97.5	1425	5475	5-10	97.2
1200	5400	15-20	97.7	1425	5475	0-5	97.3
1200	5400	10-15	96.9	1350	5475	10-15	98.4
1050	4500	0-5	96.5	1425	5475	15-20	97.4
1200	5400	15-20	97.7	1350	5475	15-18	96.0
1275	5400	0-5	99.1	1350	5475	5-10	99.1
1275	5401	10-15	98.3	1350	5475	0-5	97.4
1050	4500	5-10	96.9	1275	5475	0-5	98.1
1050	4500	15-18	98.7	1275	5475	15-20	97.6
1575	5475	10-15	97.8	1275	5475	5-10	97.4
1500	5475	10-15	97.6	1275	5475	10-15	96.5

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 18

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1275	5401	15-20	97.9	2025	5625	35-40	97.7
1050	4500	10-15	97.4	2025	5625	40-45	97.9
1575	5475	20-23	96.6	2025	5625	20-25	98.2
1575	5475	0-5	98.1	2025	5625	30-35	98.9
1575	5475	5-10	97.4	2025	5625	5-10	97.2
1575	5475	15-20	96.8	2025	5625	25-30	98.1
1875	5475	15-20	98.9	2025	5625	15-20	97.0
1875	5475	0-5	98.4	2025	5625	10-15	97.4
1800	5475	20-25	97.5	150	5625	5-7	98.7
1875	5475	10-15	99.1	225	5625	0-5	96.5
1800	5475	0-5	98.5	300	5625	5-10	97.5
1800	5475	5-10	97.8	225	5625	5-7	94.9
1800	5475	15-20	98.9	150	5625	0-5	98.0
1725	5475	10-15	97.6	300	5625	0-5	97.8
1725	5475	20-25	98.4	1800	5550	0-5	98.0
1725	5475	5-10	97.9	1955	5550	5-10	98.1
1725	5475	15-20	98.4	1950	5550	0-5	96.6
1650	5475	15-18	96.3	1950	5550	30-34	99.3
1650	5475	0-5	98.6	1950	5550	25-30	99.2
1275	5475	20-24	97.4	1950	5550	20-25	98.0
2025	5625	45-47	93.8	1950	5550	15-20	97.9

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 19

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1950	5550	10-15	97.0	1125	5550	0-5	96.7
1500	5550	10-15	96.6	1050	5550	20-24	95.5
1500	5550	25-30	99.2	1125	5550	5-10	96.4
1500	5550	5-10	96.1	1125	5550	20-24	96.9
1500	5550	20-25	98.2	1200	5550	25-30	96.9
1500	5550	15-20	95.9	1275	5550	5-10	97.1
1425	5550	5-10	97.0	1125	5550	10-15	96.7
1500	5550	30-35	96.5	1200	5550	20-25	98.0
1425	5550	20-21	98.3	1200	5550	0-5	96.0
1350	5550	10-15	97.0	1875	5625	50-55	97.2
1350	5550	5-10	97.1	1875	5625	55-58	97.2
1350	5550	15-20	97.5	1050	5550	15-20	95.2
1425	5550	15-20	98.1	1125	5550	15-20	97.8
1500	5550	0-5	97.9	1200	5550	10-15	97.6
1350	5550	20-24	93.6	1200	5550	15-20	98.8
1425	5550	10-15	97.6	1275	5550	10-15	95.0
1350	5550	0-5	96.4	1200	5550	5-10	97.9
1425	5550	0-5	90.8	1225	5550	15-20	97.6
1050	5550	10-15	94.8	1275	5550	20-25	98.3
1050	5550	0-5	95.6	1275	5550	0-5	97.1
1050	5550	5-10	96.2	1275	5550	25-30	96.9

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 20

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1050	5475	12-18	95.6	1275	5550	5-10	97.0
1125	5475	12-24	97.6	1875	5625	0-5	95.0
1125	5475	0-12	96.7	1875	5625	5-10	97.1
1050	5475	0-12	98.1	1875	5625	10-15	95.3
1200	5475	20-28	96.3	1875	5625	30-35	98.3
1200	5475	0-5	94.6	1875	5625	35-40	97.8
1200	5475	15-20	96.9	1875	5625	40-45	98.2
1200	5475	5-10	97.5	1875	5625	15-20	97.9
1200	5475	10-15	94.2	1875	5625	45-50	98.8
1200	5475	25-28	95.8	1875	5625	20-25	97.6
1050	5550	5-10	95.9	1875	5625	25-30	96.3
1050	5550	10-15	94.2	1875	5550	0-5	97.2
1050	5550	20-24	97.0	1875	5550	35-37	98.4
1050	5550	0-5	93.6	1875	5550	25-30	95.8
1125	5550	10-15	93.4	1875	5550	20-25	95.6
1125	5550	0-5	97.1	1875	5550	10-15	93.6
1125	5550	20-24	95.0	1875	5550	30-35	96.0
1125	5550	5-10	97.4	1875	5550	5-10	98.0
1200	5550	0-5	97.9	1875	5550	15-20	97.8
1200	5550	20-25	97.5	1800	5550	25-30	97.5
1200	5550	25-30	96.5	1800	5550	20-25	98.1

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 21

CLIENT Pathfinder Mines DATE JUNE 8, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1800	5550	30-34	98.9				
1800	5550	10-15	97.9				
1800	5550	15-20	99.7				
1725	5550	0-5	97.9				
1725	5550	30-35	97.3				
1800	5550	5-10	97.9				
1725	5550	35-36	98.2				
1725	5550	25-30	96.1				

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 22

CLIENT Pathfinder Mines DATE JUNE 15, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1725	5550	5-10	97.2	450	5700	10-13	95.7
1725	5550	15-20	97.3	1950	5625	30-35	98.6
1725	5550	10-15	97.8	1950	5625	40-45	99.4
1725	5550	20-25	98.9	1950	5625	25-30	97.9
1650	5550	0-5	97.5	1950	5625	50-55	99.1
1650	5550	15-20	97.9	1950	5625	45-50	97.8
1650	5550	20-25	97.9	1950	5625	35-40	98.8
1650	5550	5-10	98.5	1950	5625	55-56	98.8
1650	5550	10-15	98.0	1950	5625	15-20	99.9
1575	5550	10-15	98.0	1950	5625	10-15	97.6
1575	5550	5-10	97.11	1950	5625	5-10	98.3
1575	5550	15-20	97.5	1950	5625	0-5	97.4
1575	5550	0-5	98.4	1950	5625	20-25	98.1
525	5700	10-15	97.5	075	5700	10-15	94.9
525	5700	0-5	97.9	075	5700	5-10	95.0
525	5700	5-10	97.7	90000	5700	0-5	98.4
525	5700	15-16	98.2	075	5700	15-20	97.5
450	5700	0-5	96.9	075	5700	0-5	97.3
375	5700	0-5	98.4	90000	5700	20-25	97.0
450	5700	5-10	97.6	90000	5700	5-10	94.9
375	5700	5-10	95.2	90000	5700	10-15	96.1

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 23

CLIENT Pathfinder Mines DATE JUNE 15, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
90000	5700	15-20	96.9	975	5625	20-25	97.7
675	5700	10-15	98.5	975	5625	10-15	98.3
675	5700	15-20	99.0	975	5625	15-20	98.6
600	5700	0-5	98.1	975	5700	20-25	99.2
675	5700	20-25	98.6	975	5700	35-39	96.9
675	5700	0-5	98.1	975	5700	30-35	96.7
675	5700	5-10	98.6	975	5700	10-15	97.5
600	5700	10-15	97.8	975	5700	15-20	98.1
600	5700	5-10	98.1	975	5700	5-10	98.1
600	5700	15-20	98.3	975	5700	0-5	61.0
90000	5925	15-20	96.5	225	5775	5-10	96.0
90000	5925	25-28	96.4	750	5700	15-20	97.4
90000	5925	5-10	97.0	225	5775	0-5	95.4
90000	5925	0-5	95.0	750	5700	10-15	98.1
90000	5925	20-25	95.3	225	5775	10-15	96.7
90000	5925	10-15	96.6	225	5775	15-16	97.6
90000	5625	0-5	96.4	750	5700	5-10	97.8
75	5625	10-14	98.0	750	5700	20-25	97.8
75	5625	0-5	95.3	750	5700	0-5	98.0
75	5625	5-10	97.5	450	5775	10-15	95.8
90000	5625	5-6	96.2	375	5775	0-5	97.1

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 24

CLIENT Pathfinder Mines DATE JUNE 15, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
450	5775	5-10	97.6	150	5775	5-10	93.6
450	5775	0-5	97.4	300	5775	5-10	96.0
150	5850	0-5	95.5	975	5700	25-30	97.4
150	5850	15-18	95.6	975	5775	25-30	97.6
075	5850	10-15	96.7	975	5775	40-43	96.6
075	5850	5-10	97.1	975	5775	35-40	98.0
825	5775	10-15	98.3	975	5775	0-5	98.4
825	5775	5-10	97.8	975	5775	10-15	97.1
825	5625	5-10	93.3	975	5775	20-25	97.2
825	5775	0-5	97.3	975	5775	5-10	98.3
825	5625	0-5	95.3	225	5850	10-12	96.5
675	5775	10-13	96.0	450	5850	10-13	96.6
675	5775	0-5	96.8	450	5850	5-10	95.6
675	5775	5-10	95.8	525	5850	10-13	95.4
300	5775	10-15	95.2	600	5850	10-15	92.1
825	5700	5-10	97.8	450	5850	0-5	95.2
825	5700	10-13	98.0	525	5850	0-5	94.4
150	5775	10-12	93.7	225	5850	5-10	96.4
300	5775	0-5	92.6	600	5850	0-5	98.1
825	5700	0-5	91.7	525	5850	5-10	94.3
150	5775	0-5	95.4	225	5850	0-5	95.9

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 25

CLIENT Pathfinder Mines DATE JUNE 15, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
600	5850	5-10	95.3	600	5925	10-15	97.3
075	5850	0-5	95.7	450	5925	5-10	97.0
150	5850	10-15	97.4	450	5925	10-15	93.0
150	5850	5-10	94.4	975	5775	30-35	97.5
075	5925	15-20	95.5	975	5775	15-20	97.0
075	5925	5-10	98.2	975	5625	0-5	98.0
075	5925	10-15	98.4	975	5625	5-10	96.7
075	5925	0-5	96.1	375	5850	5-10	97.2
525	5925	10-15	96.6	300	5825	0-5	96.2
375	5295	0-5	96.7	300	5825	5-10	96.0
525	5925	5-10	97.9	300	5850	10-14	96.6
375	5925	5-10	94.6	375	5850	10-12	95.7
375	5925	10-15	96.8	375	5850	0-10	96.8
300	5925	5-10	96.0	150	5925	5-10	95.9
300	5925	10-15	96.2	150	5925	0-5	96.8
300	5925	0-5	91.2	150	5925	20-24	96.5
300	5925	15-19	96.7	150	5925	10-15	96.2
600	5925	15-20	95.8	90000	5850	0-5	95.3
600	5925	5-10	92.2	90000	5850	5-6	93.4
600	5925	0-5	95.0	225	5925	10-15	96.6
450	5925	0-5	95.6	225	5925	15-20	96.3

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 26

CLIENT Pathfinder Mines DATE JUNE 15, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
225	5925	20-22	95.9	1050	5605	10-15	95.4
225	5925	0-5	95.5	1125	5625	0-5	96.4
225	5925	5-10	97.9	1125	5625	20-25	95.7
075	5925	25-28	96.0	1200	5625	10-15	93.0
075	5925	20-25	91.1	1050	5625	20-25	97.6
150	5925	15-20	96.8	1125	5625	30-35	97.6
900	5700	20-25	98.2	1200	5625	20-25	96.1
900	5700	10-15	95.3	1200	5625	25-30	95.0
900	5700	15-20	98.4	1650	5625	35-40	98.0
900	5700	5-10	93.2	1650	5625	55-57	99.2
900	5700	0-5	84.6	1650	5625	50-55	98.9
1050	5625	25-30	97.4	1650	5625	40-45	97.0
1050	5625	15-20	97.4	1650	5625	20-25	97.7
1125	5625	25-30	94.9	1650	5625	45-50	97.4
1050	5625	0-5	96.7	1650	5625	25-30	95.9
1050	5625	5-10	96.0	1650	5625	15-20	98.7
1125	5625	10-15	96.2	1650	5625	30-35	95.9
1125	5625	15-20	96.8	1650	5625	10-15	93.6
1200	5625	30-35	97.2	1650	5625	5-10	96.6
1125	5625	5-10	95.7	1650	5625	0-5	97.3
1200	5625	15-20	95.6	375	5625	0-5	97.1

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RA PAGE 27

CLIENT Pathfinder Mines DATE JUNE 15, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
375	5625	10-15	96.2	225	5700	5-10	94.5
375	5625	15-18	98.1	900	5700	30-35	96.1
375	5625	5-10	96.8	900	5700	25-30	94.9
450	5625	0-5	95.1	900	5700	35-40	95.3
375	5775	10-13	94.5	1575	5625	25-30	98.5
375	5775	5-10	94.2	1575	5625	45-49	99.7
900	5775	25-30	96.3	1575	5625	40-45	98.1
900	5775	30-35	97.0	1575	5625	20-25	97.4
900	5775	35-40	96.7	1575	5625	5-10	97.6
900	5775	40-43	97.3	1575	5625	0-5	98.3
900	5775	20-25	96.1	1275	5625	5-10	97.8
900	5775	10-15	96.1	1275	5625	15-20	99.2
900	5775	15-20	95.9	1275	5625	0-5	97.0
900	5775	5-10	98.0	1275	5675	10-15	98.1
900	5775	0-5	96.3	1275	5625	20-23	97.6
300	5700	10-11	97.1	900	5625	15-20	96.5
150	5000	0-5	92.6	900	5625	10-15	96.1
300	5700	5-10	96.8	900	5625	5-10	93.8
225	5700	0-5	83.8	900	5625	0-5	99.1
150	5700	5-6	93.5	900	5625	20-25	97.5
300	5700	0-5	95.0	900	5625	25-30	97.5

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 28

CLIENT Pathfinder Mines DATE JUNE 15, 1998 BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
1500	5625	20-25	98.0	1800	5625	25-30	98.6
1500	5625	5-10	98.5	1800	5625	35-40	97.9
1350	5625	20-25	96.9	1800	5625	10-15	98.2
1500	5625	10-15	98.0	1800	5625	15-20	98.0
1500	5625	15-20	97.7	1800	5625	20-25	96.5
1350	5625	10-15	97.1	1800	5625	5-10	98.7
1425	5625	10-15	98.2	525	5625	5-10	98.4
1500	5625	0-5	98.3	525	5625	20-24	97.9
1500	5625	30-35	98.2	600	5625	0-5	96.8
1425	5625	15-20	98.9	525	5625	0-5	97.7
1425	5625	0-10	98.7	525	5625	10-15	98.8
1500	5625	25-30	98.6	525	5625	15-20	98.3
1425	5625	0-5	96.8	600	5625	15-20	97.8
1350	5625	15-20	99.2	600	5625	10-15	100.0
1350	5625	25-30	98.2	600	5625	20-23	98.2
1350	5625	5-10	97.7	600	5625	5-10	97.5
450	5625	15-20	97.6	1800	5625	45-50	97.5
450	5625	5-10	97.5	1800	5625	50-52	98.6
450	5625	10-15	97.6	225	3050	20-25	96.4
1800	5625	30-35	98.7	75	2900	0-5	97.6
1800	5625	40-45	97.2	75	2900	15-16	97.0

SUBJECT 200 WASH RESULTS PROJECT NO. 8152 RX PAGE 29

CLIENT Pathfinder Mines DATE BY JCH

PROJECT Lucky Mc Mine CHECKED BY

NORTHING	EASTING	DEPTH (FT)	-#200 (%)	NORTHING	EASTING	DEPTH (FT)	-#200 (%)
750	5625	5-10	97.9	1725	5625	15-20	98.8
750	5625	15-17	97.8	1725	5625	50-52	98.5
225	3050	15-20	95.3	1725	5625	10-15	97.6
750	5625	10-15	97.8	1725	5625	40-45	97.0
225	3050	0-5	94.1	1725	5625	20-25	98.8
750	5625	0-5	97.2	1725	5625	0-5	96.8
225	3050	25-26	97.8	600	5775	5-10	97.4
75	2900	10-15	96.1	525	5775	10-14	97.5
75	2900	5-10	96.0	600	5775	10-13	97.8
225	3050	10-15	99.3	525	5775	0-5	96.5
225	3050	5-10	97.5	525	5775	5-10	97.6
675	5625	0-5	98.2	600	5775	0-5	95.1
675	5625	20-22	97.9	1575	5625	15-20	96.9
675	5625	10-15	98.0	1575	5625	30-35	98.0
675	5625	5-10	99.6	1575	5625	10-15	98.5
675	5625	15-20	100.0	1575	5625	35-40	98.6
1725	5625	45-50	99.4				
1725	5625	35-40	97.2				
1725	5625	5-10	97.4				
1725	5625	30-35	97.5				
1725	5625	25-30	98.2				

CLAY BORROW
DRILL SAMPLES
SIEVE ANALYSES

1999

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791125	803425	10-15'	98.3
791125	803425	15-20'	97.5
791050	803350	0-5'	97.5
791050	803350	5-10'	96.8
791050	803350	10-15'	96.2
791050	803350	15-20'	96.9
790525	803275	0-5'	97.2
790525	803275	5-10'	97.3
790525	803275	10-15'	96.0
790525	803275	15-20'	96.6
790825	803275	0-5'	90.2
790825	803275	5-10'	95.6
790825	803275	10-15'	98.1
790825	803275	15-20'	97.9
790750	803275	0-5'	96.9
790750	803275	5-10'	96.6
790750	803275	10-15'	94.5
790750	803275	15-20'	97.9
790600	803200	0-5'	97.6
790600	803200	5-10'	98.5
790600	803200	10-15'	97.0
790600	803200	15-20'	96.7
790900	803275	0-5'	96.8
790900	803275	5-10'	97.4
790900	803275	10-15'	99.2
790900	803275	15-20'	94.8
790975	803350	0-5'	94.8
790975	803350	5-10'	96.5
790975	803350	10-15'	97.2
790975	803350	15-20'	99.4
790975	803275	0-5'	97.9
790975	803275	5-10'	95.5
790975	803275	10-15'	94.7

Northing	Easting	Depth	- #200 (%)
790975	803275	15-20'	99.2
790075	803125	0-5'	97.2
790075	803125	5-10'	97.4
790075	803125	10-15'	96.8
790075	803125	15-20'	96.0
790225	803200	0-5'	92.8
790225	803200	5-10'	96.3
790225	803200	10-15'	95.7
790225	803200	15-20'	97.4
790450	803275	0-5'	93.0
790450	803275	5-10'	96.2
790450	803275	10-15'	97.0
790450	803275	15-20'	98.0
791050	803425	0-5'	97.2
791050	803425	5-10'	97.0
791050	803425	10-15'	97.3
791050	803425	15-20'	97.7
791125	803350	0-5'	95.9
791125	803350	5-10'	96.0
791125	803350	10-15'	91.4
791125	803350	15-20'	95.9
790075	803050	0-5'	97.0
790075	803050	5-10'	97.3
790075	803050	10-15'	95.4
790075	803050	15-20'	94.9
790900	803350	0-5'	94.6
790900	803350	5-10'	94.2
790900	803350	10-15'	93.8
790900	803350	15-20'	96.5
790825	803350	0-5'	92.9
790825	803350	5-10'	94.0
790825	803350	10-15'	98.0
790825	803350	15-20'	97.5

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791875	805700	0-5'	41.8*
791875	805700	5-10'	83.3*
791875	805700	10-15'	87.2*
791875	805700	15-20'	93.6
791875	805700	20-25'	92.4
791875	805700	25-30'	92.2
791875	805700	30-35'	97.4
791875	805700	35-40'	98.2
790075	802975	0-5'	97.4
790075	802975	5-10'	98.1
790075	802975	10-15'	96.1
790075	802975	15-20'	90.0
790150	803050	0-5'	94.2
790150	803050	5-10'	96.9
790150	803050	10-15'	96.1
790150	803050	15-20'	92.3
790225	803125	0-5'	92.8
790225	803125	5-10'	96.3
790225	803125	10-15'	93.3
790225	803125	15-20'	97.9
790150	802975	0-5'	93.6
790150	802975	5-10'	96.6
790150	802975	10-15'	97.0
790150	802975	15-20'	97.7
790225	803050	0-5'	93.5
790225	803050	5-10'	95.0
790225	803050	10-15'	97.7
790225	803050	15-20'	96.9
790225	803125	0-5'	93.2
790225	803125	5-10'	95.1
790225	803125	10-15'	94.9
790225	803125	15-20'	97.2
790675	803275	0-5'	86.1*

Northing	Easting	Depth	- #200 (%)
790675	803275	5-10'	93.7
790675	803275	10-15'	98.6
790675	803275	15-20'	98.4
790150	803125	0-5'	95.8
790150	803125	5-10'	93.1
790150	803125	10-15'	97.2
790150	803125	15-20'	93.8
790525	803200	0-5'	97.0
790525	803200	5-10'	96.7
790525	803200	10-15'	96.8
790525	803200	15-20'	97.4
790300	803200	0-5'	94.4
790300	803200	5-10'	97.4
790300	803200	10-15'	97.7
790300	803200	15-20'	98.1
790600	803275	0-5'	95.2
790600	803275	5-10'	94.6
790600	803275	10-15'	98.0
790600	803275	15-20'	96.5
790300	803275	0-5'	92.0
790300	803275	5-10'	94.9
790300	803275	10-15'	98.2
790300	803275	15-20'	97.1
790150	803200	0-5'	92.0
790150	803200	5-10'	96.0
790150	803200	10-15'	97.1
790150	803200	15-20'	96.7
790450	803200	0-5'	98.1
790450	803200	5-10'	97.6
790450	803200	10-15'	98.9
790450	803200	15-20'	95.5
791125	803425	0-5'	94.0
791125	803425	5-10'	96.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
790600	803350	0-5'	95.2
790600	803350	5-10'	92.0
790600	803350	10-15'	95.6
790600	803350	15-20'	96.0
790750	803350	0-5'	94.9
790750	803350	5-10'	96.4
790750	803350	10-15'	93.6
790750	803350	15-20'	97.1
790525	803350	0-5'	94.4
790525	803350	5-10'	91.0
790525	803350	10-15'	96.3
790525	803350	15-20'	97.2
790675	803350	0-5'	83.2*
790675	803350	5-10'	96.1
790676	803350	10-15'	96.1
790675	803350	15-20'	96.7
790375	803275	0-5'	95.1
790375	803275	5-10'	96.4
790375	803275	10-15'	95.6
790375	803275	15-20'	97.5

Northing	Easting	Depth	- #200 (%)

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

8152 RX

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792100	802900	10-15'	98.4
792100	802900	15-20'	98.0
792100	802900	20-22'	
791725	802900	0-5'	80.2*
791725	802900	5-10'	72.1*
791725	802900	10-15'	94.9
791725	802900	15-20'	98.2
791725	802900	20-25'	99.0
791725	802900	25-26'	99.2
792025	802900	0-5'	84.0*
792025	802900	5-10'	95.8
792025	802900	10-15'	99.1
792025	802900	15-20'	99.1
792025	802900	20-21'	98.4
792100	802975	0-5'	90.2
792100	802975	5-10'	97.3
792100	802975	10-15'	98.6
792100	802975	15-17'	98.7
791275	803200	0-5'	83.8*
791275	803200	5-10'	96.3
791275	803200	10-15'	97.1
791275	803200	15-20'	97.6
791275	803200	20-25'	96.9
791275	803200	25-27'	97.9
792175	803350	0-5'	93.8
792175	803350	5-10'	99.2
792175	803350	10-12'	99.1
791650	802825	0-5'	79.6*
791650	802825	5-10'	73.9*
791650	802825	10-15'	77.8*
791650	802825	15-20'	92.4
791650	802825	20-25'	97.7
791650	802825	25-29'	99.1

Northing	Easting	Depth	- #200 (%)
791575	802900	0-5'	72.1*
791575	802900	5-10'	63.7*
791575	802900	10-15'	90.3
791575	802900	15-20'	98.2
791575	802900	20-25'	94.4
791575	802900	25-26'	97.8
792325	802750	0-5'	58.2*
792325	802750	5-10'	91.8
792325	802750	10-15'	84.6*
792325	802750	15-20'	91.2
792325	802750	20-24'	91.4
791500	803425	0-5'	98.3
791500	803425	5-10'	96.3
791500	803425	10-15'	98.3
791500	803425	15-20'	98.7
792175	803200	0-5'	92.9
792175	803200	5-10'	98.9
792175	803200	10-12'	99.1
792100	803125	0-5'	
792100	803125	5-10'	96.9
792100	803125	10-12'	98.1
792550	802900	0-5'	98.4
792550	802900	5-10'	98.0
792550	802900	10-15'	97.0
791875	803050	0-5'	97.1
791875	803050	5-10'	97.1
791875	803050	10-15'	97.7
791875	803050	15-16'	98.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791575	802825	20-25'	95.5
791575	802825	25-30'	99.0
791575	802825	30-31'	99.2
791800	802975	0-5'	76.8*
791800	802975	5-10'	77.0*
791800	802975	10-15'	91.9
791800	802975	15-20'	95.9
792325	803050	0-5'	94.9
792325	803050	5-10'	97.4
792325	803050	10-15'	97.6
792025	802975	0-5'	77.6*
792025	802975	5-10'	88.0*
792025	802975	10-15'	97.4
792025	802975	15-16'	97.1
792475	803350	0-5'	97.1
792475	803350	5-10'	97.3
792475	803350	10-12'	96.2
791950	803425	0-5'	95.6
791950	803425	5-10'	98.0
791950	803425	10-12'	93.9
792475	802975	0-5'	98.0
792475	802975	5-10'	98.5
792475	802975	10-15'	97.6
792475	802975	15-17'	98.2
791500	802975	0-5'	95.4
791500	802975	5-10'	98.2
791500	802975	10-15'	98.3
791500	802975	15-20'	97.8
791500	802975	20-24'	96.7
791650	802975	0-5'	77.1*
791650	802975	5-10'	81.7*
791650	802975	10-15'	97.3
791650	802975	15-20'	96.5

Northing	Easting	Depth	- #200 (%)
791575	802975	0-5'	76.0*
791575	802975	5-10'	94.9
791575	802975	10-15'	97.9
791575	802975	15-20'	98.2
791575	802975	20-22'	97.6
792325	802975	0-5'	96.7
792325	802975	5-10'	97.2
792325	802975	10-15'	97.8
792325	802975	15-18'	97.8
792550	803050	0-5'	98.2
792550	803050	5-10'	98.2
792550	803050	10-11'	97.8
791725	802975	0-5'	73.7*
791725	802975	5-10'	74.6*
791725	802975	10-15'	86.0*
791725	802975	15-20'	98.4
791725	802975	20-21'	95.8
792475	803050	0-5'	98.0
792475	803050	5-10'	98.7
792475	803050	10-14'	99.2
792325	802900	0-5'	98.2
792325	802900	5-10'	99.2
792325	802900	10-15'	98.3
792325	802900	15-20'	98.8
792325	802900	20-24'	98.7
791575	803050	0-5'	96.7
791575	803050	5-10'	99.7
791575	803050	10-15'	98.7
791575	803050	15-19'	98.8
792175	803425	0-5'	94.7
792175	803425	5-10'	98.8
792175	803425	10-12'	99.2
792400	803350	0-5'	94.8

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792025	803050	5-10'	82.8*
792025	803050	10-13'	96.7
791725	803425	0-5'	99.0
791725	803425	5-10'	98.9
791725	803425	10-13'	98.7
791500	803350	0-5'	99.3
791500	803350	5-10'	99.6
791500	803350	10-15'	99.3
791500	803350	15-20'	96.0
791500	803350	20-25'	97.8
791950	802975	0-5'	73.7*
791950	802975	5-10'	82.6*
791950	802975	10-15'	94.1
791950	802975	15-17'	95.9
791650	803275	0-5'	98.9
791650	803275	5-10'	99.0
791650	803275	10-12'	99.4
792250	802975	0-5'	95.8
792250	802975	5-10'	97.5
792250	802975	10-15'	99.2
792250	802975	15-17'	98.5
792550	802975	0-5'	84.8*
792550	802975	5-10'	96.8
791525	802975	0-5'	92.7
791525	802975	5-10'	96.8
791525	802975	10-15'	96.3
791525	802975	15-20'	97.1
791525	802975	20-24'	98.8
792325	803350	0-5'	97.0
792325	803350	5-10'	97.6
792325	803350	10-12'	99.0
792100	803050	0-5'	78.0*
792100	803050	5-10'	93.0

Northing	Easting	Depth	- #200 (%)
792100	803050	10-13'	97.0
791350	803425	0-5'	64.9*
791350	803425	5-10'	99.3
791350	803425	10-15'	98.2
791350	803425	15-20'	97.9
791350	803425	20-25'	96.0
791350	803425	25-30'	98.4
791350	803425	30-32'	99.3
791425	803425	0-5'	99.1
791425	803425	5-10'	98.0
791425	803425	10-15'	99.6
791425	803425	15-20'	99.6
791425	803425	20-25'	94.7
791425	803425	25-27'	98.9
792250	803425	0-5'	82.0*
792250	803425	5-10'	69.7*
792250	803425	10-12'	69.0*
791275	803125	0-5'	96.6
791275	803125	5-10'	98.1
791275	803125	10-15'	93.7
791275	803125	15-20'	98.4
791275	803125	20-25'	99.4
791275	803350	0-5'	99.2
791275	803350	5-10'	99.5
791275	803350	10-15'	98.1
791275	803350	15-20'	96.9
791275	803350	20-25'	99.1
791275	803350	25-30'	98.8
791275	803350	30-31'	97.8
792100	803200	0-5'	97.8
792100	803200	5-10'	98.2
792100	803200	10-12'	99.5
792475	802900	0-5'	98.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792400	803350	5-10'	98.3
792400	803350	10-12'	98.4
792550	803275	0-5'	97.0
792550	803275	5-10'	97.9
792550	803275	10-12'	97.7
792325	803275	0-5'	97.5
792325	803275	5-10'	96.5
792325	803275	10-12'	99.0
791650	803425	0-5'	96.6
791650	803425	5-10'	99.4
791650	803425	10-15'	98.5
791650	803425	15-16'	70.4*
791125	803125	0-5'	96.3
791125	803125	5-10'	97.8
791125	803125	10-15'	98.2
791125	803125	15-20'	98.2
791125	803125	20-25'	99.2
791125	803125	25-28'	98.8
791575	803425	0-5'	99.0
791575	803425	5-10'	99.3
791575	803425	10-15'	95.6
791575	803425	15-20'	99.3
791575	803425	20-23'	99.2
791425	803350	0-5'	99.1
791425	803350	5-10'	98.9
791425	803350	10-15'	99.0
791425	803350	15-20'	99.1
791425	803350	20-25'	98.6
791425	803350	25-29'	98.3
791275	803275	0-5'	99.2
791275	803275	5-10'	99.2
791275	803275	10-15'	98.9
791275	803275	15-20'	97.8

Northing	Easting	Depth	- #200 (%)
791275	803275	20-25'	99.0
791275	803275	25-30'	99.2
791275	803050	0-5'	97.7
791275	803050	5-10'	97.7
791275	803050	10-15'	98.5
791275	803050	15-20'	99.1
791275	803050	20-25'	98.9
791275	803050	25-28'	97.6
791350	803275	0-5'	92.3
791350	803275	5-10'	99.3
791350	803275	10-15'	99.5
791350	803275	15-20'	99.4
791350	803275	20-25'	97.8
792025	803200	0-5'	95.9
792025	803200	5-10'	99.1
792025	803200	10-12'	99.2
792550	803125	0-5'	97.9
792550	803125	5-10'	98.8
792550	803125	10-11'	97.6
791200	803200	0-5'	98.1
791200	803200	5-10'	99.0
791200	803200	10-15'	97.2
791200	803200	15-20'	99.4
791200	803200	20-25'	98.9
791200	803200	25-27'	99.4
791500	803200	0-5'	84.6*
791500	803200	5-10'	97.4
791500	803200	10-15'	99.2
791500	803200	15-17'	99.2
791650	803350	0-5'	97.2
791650	803350	5-10'	99.4
791650	803350	10-15'	96.9
791650	803350	15-20'	99.6

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

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Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792475	802900	5-10'	96.9
792475	802900	10-15'	99.5
792475	802900	15-20'	98.7
791300	803050	0-5'	98.9
791300	803050	5-10'	99.3
791300	803050	10-15'	98.9
791300	803050	15-20'	99.6
791300	803050	20-25'	98.8
791300	803050	25-27'	99.7
791875	803200	0-5'	89.3*
791875	803200	5-10'	97.0
791875	803200	10-12'	98.6
792025	803275	0-5'	78.4*
792025	803275	5-10'	87.0
792025	803275	10-12'	97.4
791875	803425	0-5'	93.4
791875	803425	5-10'	98.9
791875	803425	10-12'	99.0
791350	803200	0-5'	98.9
791350	803200	5-10'	99.1
791350	803200	10-15'	94.3
791350	803200	15-20'	99.6
791350	803200	20-23'	98.9
792475	803200	0-5'	96.1
792475	803200	5-10'	98.9
792475	803200	10-12'	99.1
791800	803425	0-5'	99.3
791800	803425	5-10'	98.1
791800	803425	10-12'	99.3
792100	803425	0-5'	91.5
792100	803425	5-10'	95.8
792100	803425	10-12'	99.2
792400	802975	0-5'	98.2

Northing	Easting	Depth	- #200 (%)
792400	802975	5-10'	98.9
792400	802975	10-15'	99.3
792400	802975	15-19'	99.2
792250	803200	0-5'	96.6
792250	803200	5-10'	94.1
792250	803200	10-12'	99.3
791650	803050	0-5'	91.6
791650	803050	5-10'	99.4
791650	803050	10-15'	99.2
791650	803050	15-18'	98.5
792025	803425	0-5'	82.4*
792025	803425	5-10'	90.6
792025	803425	10-12'	91.2
791375	803050	0-5'	89.2*
791375	803050	5-10'	94.9
791375	803050	10-15'	99.2
791375	803050	15-20'	98.2
791375	803050	20-23'	99.6
792400	802900	0-5'	97.6
792400	802900	5-10'	98.6
792400	802900	10-15'	98.9
792400	802900	15-20'	98.3
791725	803050	0-5'	82.1*
791725	803050	5-10'	89.0*
791725	803050	10-15'	95.3
791725	803050	15-17'	94.6
791950	803050	0-5'	79.2*
791950	803050	5-10'	82.7*
791950	803050	10-14'	95.2
791800	803275	0-5'	71.0*
791800	803275	5-10'	95.0
791800	803275	10-12'	98.4
791450	803050	0-5'	86.7*

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

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Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	-#200 (%)
791450	803050	5-10'	98.0
791450	803050	10-15'	99.1
791450	803050	15-20'	97.9
791450	803050	20-21'	98.6
792250	803050	0-5'	99.3
792250	803050	5-10'	99.4
792250	803050	10-12'	98.0
792100	803350	0-5'	81.5*
792100	803350	5-10'	90.9
792100	803350	10-12'	97.1
791950	802825	0-5'	93.7
791950	802825	5-10'	98.9
791950	802825	10-15'	99.2
791950	802825	15-20'	99.1
791950	802825	20-24'	97.5
792025	802825	0-5'	98.5
792025	802825	5-10'	98.7
792025	802825	10-15'	99.0
792025	802825	15-20'	98.3
792025	802825	20-25'	98.9
792025	802825	25-27'	98.9
791500	802825	0-5'	77.0*
791500	802825	5-10'	72.8*
791500	802825	10-15'	84.2*
791500	802825	15-20'	98.1
791500	802825	20-25'	98.4
791500	802825	25-30'	97.7
791500	802825	30-31'	97.9
791800	802900	0-5'	72.9*
791800	802900	5-10'	74.4*
791800	802900	10-15'	
791800	802900	15-20'	97.1
791800	802900	20-22'	95.6

Northing	Easting	Depth	-#200 (%)
792250	802900	0-5'	96.7
792250	802900	5-10'	95.4
792250	802900	10-15'	98.8
792250	802900	15-20'	98.0
792250	802900	20-22'	98.4
791875	802900	0-5'	74.2*
791875	802900	5-10'	76.3*
791875	802900	10-15'	89.3
791875	802900	15-20'	96.9
791875	802900	20-21'	94.4
792400	803200	0-5'	96.2
792400	803200	5-10'	98.4
792400	803200	10-12'	98.8
792175	802900	0-5'	97.2
792175	802900	5-10'	98.2
792175	802900	10-15'	98.8
792175	802900	15-20'	98.7
792175	802900	20-21'	98.8
791650	802900	0-5'	72.5*
791650	802900	5-10'	69.9*
791650	802900	10-15'	77.7*
791650	802900	15-20'	94.7
791650	802900	20-25'	98.5
792250	802750	0-5'	98.0
792250	802750	5-10'	95.8
792250	802750	10-15'	
792250	802750	15-20'	97.6
791950	802900	0-5'	99.0
791950	802900	5-10'	78.4*
791950	802900	10-15'	82.6*
791950	802900	15-20'	96.0
792100	802900	0-5'	99.4
792100	802900	5-10'	98.1

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792550	803350	10-12'	97.1

Northing	Easting	Depth	- #200 (%)

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

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Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material

Northing	Easting	Depth	- #200 (%)
792475	802675	0-5'	99.0
792475	802675	5-10'	98.8
792475	802675	10-11'	99.1
792550	802750	0-5'	98.3
792550	802750	5-9'	99.2
792550	802825	0-5'	99.0
792550	802825	5-10'	98.0
792325	802600	0-5'	83.5*
792325	802600	5-10'	97.6
792325	802600	10-15'	98.9
792325	802600	15-20'	98.7
792325	802600	20-22'	98.7
792475	802600	0-5'	76.5*
792475	802600	5-10'	91.4
792475	802600	10-14'	96.7
792550	802675	0-5'	91.4
792550	802675	5-9'	97.8
792400	802600	0-5'	72.7*
792400	802600	5-10'	92.2
792400	802600	10-15'	97.1
792400	802600	15-20'	97.5
792325	802675	0-5'	97.5
792325	802675	5-10'	97.4
792325	802675	10-15'	97.7
792325	802675	15-20'	92.5
792250	802600	0-5'	98.4
792250	802600	5-10'	99.1
792250	802600	10-15'	97.6
792250	802600	15-20'	97.2
792250	802600	20-22'	99.1
792400	802750	0-5'	99.0
792400	802750	5-10'	85.6*
792400	802750	10-15'	97.1

Northing	Easting	Depth	- #200 (%)
792400	802750	15-17'	99.2
792475	802825	0-5'	97.2
792475	802825	5-10'	98.5
792475	802825	10-15'	98.5
792475	802825	15-16'	99.3
792400	802675	0-5'	95.1
792400	802675	5-10'	97.5
792400	802675	10-15'	97.6
792475	802750	0-5'	98.1
792475	802750	5-10'	98.2
792475	802750	10-12'	97.6
791375	803125	0-5'	97.8
791375	803125	5-10'	98.9
791375	803125	10-15'	99.2
791375	803125	15-20'	98.8
791375	803125	20-23'	99.2
791450	803125	0-5'	93.9
791450	803125	5-10'	98.7
791450	803125	10-15'	98.7
791450	803125	15-20'	99.3
791300	803125	0-5'	93.0
791300	803125	5-10'	98.1
791300	803125	10-15'	98.9
791300	803125	15-20'	92.4
791300	803125	20-24'	98.9
792175	803125	0-5'	97.2
792175	803125	5-9'	97.9
792250	803125	0-5'	98.6
792250	803125	5-9'	97.3
792400	803125	0-5'	95.8
792400	803125	5-9'	98.7
792325	803125	0-5'	97.0
792325	803125	5-8'	95.7

Specifications: 95% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791650	803125	0-5'	93.3
791650	803125	5-10'	97.8
791650	803125	10-15'	98.4
791650	803125	15-16'	98.3
791800	803125	0-5'	82.0*
791800	803125	5-10'	90.9
791800	803125	10-14'	97.1
791725	803125	0-5'	88.9*
791725	803125	5-10'	97.2
791725	803125	10-14'	98.5
791875	803125	0-5'	83.3*
791875	803125	5-10'	84.4*
791875	803125	10-14'	96.0
791950	803125	0-5'	71.8*
791950	803125	5-10'	90.2
791950	803125	10-12'	95.0
792025	803125	0-5'	64.7*
792025	803125	5-9'	94.3
792100	803125	0-5'	79.3*
792100	803125	5-9'	98.3
792475	803125	0-5'	98.1
792475	803125	5-9'	98.6
791525	803125	0-5'	88.5*
791525	803125	5-10'	98.7
791525	803125	10-15'	96.5
791525	803125	15-18'	99.3
791575	803125	0-5'	92.9
791575	803125	5-10'	97.7
791575	803125	10-15'	99.3
791575	803125	10-16'	98.9
791650	802600	0-5'	96.8
791650	802600	5-10'	97.9
791650	802600	10-15'	98.1

Northing	Easting	Depth	- #200 (%)
791650	802600	15-20'	97.2
791650	802600	20-25'	96.7
791650	802600	25-30'	99.2
791650	802600	30-35'	98.0
791650	802600	35-39'	98.3
791725	802600	0-5'	99.1
791725	802600	5-10'	98.5
791725	802600	10-15'	96.9
791725	802600	15-20'	98.4
791725	802600	20-25'	98.4
791725	802600	25-30'	98.0
791725	802600	30-35'	98.2
791725	802600	35-39'	99.3
792025	802600	0-5'	96.1
792025	802600	5-10'	97.1
792025	802600	10-15'	97.3
792025	802600	15-20'	97.1
792025	802600	20-25'	95.6
792025	802600	25-30'	96.6
791950	802600	0-5'	97.3
791950	802600	5-10'	96.9
791950	802600	10-15'	96.8
791950	802600	15-20'	93.9
791800	802600	0-5'	96.0
791800	802600	5-10'	97.0
791800	802600	10-15'	95.4
791800	802600	15-20'	98.3
791800	802600	20-25'	97.7
791800	802600	25-30'	97.3
791800	802600	30-35'	98.1
791800	802600	35-40'	98.5
791500	802600	0-5'	82.9*
791500	802600	5-10'	95.2

Specifications: 95% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material

Northing	Easting	Depth	- #200 (%)
792475	802675	0-5'	99.0
792475	802675	5-10'	98.8
792475	802675	10-11'	99.1
792550	802750	0-5'	98.3
792550	802750	5-9'	99.2
792550	802825	0-5'	99.0
792550	802825	5-10'	98.0
792325	802600	0-5'	
792325	802600	5-10'	97.6
792325	802600	10-15'	98.9
792325	802600	15-20'	98.7
792325	802600	20-22'	98.7
792475	802600	0-5'	
792475	802600	5-10'	91.4
792475	802600	10-14'	96.7
792550	802675	0-5'	91.4
792550	802675	5-9'	97.8
792400	802600	0-5'	
792400	802600	5-10'	92.2
792400	802600	10-15'	97.1
792400	802600	15-20'	97.5

Northing	Easting	Depth	- #200 (%)

Specifications: 95% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material

Northing	Easting	Depth	- #200 (%)
792475	802675	0-5'	99.0
792475	802675	5-10'	98.8
792475	802675	10-11'	99.1
792550	802750	0-5'	98.3
792550	802750	5-9'	99.2
792550	802825	0-5'	99.0
792550	802825	5-10'	98.0
792325	802600	0-5'	83.5*
792325	802600	5-10'	97.6
792325	802600	10-15'	98.9
792325	802600	15-20'	98.7
792325	802600	20-22'	98.7
792475	802600	0-5'	76.5*
792475	802600	5-10'	91.4
792475	802600	10-14'	96.7
792550	802675	0-5'	91.4
792550	802675	5-9'	97.8
792400	802600	0-5'	72.7*
792400	802600	5-10'	92.2
792400	802600	10-15'	97.1
792400	802600	15-20'	97.5
792325	802675	0-5'	97.5
792325	802675	5-10'	97.4
792325	802675	10-15'	97.7
792325	802675	15-20'	92.5
792250	802600	0-5'	98.4
792250	802600	5-10'	99.1
792250	802600	10-15'	97.6
792250	802600	15-20'	97.2
792250	802600	20-22'	99.1
792400	802750	0-5'	98.0
792400	802750	5-10'	85.6*
792400	802750	10-15'	97.1

Northing	Easting	Depth	- #200 (%)
792400	802750	15-17'	99.2
792475	802825	0-5'	97.2
792475	802825	5-10'	98.5
792475	802825	10-15'	98.5
792475	802825	15-16'	99.3
792400	802675	0-5'	95.1
792400	802675	5-10'	97.5
792400	802675	10-15'	97.6
792475	802750	0-5'	98.1
792475	802750	5-10'	98.2
792475	802750	10-12'	97.6
791375	803125	0-5'	97.8
791375	803125	5-10'	98.9
791375	803125	10-15'	99.2
791375	803125	15-20'	98.8
791375	803125	20-23'	99.2
791450	803125	0-5'	93.9
791450	803125	5-10'	98.7
791450	803125	10-15'	98.7
791450	803125	15-20'	99.3
791300	803125	0-5'	93.0
791300	803125	5-10'	98.1
791300	803125	10-15'	98.9
791300	803125	15-20'	92.4
791300	803125	20-24'	98.9
792175	803125	0-5'	97.2
792175	803125	5-9'	97.9
792250	803125	0-5'	98.6
792250	803125	5-9'	97.3
792400	803125	0-5'	95.8
792400	803125	5-9'	98.7
792325	803125	0-5'	97.0
792325	803125	5-8'	95.7

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791650	803125	0-5'	93.3
791650	803125	5-10'	97.8
791650	803125	10-15'	98.4
791650	803125	15-16'	98.3
791800	803125	0-5'	82.0*
791800	803125	5-10'	90.9
791800	803125	10-14'	97.1
791725	803125	0-5'	88.9*
791725	803125	5-10'	97.2
791725	803125	10-14'	98.5
791875	803125	0-5'	83.3*
791875	803125	5-10'	84.4*
791875	803125	10-14'	96.0
791950	803125	0-5'	71.8*
791950	803125	5-10'	90.2
791950	803125	10-12'	95.0
792025	803125	0-5'	64.7*
792025	803125	5-9'	94.3
792100	803125	0-5'	79.3*
792100	803125	5-9'	98.3
792475	803125	0-5'	98.1
792475	803125	5-9'	98.6
791525	803125	0-5'	88.5*
791525	803125	5-10'	98.7
791525	803125	10-15'	96.5
791525	803125	15-18'	99.3
791575	803125	0-5'	92.9
791575	803125	5-10'	97.7
791575	803125	10-15'	99.3
791575	803125	15-16'	98.9
791650	802600	0-5'	96.8
791650	802600	5-10'	97.9
791650	802600	10-15'	98.1

Northing	Easting	Depth	- #200 (%)
791650	802600	15-20'	97.2
791650	802600	20-25'	96.7
791650	802600	25-30'	99.2
791650	802600	30-35'	98.0
791650	802600	35-39'	98.3
791725	802600	0-5'	99.1
791725	802600	5-10'	98.5
791725	802600	10-15'	96.9
791725	802600	15-20'	98.4
791725	802600	20-25'	98.4
791725	802600	25-30'	98.0
791725	802600	30-35'	98.2
791725	802600	35-39'	99.3
792025	802600	0-5'	96.1
792025	802600	5-10'	97.1
792025	802600	10-15'	97.3
792025	802600	15-20'	97.1
792025	802600	20-25'	95.6
792025	802600	25-30'	96.6
791950	802600	0-5'	97.3
791950	802600	5-10'	96.9
791950	802600	10-15'	96.8
791950	802600	15-20'	93.9
791800	802600	0-5'	96.0
791800	802600	5-10'	97.0
791800	802600	10-15'	95.4
791800	802600	15-20'	98.3
791800	802600	20-25'	97.7
791800	802600	25-30'	97.3
791800	802600	30-35'	98.1
791800	802600	35-40'	98.5
791500	802600	0-5'	82.9*
791500	802600	5-10'	95.2

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791500	802600	10-15'	96.9
791500	802600	15-20'	97.2
791500	802600	20-25'	95.0
791500	802600	25-30'	91.3
791500	802600	30-35'	98.3
791500	802600	35-40'	98.5
791500	802600	40-43'	97.2
791575	802600	0-5'	82.2*
791575	802600	5-10'	77.0*
791575	802600	10-15'	95.7
791575	802600	15-20'	97.9
791575	802600	20-25'	97.9
791575	802600	25-30'	97.1
791575	802600	30-35'	97.9
791575	802600	35-40'	98.5
791575	802600	40-41'	97.6
791875	802600	0-5'	94.0
791875	802600	5-10'	95.9
791875	802600	10-15'	97.6
791875	802600	15-20'	98.5
791875	802600	20-25'	97.3
791875	802600	25-30'	97.1
791875	802600	30-35'	98.2
791875	802600	35-40'	98.0
792025	802675	0-5'	96.0
792025	802675	5-10'	94.8
792025	802675	10-15'	98.4
792025	802675	15-20'	97.9
791725	802675	0-5'	97.7
791725	802675	5-10'	97.8
791725	802675	10-15'	98.8
791725	802675	15-20'	96.3
791725	802675	20-25'	99.0

Northing	Easting	Depth	- #200 (%)
791725	802675	25-30'	90.2
791725	802675	30-33'	75.9*
792100	802675	0-5'	97.5
792100	802675	5-10'	98.6
792100	802675	10-15'	98.9
792100	802675	15-20'	98.9
791650	802675	0-5'	96.0
791650	802675	5-10'	98.6
791650	802675	10-15'	98.0
791650	802675	15-20'	98.3
791650	802675	20-25'	90.7
791650	802675	25-30'	80.5*
791650	802675	30-35'	84.2*
791875	802675	0-5'	97.1
791875	802675	5-10'	96.0
791875	802675	10-15'	95.5
791875	802675	15-20'	97.7
791875	802675	20-25'	98.6
791875	802675	25-30'	98.1
791875	802675	30-35'	99.3
791800	802750	0-5'	76.5*
791800	802750	5-10'	91.4
791800	802750	10-15'	98.6
791800	802750	15-20'	98.4
791800	802750	20-25'	97.9
791800	802750	25-28'	98.5
792250	802675	0-5'	98.0
792250	802675	5-10'	97.6
792250	802675	10-15'	98.6
792250	802675	15-20'	99.1
792250	802675	20-24'	98.4
792250	802825	0-5'	95.4
792250	802825	5-10'	98.0

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792250	802825	10-15'	97.6
792250	802825	15-20'	97.8
791950	802750	0-5'	97.4
791950	802750	5-10'	96.0
791950	802750	10-15'	97.7
791950	802750	15-20'	97.3
791950	802750	20-25'	97.0
791950	802750	25-30'	97.9
791725	802750	0-5'	79.4*
791725	802750	5-10'	76.7*
791725	802750	10-15'	84.9*
791725	802750	15-20'	98.0
791725	802750	20-25'	97.4
791725	802750	25-30'	95.6
791500	802750	0-5'	73.3*
791500	802750	5-10'	70.2*
791500	802750	10-15'	97.8
791500	802750	15-20'	98.2
791500	802750	20-25'	98.0
791500	802750	25-30'	99.3
791500	802750	30-35'	98.5
791650	802750	0-5'	72.4*
791650	802750	5-10'	67.3*
791650	802750	10-15'	72.4*
791650	802750	15-20'	93.4
791650	802750	20-25'	98.5
791650	802750	25-30'	98.9
791650	802750	30-33'	99.1
792175	802825	0-5'	96.3
792175	802825	5-10'	97.0
792175	802825	10-15'	95.5
792175	802825	15-20'	98.5
792175	802825	20-25'	97.9

Northing	Easting	Depth	- #200 (%)
791950	802675	0-5'	95.0
791950	802675	5-10'	95.4
791950	802675	10-15'	97.6
791950	802675	15-20'	98.7
791950	802675	20-25'	99.1
791950	802675	25-30'	98.6
791950	802675	30-35'	98.6
791950	802675	35-36'	98.5
791800	802675	0-5'	97.2
791800	802675	5-10'	97.6
791800	802675	10-15'	97.3
791800	802675	15-20'	97.8
792025	802750	0-5'	94.1
792025	802750	5-10'	97.1
792025	802750	10-15'	97.3
792025	802750	15-20'	97.1
792025	802750	20-25'	96.3
792025	802750	25-30'	97.8
792025	802750	30-31'	98.3
791875	802750	0-5'	98.5
791875	802750	5-10'	98.1
791875	802750	10-15'	97.9
791875	802750	15-20'	98.4
791875	802750	20-25'	96.4
791875	802750	25-29'	98.9
792325	802825	0-5'	95.5
792325	802825	5-10'	95.0
792325	802825	10-15'	97.8
792325	802825	15-20'	96.5
791575	802750	0-5'	83.4*
791575	802750	5-10'	71.2*
791575	802750	10-15'	77.2*
791575	802750	15-20'	96.9

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791875	805700	0-5'	41.8*
791875	805700	5-10'	83.3*
791875	805700	10-15'	87.2*
791875	805700	15-20'	93.6
791875	805700	20-25'	92.4
791875	805700	25-30'	92.2
791875	805700	30-35'	97.4
791875	805700	35-40'	98.2
790075	802975	0-5'	97.4
790075	802975	5-10'	98.1
790075	802975	10-15'	96.1
790075	802975	15-20'	90.0
790150	803050	0-5'	94.2
790150	803050	5-10'	96.9
790150	803050	10-15'	96.1
790150	803050	15-20'	92.3
790225	803125	0-5'	92.8
790225	803125	5-10'	96.3
790225	803125	10-15'	93.3
790225	803125	15-20'	97.9
790150	802975	0-5'	93.6
790150	802975	5-10'	96.6
790150	802975	10-15'	97.0
790150	802975	15-20'	97.7
790225	803050	0-5'	93.5
790225	803050	5-10'	95.0
790225	803050	10-15'	97.7
790225	803050	15-20'	96.9
790225	803125	0-5'	93.2
790225	803125	5-10'	95.1
790225	803125	10-15'	94.9
790225	803125	15-20'	97.2
790675	803275	0-5'	

NEW ↓

790300 803275

Northing	Easting	Depth	- #200 (%)
790675	803275	5-10'	93.7
790675	803275	10-15'	98.6
790675	803275	15-20'	98.4
790150	803125	0-5'	95.8
790150	803125	5-10'	93.1
790150	803125	10-15'	97.2
790150	803125	15-20'	93.8
790525	803200	0-5'	97.0
790525	803200	5-10'	96.7
790525	803200	10-15'	96.8
790525	803200	15-20'	97.4
790300	803200	0-5'	94.4
790300	803200	5-10'	97.4
790300	803200	10-15'	97.7
790300	803200	15-20'	98.1
790600	803275	0-5'	95.2
790600	803275	5-10'	94.6
790600	803275	10-15'	98.0
790600	803275	15-20'	96.5
~~790225?~~	~~803200~~	0-5'	92.0
~~790225?~~	~~803200~~	5-10'	
~~790225?~~	~~803200~~	10-15'	
~~790225?~~	~~803200~~	15-20'	97.1
790150	803200	0-5'	92.0
790150	803200	5-10'	
790150	803200	10-15'	97.1
790150	803200	15-20'	
790450	803200	0-5'	98.1
790450	803200	5-10'	
790450	803200	10-15'	98.9
790450	803200	15-20'	
791125	803425	0-5'	
791125	803425	5-10'	

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791125	803425	10-15'	98.3
791125	803425	15-20'	97.5
791050	803350	0-5'	97.5
791050	803350	5-10'	
791050	803350	10-15'	
791050	803350	15-20'	96.9
790525	803275	0-5'	
790525	803275	5-10'	97.3
790525	803275	10-15'	96.0
790525	803275	15-20'	
790825	803275	0-5'	
790825	803275	5-10'	95.6
790825	803275	10-15'	98.1
790825	803275	15-20'	97.9
790750	803275	0-5'	96.9
790750	803275	5-10'	96.6
790750	803275	10-15'	94.5
790750	803275	15-20'	97.9
790600	803200	0-5'	97.6
790600	803200	5-10'	98.5
790600	803200	10-15'	97.0
790600	803200	15-20'	96.7
790900	803275	0-5'	96.8
790900	803275	5-10'	97.4
790900	803275	10-15'	99.2
790900	803275	15-20'	94.8
790975	803350	0-5'	
790975	803350	5-10'	
790975	803350	10-15'	97.2
790975	803350	15-20'	99.4
790975	803275	0-5'	97.9
790975	803275	5-10'	
790975	803275	10-15'	

Northing	Easting	Depth	- #200 (%)
790975	803275	15-20'	99.2
790075	803125	0-5'	97.2
790075	803125	5-10'	97.4
790075	803125	10-15'	
790075	803125	15-20'	
790225	803200	0-5'	
790225	803200	5-10'	
790225	803200	10-15'	95.7
790225	803200	15-20'	
790450	803275	0-5'	
790450	803275	5-10'	
790450	803275	10-15'	
790450	803275	15-20'	98.0
791050	803425	0-5'	97.2
791050	803425	5-10'	
791050	803425	10-15'	
791050	803425	15-20'	97.7
791125	803350	0-5'	
791125	803350	5-10'	
791125	803350	10-15'	
791125	803350	15-20'	
790075	803050	0-5'	
790075	803050	5-10'	
790075	803050	10-15'	
790075	803050	15-20'	
790900	803350	0-5'	
790900	803350	5-10'	
790900	803350	10-15'	
790900	803350	15-20'	
790825	803350	0-5'	
790825	803350	5-10'	
790825	803350	10-15'	
790825	803350	15-20'	

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
790600	803350	0-5'	
790600	803350	5-10'	
790600	803350	10-15'	
790600	803350	15-20'	
790750	803350	0-5'	
790750	803350	5-10'	
790750	803350	10-15'	
790750	803350	15-20'	
790525	803350	0-5'	
790525	803350	5-10'	
790525	803350	10-15'	
790525	803350	15-20'	
790650	803350	0-5'	
790650	803350	5-10'	
790650	803350	10-15'	
790650	803350	15-20'	
790375	803275	0-5'	
790375	803275	5-10'	
790375	803275	10-15'	
790375	803275	15-20'	

Northing	Easting	Depth	- #200 (%)

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791875	805700	0-5'	41.8*
791875	805700	5-10'	83.3*
791875	805700	10-15'	87.2*
791875	805700	15-20'	93.6
791875	805700	20-25'	92.4
791875	805700	25-30'	92.2
791875	805700	30-35'	97.4
791875	805700	35-40'	98.2
790075	802975	0-5'	97.4
790075	802975	5-10'	98.1
790075	802975	10-15'	96.1
790075	802975	15-20'	90.0
790150	803050	0-5'	94.2
790150	803050	5-10'	96.9
790150	803050	10-15'	96.1
790150	803050	15-20'	92.3
790225	803125	0-5'	92.8
790225	803125	5-10'	96.3
790225	803125	10-15'	93.3
790225	803125	15-20'	97.9
790150	802975	0-5'	93.6
790150	802975	5-10'	96.6
790150	802975	10-15'	97.0
790150	802975	15-20'	97.7
790225	803050	0-5'	93.5
790225	803050	5-10'	95.0
790225	803050	10-15'	97.7
790225	803050	15-20'	96.9
790225	803125	0-5'	93.2
790225	803125	5-10'	95.1
790225	803125	10-15'	94.9
790225	803125	15-20'	97.2
790675	803275	0-5'	86.1*

Northing	Easting	Depth	- #200 (%)
790675	803275	5-10'	93.7
790675	803275	10-15'	98.6
790675	803275	15-20'	98.4
790150	803125	0-5'	95.8
790150	803125	5-10'	93.1
790150	803125	10-15'	97.2
790150	803125	15-20'	93.8
790525	803200	0-5'	97.0
790525	803200	5-10'	96.7
790525	803200	10-15'	96.8
790525	803200	15-20'	97.4
790300	803200	0-5'	94.4
790300	803200	5-10'	97.4
790300	803200	10-15'	97.7
790300	803200	15-20'	98.1
790600	803275	0-5'	95.2
790600	803275	5-10'	94.6
790600	803275	10-15'	98.0
790600	803275	15-20'	96.5
790225?	803200	0-5'	92.0
790225?	803200	5-10'	94.9
790225?	803200	10-15'	98.2
790225?	803200	15-20'	97.1
790150	803200	0-5'	92.0
790150	803200	5-10'	96.0
790150	803200	10-15'	97.1
790150	803200	15-20'	96.7
790450	803200	0-5'	98.1
790450	803200	5-10'	97.6
790450	803200	10-15'	98.9
790450	803200	15-20'	95.5
791125	803425	0-5'	94.0
791125	803425	5-10'	96.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791125	803425	10-15'	98.3
791125	803425	15-20'	97.5
791050	803350	0-5'	97.5
791050	803350	5-10'	96.8
791050	803350	10-15'	96.2
791050	803350	15-20'	96.9
790525	803275	0-5'	97.2
790525	803275	5-10'	97.3
790525	803275	10-15'	96.0
790525	803275	15-20'	96.6
790825	803275	0-5'	90.2
790825	803275	5-10'	95.6
790825	803275	10-15'	98.1
790825	803275	15-20'	97.9
790750	803275	0-5'	96.9
790750	803275	5-10'	96.6
790750	803275	10-15'	94.5
790750	803275	15-20'	97.9
790600	803200	0-5'	97.6
790600	803200	5-10'	98.5
790600	803200	10-15'	97.0
790600	803200	15-20'	96.7
790900	803275	0-5'	96.8
790900	803275	5-10'	97.4
790900	803275	10-15'	99.2
790900	803275	15-20'	94.8
790975	803350	0-5'	94.8
790975	803350	5-10'	96.5
790975	803350	10-15'	97.2
790975	803350	15-20'	99.4
790975	803275	0-5'	97.9
790975	803275	5-10'	95.5
790975	803275	10-15'	94.7

Northing	Easting	Depth	- #200 (%)
790975	803275	15-20'	99.2
790075	803125	0-5'	97.2
790075	803125	5-10'	97.4
790075	803125	10-15'	96.8
790075	803125	15-20'	96.0
790225	803200	0-5'	92.8
790225	803200	5-10'	96.3
790225	803200	10-15'	95.7
790225	803200	15-20'	97.4
790450	803275	0-5'	93.0
790450	803275	5-10'	96.2
790450	803275	10-15'	97.0
790450	803275	15-20'	98.0
791050	803425	0-5'	97.2
791050	803425	5-10'	97.0
791050	803425	10-15'	97.3
791050	803425	15-20'	97.7
791125	803350	0-5'	95.9
791125	803350	5-10'	96.0
791125	803350	10-15'	91.4
791125	803350	15-20'	95.9
790075	803050	0-5'	97.0
790075	803050	5-10'	97.3
790075	803050	10-15'	95.4
790075	803050	15-20'	95.0
790900	803350	0-5'	94.6
790900	803350	5-10'	94.2
790900	803350	10-15'	93.8
790900	803350	15-20'	96.5
790825	803350	0-5'	92.9
790825	803350	5-10'	94.0
790825	803350	10-15'	98.0
790825	803350	15-20'	97.5

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
790600	803350	0-5'	95.2
790600	803350	5-10'	92.0
790600	803350	10-15'	95.6
790600	803350	15-20'	96.0
790750	803350	0-5'	94.9
790750	803350	5-10'	96.4
790750	803350	10-15'	93.6
790750	803350	15-20'	97.1
790525	803350	0-5'	94.5
790525	803350	5-10'	91.0
790525	803350	10-15'	96.3
790525	803350	15-20'	97.2
790675	803350	0-5'	83.2*
790675	803350	5-10'	96.1
790675	803350	10-15'	96.1
790675	803350	15-20'	96.7
790375	803275	0-5'	95.1
790375	803275	5-10'	96.4
790375	803275	10-15'	95.6
790375	803275	15-20'	97.5

Northing	Easting	Depth	- #200 (%)

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792475	803275	0-5'	98.3
792475	803275	5-10'	98.4
792475	803275	10-12'	99.2
791875	803275	0-5'	89.0*
791875	803275	5-10'	86.1*
791875	803275	10-12'	97.5
791575	803350	0-5'	99.4
791575	803350	5-10'	99.1
791575	803350	10-15'	99.2
791575	803350	15-20'	99.5
791575	803350	20-22'	84.2*
792100	803275	0-5'	96.2
792100	803275	5-10'	99.5
792100	803275	10-12'	99.1
792175	803275	0-5'	96.1
792175	803275	5-10'	98.9
792175	803275	10-12'	99.0
792025	803350	0-5'	86.2*
792025	803350	5-10'	79.7*
792025	803350	10-12'	95.6
792250	803275	0-5'	91.9
792250	803275	5-10'	94.8
792250	803275	10-12'	98.8
791950	803350	0-5'	81.8*
791950	803350	5-10'	99.0
791950	803350	10-12'	92.3
791725	803275	0-5'	87.2*
791725	803275	5-10'	98.8
791725	803275	10-12'	96.7
791875	803350	0-5'	80.3*
791875	803350	5-10'	98.8
791875	803350	10-12'	98.1
791500	803275	0-5'	99.0

Northing	Easting	Depth	- #200 (%)
791500	803275	5-10'	99.1
791500	803275	10-15'	99.6
791500	803275	15-20'	99.1
791500	803275	20-23'	95.5
791425	803275	0-5'	99.0
791425	803275	5-10'	99.4
791425	803275	10-15'	92.7
791425	803275	15-20'	99.6
791425	803275	20-24'	99.6
791575	803275	0-5'	98.2
791575	803275	5-10'	98.4
791575	803275	10-15'	98.9
791575	803275	15-16'	99.7
791800	803350	0-5'	93.2
791800	803350	5-10'	99.0
791800	803350	10-12'	99.2
791425	803200	0-5'	85.4*
791425	803200	5-10'	95.4
791425	803200	10-15'	99.6
791425	803200	15-20'	97.2
792250	803350	0-5'	98.6
792250	803350	5-10'	99.7
792250	803350	10-12'	99.4
792400	803050	0-5'	96.7
792400	803050	5-10'	96.9
792400	803050	10-13'	97.0
791950	803200	0-5'	87.0*
791950	803200	5-10'	84.8*
791950	803200	10-12'	97.2
791650	803200	0-5'	85.4*
791650	803200	5-10'	95.2
791650	803200	10-13'	99.5
792325	803200	0-5'	97.6

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792325	803200	5-10'	98.7
792325	803200	10-12'	98.5
791800	803200	0-5'	83.6*
791800	803200	5-10'	96.0
791800	803200	10-12'	98.8
791725	803200	0-5'	76.6*
791725	803200	5-10'	91.9
791725	803200	10-12'	96.7
791875	802975	0-5'	76.7*
791875	802975	5-10'	83.2*
791875	802975	10-15'	93.5
791875	802975	15-18'	96.5
792550	803200	0-5'	96.5
792550	803200	5-10'	96.9
792550	803200	10-12'	96.5
791725	803350	0-5'	97.1
791725	803350	5-10'	98.9
791725	803350	10-13'	99.0
791800	802825	0-5'	88.9*
791800	802825	5-10'	76.7*
791800	802825	10-15'	85.0*
791800	802825	15-20'	96.1
791800	802825	20-25'	94.5
791800	802825	25-26'	97.7
791200	803125	0-5'	98.7
791200	803125	5-10'	97.2
791200	803125	10-15'	94.5
791200	803125	15-20'	97.7
791200	803125	20-25'	97.1
791200	803125	25-26'	98.4
791525	803050	0-5'	81.8*
791525	803050	5-10'	93.0
791525	803050	10-15'	98.3

Northing	Easting	Depth	- #200 (%)
791525	803050	15-20'	96.2
792400	803275	0-5'	97.9
792400	803275	5-10'	98.0
792400	803275	10-12'	96.6
791275	803425	0-5'	97.3
791275	803425	5-10'	98.5
791275	803425	10-15'	97.1
791275	803425	15-20'	98.5
791275	803425	20-25'	99.2
791275	803425	25-30'	97.4
791275	803425	30-35'	97.9
791275	803425	35-38'	97.0
791950	803275	0-5'	93.9
791950	803275	5-10'	98.3
791950	803275	10-12'	98.8
791800	803050	0-5'	80.4*
791800	803050	5-10'	77.8*
791800	803050	10-15'	95.3
791800	803050	15-17'	96.7
792175	802975	0-5'	97.5
792175	802975	5-10'	98.6
792175	802975	10-15'	98.3
792175	802975	15-17'	98.8
791350	803350	0-5'	95.6
791350	803350	5-10'	98.0
791350	803350	10-15'	99.1
791350	803350	15-20'	98.3
791350	803350	20-25'	98.6
791350	803350	25-30'	99.2
792175	803050	0-5'	95.3
792175	803050	5-10'	97.0
792175	803050	10-12'	99.0
792025	803050	0-5'	77.7*

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792475	802900	5-10'	96.9
792475	802900	10-15'	99.5
792475	802900	15-20'	98.7
791300	803050	0-5'	98.9
791300	803050	5-10'	99.3
791300	803050	10-15'	98.9
791300	803050	15-20'	99.6
791300	803050	20-25'	98.8
791300	803050	25-27'	99.7
791875	803200	0-5'	89.3*
791875	803200	5-10'	97.0
791875	803200	10-12'	98.6
792025	803275	0-5'	78.4*
792025	803275	5-10'	85.5*
792025	803275	10-12'	97.4
791875	803425	0-5'	93.4
791875	803425	5-10'	98.9
791875	803425	10-12'	99.0
791350	803200	0-5'	98.9
791350	803200	5-10'	99.1
791350	803200	10-15'	94.3
791350	803200	15-20'	99.6
791350	803200	20-23'	98.9
792475	803200	0-5'	96.1
792475	803200	5-10'	98.9
792475	803200	10-12'	99.1
791800	803425	0-5'	99.3
791800	803425	5-10'	98.1
791800	803425	10-12'	99.3
792100	803425	0-5'	91.5
792100	803425	5-10'	95.8
792100	803425	10-12'	99.2
792400	802975	0-5'	98.2

Northing	Easting	Depth	- #200 (%)
792400	802975	5-10'	98.9
792400	802975	10-15'	99.3
792400	802975	15-19'	99.2
792250	803200	0-5'	96.6
792250	803200	5-10'	94.1
792250	803200	10-12'	99.3
791650	803050	0-5'	91.6
791650	803050	5-10'	99.4
791650	803050	10-15'	99.2
791650	803050	15-18'	99.5
792025	803425	0-5'	82.4*
792025	803425	5-10'	90.6
792025	803425	10-12'	91.2
791375	803050	0-5'	89.2*
791375	803050	5-10'	94.9
791375	803050	10-15'	99.2
791375	803050	15-20'	98.2
791375	803050	20-23'	99.6
792400	802900	0-5'	97.6
792400	802900	5-10'	98.6
792400	802900	10-15'	98.9
792400	802900	15-20'	98.3
791725	803050	0-5'	82.1*
791725	803050	5-10'	89.0*
791725	803050	10-15'	95.3
791725	803050	15-17'	94.6
791950	803050	0-5'	79.2*
791950	803050	5-10'	82.7*
791950	803050	10-14'	95.2
791800	803275	0-5'	71.0*
791800	803275	5-10'	95.0
791800	803275	10-12'	98.4
791450	803050	0-5'	86.7*

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791450	803050	5-10'	98.0
791450	803050	10-15'	99.1
791450	803050	15-20'	97.9
791450	803050	20-21'	98.6
792250	803050	0-5'	99.3
792250	803050	5-10'	99.4
792250	803050	10-12'	98.0
792100	803350	0-5'	81.5*
792100	803350	5-10'	90.9
792100	803350	10-12'	97.1
791950	802825	0-5'	93.7
791950	802825	5-10'	98.9
791950	802825	10-15'	99.2
791950	802825	15-20'	99.1
791950	802825	20-24'	97.5
792025	802825	0-5'	98.5
792025	802825	5-10'	98.7
792025	802825	10-15'	99.0
792025	802825	15-20'	98.3
792025	802825	20-25'	98.9
792025	802825	25-27'	98.9
791500	802825	0-5'	77.0*
791500	802825	5-10'	72.8*
791500	802825	10-15'	84.2*
791500	802825	15-20'	98.1
791500	802825	20-25'	98.4
791500	802825	25-30'	97.7
791500	802825	30-31'	97.9
791800	802900	0-5'	72.9*
791800	802900	5-10'	74.4*
791800	802900	10-15'	90.1
791800	802900	15-20'	97.1
791800	802900	20-22'	95.6

Northing	Easting	Depth	- #200 (%)
792250	802900	0-5'	96.7
792250	802900	5-10'	95.4
792250	802900	10-15'	98.8
792250	802900	15-20'	98.0
792250	802900	20-22'	98.4
791875	802900	0-5'	74.2*
791875	802900	5-10'	76.3*
791875	802900	10-15'	89.3
791875	802900	15-20'	96.9
791875	802900	20-21'	94.4
792400	803200	0-5'	96.2
792400	803200	5-10'	98.4
792400	803200	10-12'	98.8
792175	802900	0-5'	97.2
792175	802900	5-10'	98.2
792175	802900	10-15'	98.8
792175	802900	15-20'	98.7
792175	802900	20-21'	98.8
791650	802900	0-5'	72.5*
791650	802900	5-10'	69.9*
791650	802900	10-15'	77.7*
791650	802900	15-20'	94.7
791650	802900	20-25'	98.5
792250	802750	0-5'	98.0
792250	802750	5-10'	95.8
792250	802750	10-15'	97.7
792250	802750	15-20'	97.6
791950	802900	0-5'	99.0
791950	802900	5-10'	78.4*
791950	802900	10-15'	82.6*
791950	802900	15-20'	96.0
792100	802900	0-5'	99.4
792100	802900	5-10'	98.1

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792100	802900	10-15'	98.4
792100	802900	15-20'	98.0
792100	802900	20-22'	98.2
791725	802900	0-5'	80.2*
791725	802900	5-10'	72.1*
791725	802900	10-15'	94.9
791725	802900	15-20'	98.2
791725	802900	20-25'	99.0
791725	802900	25-26'	99.2
792025	802900	0-5'	84.0*
792025	802900	5-10'	95.8
792025	802900	10-15'	99.1
792025	802900	15-20'	99.1
792025	802900	20-21'	98.4
792100	802975	0-5'	90.2
792100	802975	5-10'	97.3
792100	802975	10-15'	98.6
792100	802975	15-17'	98.7
791275	803200	0-5'	83.8*
791275	803200	5-10'	96.3
791275	803200	10-15'	97.1
791275	803200	15-20'	97.6
791275	803200	20-25'	96.9
791275	803200	25-27'	97.9
792175	803350	0-5'	93.8
792175	803350	5-10'	99.2
792175	803350	10-12'	99.1
791650	802825	0-5'	79.6*
791650	802825	5-10'	73.9*
791650	802825	10-15'	77.8*
791650	802825	15-20'	92.4
791650	802825	20-25'	97.7
791650	802825	25-29'	99.1

Northing	Easting	Depth	- #200 (%)
791575	802900	0-5'	72.1*
791575	802900	5-10'	63.7*
791575	802900	10-15'	90.3
791575	802900	15-20'	98.2
791575	802900	20-25'	94.4
791575	802900	25-27'	97.8
792325	802750	0-5'	58.2*
792325	802750	5-10'	91.8
792325	802750	10-15'	84.6*
792325	802750	15-20'	91.2
792325	802750	20-24'	91.4
791500	803425	0-5'	98.3
791500	803425	5-10'	96.3
791500	803425	10-15'	98.3
791500	803425	15-20'	98.7
792175	803200	0-5'	92.9
792175	803200	5-10'	98.9
792175	803200	10-12'	99.1
792100	803125	0-5'	97.9
792100	803125	5-10'	96.9
792100	803125	10-12'	98.1
792550	802900	0-5'	98.4
792550	802900	5-10'	98.0
792550	802900	10-12'	97.0
791875	803050	0-5'	97.1
791875	803050	5-10'	97.1
791875	803050	10-15'	97.7
791875	803050	15-16'	98.1
791575	803200	0-5'	92.5
791575	803200	5-10'	92.2
791575	803200	10-14'	95.3
792550	803350	0-5'	94.4
792550	803350	5-10'	95.5

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792025	805775	10-15'	97.3
792025	805775	15-20'	96.2
792025	805775	20-25'	98.8
792025	805775	25-30'	97.9
792025	805775	30-35'	97.1
792025	805775	35-40'	98.2
792025	805775	40-45'	98.7
792025	805775	45-49'	98.6
791950	805700	0-5'	91.3
791950	805700	5-10'	96.8
791950	805700	10-15'	97.6
791950	805700	15-20'	97.2
791950	805700	20-25'	98.0
791950	805700	25-30'	97.7
791950	805700	30-35'	98.1
791950	805700	35-40'	97.8
791950	805700	40-45'	98.6
791950	805700	45-50'	98.5
791950	805700	50-55'	97.7
791950	805700	55-60'	97.9
791950	805700	60-65'	96.9
791950	805700	65-70'	95.7
791950	805700	70-74'	95.8
791725	805700	0-5'	46.3*
791725	805700	5-10'	90.5
791725	805700	10-15'	94.7
791725	805700	15-20'	97.0
791725	805700	20-25'	95.9
791725	805700	25-30'	96.0
791725	805700	30-35'	97.6
791725	805700	35-40'	97.0
791725	805700	40-45'	97.2
791725	805700	45-50'	96.6

Northing	Easting	Depth	- #200 (%)
791725	805700	50-55'	95.3
791725	805700	55-60'	97.1
792100	805700	0-5'	95.9
792100	805700	5-10'	99.4
792100	805700	10-15'	98.5
792100	805700	15-20'	98.9
792100	805700	20-25'	98.1
792100	805700	25-30'	98.4
792100	805700	30-35'	98.4
792100	805700	35-40'	98.7
792100	805700	40-45'	97.1
792100	805700	45-50'	98.5
791800	805700	0-5'	29.2*
791800	805700	5-10'	71.6
791800	805700	10-15'	97.7
791800	805700	15-20'	96.0
791800	805700	20-25'	97.7
791800	805700	25-30'	97.7
791800	805700	30-35'	98.1
791800	805700	35-40'	98.5
805700	792025	0-5'	97.4
805700	792025	5-10'	98.1
805700	792025	10-15'	97.9
805700	792025	15-20'	99.5
805700	792025	20-25'	99.0
805700	792025	25-30'	97.7
805700	792025	30-35'	96.3
805700	792025	35-40'	98.6
805700	792025	40-45'	97.6
805700	792025	45-50'	99.0
805700	792025	50-55'	97.3
805700	792025	55-60'	96.8
805700	792025	60-65'	97.1

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791200	805700	15-20'	96.2
791200	805700	20-25'	97.8
791200	805700	25-30'	97.3
791200	805700	30-35'	96.2
791200	805700	35-40'	94.6
791200	805700	40-45'	98.6
791050	805700	0-5'	96.4
791050	805700	5-10'	99.0
791050	805700	10-15'	97.4
791050	805700	15-20'	98.2
791050	805700	20-25'	98.0
791050	805700	25-30'	97.2
791500	805775	0-5'	96.7
791500	805775	5-10'	96.3
791500	805775	10-15'	96.9
791500	805775	15-20'	97.5
791500	805775	20-25'	98.6
791500	805775	25-30'	97.5
791500	805775	30-35'	98.2
791500	805775	35-40'	97.6
791500	805775	40-45'	97.3
791500	805775	45-50'	98.8
791575	805775	0-5'	83.7*
791575	805775	5-10'	80.8*
791575	805775	10-15'	78.7*
791575	805775	15-20'	96.3
791575	805775	20-25'	96.5
791575	805775	25-30'	96.8
791575	805775	30-35'	98.4
791575	805775	35-40'	98.4
791575	805775	40-45'	97.4
791575	805775	45-50'	97.5
791575	805775	50-55'	98.0

Northing	Easting	Depth	- #200 (%)
791575	805775	55-60'	98.3
791950	805775	0-5'	95.9
791950	805775	5-10'	98.2
791950	805775	10-15'	98.3
791950	805775	15-20'	98.3
791950	805775	20-25'	98.7
791950	805775	25-30'	99.2
791950	805775	30-35'	98.6
791950	805775	35-40'	97.7
791950	805775	40-45'	94.1
791950	805775	45-50'	96.1
791950	805775	50-55'	96.9
791950	805775	55-57'	97.8
792175	805775	0-5'	96.5
792175	805775	5-10'	96.3
792175	805775	10-15'	96.9
792175	805775	15-20'	96.8
792175	805775	20-25'	98.6
792175	805775	25-30'	98.2
792175	805775	30-35'	97.7
792175	805775	35-40'	97.7
792175	805775	40-41'	99.2
792100	805775	0-5'	97.4
792100	805775	5-10'	97.4
792100	805775	10-15'	96.9
792100	805775	15-20'	98.5
792100	805775	20-25'	96.7
792100	805775	25-30'	98.2
792100	805775	30-35'	98.6
792100	805775	35-40'	98.2
792100	805775	40-44'	98.7
792025	805775	0-5'	97.3
792025	805775	5-10'	98.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791650	805775	30-35'	93.3
791650	805775	35-40'	94.9
791650	805775	40-45'	85.2*
791650	805775	45-50'	89.0*
791650	805775	50-55'	92.2
791650	805775	55-60'	94.1
791650	805775	60-65'	98.9
791650	805775	65-70'	98.8
791650	805775	70-75'	96.4
791650	805775	75-77'	96.7
791425	805775	0-5'	97.9
791425	805775	5-10'	99.0
791425	805775	10-15'	96.9
791425	805775	15-20'	97.8
791425	805775	20-25'	98.5
791425	805775	25-30'	99.2
791425	805775	30-35'	98.0
791425	805775	35-40'	97.4
791425	805775	40-45'	97.6
791425	805775	45-50'	97.3
791425	805775	50-53'	99.1
791350	805775	0-5'	98.3
791350	805775	5-10'	97.6
791350	805775	10-15'	99.1
791350	805775	15-20'	99.1
791350	805775	20-25'	99.2
791350	805775	25-30'	99.3
791350	805775	30-35'	97.1
791350	805775	35-40'	97.0
791350	805775	40-45'	99.1
791350	805775	45-50'	98.8
791350	805775	50-55'	99.3
791350	805775	55-60'	99.3

Northing	Easting	Depth	- #200 (%)
791350	805775	60-61'	98.8
791350	805700	0-5'	99.5
791350	805700	5-10'	99.2
791350	805700	10-15'	97.9
791350	805700	15-20'	97.3
791350	805700	20-25'	99.6
791425	805700	0-5'	99.0
791425	805700	5-10'	99.1
791425	805700	10-15'	99.3
791425	805700	15-20'	98.9
791425	805700	20-25'	99.0
791425	805700	25-30'	97.5
791425	805700	30-35'	99.3
791425	805700	35-40'	99.5
791275	805775	0-5'	39.4*
791275	805775	5-10'	58.9*
791275	805775	10-15'	96.6
791275	805775	15-20'	97.8
791275	805775	20-25'	97.4
791275	805775	25-30'	98.7
791275	805775	30-35'	97.8
791275	805775	35-40'	99.1
791275	805775	40-45'	98.7
791275	805775	45-50'	99.3
791275	805775	50-55'	99.4
791275	805775	55-60'	98.3
791275	805775	60-65'	97.2
791275	805775	65-68'	97.6
791575	805700	0-5'	92.1
791575	805700	5-10'	98.0
791575	805700	10-15'	96.9
791575	805700	15-20'	97.6
791575	805700	20-25'	97.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791575	805700	25-30'	97.7
791575	805700	30-35'	98.6
791575	805700	35-40'	99.0
791575	805700	40-45'	98.2
791575	805700	45-50'	97.4
791575	805700	50-54'	97.3
791050	805775	0-5'	96.4
791050	805775	5-10'	98.8
791050	805775	10-15'	98.0
791050	805775	15-20'	97.9
791050	805775	20-25'	95.7
791050	805775	25-30'	94.0
791050	805775	30-35'	96.8
791050	805775	35-40'	97.7
791050	805775	40-45'	95.5
791050	805775	45-50'	98.9
791050	805775	50-55'	98.2
791050	805775	55-60'	97.9
791050	805775	60-63'	94.6
791500	805700	0-5'	98.6
791500	805700	5-10'	97.2
791500	805700	10-15'	97.9
791500	805700	15-20'	98.3
791500	805700	20-25'	98.8
791500	805700	25-30'	98.1
791500	805700	30-35'	97.9
791500	805700	35-37'	99.3
791125	805700	0-5'	97.3
791125	805700	5-10'	95.9
791125	805700	10-15'	96.0
791125	805700	15-20'	98.1
791125	805700	20-25'	97.4
791125	805700	25-30'	99.1

Northing	Easting	Depth	- #200 (%)
791125	805700	30-35	98.6
791275	805700	0-5'	97.2
791275	805700	5-10'	98.2
791275	805700	10-15'	99.0
791275	805700	15-20'	97.6
791275	805700	20-25'	94.9
791275	805700	25-30'	98.2
791275	805700	30-35'	97.9
791275	805700	35-40'	96.9
791275	805700	40-45'	98.6
791275	805700	45-50'	98.5
791125	805775	0-5'	32.8*
791125	805775	5-10'	13.6*
791125	805775	10-15'	85.2*
791125	805775	15-20'	90.4
791125	805775	20-25'	79.8*
791125	805775	25-30'	97.0
791125	805775	30-35'	96.7
791125	805775	35-40'	93.3
791125	805775	40-45'	95.5
791200	805775	0-5'	45.7*
791200	805775	5-10'	56.8*
791200	805775	10-15'	51.2*
791200	805775	15-20'	75.4*
791200	805775	20-25'	97.6
791200	805775	25-30'	97.2
791200	805775	30-35'	94.3
791200	805775	35-40'	95.6
791200	805775	40-45'	97.5
791200	805775	45-50'	97.9
791200	805700	0-5'	98.5
791200	805700	5-10'	96.9
791200	805700	10-15'	98.5

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791875	805700	0-5'	41.8*
791875	805700	5-10'	83.3*
791875	805700	10-15'	87.2*
791875	805700	15-20'	93.6
791875	805700	20-25'	92.4
791875	805700	25-30'	92.2
791875	805700	30-35'	97.4
791875	805700	35-40'	98.2

Northing	Easting	Depth	- #200 (%)

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792625	803350	0-5'	92.8
792625	803350	5-8'	90.5
792625	803125	0-5'	95.7
792625	803125	5-10'	93.0
792625	803125	10-12'	98.8
792625	803200	0-5'	98.5
792625	803200	5-10'	98.1
792625	803200	10-12'	97.9
792700	803125	0-5'	97.7
792700	803125	5-10'	97.6
792925	803350	0-5'	97.5
792925	803350	5-8'	97.0
792850	803350	0-5'	96.5
792850	803350	5-10'	97.9
792775	803350	0-5'	94.7
792775	803350	5-10'	96.1
792775	803350	10-12'	97.3
792775	803275	0-5'	97.4
792775	803275	5-10'	97.0
792850	803500	0-1'	80.4*
782850	803275	0-5'	97.1
793525	803575	0-2'	97.6
792775	803200	0-5'	98.5
793225	803500	0-5'	94.1
793225	803500	5-10'	91.4
793225	803500	10-15'	92.9
793225	803500	15-20'	95.3
793300	803500	0-5'	92.7
793300	803500	5-10'	92.9
793300	803500	10-15'	93.2
793300	803425	0-5'	97.5
793300	803425	5-10'	95.1

Northing	Easting	Depth	- #200 (%)

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
793225	803425	0-5'	85.4*
793375	803425	0-5'	96.5
793150	803425	0-5'	94.0
793150	803425	5-6'	94.6
793075	803500	0-5'	97.6
793075	803500	5-10'	95.7
793075	803500	10-15'	99.4
793150	803575	0-5'	90.4
793150	803575	5-10'	96.2
793150	803575	10-15'	96.1
793075	803575	0-5'	95.7
793075	803575	5-7'	95.7
793300	803575	0-5'	93.2
793300	803575	5-10'	93.8
793300	803575	10-15'	93.7
793375	803575	0-5'	95.9
793375	803575	5-10'	95.6
793375	803575	10-12'	92.9
793375	803500	0-5'	96.2
793375	803500	5-9'	97.3
792700	803425	0-5'	93.3
792700	803425	5-6'	83.4*
792700	803350	0-5'	93.8
792700	803350	5-10'	94.5
792925	803450	0-5'	93.9
792925	803450	5-10'	96.9
792925	803450	10-14'	96.8
792850	803425	0-5'	95.1
792850	803425	5-10'	93.3
792775	803425	0-5'	95.2
792775	803425	5-8'	95.4
793000	803425	0-5'	96.1
793000	803425	5-10'	95.7

Northing	Easting	Depth	- #200 (%)
793000	803425	10-15'	92.6
793075	803425	0-5'	95.9
793075	803425	5-9'	95.4
793150	803500	0-5'	92.2
793150	803500	5-10'	95.7
793150	803500	10-15'	92.8
793150	803500	15-20'	95.7
793000	803500	0-5'	92.8
793000	803500	5-10'	96.4
793000	803575	0-5'	93.2
792925	803500	0-5'	93.5
792925	803500	5-8'	94.4
793525	803650	0-5'	92.0
793375	803650	0-5'	96.3
793300	803650	0-5'	91.1
793075	803650	0-3'	93.2
793225	803575	0-5'	94.3
793225	803575	5-10'	94.0
793225	803575	10-15'	93.2
793225	803650	0-5'	95.7
793450	803650	0-5'	95.5
793450	803650	5-8'	95.4
793450	803575	0-5'	95.2
793450	803575	5-8'	95.5
792700	803200	0-5'	91.1
792700	803200	5-10'	93.7
792700	803200	10-12'	96.3
792700	803275	0-5'	93.6
792700	803275	5-10'	94.4
792700	803275	10-14'	93.6
792625	803275	0-5'	93.8
792625	803275	5-10'	94.2
792625	803275	10-12'	94.0

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Boring Log on Radon Barrier Material - East Side

Northing	Easting	Depth
791050	805775	64'
791125	805775	45'
791200	805775	50'
791275	805775	68'
791350	805775	61'
791425	805775	53'
791500	805775	50'
791575	805775	60'
791650	805775	77'
791725	805775	75'
791800	805775	73'
791875	805775	66'
791950	805775	57'
792025	805775	49'
792100	805775	44'
792175	805775	41'
791050	805700	30'
791125	805700	35'
791200	805700	48'
791275	805700	48'
791350	805700	25'
791425	805700	40'
791500	805700	37'
791575	805700	54'
791650	805700	73'
791725	805700	60'
791800	805700	40'
791875	805700	40'
791950	805700	71'
792025	805700	62'
792100	805700	50'

Testing Interval: 5'.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791875	805700	0-5'	41.8*
791875	805700	5-10'	
791875	805700	10-15'	
791875	805700	15-20'	93.6
791875	805700	20-25'	92.4
791875	805700	25-30'	92.2
791875	805700	30-35'	97.4
791875	805700	35-40'	98.2

Northing	Easting	Depth	- #200 (%)

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791575	805700	25-30'	97.7
791575	805700	30-35'	98.6
791575	805700	35-40'	99.0
791575	805700	40-45'	98.2
791575	805700	45-50'	97.4
791575	805700	50-54'	97.3
791050	805775	0-5'	96.4
791050	805775	5-10'	98.8
791050	805775	10-15'	98.0
791050	805775	15-20'	97.9
791050	805775	20-25'	95.7
791050	805775	25-30'	94.0
791050	805775	30-35'	96.8
791050	805775	35-40'	97.7
791050	805775	40-45'	95.5
791050	805775	45-50'	98.9
791050	805775	50-55'	98.2
791050	805775	55-60'	97.9
791050	805775	60-63'	94.6
791500	805700	0-5'	98.6
791500	805700	5-10'	97.2
791500	805700	10-15'	97.9
791500	805700	15-20'	98.3
791500	805700	20-25'	98.8
791500	805700	25-30'	98.1
791500	805700	30-35'	97.9
791500	805700	35-37'	99.3
791125	805700	0-5'	97.3
791125	805700	5-10'	95.9
791125	805700	10-15'	96.0
791125	805700	15-20'	98.1
791125	805700	20-25'	97.4
791125	805700	25-30'	99.1

Northing	Easting	Depth	- #200 (%)
791125	805700	30-35	98.6
791275	805700	0-5'	97.2
791275	805700	5-10'	98.2
791275	805700	10-15'	99.0
791275	805700	15-20'	97.6
791275	805700	20-25'	94.9
791275	805700	25-30'	98.2
791275	805700	30-35'	97.9
791275	805700	35-40'	96.9
791275	805700	40-45'	98.9
791275	805700	45-50'	98.5
791125	805775	0-5'	32.8*
791125	805775	5-10'	13.6*
791125	805775	10-15'	85.2*
791125	805775	15-20'	90.4
791125	805775	20-25'	79.8*
791125	805775	25-30'	97.0
791125	805775	30-35'	96.7
791125	805775	35-40'	93.3
791125	805775	40-45'	95.5
791200	805775	0-5'	45.7*
791200	805775	5-10'	56.8*
791200	805775	10-15'	51.2*
791200	805775	15-20'	75.4*
791200	805775	20-25'	97.6
791200	805775	25-30'	97.2
791200	805775	30-35'	94.3
791200	805775	35-40'	95.6
791200	805775	40-45'	97.5
791200	805775	45-50'	97.9
791200	805700	0-5'	98.5
791200	805700	5-10'	96.9
791200	805700	10-15'	98.5

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792550	803350	10-12'	97.1
791650	805700	0-5'	62.2*
791650	805700	5-10'	94.0
791650	805700	10-15'	96.4
791650	805700	15-20'	95.3
791650	805700	20-25'	98.8
791650	805700	25-30'	96.6
791650	805700	30-35'	97.9
791650	805700	35-40'	98.2
791650	805700	40-45'	98.3
791650	805700	45-50'	99.0
791650	805700	50-55'	96.2
791650	805700	55-60'	97.7
791650	805700	60-65'	96.5
791650	805700	65-70'	98.9
791650	805700	70-73'	98.7
791800	805775	0-5'	83.9*
791800	805775	5-10'	98.2
791800	805775	10-15'	92.7
791800	805775	15-20'	96.2
791800	805775	20-25'	93.6
791800	805775	25-30'	98.3
791800	805775	30-35'	97.4
791800	805775	35-40'	97.7
791800	805775	40-45'	96.2
791800	805775	45-50'	92.9
791800	805775	50-55'	97.7
791800	805775	55-60'	98.5
791800	805775	60-65'	97.4
791800	805775	65-70'	98.8
791800	805775	70-73'	98.4
791875	805775	0-5'	96.5
791875	805775	5-10'	98.8

Northing	Easting	Depth	- #200 (%)
791875	805775	10-15'	97.9
791875	805775	15-20'	98.1
791875	805775	20-25'	98.2
791875	805775	25-30'	99.1
791875	805775	30-35'	98.3
791875	805775	35-40'	92.3
791875	805775	40-45'	96.0
791875	805775	45-50'	94.8
791875	805775	50-55'	98.0
791875	805775	55-60'	98.3
791875	805775	60-65'	98.5
791875	805775	65-66'	97.2
791725	805775	0-5'	32.0*
791725	805775	5-10'	64.8*
791725	805775	10-15'	82.4*
791725	805775	15-20'	93.5
791725	805775	20-25'	91.9
791725	805775	25-30'	92.1
791725	805775	30-35'	95.1
791725	805775	35-40'	96.7
791725	805775	40-45'	97.2
791725	805775	45-50'	97.6
791725	805775	50-55'	97.6
791725	805775	55-60'	97.0
791725	805775	60-65'	95.3
791725	805775	65-70'	93.7
791725	805775	70-75'	93.7
791650	805775	0-5'	35.3*
791650	805775	5-10'	57.8*
791650	805775	10-15'	58.8*
791650	805775	15-20'	66.8*
791650	805775	20-25'	66.8*.
791650	805775	25-30'	90.0

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791200	805700	15-20'	96.2
791200	805700	20-25'	97.8
791200	805700	25-30'	97.3
791200	805700	30-35'	96.2
791200	805700	35-40'	94.6
791200	805700	40-45'	98.6
791050	805700	0-5'	96.4
791050	805700	5-10'	99.0
791050	805700	10-15'	97.4
791050	805700	15-20'	98.2
791050	805700	20-25'	98.0
791050	805700	25-30'	97.2
791500	805775	0-5'	96.7
791500	805775	5-10'	96.3
791500	805775	10-15'	96.9
791500	805775	15-20'	97.5
791500	805775	20-25'	98.6
791500	805775	25-30'	97.5
791500	805775	30-35'	98.2
791500	805775	35-40'	97.6
791500	805775	40-45'	97.3
791500	805775	45-50'	98.8
791575	805775	0-5'	83.7*
791575	805775	5-10'	80.8*
791575	805775	10-15'	78.7*
791575	805775	15-20'	96.3
791575	805775	20-25'	96.5
791575	805775	25-30'	96.8
791575	805775	30-35'	98.4
791575	805775	35-40'	98.4
791575	805775	40-45'	97.4
791575	805775	45-50'	97.5
791575	805775	50-55'	98.0

Northing	Easting	Depth	- #200 (%)
791575	805775	55-60'	98.3
791950	805775	0-5'	95.9
791950	805775	5-10'	98.2
791950	805775	10-15'	98.3
791950	805775	15-20'	98.3
791950	805775	20-25'	98.7
791950	805775	25-30'	99.2
791950	805775	30-35'	98.6
791950	805775	35-40'	97.7
791950	805775	40-45'	94.1
791950	805775	45-50'	96.1
791950	805775	50-55'	96.9
791950	805775	55-57'	97.8
792175	805775	0-5'	96.5
792175	805775	5-10'	96.3
792175	805775	10-15'	96.9
792175	805775	15-20'	96.8
792175	805775	20-25'	98.6
792175	805775	25-30'	98.2
792175	805775	30-35'	97.7
792175	805775	35-40'	97.7
792175	805775	40-41'	99.2
792100	805775	0-5'	97.4
792100	805775	5-10'	97.4
792100	805775	10-15'	96.9
792100	805775	15-20'	98.5
792100	805775	20-25'	96.7
792100	805775	25-30'	98.2
792100	805775	30-35'	98.6
792100	805775	35-40'	98.2
792100	805775	40-44'	98.7
792025	805775	0-5'	97.3
792025	805775	5-10'	98.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792025	805775	10-15'	97.3
792025	805775	15-20'	96.2
792025	805775	20-25'	98.8
792025	805775	25-30'	97.9
792025	805775	30-35'	97.1
792025	805775	35-40'	98.2
792025	805775	40-45'	98.7
792025	805775	45-49'	98.6
791950	805700	0-5'	91.3
791950	805700	5-10'	96.8
791950	805700	10-15'	97.6
791950	805700	15-20'	97.2
791950	805700	20-25'	98.0
791950	805700	25-30'	97.7
791950	805700	30-35'	98.1
791950	805700	35-40'	97.8
791950	805700	40-45'	98.6
791950	805700	45-50'	98.5
791950	805700	50-55'	97.7
791950	805700	55-60'	97.9
791950	805700	60-65'	96.9
791950	805700	65-70'	95.7
791950	805700	70-74'	95.7
791725	805700	0-5'	46.3*
791725	805700	5-10'	90.5
791725	805700	10-15'	94.7
791725	805700	15-20'	97.0
791725	805700	20-25'	95.9
791725	805700	25-30'	96.0
791725	805700	30-35'	97.6
791725	805700	35-40'	97.0
791725	805700	40-45'	97.2
791725	805700	45-50'	96.6

Northing	Easting	Depth	- #200 (%)
791725	805700	50-55'	95.3
791725	805700	55-60'	97.1
792100	805700	0-5'	95.9
792100	805700	5-10'	99.4
792100	805700	10-15'	98.5
792100	805700	15-20'	98.9
792100	805700	20-25'	98.1
792100	805700	25-30'	98.4
792100	805700	30-35'	98.4
792100	805700	35-40'	98.7
792100	805700	40-45'	97.1
792100	805700	45-50'	98.5
791800	805700	0-5'	29.2*
791800	805700	5-10'	71.6
791800	805700	10-15'	97.7
791800	805700	15-20'	96.0
791800	805700	20-25'	97.7
791800	805700	25-30'	97.7
791800	805700	30-35'	98.1
791800	805700	35-40'	98.5
805700	792025	0-5'	97.4
805700	792025	5-10'	98.1
805700	792025	10-15'	97.9
805700	792025	15-20'	99.5
805700	792025	20-25'	99.0
805700	792025	25-30'	97.7
805700	792025	30-35'	96.3
805700	792025	35-40'	98.6
805700	792025	40-45'	97.6
805700	792025	45-50'	99.0
805700	792025	50-55'	97.3
805700	792025	55-60'	96.8
805700	792025	60-65'	97.1

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792550	803350	10-12'	97.1
791650	805700	0-5'	62.2*
791650	805700	5-10'	94.0
791650	805700	10-15'	96.4
791650	805700	15-20'	95.3
791650	805700	20-25'	98.8
791650	805700	25-30'	96.6
791650	805700	30-35'	97.9
791650	805700	35-40'	98.2
791650	805700	40-45'	98.3
791650	805700	45-50'	99.0
791650	805700	50-55'	96.2
791650	805700	55-60'	97.7
791650	805700	60-65'	96.5
791650	805700	65-70'	98.9
791650	805700	70-73'	98.7
791800	805775	0-5'	83.9*
791800	805775	5-10'	98.2
791800	805775	10-15'	92.7
791800	805775	15-20'	96.2
791800	805775	20-25'	93.6
791800	805775	25-30'	98.3
791800	805775	30-35'	97.4
791800	805775	35-40'	97.7
791800	805775	40-45'	96.2
791800	805775	45-50'	92.9
791800	805775	50-55'	97.7
791800	805775	55-60'	98.5
791800	805775	60-65'	97.4
791800	805775	65-70'	98.8
791800	805775	70-73'	98.4
791875	805775	0-5'	96.5
791875	805775	5-10'	98.8

Northing	Easting	Depth	- #200 (%)
791875	805775	10-15'	97.9
791875	805775	15-20'	98.1
791875	805775	20-25'	98.2
791875	805775	25-30'	99.1
791875	805775	30-35'	98.3
791875	805775	35-40'	92.3
791875	805775	40-45'	96.0
791875	805775	45-50'	94.8
791875	805775	50-55'	98.0
791875	805775	55-60'	98.3
791875	805775	60-65'	98.5
791875	805775	65-66'	97.2
791725	805775	0-5'	32.0*
791725	805775	5-10'	64.8*
791725	805775	10-15'	82.4*
791725	805775	15-20'	93.5
791725	805775	20-25'	91.9
791725	805775	25-30'	92.1
791725	805775	30-35'	95.1
791725	805775	35-40'	96.7
791725	805775	40-45'	97.2
791725	805775	45-50'	97.6
791725	805775	50-55'	97.6
791725	805775	55-60'	97.0
791725	805775	60-65'	95.3
791725	805775	65-70'	93.7
791725	805775	70-75'	93.7
791650	805775	0-5'	35.3*
791650	805775	5-10'	57.8*
791650	805775	10-15'	58.8*
791650	805775	15-20'	66.8*
791650	805775	20-25'	66.8*
791650	805775	25-30'	90.0

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791650	805775	30-35'	93.3
791650	805775	35-40'	94.9
791650	805775	40-45'	85.2*
791650	805775	45-50'	89.0*
791650	805775	50-55'	92.2
791650	805775	55-60'	94.1
791650	805775	60-65'	98.9
791650	805775	65-70'	98.8
791650	805775	70-75'	96.4
791650	805775	75-77'	96.7
791425	805775	0-5'	97.9
791425	805775	5-10'	99.0
791425	805775	10-15'	96.9
791425	805775	15-20'	97.8
791425	805775	20-25'	98.5
791425	805775	25-30'	99.2
791425	805775	30-35'	98.0
791425	805775	35-40'	97.4
791425	805775	40-45'	97.6
791425	805775	45-50'	97.3
791425	805775	50-53'	99.1
791350	805775	0-5'	98.3
791350	805775	5-10'	97.6
791350	805775	10-15'	99.1
791350	805775	15-20'	99.1
791350	805775	20-25'	99.2
791350	805775	25-30'	99.3
791350	805775	30-35'	97.1
791350	805775	35-40'	97.0
791350	805775	40-45'	99.1
791350	805775	45-50'	98.8
791350	805775	50-55'	99.3
791350	805775	55-60'	99.3

Northing	Easting	Depth	- #200 (%)
791350	805775	60-61'	98.8
791350	805700	0-5'	99.5
791350	805700	5-10'	99.2
791350	805700	10-15'	97.9
791350	805700	15-20'	97.3
791350	805700	20-25'	99.6
791425	805700	0-5'	99.0
791425	805700	5-10'	99.1
791425	805700	10-15'	99.3
791425	805700	15-20'	98.9
791425	805700	20-25'	99.0
791425	805700	25-30'	97.5
791425	805700	30-35'	99.3
791425	805700	35-40'	99.5
791275	805775	0-5'	39.4*
791275	805775	5-10'	58.9*
791275	805775	10-15'	96.6
791275	805775	15-20'	97.8
791275	805775	20-25'	97.4
791275	805775	25-30'	98.7
791275	805775	30-35'	97.8
791275	805775	35-40'	99.1
791275	805775	40-45'	98.7
791275	805775	45-50'	99.3
791275	805775	50-55'	99.4
791275	805775	55-60'	98.3
791275	805775	60-65'	97.2
791275	805775	65-68'	97.6
791575	805700	0-5'	92.1
791575	805700	5-10'	98.0
791575	805700	10-15'	96.9
791575	805700	15-20'	97.6
791575	805700	20-25'	97.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Boring Log on Radon Barrier Material

Northing	Easting	Depth
792550	802825	10'
792550	802750	9'
792475	802675	11'
792400	802600	20'
792475	802600	14'
792550	802675	9'
792325	802600	22'
792550	802975	10'
792475	802975	17'
792400	802975	19'
792325	802975	18'
792250	802975	17'
792175	802975	17'
792100	802975	17'
792025	802975	16'
791950	802975	17'
791875	802975	18'
791800	802975	20'
791725	802975	19'
791650	802975	20'
791575	802975	22'
791525	802975	26'
791375	803050	23'
791450	803050	21'
791525	803050	20
791575	803050	19'
791650	803050	18'
791725	803050	17'
791800	803050	17'
791875	803050	16'
791950	803050	14'
792025	803050	14'
792100	803050	12'
792475	802825	16'
792475	802750	12'
792400	802675	15'
792250	802600	22'

Northing	Easting	Depth
792175	803050	12'
792250	803050	12'
792325	803050	13'
792400	803050	13'
792475	803050	14'
792550	803050	11'
792550	803125	11'
792475	803125	9'
792400	803125	9'
792325	803125	8'
792250	803125	9'
792175	803125	9'
792100	803125	9'
792025	803125	9'
791950	803125	12'
791875	803125	14'
791800	803125	14'
791725	803125	14'
791650	803125	16'
791575	803125	16'
791525	803125	18'
791450	803125	20'
791375	803125	23'
791300	803125	24'
791200	803125	26'
791125	803125	28'
792550	803200	12'
792475	803200	12'
792400	803200	12'
792325	803200	12'
792250	803200	12'
792175	803200	12'
792100	803200	12'
792325	802675	20'
792400	802750	17'
792325	802750	24'
792250	802675	26'

Testing Interval: 5'.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Boring Log on Radon Barrier Material - West Side (continued)

Northing	Easting	Depth
791875	802900	21'
791800	802900	22'
791725	802900	26'
791650	802900	25'
791575	802900	26'
791500	802900	27'
792400	802825	24'
792325	802825	20'
792250	802825	20'
792175	802825	25'
792100	802825	27'
792025	802825	20'
791950	802825	24'
791875	802825	24'
791800	802825	26'
791725	802825	27'
791650	802825	29'
791575	802825	31'
791500	802825	31'
792250	802750	20'
792175	802750	20'
792100	802750	20'
792025	802750	31'
791950	802750	30'
791875	802750	29'
791800	802750	28'
791725	802750	30'
791650	802750	33'
791575	802750	35'
791500	802750	36'
792175	802675	32'
792100	802675	20'
792025	802675	20'
791950	802675	36'
791875	802675	35'
791800	802675	20'
791725	802675	33'

Northing	Easting	Depth
791650	802675	35'
791575	802675	37'
791500	802675	40'
792025	802600	30'
791950	802600	20'
791875	802600	40'
791800	802600	40'
791725	802600	39'
791650	802600	39'
791575	802600	41'
791500	802600	43'
792550	802900	9'

Testing Interval: 5'.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Boring Log on Radon Barrier Material - West Side (continued)

Northing	Easting	Depth
792025	803200	12'
791950	803200	12'
791875	803200	12'
791800	803200	12'
791725	803200	12'
791650	803200	13'
791575	803200	14'
791500	803200	17'
791425	803200	20'
791350	803200	23'
791275	803200	27'
791200	803200	27'
792550	803275	12'
792475	803275	12'
792400	803275	12'
792325	803275	12'
792250	803275	12'
792175	803275	12'
792100	803275	12'
792025	803275	12'
791950	803275	12'
791875	803275	12'
791800	803275	12'
791725	803275	12'
791650	803275	12'
791575	803275	16'
791500	803275	23'
791425	803275	24'
791350	803275	25'
791275	803275	30'
792550	803350	12'
792475	803350	12'
792400	803350	12'
792325	803350	12'
792250	803350	12'
792175	803350	12'
792100	803350	12'

Northing	Easting	Depth
792025	803350	12'
791950	803350	12'
791875	803350	12'
791800	803350	12'
791725	803350	13'
791650	803350	20'
791575	803350	22'
791500	803350	25'
791425	803350	29'
791350	803350	30'
791275	803350	31'
792250	803425	12'
792175	803425	12'
792100	803425	12'
792025	803425	12'
791950	803425	12'
791875	803425	12'
791800	803425	12'
791725	803425	13'
791650	803425	16'
791575	803425	23'
791500	803425	23'
791425	803425	27'
791350	803425	32'
791275	803425	38'
791275	803125	25'
791300	803050	27'
791275	803050	28'
791500	802975	24'
792475	802900	20'
792400	802900	20'
792325	802900	24'
792250	802900	22'
792175	802900	21'
792100	802900	22'
792025	802900	21'
791950	802900	20'

Testing Interval: 5'.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Boring Log on Radon Barrier Material - West Side

Northing	Easting	Depth
792550	802825	10'
792550	802750	9'
792475	802675	11'
792400	802600	20'
792475	802600	14'
792550	802675	9'
792325	802600	22'
792550	802975	10'
792475	802975	17'
792400	802975	19'
792325	802975	18'
792250	802975	17'
792175	802975	17'
792100	802975	17'
792025	802975	16'
791950	802975	17'
791875	802975	18'
791800	802975	20'
791725	802975	21'
791650	802975	20'
791575	802975	22'
791525	802975	24'
791375	803050	23'
791450	803050	21'
791525	803050	20'
791575	803050	19'
791650	803050	18'
791725	803050	17'
791800	803050	17'
791875	803050	16'
791950	803050	14'
792025	803050	14'
792100	803050	12'
792475	802825	16'
792475	802750	12'
792400	802675	15'
792250	802600	22'

Northing	Easting	Depth
792175	803050	12'
792250	803050	12'
792325	803050	13'
792400	803050	13'
792475	803050	14'
792550	803050	11'
792550	803125	11'
792475	803125	9'
792400	803125	9'
792325	803125	8'
792250	803125	9'
792175	803125	9'
792100	803125	9'
792025	803125	9'
791950	803125	12'
791875	803125	14'
791800	803125	14'
791725	803125	14'
791650	803125	16'
791575	803125	16'
791525	803125	18'
791450	803125	20'
791375	803125	23'
791300	803125	24'
791200	803125	26'
791125	803125	28'
792550	803200	12'
792475	803200	12'
792400	803200	12'
792325	803200	12'
792250	803200	12'
792175	803200	12'
792100	803200	12'
792325	802675	20'
792400	802750	17'
792325	802750	24'
792250	802675	26'

Testing Interval: 5'.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Boring Log on Radon Barrier Material - West Side (continued)

Northing	Easting	Depth
791875	802900	21'
791800	802900	22'
791725	802900	26'
791650	802900	25'
791575	802900	26'
791500	802900	27'
792400	802825	24'
792325	802825	20'
792250	802825	20'
792175	802825	25'
792100	802825	27'
792025	802825	20'
791950	802825	24'
791875	802825	24'
791800	802825	26'
791725	802825	27'
791650	802825	29'
791575	802825	31'
791500	802825	31'
792250	802750	20'
792175	802750	20'
792100	802750	20'
792025	802750	31'
791950	802750	30'
791875	802750	29'
791800	802750	28'
791725	802750	30'
791650	802750	33'
791575	802750	35'
791500	802750	36'
792175	802675	32'
792100	802675	20'
792025	802675	20'
791950	802675	36'
791875	802675	35'
791800	802675	20'
791725	802675	33'

Northing	Easting	Depth
791650	802675	35'
791575	802675	37'
791500	802675	40'
792025	802600	30'
791950	802600	20'
791875	802600	40'
791800	802600	40'
791725	802600	39'
791650	802600	39'
791575	802600	41'
791500	802600	43'
792550	802900	~~29'~~ *
		11'

Testing Interval: 5'.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Boring Log on Radon Barrier Material - West Side (continued)

Northing	Easting	Depth
792025	803200	12'
791950	803200	12'
791875	803200	12'
791800	803200	12'
791725	803200	12'
791650	803200	13'
791575	803200	14'
791500	803200	17'
791425	803200	20'
791350	803200	23'
791275	803200	27'
791200	803200	27'
792550	803275	12'
792475	803275	12'
792400	803275	12'
792325	803275	12'
792250	803275	12'
792175	803275	12'
792100	803275	12'
792025	803275	12'
791950	803275	12'
791875	803275	12'
791800	803275	12'
791725	803275	12'
791650	803275	12'
791575	803275	16'
791500	803275	23'
791425	803275	24'
791350	803275	25'
791275	803275	30'
792550	803350	12'
792475	803350	12'
792400	803350	12'
792325	803350	12'
792250	803350	12'
792175	803350	12'
792100	803350	12'

Northing	Easting	Depth
792025	803350	12'
791950	803350	12'
791875	803350	12'
791800	803350	12'
791725	803350	13'
791650	803350	20'
791575	803350	22'
791500	803350	25'
791425	803350	29'
791350	803350	30'
791275	803350	31'
792250	803425	12'
792175	803425	12'
792100	803425	12'
792025	803425	12'
791950	803425	12'
791875	803425	12'
791800	803425	12'
791725	803425	13'
791650	803425	16'
791575	803425	23'
791500	803425	23'
791425	803425	27'
791350	803425	32'
791275	803425	38'
791275	803125	25'
791300	803050	27'
791275	803050	28'
791500	802975	24'
792475	802900	20'
792400	802900	20'
792325	802900	24'
792250	802900	22'
792175	802900	21'
792100	802900	22'
792025	802900	21'
791950	802900	20'

Testing Interval: 5'.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Boring Log on Radon Barrier Material - West Side

Northing	Easting	Depth
792550	802825	10'
792550	802750	9'
792475	802675	11'
792400	802600	20'
792475	802600	14'
792550	802675	9'
792325	802600	22'
792550	802975	10'
792475	802975	17'
792400	802975	19'
792325	802975	18'
792250	802975	17'
792175	802975	17'
792100	802975	17'
792025	802975	16'
791950	802975	17'
791875	802975	18'
791800	802975	20'
791725	802975	19'
791650	802975	20'
791575	802975	22'
791525	802975	24'
791375	803050	23'
791450	803050	21'
791525	803050	20
791575	803050	19'
791650	803050	18'
791725	803050	17'
791800	803050	17'
791875	803050	16'
791950	803050	14'
792025	803050	14'
792100	803050	12'
792475	802825	16'
792475	802750	12'
792400	802675	15'
792250	802600	22'

Northing	Easting	Depth	
792175	803050	12'	
792250	803050	12'	
792325	803050	13'	
792400	803050	13'	
792475	803050	14'	
792550	803050	11'	
792550	803125	11'	
792475	803125	9'	
792400	803125	9'	
792325	803125	8'	
792250	803125	9'	
792175	803125	9'	
792100	803125	9'	
792025	803125	9'	
791950	803125	12'	
791875	803125	14'	
791800	803125	14'	
791725	803125	14'	
791650	803125	16'	
791575	803125	16'	
791525	803125	18'	
791450	803125	20'	
791375	803125	23'	
791300	803125	24'	
791200	803125	26'	
791125	803125	28'	
792550	803200	12'	
792475	803200	12'	
792400	803200	12'	
792325	803200	12'	*
792250	803200	12'	
792175	803200	12'	
792100	803200	12'	
792325	802675	20'	*
792400	802750	17'	
792325	802750	24'	
792250	802675	26'	

Testing Interval: 5'.

CLAY BORROW
DRILL SAMPLES
SIEVE ANALYSES

2000

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material

Northing	Easting	Depth	- #200 (%)
791950	805925	0-5'	71.4*
791950	805925	5-10'	93.1
791950	805925	10-15'	97.1
791950	805925	15-20'	93.5
791950	805925	20-25'	97.5
791950	805925	25-30'	95.4
791950	805925	30-35'	97.2
791950	805925	35-40'	96.4
791275	806075	0-5'	89.2*
791275	806075	5-10'	92.9
791275	806075	10-15'	94.0
791275	806075	15-20'	97.3
791275	806075	20-25'	97.6
791275	806075	25-30'	97.9
791275	806075	30-35'	98.3
791275	806075	35-40'	97.6
791350	806075	0-5'	71.4*
791350	806075	5-10'	95.5
791350	806075	10-15'	96.9
791350	806075	15-20'	95.8
791350	806075	20-25'	93.4
791350	806075	25-30'	95.2
791350	806075	30-35'	97.5
791350	806075	35-40'	96.2
791725	806075	0-5'	50.6*
791725	806075	5-10'	50.3*
791725	806075	10-15'	48.9*
791725	806075	15-20'	88.4*
791725	806075	20-25'	95.3
791725	806075	25-30'	96.3
791725	806075	30-35'	97.9
791725	806075	35-40'	95.2
791875	806000	0-5'	98.1

Northing	Easting	Depth	- #200 (%)
791875	806000	5-10'	95.0
791875	806000	10-15'	95.3
791875	806000	15-20'	97.2
791875	806000	20-25'	96.5
791875	806000	25-30'	92.8
791875	806000	30-35'	96.2
791875	806000	35-40'	96.4
791875	805925	0-5'	91.5
791875	805925	5-10'	94.0
791875	805925	10-15'	96.9
791875	805925	15-20'	98.4
791875	805925	20-25'	96.0
791875	805925	25-30'	98.1
791875	805925	30-35'	98.5
791875	805925	35-40'	95.6
791800	805925	0-5'	99.3
791800	805925	5-10'	97.5
791800	805925	10-15'	98.9
791800	805925	15-20'	96.0
791800	805925	20-25'	98.4
791800	805925	25-30'	96.1
791800	805925	30-35'	99.4
791800	805925	35-40'	98.5
792100	805850	0-5'	95.2
792100	805850	5-10'	96.4
792100	805850	10-15'	97.9
792100	805850	15-20'	98.4
792100	805850	20-25'	98.9
792100	805850	25-30'	98.8
792100	805850	30-35'	98.9
792100	805850	35-40'	96.2
791125	806000	0-5'	97.6
791125	806000	5-10'	98.1
791125	806000	10-15'	94.0

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791125	806000	15-20'	98.4
791125	806000	20-25'	98.1
791125	806000	25-30'	98.3
791125	806000	30-35'	98.0
791125	806000	35-40'	98.8
792175	805850	0-5'	93.2
792175	805850	5-10'	91.6
792175	805850	10-15'	96.2
792175	805850	15-20'	97.4
792175	805850	20-25'	98.5
792175	805850	25-30'	97.0
792175	805850	30-35'	97.1
792175	805850	35-40'	97.8
792025	805850	0-5'	98.4
792025	805850	5-10'	98.6
792025	805850	10-15'	97.3
792025	805850	15-20'	96.6
792025	805850	20-25'	97.1
792025	805850	25-30'	97.5
792025	805850	30-35'	97.7
792025	805850	35-40'	98.1
791275	806000	0-5'	98.8
791275	806000	5-10'	99.2
791275	806000	10-15'	98.5
791275	806000	15-20'	98.8
791275	806000	20-25'	96.3
791275	806000	25-30'	96.9
791275	806000	30-35'	97.3
791275	806000	35-40'	98.4
791725	806000	0-5'	17.4*
791725	806000	5-10'	61.2*
791725	806000	10-15'	98.6
791725	806000	15-20'	75.7*

Northing	Easting	Depth	- #200 (%)
791725	806000	20-25'	84.2*
791725	806000	25-30'	79.3*
791725	806000	30-35'	92.9
791725	806000	35-40'	83.3*
791950	805850	0-5'	96.9
791950	805850	5-10'	97.4
791950	805850	10-15'	98.5
791950	805850	15-20'	98.6
791950	805850	20-25'	98.1
791950	805850	25-30'	97.5
791950	805850	30-35'	93.4
791950	805850	35-40'	98.0
791800	806000	0-5'	97.0
791800	806000	5-10'	97.9
791800	806000	10-15'	98.4
791800	806000	15-20'	98.9
791800	806000	20-25'	98.2
791800	806000	25-30'	98.9
791800	806000	30-35'	98.9
791800	806000	35-40'	98.6
791425	805850	0-5'	51.0*
791425	805850	5-10'	97.2
791425	805850	10-15'	97.8
791425	805850	15-20'	98.2
791425	805850	20-25'	97.1
791425	805850	25-30'	96.8
791425	805850	30-35'	96.8
791425	805850	35-40'	98.2
791650	805850	0-5'	91.1
791650	805850	5-10'	81.4*
791650	805850	10-15'	68.6*
791650	805850	15-20'	73.8*
791650	805850	20-25'	97.3

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791650	805850	25-30'	97.8
791650	805850	30-35'	96.7
791650	805850	35-40'	97.6
791725	805925	0-5'	96.5
791725	805925	5-10'	98.2
791725	805925	10-15'	97.3
791725	805925	15-20'	98.0
791725	805925	20-25'	99.0
791725	805925	25-30'	99.4
791725	805925	30-35'	98.5
791725	805925	35-40'	98.2
791275	805925	0-5'	92.4
791275	805925	5-10'	96.1
791275	805925	10-15'	97.1
791275	805925	15-20'	98.6
791275	805925	20-25'	98.0
791275	805925	25-30'	96.1
791275	805925	30-35'	97.0
791275	805925	35-40'	92.4
791650	805925	0-5'	82.2*
791650	805925	5-10'	87.6
791650	805925	10-15'	68.3*
791650	805925	15-20'	64.6*
791650	805925	20-25'	93.8
791650	805925	25-30'	96.7
791650	805925	30-35'	98.4
791650	805925	35-40'	97.5
791125	805925	0-5'	97.4
791125	805925	5-10'	99.3
791125	805925	10-15'	98.6
791125	805925	15-20'	97.2
791125	805925	20-25'	96.6
791125	805925	25-30'	99.0

Northing	Easting	Depth	- #200 (%)
791125	805925	30-35'	98.3
791125	805925	35-40'	98.2
791200	805925	0-5'	91.3
791200	805925	5-10'	97.0
791200	805925	10-15'	98.7
791200	805925	15-20'	99.2
791200	805925	20-25'	95.3
791200	805925	25-30'	96.1
791200	805925	30-35'	96.2
791200	805925	35-40'	98.1
791050	806075	0-5'	5.4*
791050	806075	5-10'	81.8*
791050	806075	10-15'	90.5
791050	806075	15-20'	92.5
791050	806075	20-25'	97.1
791050	806075	25-30'	97.0
791050	806075	30-35'	98.8
791050	806075	35-40'	99.0
790975	805925	0-5'	86.3*
790975	805925	5-10'	95.8
790975	805925	10-15'	96.9
790975	805925	15-20'	97.6
790975	805925	20-25'	96.6
790975	805925	25-30'	98.1
790975	805925	30-35'	98.7
790975	805925	35-40'	98.9
791050	805925	0-5'	98.3
791050	805925	5-10'	97.8
791050	805925	10-15'	95.5
791050	805925	15-20'	97.3
791050	805925	20-25'	98.8
791050	805925	25-30'	96.1
791050	805925	30-35'	97.9

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791050	805925	35-40'	98.5
791050	806000	0-5'	98.9
791050	806000	5-10'	96.9
791050	806000	10-15'	97.8
791050	806000	15-20'	98.3
791050	806000	20-25'	98.0
791050	806000	25-30'	98.0
791050	806000	30-35'	99.3
791050	806000	35-40'	97.7
791350	805925	0-5'	92.4
791350	805925	5-10'	79.6*
791350	805925	10-15'	61.1*
791350	805925	15-20'	84*
791350	805925	20-25'	92.3
791350	805925	25-30'	97.0
791350	805925	30-35'	98.7
791350	805925	35-40'	98.0
790975	806000	0-5'	99.4
790975	806000	5-10'	97.4
790975	806000	10-15'	97.8
790975	806000	15-20'	98.4
790975	806000	20-25'	98.7
790975	806000	25-30'	97.6
790975	806000	30-35'	96.6
790975	806000	35-40'	98.6
792250	805850	0-5'	77.0*
792250	805850	5-10'	90.6
792250	805850	10-15'	96.5
792250	805850	15-20'	90.6
792250	805850	20-25'	90.3
792250	805850	25-30'	98.5
792250	805850	30-35'	98.8
792250	805850	35-40'	93.8

Northing	Easting	Depth	- #200 (%)
791875	805850	0-5'	98.1
791875	805850	5-10'	97.1
791875	805850	10-15'	99.0
791875	805850	15-20'	97.3
791875	805850	20-25'	99.1
791875	805850	25-30'	99.1
791875	805850	30-35'	98.6
791875	805850	35-40'	98.7
791200	805850	0-5'	84.5*
791200	805850	5-10'	87.1*
791200	805850	10-15'	95.8
791200	805850	15-20'	98.3
791200	805850	20-25'	97.9
791200	805850	25-30'	98.4
791200	805850	30-35'	98.3
791200	805850	35-40'	97.0
791500	805850	0-5'	52.6*
791500	805850	5-10'	84.7*
791500	805850	10-15'	98.2
791500	805850	15-20'	98.2
791500	805850	20-25'	95.3
791500	805850	25-30'	98.2
791500	805850	30-35'	98.7
791500	805850	35-40'	96.6
791575	805850	0-5'	77.1*
791575	805850	5-10'	58.9*
791575	805850	10-15'	76.1*
791575	805850	15-20'	77.0*
791575	805850	20-25'	97.6
791575	805850	25-30'	97.6
791575	805850	30-35'	97.9
791575	805850	35-40'	98.4
791425	806075	0-5'	64.5*

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791425	806075	5-10'	84.1*
791425	806075	10-15'	76.9*
791425	806075	15-20'	82.9*
791425	806075	20-25'	90.1
791425	806075	25-30'	96.4
791425	806075	30-35'	93.4
791425	806075	35-40'	98.3
791125	806075	0-5'	77.4*
791125	806075	5-10'	97.1
791125	806075	10-15'	94.8
791125	806075	15-20'	98.4
791125	806075	20-25'	94.9
791125	806075	25-30'	98.4
791125	806075	30-35'	90.3
791125	806075	35-40'	98.2
790975	806075	0-5'	37.0*
790975	806075	5-10'	91.4
790975	806075	10-15'	93.6
790975	806075	15-20'	97.1
790975	806075	20-25'	78.1*
790975	806075	25-30'	84.7*
790975	806075	30-35'	92.8
790975	806075	35-40'	95.5
791200	806075	0-5'	58.5*
791200	806075	5-10'	78.5*
791200	806075	10-15'	95.6
791200	806075	15-20'	97.4
791200	806075	20-25'	90.9
791200	806075	25-30'	95.5
791200	806075	30-35'	94.3
791200	806075	35-40'	97.9
792250	805400	0-5'	98.3
792250	805400	5-10'	97.4

Northing	Easting	Depth	- #200 (%)
792250	805400	10-15'	97.4
792250	805400	15-20'	97.6
792250	805400	20-25'	98.0
792250	805400	25-30'	95.8
792250	805400	30-35'	96.5
792250	805400	35-40'	95.6
792325	805400	0-5'	96.7
792325	805400	5-10'	68.3*
792325	805400	10-15'	31.2*
792325	805400	15-20'	43.4*
792325	805400	20-25'	94.8
792325	805400	25-30'	94.0
792325	805400	30-35'	96.5
792025	805400	0-5'	98.2
792025	805400	5-10'	98.3
792025	805400	10-15'	94.7
792025	805400	15-20'	95.8
792025	805400	20-25'	97.7
792025	805400	25-30'	97.6
792025	805400	30-35'	98.4
792025	805400	35-40'	94.3
792100	805550	0-5'	95.7
792100	805550	5-10'	96.9
792100	805550	10-15'	97.0
792100	805550	15-20'	96.0
792100	805550	20-25'	96.7
792100	805550	25-30'	98.8
792100	805550	30-35'	98.7
792100	805550	35-40'	96.7
792250	805625	0-5'	97.3
792250	805625	5-10'	98.2
792250	805625	10-15'	95.7
792250	805625	15-20'	97.6

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792250	805625	20-25'	99.0
792250	805625	25-30'	95.3
792250	805625	30-35'	98.1
792250	805625	35-40'	97.0
792325	805625	0-5'	98.7
792325	805625	5-10'	99.0
792325	805625	10-15'	98.3
792325	805625	15-20'	98.9
792325	805625	20-25'	98.1
792325	805625	25-30'	98.2
792325	805625	30-35'	98.8
792325	805625	35-40'	99.0
792100	805400	0-5'	97.6
792100	805400	5-10'	98.6
792100	805400	10-15'	99.1
792100	805400	15-20'	98.4
792100	805400	20-25'	97.8
792100	805400	25-30'	98.4
792100	805400	30-35'	98.5
792100	805400	35-40'	98.6
791950	805475	0-5'	97.9
791950	805475	5-10'	98.2
791950	805475	10-15'	98.5
791950	805475	15-20'	98.5
791950	805475	20-25'	98.9
791950	805475	25-30'	98.6
791950	805475	30-35'	97.8
791950	805475	35-40'	99.0
792025	805475	0-5'	97.9
792025	805475	5-10'	98.6
792025	805475	10-15'	97.1
792025	805475	15-20'	97.1
792025	805475	20-25'	99.3

Northing	Easting	Depth	- #200 (%)
792025	805475	25-30'	98.2
792025	805475	30-35'	99.5
792025	805475	35-40'	98.4
791950	805400	0-5'	99.0
791950	805400	5-10'	98.6
791950	805400	10-15'	98.5
791950	805400	15-20'	98.8
791950	805400	20-25'	98.8
791950	805400	25-30'	98.7
791950	805400	30-35'	98.8
791950	805400	35-40'	98.6
791875	805400	0-5'	98.5
791875	805400	5-10'	99.2
791875	805400	10-15'	98.6
791875	805400	15-20'	99.2
791875	805400	20-25'	99.3
791875	805400	25-30'	98.3
791875	805400	30-35'	98.3
791875	805400	35-40'	98.9
792250	805700	0-5'	98.1
792250	805700	5-10'	99.5
792250	805700	10-15'	98.8
792250	805700	15-20'	98.9
792250	805700	20-25'	96.1
792250	805700	25-30'	95.6
792250	805700	30-35'	97.3
792250	805700	35-40'	98.7
792100	805475	0-5'	98.1
792100	805475	5-10'	97.3
792100	805475	10-15'	98.8
792100	805475	15-20'	97.2
792100	805475	20-25'	99.0
792100	805475	25-30'	98.8

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792100	805475	30-35'	99.0
792100	805475	35-40'	99.2
792175	805550	0-5'	97.6
792175	805550	5-10'	98.2
792175	805550	10-15'	99.2
792175	805550	15-20'	97.8
792175	805550	20-25'	97.4
792175	805550	25-30'	97.3
792175	805550	30-35'	98.6
792175	805550	35-40'	98.0
792325	805550	0-5'	98.5
792325	805550	5-10'	98.5
792325	805550	10-15'	97.8
792325	805550	15-20'	98.8
792325	805550	20-25'	97.9
792325	805550	25-30'	98.7
792325	805550	30-35'	97.8
792325	805550	35-40'	97.6
792175	805400	0-5'	96.3
792175	805400	5-10'	96.0
792175	805400	10-15'	98.5
792175	805400	15-20'	98.8
792175	805400	20-25'	96.6
792175	805400	25-30'	96.0
792175	805400	30-35'	98.1
792175	805400	35-40'	98.6
792400	805625	0-5'	98.9
792400	805625	5-10'	98.9
792400	805625	10-15'	98.3
792400	805625	15-20'	99.0
792400	805625	20-25'	98.8
792400	805625	25-30'	98.1
792400	805625	30-35'	97.2

Northing	Easting	Depth	- #200 (%)
792400	805625	35-40'	96.3
792250	805550	0-5'	96.0
792250	805550	5-10'	98.8
792250	805550	10-15'	97.4
792250	805550	15-20'	98.3
792250	805550	20-25'	98.8
792250	805550	25-30'	98.8
792250	805550	30-35'	98.8
792250	805550	35-40'	99.0
792325	805475	0-5'	97.6
792325	805475	5-10'	97.6
792325	805475	10-15'	98.2
792325	805475	15-20'	97.9
792325	805475	20-25'	97.9
792325	805475	25-30'	97.9
792325	805475	30-35'	97.8
792325	805475	35-40'	93.1
792175	805475	0-5'	97.7
792175	805475	5-10'	98.2
792175	805475	10-15'	98.6
792175	805475	15-20'	97.6
792175	805475	20-25'	97.8
792175	805475	25-30'	96.7
792175	805475	30-35'	97.8
792175	805475	35-40'	97.7
792175	805700	0-5'	95.0
792175	805700	5-10'	97.5
792175	805700	10-15'	97.6
792175	805700	15-20'	98.9
792175	805700	20-25'	98.1
792175	805700	25-30'	98.4
792175	805700	30-35'	98.7
792175	805700	35-40'	96.9

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792250	805475	0-5'	98.9
792250	805475	5-10'	97.6
792250	805475	10-15'	98.9
792250	805475	15-20'	97.9
792250	805475	20-25'	97.9
792250	805475	25-30'	97.6
792250	805475	30-35'	97.2
792250	805475	35-40'	99.7
792400	805700	0-5'	98.2
792400	805700	5-10'	98.7
792400	805700	10-15'	97.6
792400	805700	15-20'	98.8
792400	805700	20-25'	99.5
792400	805700	25-30'	99.1
792400	805700	30-35'	98.8
792400	805700	35-40'	98.6
790975	805850	0-5'	98.0
790975	805850	5-10'	97.6
790975	805850	10-15'	97.9
790975	805850	15-20'	97.2
790975	805850	20-25'	96.7
790975	805850	25-30'	98.7
790975	805850	30-35'	98.3
790975	805850	35-40'	99.0
792400	805775	0-5'	97.8
792400	805775	5-10'	98.6
792400	805775	10-15'	41.2*
792400	805775	15-20'	84.1*
792400	805775	20-25'	93.9
792400	805775	25-30'	97.2
792400	805775	30-35'	98.0
792400	805775	35-40'	98.0
792025	805550	0-5'	96.9

Northing	Easting	Depth	- #200 (%)
792025	805550	5-10'	98.8
792025	805550	10-15'	97.9
792025	805550	15-20'	98.6
792025	805550	20-25'	98.5
792025	805550	25-30'	99.1
792025	805550	30-35'	99.1
792025	805550	35-40'	99.0
792325	805775	0-5'	98.5
792325	805775	5-10'	98.5
792325	805775	10-15'	98.8
792325	805775	15-20'	98.8
792325	805775	20-25'	97.1
792325	805775	25-30'	97.8
792325	805775	30-35'	96.8
792325	805775	35-40'	97.6
792100	805625	0-5'	97.3
792100	805625	5-10'	97.6
792100	805625	10-15'	98.4
792100	805625	15-20'	98.4
792100	805625	20-25'	99.5
792100	805625	25-30'	98.9
792100	805625	30-35'	98.2
792100	805625	35-40'	96.1
792250	805775	0-5'	99.2
792250	805775	5-10'	98.6
792250	805775	10-15'	99.1
792250	805775	15-20'	97.9
792250	805775	20-25'	98.8
792250	805775	25-30'	98.5
792250	805775	30-35'	99.2
792250	805775	35-40'	98.5
791275	805850	0-5'	61.7*
791275	805850	5-10'	55.0*

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791275	805850	10-15'	58.1*
791275	805850	15-20'	33.8*
791275	805850	20-25'	93.3
791275	805850	25-30'	96.6
791275	805850	30-35'	95.0
791275	805850	35-40'	97.8
791125	805850	0-5'	95.2
791125	805850	5-10'	96.0
791125	805850	10-15'	98.3
791125	805850	15-20'	96.6
791125	805850	20-25'	98.8
791125	805850	25-30'	91.1
791125	805850	30-35'	98.2
791125	805850	35-40'	96.9
791725	805850	0-5'	91.3
791725	805850	5-10'	95.2
791725	805850	10-15'	91.6
791725	805850	15-20'	97.9
791725	805850	20-25'	90.2
791725	805850	25-30'	97.1
791725	805850	30-35'	90.5
791725	805850	35-40'	96.4
791800	805850	0-5'	90.6
791800	805850	5-10'	97.8
791800	805850	10-15'	93.8
791800	805850	15-20'	99.3
791800	805850	20-25'	95.6
791800	805850	25-30'	98.3
791800	805850	30-35'	91.7
791800	805850	35-40'	98.8
791050	805850	0-5'	75.6*
791050	805850	5-10'	95.9
791050	805850	10-15'	97.7

Northing	Easting	Depth	- #200 (%)
791050	805850	15-20'	94.4
791050	805850	20-25'	92.8
791050	805850	25-30'	96.2
791050	805850	30-35'	97.4
791050	805850	35-40'	96.4
792700	805400	0-5'	97.8
792700	805400	5-10'	95.5
792700	805400	10-15'	97.5
792700	805400	15-20'	96.4
792700	805400	20-25'	97.6
792700	805400	25-30'	95.1
792700	805400	30-35'	97.9
792700	805400	35-40'	97.9
792775	805475	0-5'	97.9
792775	805475	5-10'	98.7
792775	805475	10-15'	96.4
792775	805475	15-20'	97.1
792775	805475	20-25'	98.3
792775	805475	25-30'	95.8
792775	805475	30-35'	97.3
792775	805475	35-40'	97.9
792625	805700	0-5'	97.4
792625	805700	5-10'	96.3
792625	805700	10-15'	98.2
792625	805700	15-20'	98.8
792625	805700	20-25'	98.2
792625	805700	25-30'	97.6
792625	805700	30-35'	98.7
792625	805700	35-40'	98.2
792775	805400	0-5'	98.2
792775	805400	5-10'	97.1
792775	805400	10-15'	97.9
792775	805400	15-20'	97.6

* Indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792775	805400	20-25'	97.1
792775	805400	25-30'	95.3
792775	805400	30-35'	96.3
792775	805400	35-40'	97.5
792775	805700	0-5'	96.8
792775	805700	5-10'	97.0
792775	805700	10-15'	97.4
792775	805700	15-20'	97.7
792775	805700	20-25'	98.7
792775	805700	25-30'	97.3
792775	805700	30-35'	97.5
792775	805700	35-40'	98.4
792625	805550	0-5'	97.5
792625	805550	5-10'	97.7
792625	805550	10-15'	98.6
792625	805550	15-20'	97.6
792625	805550	20-25'	99.7
792625	805550	25-30'	99.4
792625	805550	30-35'	98.9
792625	805550	35-40'	99.4
792700	805550	0-5'	99.0
792700	805550	5-10'	99.1
792700	805550	10-15'	98.6
792700	805550	15-20'	98.5
792700	805550	20-25'	98.3
792700	805550	25-30'	98.8
792700	805550	30-35'	97.8
792700	805550	35-40'	99.2
792625	805625	0-5'	99.1
792625	805625	5-10'	99.7
792625	805625	10-15'	99.6
792625	805625	15-20'	99.5
792625	805625	20-25'	99.4

Northing	Easting	Depth	- #200 (%)
792625	805625	25-30'	99.3
792625	805625	30-35'	98.5
792625	805625	35-40'	97.5
792625	805400	0-5'	98.4
792625	805400	5-10'	98.8
792625	805400	10-15'	98.5
792625	805400	15-20'	97.7
792625	805400	20-25'	99.3
792625	805400	25-30'	98.9
792625	805400	30-35'	98.9
792625	805400	35-40'	98.4
792550	805700	0-5'	97.5
792550	805700	5-10'	95.4
792550	805700	10-15'	98.5
792550	805700	15-20'	99.1
792550	805700	20-25'	98.0
792550	805700	25-30'	99.7
792550	805700	30-35'	99.4
792550	805700	35-40'	99.3
792700	805475	0-5'	96.5
792700	805475	5-10'	99.2
792700	805475	10-15'	95.6
792700	805475	15-20'	96.5
792700	805475	20-25'	97.8
792700	805475	25-30'	97.8
792700	805475	30-35'	96.9
792700	805475	35-40'	94.6
791350	806000	0-5'	96.9
791350	806000	5-10'	98.9
791350	806000	10-15'	98.1
791350	806000	15-20'	98.8
791350	806000	20-25'	99.4
791350	806000	25-30'	99.0

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791350	806000	30-35'	99.4
791350	806000	35-40'	99.3
791350	805850	0-5'	64.9*
791350	805850	5-10'	77.6*
791350	805850	10-15'	88.6*
791350	805850	15-20'	96.0
791350	805850	20-25'	97.5
791350	805850	25-30'	97.1
791350	805850	30-35'	97.9
791350	805850	35-40'	97.9
791200	806000	0-5'	93.7
791200	806000	5-10'	99.3
791200	806000	10-15'	98.0
791200	806000	15-20'	98.8
791200	806000	20-25'	97.4
791200	806000	25-30'	98.2
791200	806000	30-35'	97.7
791200	806000	35-40'	98.8
792850	805475	0-5'	97.5
792850	805475	5-10'	97.4
792850	805475	10-15'	97.7
792850	805475	15-20'	98.9
792850	805475	20-25'	97.6
792850	805475	25-30'	97.9
792850	805475	30-35'	95.9
792850	805475	35-40'	96.7
792850	805700	0-5'	96.7
792850	805700	5-10'	96.7
792850	805700	10-15'	97.7
792850	805700	15-20'	98.0
792850	805700	20-25'	98.6
792850	805700	25-30'	98.5
792850	805700	30-35'	98.3

Northing	Easting	Depth	- #200 (%)
792850	805700	35-40'	98.6
792850	805400	0-5'	84.6*
792850	805400	5-10'	95.5
792850	805400	10-15'	97.8
792850	805400	15-20'	98.4
792850	805400	20-25'	97.7
792850	805400	25-30'	97.4
792850	805400	30-35'	97.4
792850	805400	35-40'	95.5
792700	805775	0-5'	98.1
792700	805775	5-10'	98.4
792700	805775	10-15'	98.2
792700	805775	15-20'	96.6
792700	805775	20-25'	94.8
792700	805775	25-30'	94.0
792700	805775	30-35'	96.2
792700	805775	35-40'	97.3
792625	805475	0-5'	91.0
792625	805475	5-10'	95.8
792625	805475	10-15'	96.6
792625	805475	15-20'	96.6
792625	805475	20-25'	96.3
792625	805475	25-30'	97.8
792625	805475	30-35'	98.0
792625	805475	35-40'	96.8
792550	805475	0-5'	97.5
792550	805475	5-10'	95.4
792550	805475	10-15'	98.2
792550	805475	15-20'	98.3
792550	805475	20-25'	98.7
792550	805475	25-30'	97.9
792550	805475	30-35'	96.7
792550	805475	35-40'	96.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792775	805775	0-5'	98.5
792775	805775	5-10'	98.3
792775	805775	10-15'	97.2
792775	805775	15-20'	98.7
792775	805775	20-25'	97.7
792775	805775	25-30'	97.5
792775	805775	30-35'	97.3
792775	805775	35-40'	95.4
792700	805700	0-5'	97.8
792700	805700	5-10'	98.9
792700	805700	10-15'	99.5
792700	805700	15-20'	99.2
792700	805700	20-25'	97.3
792700	805700	25-30'	96.4
792700	805700	30-35'	97.6
792700	805700	35-40'	97.3
792325	805700	0-5'	97.5
792325	805700	5-10'	98.5
792325	805700	10-15'	95.4
792325	805700	15-20'	99.3
792325	805700	20-25'	98.7
792325	805700	25-30'	97.4
792325	805700	30-35'	93.9
792325	805700	35-40'	99.4
792175	805625	0-5'	98.4
792175	805625	5-10'	97.1
792175	805625	10-15'	98.5
792175	805625	15-20'	97.5
792175	805625	20-25'	98.2
792175	805625	25-30'	98.6
792175	805625	30-35'	98.8
792175	805625	35-40'	98.2
792700	805625	0-5'	96.6

Northing	Easting	Depth	- #200 (%)
792700	805625	5-10'	90.2
792700	805625	10-15'	98.2
792700	805625	15-20'	98.3
792700	805625	20-25'	97.8
792700	805625	25-30'	97.6
792700	805625	30-35'	97.4
792700	805625	35-40'	98.6
792850	805625	0-5'	98.1
792850	805625	5-10'	98.9
792850	805625	10-15'	99.1
792850	805625	15-20'	98.4
792850	805625	20-25'	99.4
792850	805625	25-30'	99.2
792850	805625	30-35'	98.2
792850	805625	35-40'	97.5
792850	805550	0-5'	91.5
792850	805550	5-10'	97.9
792850	805550	10-15'	98.3
792850	805550	15-20'	98.2
792850	805550	20-25'	97.4
792850	805550	25-30'	99.0
792850	805550	30-35'	98.6
792850	805550	35-40'	93.7
792850	805775	0-5'	96.4
792850	805775	5-10'	97.1
792850	805775	10-15'	97.2
792850	805775	15-20'	99.3
792850	805775	20-25'	97.5
792850	805775	25-30'	97.7
792850	805775	30-35'	96.8
792850	805775	35-40'	97.2
792925	805625	0-5'	96.8
792925	805625	5-10'	97.4

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792925	805625	10-15'	98.1
792925	805625	15-20'	98.6
792925	805625	20-25'	98.3
792925	805625	25-30'	98.5
792925	805625	30-35'	98.7
792925	805625	35-40'	98.6
792775	805550	0-5'	96.7
792775	805550	5-10'	97.1
792775	805550	10-15'	97.0
792775	805550	15-20'	98.2
792775	805550	20-25'	97.6
792775	805550	25-30'	98.0
792775	805550	30-35'	98.8
792775	805550	35-40'	98.3
792550	805550	0-5'	97.0
792550	805550	5-10'	98.7
792550	805550	10-15'	97.0
792550	805550	15-20'	97.9
792550	805550	20-25'	98.5
792550	805550	25-30'	99.0
792550	805550	30-35'	98.5
792550	805550	35-40'	98.8
792775	805625	0-5'	98.6
792775	805625	5-10'	99.4
792775	805625	10-15'	98.2
792775	805625	15-20'	97.9
792775	805625	20-25'	99.1
792775	805625	25-30'	98.8
792775	805625	30-35'	98.0
792775	805625	35-40'	99.2
792550	805625	0-5'	96.2
792550	805625	5-10'	98.8
792550	805625	10-15'	98.5

Northing	Easting	Depth	- #200 (%)
792550	805625	15-20'	99.0
792550	805625	20-25'	98.5
792550	805625	25-30'	96.7
792550	805625	30-35'	98.0
792550	805625	35-40'	98.7
790525	805550	0-5'	98.4
790525	805550	5-10'	97.4
790525	805550	10-15'	97.2
790525	805550	15-20'	96.9
790600	805250	0-5'	94.6
790600	805250	5-10'	96.0
790600	805250	10-15'	96.4
790600	805250	15-20'	97.4
790600	805325	0-5'	96.7
790600	805325	5-10'	96.4
790600	805325	10-15'	97.2
790600	805325	15-20'	97.0
790700	805250	0-5'	94.7
790700	805250	5-10'	97.3
790700	805250	10-15'	96.8
790700	805250	15-20'	96.5
790675	805325	0-5'	96.5
790675	805325	5-10'	97.0
790675	805325	10-15'	97.0
790675	805325	15-20'	96.2
790750	805250	0-5'	92.1
790750	805250	5-10'	97.3
790750	805250	10-15'	96.7
790750	805250	15-20'	97.4
790750	805325	0-5'	96.8
790750	805325	5-10'	95.5
790750	805325	10-15'	95.2
790750	805325	15-20'	97.3

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
790825	805475	0-5'	85.7*
790825	805475	5-10'	96.2
790825	805475	10-15'	97.5
790825	805475	15-20'	97.6
790825	805550	0-5'	98.4
790825	805550	5-10'	96.2
790825	805550	10-15'	96.9
790825	805550	15-20'	97.2
790900	805550	0-5'	95.9
790900	805550	5-10'	96.9
790900	805550	10-15'	97.4
790900	805550	15-20'	97.4
790975	805475	0-5'	94.9
790975	805475	5-10'	96.0
790975	805475	10-15'	97.0
790975	805475	15-20'	97.1
790975	805550	0-5'	92.4
790975	805550	5-10'	97.0
790975	805550	10-15'	97.0
790975	805550	15-20'	97.0
791050	805550	0-5'	86.2*
791050	805550	5-10'	96.0
791050	805550	10-15'	96.0
791050	805550	15-20'	98.0
791125	805550	0-5'	76.3*
791125	805550	5-10'	95.0
791125	805550	10-15'	97.0
791125	805550	15-20'	97.0
790525	805400	5-10'	93.8
791575	805325	10-15'	97.0
790525	805400	0-5'	93.8
791200	805400	0-5'	97.2
791200	805550	0-5'	87.7*

Northing	Easting	Depth	- #200 (%)
791350	805550	0-5'	96.4
790900	805400	0-5'	95.5
790975	805400	0-5'	98.1
791050	805325	0-5'	96.4
791425	805325	0-5'	93.6
791275	805475	0-5'	97.2
791275	805400	0-5'	97.4
791575	805525	0-5'	95.9
791650	805325	0-5'	97.7
791275	805325	0-5'	96.6
791050	805475	0-5'	95.9
791125	805325	0-5'	96.0
791125	805400	0-5'	95.7
791200	805475	0-5'	96.4
791350	805325	0-5'	91.8
791200	805325	0-5'	98.1
791275	805550	0-5'	91.7
791350	805475	0-5'	98.4
791050	805400	0-5'	96.9
791350	805400	0-5'	91.0
791500	805325	0-5'	98.3
791125	805475	0-5'	96.2
791875	805250	0-5'	95.2
791050	805175	0-5'	94.8
791125	805250	0-5'	97.6
790975	805250	0-5'	95.6
791575	805250	0-5'	92.6
792175	805325	0-5'	97.1
791800	805325	0-5'	97.5
791350	805250	0-5'	95.7
791500	805250	0-5'	96.2
791425	805250	0-5'	96.6
791650	805250	0-5'	97.0

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
792025	805250	0-5'	97.0
792025	805325	0-5'	95.8
792250	805250	0-5'	93.9
792175	805250	0-5'	97.5
791200	805250	0-5'	85.3*
791725	805250	0-5'	97.8
792100	805325	0-5'	97.7
791050	805250	0-5'	96.3
791950	805250	0-5'	96.5
792325	805250	0-5'	92.8
792100	805250	0-5'	97.3
791800	805250	0-5'	94.8
792325	805325	0-5'	95.2
791725	805325	0-5'	97.0
792250	805325	0-5'	97.0
791875	805325	0-5'	98.3
791950	805325	0-5'	96.5
792325	805175	0-5'	78.7*
791050	805100	0-5'	95.5
792025	805100	0-5'	96.9
791425	805175	0-5'	94.7
791800	805100	0-5'	95.8
791725	805100	0-5'	95.0
791125	805175	0-5'	98.0
791800	805175	0-5'	96.8
791800	805025	0-5'	92.6
791725	805025	0-5'	96.8
791875	805100	0-5'	93.7
791950	805175	0-5'	97.4
792250	805100	0-5'	94.1
791500	805175	0-5'	96.1
792250	805175	0-5'	93.3
791425	804950	0-5'	94.1

Northing	Easting	Depth	- #200 (%)
792175	805175	0-5'	95.5
791500	804950	0-5'	95.6
791875	805175	0-5'	92.7
792025	805175	0-5'	96.3
791650	805175	0-5'	92.1
791575	805100	0-5'	95.7
791575	805175	0-5'	95.6
791425	805025	0-5'	91.1
791950	805025	0-5'	96.3
792175	805100	0-5'	96.1
791650	805100	0-5'	97.2
791725	805175	0-5'	94.8
792100	805100	0-5'	96.5
791200	805175	0-5'	92.5
791575	805025	0-5'	95.4
791650	805025	0-5'	97.2
792100	805175	0-5'	96.4
792025	805175	0-5'	87.9*
792175	805025	0-5'	95.8
791425	805100	0-5'	95.4
791500	805100	0-5'	95.9
791500	805025	0-5'	96.5
792025	805175	5-10'	97.5
793600	805400	5-10'	97.9
791650	805175	5-10'	97.7
793300	805475	5-10'	97.4
791425	805100	5-10'	97.9
791125	805175	5-10'	94.5
791650	805100	5-10'	96.1
793150	805550	5-10'	97.0
791500	805175	5-10'	97.7
793025	805550	5-10'	97.0
792250	805175	5-10'	74.8*

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791725	805175	5-10'	97.5
792925	805550	5-10'	98.0
791800	805175	5-10'	97.9
792175	805175	5-10'	97.0
793225	805475	5-10'	87.9*
791800	805100	5-10'	98.2
791050	805100	5-10'	98.1
791575	805175	5-10'	96.9
791425	805175	5-10'	97.5
791500	805025	5-10'	94.1
791500	805100	5-10'	98.4
791425	804950	5-10'	97.6
791575	805025	5-10'	97.3
791800	805025	5-10'	97.3
792100	805175	5-10'	97.3
791725	805025	5-10'	96.4
791875	805175	5-10'	97.8
791650	805025	5-10'	97.1
791725	805100	5-10'	96.5
791200	805175	5-10'	96.7
791950	805175	5-10'	97.7
791575	805100	5-10'	97.0
791875	805100	5-10'	95.5
793225	805175	0-5'	98.3
793600	805250	0-5'	97.3
793000	805325	0-5'	93.8
793000	805175	0-5'	83.2*
793000	805250	0-5'	77.9*
793025	805325	0-5'	61.2*
793675	805250	0-5'	97.9
793150	805250	0-5'	84.4*
792925	805250	0-5'	73.5*
793225	805325	0-5'	98.2

Northing	Easting	Depth	- #200 (%)
793025	805250	0-5'	72.4*
793300	805250	0-5'	92.9
793225	805400	0-5'	94.7
792925	805175	0-5'	77.6*
793025	806175	0-5'	86.0*
793225	805250	0-5'	95.1
792925	805400	0-5'	95.8
793750	805250	0-5'	98.2
793375	805250	0-5'	96.8
793150	805325	0-5'	83.6*
793525	805325	0-5'	98.4
793300	805400	0-5'	94.9
793450	805325	0-5'	93.3
792925	805320	0-5'	80.6*
793375	805325	0-5'	95.7
793025	805475	0-5'	94.0
793150	805400	0-5'	94.6
793300	805325	0-5'	96.4
793525	805400	0-5'	96.9
793450	805250	0-5'	95.6
793600	805325	0-5'	95.9
793000	805475	0-5'	97.3
793150	805175	0-5'	89.0*
793450	805400	0-5'	95.1
793375	805400	0-5'	96.6
793675	805325	0-5'	98.1
793750	805325	0-5'	97.4
793000	805400	0-5'	96.3
792925	805475	0-5'	98.4
793150	805475	0-5'	96.6
793525	805250	0-5'	98.4
793000	805100	0-5'	80.4*
793025	805400	0-5'	95.9

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791350	805250	5-10'	92.9
791200	805250	5-10'	90.7
791425	805250	5-10'	97.1
791300	805250	5-10'	96.3
791125	807250	5-10'	95.2
790975	805250	5-10'	95.1
791050	805250	5-10'	96.1
791950	805250	5-10'	98.1
791875	805250	5-10'	97.7
791050	805175	5-10'	96.4
791650	805250	5-10'	96.1
791725	805250	5-10'	96.7
792100	805250	5-10'	96.5
792250	805250	5-10'	60.4*
791575	805250	5-10'	97.4
792025	805250	5-10'	97.2
792175	805250	5-10'	96.7
792325	805325	5-10'	79.1*
792325	805250	5-10'	76.9*
791800	805250	5-10'	95.2
792175	805325	5-10'	96.9
791875	805325	5-10'	94.1
791800	805325	5-10'	96.8
792250	805325	5-10'	98.2
792025	805325	5-10'	96.7
791725	805325	5-10'	97.1
791950	805325	5-10'	97.3
792100	805325	5-10'	98.0
791125	805325	5-10'	96.1
791350	805400	5-10'	94.4
791125	805400	5-10'	94.8
791500	805325	5-10'	96.5
791200	805400	5-10'	93.3

Northing	Easting	Depth	- #200 (%)
791575	805325	5-10'	96.2
791650	805325	5-10'	95.7
791050	805400	5-10'	97.4
791275	805325	5-10'	96.9
791275	805475	5-10'	97.3
791350	805325	15-20'	98.8
791875	805325	15-20'	98.0
791125	805325	15-20'	98.0
791650	805325	15-20'	98.6
791950	805325	15-20'	97.6
792250	805325	15-20'	99.1
791575	805250	15-20'	98.2
791050	805250	15-20'	97.3
791350	805250	15-20'	98.2
791725	805325	15-20'	97.7
791800	805325	15-20'	98.7
791125	805475	15-20'	99.3
791200	805550	15-20'	99.3
791200	805475	15-20'	96.9
792175	805325	15-20'	96.2
790975	805400	15-20'	97.3
791275	805475	15-20'	96.3
791425	805325	15-20'	97.7
791275	805325	15-20'	98.0
791350	805400	15-20'	98.1
791275	805400	15-20'	98.7
791275	805550	15-20'	98.3
792025	805325	15-20'	96.7
791650	805250	15-20'	96.7
791050	805175	15-20'	98.3
791500	805325	15-20'	97.5
791200	805250	15-20'	99.3
792100	805325	15-20'	97.4

* *indicates failed test*

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791725	805250	15-20'	98.8
791350	805475	15-20'	97.6
791950	805250	15-20'	98.9
791200	805325	15-20'	99.9
791350	805550	15-20'	80.9*
791200	805400	15-20'	98.1
791500	805250	15-20'	98.5
791050	805475	15-20'	98.4
792025	805250	15-20'	98.4
791575	805325	15-20'	98.4
791050	805325	15-20'	98.8
791350	805475	5-10'	99.1
791425	805325	5-10'	96.5
791050	805475	5-10'	95.1
791275	805400	5-10'	97.0
791200	805475	5-10'	96.4
791200	805550	5-10'	95.7
791350	805325	5-10'	97.3
790975	805400	5-10'	95.5
791350	805550	5-10'	96.8
790900	805400	5-10'	95.6
791200	805325	5-10'	96.3
791050	805325	5-10'	95.7
791125	805475	5-10'	97.1
791275	805550	5-10'	96.2
793000	805325	5-10'	95.6
793450	805325	5-10'	98.8
793000	805250	5-10'	83.6*
793375	805400	5-10'	97.9
793300	805400	5-10'	97.9
793675	805325	5-10'	98.2
793000	805400	5-10'	97.4
793000	805175	5-10'	76.2*

Northing	Easting	Depth	- #200 (%)
793525	805325	5-10'	96.5
793225	805325	5-10'	97.6
793525	805250	5-10'	98.5
793225	805400	5-10'	96.4
793150	805400	5-10'	95.0
793025	805325	5-10'	84.0*
793000	805475	5-10'	96.6
792925	805250	5-10'	78.6*
792925	805475	5-10'	98.7
793000	805100	5-10'	81.9*
793150	805325	5-10'	94.2
793025	805250	5-10'	69.9*
792425	805325	5-10'	92.4
793025	805400	5-10'	94.9
793750	805250	5-10'	97.8
793450	805400	5-10'	96.7
793325	805325	5-10'	96.2
793150	805175	5-10'	95.9
793150	805475	5-10'	96.5
792925	805175	5-10'	84.8*
793225	805175	5-10'	98.7
793025	805475	5-10'	96.8
792925	805400	5-10'	96.5
793150	805250	5-10'	83.5*
793300	805325	5-10'	97.0
793750	805325	5-10'	96.0
793525	805400	5-10'	98.2
793600	805325	5-10'	96.2
792025	805025	0-5'	94.9
793025	805550	0-5'	97.0
792100	805025	0-5'	92.4
793150	805550	0-5'	94.6
791650	804950	0-5'	94.8

* Indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
793300	805475	0-5'	96.8
791575	804950	0-5'	94.3
791950	804950	0-5'	96.1
793600	805400	0-5'	96.5
791875	804950	0-5'	93.2
792925	805550	0-5'	95.9
791800	804950	0-5'	92.8
792250	805025	0-5'	91.5
791725	804950	0-5'	93.8
791875	805025	0-5'	96.2
793225	805475	0-5'	96.6
793675	805250	5-10'	97.9
793300	805250	5-10'	96.3
793600	805250	5-10'	97.3
793025	805175	5-10'	86.6*
793225	805250	5-10'	96.9
793450	805250	5-10'	97.7
793375	805250	5-10'	97.5
791650	805250	10-15'	98.0
791500	805250	10-15'	97.2
791425	805250	10-15'	95.1
791350	805250	10-15'	96.5
791725	805325	10-15'	96.9
792025	805325	10-15'	96.9
791575	805250	10-15'	97.1
792025	805250	10-15'	96.3
791050	805125	10-15'	97.5
791875	805250	10-15'	98.1
792100	805250	10-15'	95.1
792100	805325	10-15'	97.2
791800	805325	10-15'	96.0
791950	805250	10-15'	97.0
792175	805325	10-15'	95.6

Northing	Easting	Depth	- #200 (%)
792250	805325	10-15'	97.3
791050	805250	10-15'	94.8
791875	805325	10-15'	97.4
791225	805250	10-15'	96.6
791800	805750	10-15'	92.6
791950	805325	10-15'	97.2
791125	805250	10-15'	96.9
791200	805250	10-15'	97.8
791200	805400	10-15'	96.5
793300	805475	10-15'	96.8
791575	805100	10-15'	97.3
791725	805175	10-15'	95.9
791925	805175	10-15'	96.9
791500	805100	10-15'	96.6
792925	805550	10-15'	98.3
791200	805175	10-15'	96.5
793025	805550	10-15'	99.3
791125	806475	10-15'	98.3
791200	805475	10-15'	97.9
791650	805325	10-15'	97.3
791275	805400	10-15'	97.4
791500	805325	10-15'	96.6
790900	805400	10-15'	96.5
791350	805550	10-15'	97.4
791125	805400	10-15'	96.9
791125	805325	10-15'	93.7
791425	805325	10-15'	96.6
791275	805325	10-15'	96.4
791050	805475	10-15'	97.2
791350	805550	15-20'	97.4
791350	805475	15-20'	97.1
791350	805325	10-15'	97.1
791275	805550	10-15'	97.0

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of 200 Wash Analysis on Radon Barrier Material (continued)

Northing	Easting	Depth	- #200 (%)
791200	805550	10-15'	97.0
791125	805175	15-20'	96.9
791575	805175	15-20'	97.3
791200	805175	15-20'	97.0
791650	805175	15-20'	96.4
791650	805100	10-15'	97.7
793150	805550	10-15'	95.5
791500	805175	10-15'	97.3
791575	805175	10-15'	97.4
791125	805175	10-15'	96.6
790975	805400	10-15'	95.4
791050	805400	10-15'	97.0
791650	805175	10-15'	97.7
791050	805325	10-15'	96.6
791275	805475	10-15'	96.5
791200	805325	10-15'	96.5
791350	805400	10-15'	96.7

Northing	Easting	Depth	- #200 (%)

* indicates failed test

Specifications: 90% of sample finer than the #200 sieve.

Testing Frequencies: One #200 wash sample collected for every 1000 cubic yards.

CLAY BORROW
SIEVE ANALYSES

2004

AMOUNT OF MATERIAL IN SOIL FINER THAN THE No. 200 SIEVE
ASTM D1140
INBERG-MILLER ENGINEERS

PROJECT Lucky McMine

CLIENT Lucky McMine

JOB NO. 3152PM

DATE 11-9-04

TECH. JPM.

DATE	11-9	11-11	11-12	11-15	11-16	11-17	11-18	11-19	11-22		
TEST No.	1	2	3	4	5	6	7	8	9		
Location	Bottom →										
PAN NO.	GLM	W	GLM	SB	JPK	HMJ	ASG	Ø	Ø		
WEIGHT BEFORE WASH WITH TARE	383.18	515.1	671.2	608	593.1	561.6	622.0	659.4	628.7		
WEIGHT AFTER WASH WITH TARE	35.9	129.87	42.81	136.0	156.1	149.82	154.15	152.6	147.86		
WEIGHT TARE	351.46, 4.18 31.72	394.5, 9.27 120.6	631.46 31.74	122.1	131.4	138.0	138.65	135.62	135.64		
PERCENT -200	98.8	97.6	98.3	97.1	96.3	97.2	96.8	96.8	97.5		

DATE											
TEST No.											
Location											
PAN NO											
WEIGHT BEFORE WASH WITH TARE											
WEIGHT AFTER WASH WITH TARE											
WEIGHT TARE											
PERCENT -200											

APPENDIX

D

RADON BARRIER CLAY PLACEMENT QC

1998

INBERG-MILLER ENGINEERS
124 EAST MAIN STREET RIVERTON, WYOMING 82501-4397 307-856-8136

March 22, 1999 8152.1-RM

Pathfinder Mines Corporation
P.O. Box 831
Riverton, Wyoming 82501

ATTENTION: TOM HARDGROVE/JACK WADSWORTH

RE: SUMMARY REPORT OF TESTING RESULTS
1998 CONSTRUCTION SEASON
PATHFINDER LUCKY MC MINE RECLAMATION PROJECT
GAS HILLS, WYOMING

Dear Gentlemen:

The following is a summary of the field and laboratory test results performed on clay layer soils for the 1998 construction season on the above-referenced project. The results have been summarized in tables. We have attached the following Summary Reports:

1. Clay Layer Compaction/Moisture Results (15 pages)
2. Clay Layer Proctor Results (1 page)
3. Clay Layer One-Point Proctor Results (1 page)
4. Clay Layer Atterberg Limits Results (3 pages)

We appreciate the opportunity to be of service to you on this phase of the project. If you have any questions regarding the enclosed information, or if we may be of further assistance, please contact us.

Sincerely,

INBERG-MILLER ENGINEERS

Jon C. Howell

Jon C. Howell, P.E.
Vice President

JCH:mdr:ltr\8152.1-RM

Enclosures: As Stated

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1	1	1	Test Site 2	94.4	14.7	89.7	Fail	Fail
1(R)	1	1	Test Site 2	101.6	20.6	96.6	Pass	Fail
2	1	2	Test Site 2	100.6	21.1	95.6	Pass	Fail
3	1	1	Test Site 1	101.7	22.5	96.7	Pass	Fail
4	1	2	Test Site 1	87.5	20.4	83.2	Fail	Fail
4(R)	1	2	Test Site 1	102.4	18.6	97.3	Pass	Pass
5	1	6	Test Site 1	100.3	19.0	95.3	Pass	Pass
6	1	6	Test Site 2	101.1	19.0	96.1	Pass	Pass
7	1	1	N - 784362 E - 804989	94.6	19.4	90.0	Fail	Pass
7(R)	1	1	N - 784364 E - 804985	106.0	18.9	100.8	Pass	Pass
8	1	1	N - 784264 E - 805023	105.1	22.0	99.9	Pass	Fail
9	1	1	N - 784944 E - 804994	105.6	20.4	100.4	Pass	Fail
10	1	1	N - 784247 E - 805151	106.6	18.9	101.3	Pass	Pass
11	1	1	N - 784355 E - 805096	106.0	20.7	100.8	Pass	Fail
12	1	1	N - 784350 E - 804919	109.2	20.4	103.8	Pass	Fail

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
13	1	1	N - 784375 E - 805436	102.9	21.7	97.8	Pass	Fail
14	1	1	N - 784395 E - 805283	106.6	20.4	101.4	Pass	Fail
15	1	1	N - 784372 E - 805193	104.8	20.7	99.6	Pass	Fail
16	2	1	N - 784469 E - 805115	106.0	17.5	101.1	Pass	Pass
17	2	1	N - 784509 E - 805081	107.2	20.5	102.2	Pass	Fail
18	2	1	N - 784479 E - 805346	105.7	21.1	100.8	Pass	Fail
19	2	2	N - 784261 E - 805158	106.0	20.8	101.1	Pass	Fail
20	2	2	N - 784259 E - 804988	106.3	21.4	101.3	Pass	Fail
21	2	1	N - 784526 E - 804986	100.9	23.9	96.2	Pass	Fail
22	2	2	N - 784334 E - 805186	108.7	18.1	103.6	Pass	Pass
23	2	2	N - 784334 E - 805431	104.2	22.7	99.3	Pass	Fail
24	2	2	N - 784336 E - 805107	103.3	17.7	98.5	Pass	Pass
25	2	2	N - 784373 E - 805386	102.7	19.2	97.9	Pass	Pass
26	2	2	N - 784405 E - 804961	105.6	19.2	100.7	Pass	Pass
27	2	2	N - 784442 E - 805380	85.0	12.6	81.0	Fail	Fail

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
27(R)	2	2	N - 784440 E - 805415	103.2	23.1	98.4	Pass	Fail
28	2	2	N - 784463 E - 805319	104.1	21.3	99.3	Pass	Fail
29	2	2	N - 784504 E - 805511	101.6	20.8	96.9	Pass	Fail
30	2	2	N - 784521 E - 805042	98.2	16.9	93.6	Fail	Pass
30(R)	2	2	N - 784558 E - 805027	103.8	18.9	99.0	Pass	Pass
31	3	3	N - 784259 E - 805008	83.9	18.5	80.4	Fail	Pass
31(R)	3	3	N - 784267 E - 805078	102.7	19.2	98.4	Pass	Pass
32	3	3	N - 784288 E - 805151	101.4	21.6	97.1	Pass	Fail
33	3	3	N - 784317 E - 805408	104.6	20.8	100.2	Pass	Pass
34	3	3	N - 784309 E - 804983	102.6	18.9	98.3	Pass	Pass
35	3	3	N - 784415 E - 805210	86.6	21.5	83.0	Fail	Fail
35(R)	3	3	N - 784421 E - 805217	103.2	20.4	98.9	Pass	Pass
36	3	3	N - 784408 E - 805057	75.7	17.8	72.5	Fail	Pass
36(R)	3	3	N - 784434 E - 805103	99.8	21.3	95.6	Pass	Fail
37	3	1	N - 784627 E - 805116	101.0	21.1	96.7	Pass	Fail

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
38	3	1	N - 784808 E - 805083	100.7	19.1	96.5	Pass	Pass
39	3	1	N - 784413 E - 805266	105.5	21.8	101.1	Pass	Fail
40	3	1	N - 784862 E - 804923	100.8	20.6	96.6	Pass	Pass
41	3	1	N - 784934 E - 804959	101.4	20.1	97.1	Pass	Pass
42	3	1	N - 784777 E - 805253	99.9	20.4	95.7	Pass	Pass
43	3	1	N - 784857 E - 805085	101.2	18.5	96.9	Pass	Pass
44	3	1	N - 784996 E - 805204	97.9	13.9	93.8	Fail	Fail
44(R)	3	1	N - 785034 E - 805172	101.5	20.8	97.2	Pass	Pass
45	3	1	N - 784848 E - 805423	101.7	22.2	97.4	Pass	Fail
46	4	2	N - 784538 E - 804867	100.7	21.7	98.5	Pass	Fail
47	4	3	N - 784411 E - 805198	103.5	18.1	101.4	Pass	Pass
48	4	3	N - 784424 E - 805544	99.8	22.4	97.7	Pass	Fail
49	4	2	N - 784660 E - 805019	105.1	18.3	102.8	Pass	Pass
50	4	3	N - 784393 E - 805189	100.9	18.7	98.7	Pass	Pass
51	4	3	N - 784348 E - 805164	104.2	22.9	102.0	Pass	Fail

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
52	4	2	N - 784736 E - 804952	104.7	19.5	102.5	Pass	Pass
53	4	3	N - 784457 E - 805266	103.5	19.0	101.3	Pass	Pass
54	4	3	N - 784457 E - 805266	102.8	19.9	100.6	Pass	Pass
55	4	2	N - 784963 E - 805198	104.8	22.7	102.5	Pass	Fail
56	4	2	N - 784981 E - 805346	105.3	23.0	103.0	Pass	Fail
57	4	1	N - 785069 E - 805269	97.9	19.3	95.8	Pass	Pass
58	4	1	N - 784922 E - 805341	107.4	16.9	105.1	Pass	Fail
58(R)	4	1	N - 785019 E - 805498	102.2	19.4	100.0	Pass	Pass
59	4	2	N - 784349 E - 805378	99.5	21.6	97.4	Pass	Fail
60	5	2	N - 784375 E - 805333	107.5	20.6	105.9	Pass	Pass
61	5	2	N - 784769 E - 805423	103.7	20.7	102.1	Pass	Pass
62	5	1	N - 784913 E - 805545	98.2	20.1	96.8	Pass	Pass
63	5	2	N - 784774 E - 804981	102.8	18.9	101.3	Pass	Pass
64	5	2	N - 784875 E - 805083	106.1	17.2	104.5	Pass	Fail
64(R)	5	2	N - 784855 E - 805037	104.8	19.8	103.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
65	5	2	N - 784649 E - 805278	99.3	19.4	97.8	Pass	Pass
66	5	2	N - 784598 E - 805364	107.9	19.9	106.3	Pass	Pass
67	5	1	N - 785345 E - 805134	101.8	20.6	100.3	Pass	Pass
68	5	1	N - 785135 E - 805384	99.3	16.5	97.8	Pass	Fail
68(R)	5	1	N - 785084 E - 805539	91.4	20.9	90.1	Fail	Pass
68(R)	5	1	N - 784881 E - 805620	106.2	21.9	104.6	Pass	Pass
69	5	1	N - 785357 E - 805037	110.7	16.3	109.1	Pass	Fail
69(R)	5	1	N - 785671 E - 805310	100.5	21.7	99.0	Pass	Pass
70	5	1	N - 785705 E - 805197	109.6	20.0	108.0	Pass	Pass
71	5	1	N - 785752 E - 805289	105.6	17.0	104.0	Pass	Fail
71(R)	5	1	N - 785671 E - 805310	108.0	21.2	106.4	Pass	Pass
72	5	1	N - 785202 E - 804962	97.2	21.1	95.8	Pass	Pass
73	5	2	N - 785202 E - 804962	109.3	18.1	107.7	Pass	Fail
73(R)	5	2	N - 785210 E - 804963	99.3	21.5	97.8	Pass	Pass
74	5	2	N - 785308 E - 805150	105.6	19.0	104.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
75	5	2	N - 785304 E - 805204	100.0	20.4	98.5	Pass	Pass
76	6	2	N - 785086 E - 805253	98.7	23.9	97.1	Pass	Fail
76(R)	6	2	N - 785086 E - 805306	103.4	21.2	101.7	Pass	Pass
77	6	2	N - 785086 E - 805306	109.4	19.8	107.6	Pass	Pass
78	6	2	N - 785320 E - 805365	108.6	21.3	106.8	Pass	Pass
79	6	1	N - 785283 E - 805469	106.6	20.9	104.8	Pass	Pass
80	6	2	N - 785025 E - 805480	97.8	19.5	96.2	Pass	Pass
81	6	2	N - 785101 E - 805376	109.4	17.9	107.6	Pass	Pass
82	6	2	N - 785061 E - 805603	85.0	27.2	83.6	Fail	Fail
82(R)	6	2	N - 785061 E - 805603	109.1	20.0	107.3	Pass	Pass
83	6	2	N - 785025 E - 805480	105.5	20.8	103.7	Pass	Pass
84	6	2	N - 785101 E - 805376	100.0	21.2	98.3	Pass	Pass
85	6	2	N - 785624 E - 805078	102.7	24.7	101.0	Pass	Fail
85(R)	6	2	N - 785628 E - 805079	109.8	21.2	108.0	Pass	Pass
86	6	2	N - 785341 E - 805493	101.0	21.0	99.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
87	6	2	N - 784854 E - 805687	99.7	21.2	98.0	Pass	Pass
88	6	3	N - 785106 E - 804975	102.8	19.5	101.1	Pass	Pass
89	6	3	N - 784937 E - 804953	111.3	19.9	109.4	Pass	Pass
90	6	3	N - 784672 E - 804888	113.4	17.4	111.5	Pass	Pass
91	7	3	N - 784931 E - 805177	114.9	18.8	110.3	Pass	Pass
92	7	3	N - 784942 E - 805068	109.0	20.4	104.6	Pass	Fail
92(R)	7	3	N - 784942 E - 805072	105.7	19.0	105.7	Pass	Pass
93	7	3	N - 785187 E - 805459	109.5	19.2	105.1	Pass	Pass
94	7	3	N - 785078 E - 805651	100.7	20.3	96.6	Pass	Fail
94(R)	7	3	N - 785079 E - 805565	99.1	19.8	95.1	Pass	Pass
95	7	3	N - 784583 E - 805170	111.4	21.5	106.9	Pass	Fail
95(R)	7	3	N - 784583 E - 805170	107.3	19.7	103.0	Pass	Pass
96	7	3	N - 784659 E - 805262	112.0	18.5	107.5	Pass	Pass
97	7	3	N - 784914 E - 805532	113.4	19.6	108.8	Pass	Pass
98	7	3	N - 785072 E - 805439	103.0	19.7	98.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
99	7	3	N - 785166 E - 805084	117.9	16.1	113.2	Pass	Pass
100	7	3	N - 785071 E - 805163	107.9	19.6	103.6	Pass	Pass
101	7	3	N - 785342 E - 805154	116.7	19.7	112.0	Pass	Pass
102	7	3	N - 785400 E - 805220	109.4	19.8	105.0	Pass	Pass
103	7	3	N - 785175 E - 805279	111.8	22.7	107.3	Pass	Fail
103(R)	7	3	N - 785198 E - 805273	109.2	18.7	104.8	Pass	Pass
104	7	3	N - 785357 E - 805441	107.2	17.9	102.9	Pass	Pass
105	7	3	N - 785354 E - 805350	105.9	19.0	101.6	Pass	Pass
106	8	3	N - 785159 E - 805375	111.2	19.4	105.9	Pass	Pass
107	8	3	N - 785041 E - 805463	101.1	19.4	96.3	Pass	Pass
108	8	3	N - 785070 E - 805549	106.7	18.3	101.6	Pass	Pass
109	8	3	N - 784938 E - 805632	103.3	19.6	98.4	Pass	Pass
110	8	1	N - 785875 E - 805204	105.6	18.9	100.6	Pass	Pass
111	8	2	N - 785647 E - 805147	106.3	20.1	101.2	Pass	Fail
112	8	2	N - 785689 E - 805239	107.0	19.9	101.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
113	8	2	N - 785613 E - 805335	108.0	17.3	102.9	Pass	Pass
114	8	2	N - 786006 E - 805269	106.7	20.8	101.6	Pass	Fail
114(R)	8	2	N - 786014 E - 805152	106.2	19.9	101.1	Pass	Pass
115	8	2	N - 785927 E - 805153	107.8	20.9	102.7	Pass	Fail
115(R)	8	2	N - 785620 E - 805073	106.6	20.6	101.5	Pass	Fail
115(R)	8	2	N - 785621 E - 805079	109.6	18.8	104.4	Pass	Pass
116	8	3	N - 785624 E - 805080	110.3	20.0	105.1	Pass	Pass
117	8	3	N - 785578 E - 805187	110.6	17.3	105.3	Pass	Pass
118	8	3	N - 795644 E - 805324	104.9	19.8	99.9	Pass	Pass
119	8	3	N - 785767 E - 805244	115.6	17.3	110.1	Pass	Pass
120	8	3	N - 785938 E - 805234	104.0	19.9	99.1	Pass	Pass
121	9	1	N - 755423 E - 805700	100.3	21.0	97.6	Pass	Pass
122	9	1	N - 755536 E - 805823	111.5	20.9	108.5	Pass	Pass
123	9	1	N - 785486 E - 806013	113.9	19.5	110.8	Pass	Pass
124	9	1	N - 785565 E - 805124	111.9	21.6	108.9	Pass	Fail

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
124(R)	9	1	N - 785573 E - 805127	106.7	20.6	103.8	Pass	Pass
125	9	1	N - 785637 E - 805675	104.1	21.0	101.3	Pass	Pass
126	9	1	N - 785659 E - 805660	103.1	20.6	100.3	Pass	Pass
127	9	1	N - 785969 E - 806057	103.8	20.7	101.0	Pass	Pass
128	9	2	N - 785405 E - 805682	106.9	19.7	104.0	Pass	Pass
129	9	2	N - 785494 E - 805755	103.2	20.9	100.4	Pass	Pass
130	9	2	N - 785532 E - 805890	104.2	21.1	101.4	Pass	Fail
131	9	2	N - 785526 E - 806064	107.4	19.2	104.5	Pass	Pass
132	9	2	N - 785663 E - 805638	105.3	20.9	102.4	Pass	Pass
133	9	2	N - 785635 E - 805839	107.1	18.9	104.2	Pass	Pass
134	9	2	N - 785638 E - 805929	106.3	21.7	103.4	Pass	Fail
134(R)	9	2	N - 785463 E - 805882	100.4	20.5	96.0	Pass	Pass
135	9	2	N - 785687 E - 805887	107.0	20.1	104.1	Pass	Pass
136	10	3	N - 785444 E - 805745	103.9	21.0	101.1	Pass	Pass
137	10	3	N - 785512 E - 806105	102.2	24.8	97.7	Pass	Fail

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
137(R)	10	3	N - 785523 E - 806097	101.0	21.0	96.7	Pass	Pass
138	10	3	N - 785657 E - 805737	108.0	20.8	103.3	Pass	Pass
139	10	3	N - 785665 E - 805955	109.9	20.5	105.1	Pass	Pass
140	10	3	N - 785568 E - 805893	107.0	18.6	102.3	Pass	Pass
141	10	3	N - 785576 E - 805698	112.8	17.3	107.8	Pass	Pass
142	10	3	N - 785412 E - 805489	108.3	21.4	103.5	Pass	Fail
143	10	1	N - 785987 E - 805591	110.7	21.2	105.8	Pass	Pass
144	10	1	N - 786052 E - 805797	106.0	23.8	101.3	Pass	Fail
144(R)	10	1	N - 786070 E - 805789	106.0	21.4	101.3	Pass	Fail
145	10	1	N - 786112 E - 805672	105.0	20.8	100.4	Pass	Pass
146	10	1	N - 786171 E - 805800	110.6	21.1	105.7	Pass	Pass
147	10	1	N - 786296 E - 805796	107.3	20.2	102.6	Pass	Pass
148	10	1	N - 786309 E - 805586	106.5	21.2	101.8	Pass	Pass
149	10	1	N - 786350 E - 805720	110.5	20.6	105.6	Pass	Pass
150	10	1	N - 786368 E - 805857	107.7	21.0	103.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
151	11	1	N - 786332 E - 805582	109.5	18.5	105.3	Pass	Pass
152	11	2	N - 785998 E - 805727	104.0	16.8	100.0	Pass	Pass
153	11	2	N - 786005 E - 805736	105.0	20.4	101.0	Pass	Pass
154	11	2	N - 786098 E - 805555	106.2	18.5	102.1	Pass	Pass
155	11	2	N - 786150 E - 805764	105.5	19.4	101.4	Pass	Pass
156	11	2	N - 786244 E - 805792	105.0	19.7	101.0	Pass	Pass
157	11	2	N - 786257 E - 805550	106.9	19.1	102.8	Pass	Pass
158	11	2	N - 786360 E - 805624	105.4	14.0	101.4	Pass	Fail
158(R)	11	2	N - 786378 E - 805661	106.2	20.3	102.1	Pass	Pass
159	11	2	N - 786393 E - 805842	113.5	13.1	109.1	Pass	Fail
159(R)	11	2	N - 786420 E - 805781	106.5	19.6	102.4	Pass	Pass
160	11	2	N - 786316 E - 805732	111.8	16.9	107.5	Pass	Pass
161	11	3	N - 786050 E - 805720	108.4	17.4	104.2	Pass	Pass
162	11	3	N - 786018 E - 805561	113.9	19.8	109.5	Pass	Pass
163	11	3	N - 786154 E - 805795	111.6	17.3	107.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
164	11	3	N - 786186 E - 805575	105.8	20.3	101.7	Pass	Pass
165	12	3	N - 786229 E - 805671	102.3	20.5	102.8	Pass	Pass
166	12	1	N - 786291 E - 806190	105.4	21.6	105.9	Pass	Pass
167	12	3	N - 786122 E - 805933	98.5	21.3	99.0	Pass	Pass
168	12	3	N - 786156 E - 805950	101.2	20.9	101.7	Pass	Pass
169	12	3	N - 786112 E - 806169	106.0	21.2	106.5	Pass	Pass
170	12	3	N - 786184 E - 806129	104.8	20.5	105.3	Pass	Pass
171	12	1	N - 786120 E - 805937	103.0	19.8	103.5	Pass	Pass
172	12	1	N - 786172 E - 805948	104.2	18.5	104.7	Pass	Pass
173	12	1	N - 786117 E - 806187	98.9	21.6	99.4	Pass	Pass
174	12	1	N - 786172 E - 806130	103.3	20.4	103.8	Pass	Pass
175	12	1	N - 786191 E - 806182	100.6	21.6	101.1	Pass	Pass
176	12	1	N - 786201 E - 806114	110.8	19.2	111.4	Pass	Pass
177	12	1	N - 786151 E - 806183	95.4	14.1	95.8	Pass	Fail
177(R)	12	1	N - 786150 E - 806175	103.7	21.3	104.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTMD1556.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
178	12	1	N - 786232 E - 805902	103.9	18.2	104.4	Pass	Pass
179	12	1	N - 786251 E - 805950	101.4	20.4	101.9	Pass	Pass
180	13	1	N - 786260 E - 805972	102.2	21.0	99.0	Pass	Pass
181	13	1	N - 786289 E - 805912	105.6	19.5	102.3	Pass	Pass
182	13	2	N - 786169 E - 806141	104.6	20.8	101.4	Pass	Pass
183	13	2	N - 786187 E - 806170	102.5	21.4	99.3	Pass	Pass
184	13	2	N - 786193 E - 806110	103.0	21.5	99.8	Pass	Pass
185	13	2	N - 786144 E - 806175	101.2	19.6	98.1	Pass	Pass
186	13	1	N - 786297 E - 806183	102.8	20.3	99.6	Pass	Pass
187	13	2	N - 786212 E - 805913	103.0	21.5	99.8	Pass	Pass
188	13	2	N - 786271 E - 805964	100.9	20.9	97.8	Pass	Pass
189	13	2	N - 786164 E - 806160	98.1	21.5	95.6	Pass	Pass
190	13	2	N - 786260 E - 805947	102.6	21.5	99.4	Pass	Pass
191	13	2	N - 786271 E - 805968	96.6	22.9	93.6	Fail	Fail
192	13	2	N - 786284 E - 805909	100.0	21.0	96.9	Pass	Pass
193	13	2	N - 786292 E - 806179	109.0	17.5	105.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and + or - 2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556. Adverse weather conditions prevented reworking and retesting of sandcone #191.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Proctor Results

Proctor #	Maximum Dry Density	Optimum Moisture Content
1	105.2	18.0
2	104.9	18.1
3	104.4	18.8
4	102.2	19.5
5	101.5	20.9
6	101.7	19.3
7	104.2	18.0
8	105.0	18.0
9	102.8	19.0
10	104.6	19.2
11	104.0	18.5
12	99.5	19.7
13	103.2	19.5

Specifications: Standard proctor performed according to ASTM D698. The material is considered acceptable if the maximum dry density is greater than or equal to 99 lb/ft^3.

Testing Interval: One proctor every 15 sandcones.

Notes: Proctors were sampled randomly from both east and west side borrow areas.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier One-Point Proctor Results

One-Point #	Dry Density	Moisture Content
1A	99.9	23.2
1B	103.0	20.7
2A	102.4	21.4
2B	105.7	17.6
3A	99.0	16.6
3B	102.9	20.8
4A	98.9	16.7
4B	100.0	21.3
5A	100.1	19.4
5B	100.8	20.3
6A	98.9	23.9
6B	100.2	22.3
7A	101.0	20.7
7B	101.7	16.6
8A	104.6	18.0
8B	102.9	20.2
9A	98.1	24.8
9B	101.7	21.9
10A	101.5	22.4
10B	100.5	21.9
11A	99.8	22.1
11B	95.7	19.0
12A	97.6	21.6
12B	97.2	23.0
13A	94.2	25.9
13B	96.4	23.7

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio.

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
1	3-Jul-98	13	42	29	Pass
2	9-Jul-98	15	50	35	Pass
3	13-Jul-98	17	48	31	Pass
4	14-Jul-98	20	47	27	Pass
5	15-Jul-98	18	50	32	Pass
6	16-Jul-98	19	44	25	Pass
7	17-Jul-98	19	44	25	Pass
8	20-Jul-98	20	44	24	Pass
9	21-Jul-98	20	48	28	Pass
10	22-Jul-98	20	47	27	Pass
11	23-Jul-98	21	45	24	Pass
12	24-Jul-98	19	44	25	Pass
13	27-Jul-98	20	51	31	Pass
14	28-Jul-98	20	51	31	Pass
15	29-Jul-98	18	50	32	Pass
16	3-Aug-98	20	51	31	Pass
17	4-Aug-98	19	49	30	Pass
18	5-Aug-98	18	48	30	Pass
19	6-Aug-98	19	47	28	Pass
20	7-Aug-98	18	47	29	Pass
21	10-Aug-98	18	49	31	Pass
22	11-Aug-98	20	49	29	Pass
23	12-Aug-98	18	52	34	Pass
24	13-Aug-98	20	45	25	Pass
25	14-Aug-98	20	46	26	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
26	17-Aug-98	19	49	30	Pass
27	18-Aug-98	20	46	26	Pass
28	19-Aug-98	21	46	25	Pass
29	20-Aug-98	20	49	29	Pass
30	21-Aug-98	19	50	31	Pass
31	24-Aug-98	20	50	30	Pass
32	25-Aug-98	19	45	26	Pass
33	26-Aug-98	21	48	27	Pass
34	27-Aug-98	18	48	30	Pass
35	28-Aug-98	20	49	29	Pass
36	31-Aug-98	19	50	31	Pass
37	1-Sep-98	20	47	27	Pass
38	2-Sep-98	21	48	27	Pass
39	3-Sep-98	20	47	27	Pass
40	4-Sep-98	19	51	32	Pass
41	8-Sep-98	19	48	29	Pass
42	9-Sep-98	19	46	27	Pass
43	10-Sep-98	18	50	32	Pass
44	11-Sep-98	18	47	29	Pass
45	14-Sep-98	19	48	29	Pass
46	15-Sep-98	21	54	33	Pass
47	16-Sep-98	21	50	29	Pass
48	17-Sep-98	21	45	24	Pass
49	18-Sep-98	19	50	31	Pass
50	22-Sep-98	20	43	23	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 1998 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
51	23-Sep-98	22	45	23	Pass
52	24-Sep-98	21	45	24	Pass
53	25-Sep-98	22	46	24	Pass
54	28-Sep-98	19	43	24	Pass
55	29-Sep-98	20	40	20	Pass
56	30-Sep-98	20	45	25	Pass
57	1-Oct-98	20	44	24	Pass
58	2-Oct-98	19	45	26	Pass
59	8-Oct-98	20	43	23	Pass
60	9-Oct-98	22	45	23	Pass
61	12-Oct-98	20	46	26	Pass
62	13-Oct-98	20	46	26	Pass
63	15-Oct-98	19	47	28	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

RADON BARRIER CLAY PLACEMENT QC

1999

INBERG-MILLER ENGINEERS
124 EAST MAIN STREET RIVERTON, WYOMING 82501-4397 307-856-8136

December 17, 1999 8152.1-RM

Pathfinder Mines Corporation
P.O. Box 831
Riverton, Wyoming 82501

ATTENTION: JACK WADSWORTH/TOM HARDGROVE

RE: SUMMARY REPORT OF TESTING RESULTS
1999 CONSTRUCTION SEASON
PATHFINDER LUCKY MC MINE RECLAMATION PROJECT
GAS HILLS, WYOMING

Dear Gentlemen:

The following is a summary of the field and laboratory test results performed on clay layer soils for the 1999 construction season on the above-referenced project. The results have been summarized in tables. WE have attached the following Summary Reports:

1. Radon Barrier (Clay Layer) Compaction/Moisture Results (64 pages)
2. Radon Barrier (Clay Layer) Proctor Results (2 pages)
3. Radon Barrier (Clay Layer) One-Point Proctor Results (4 pages)
4. Radon Barrier (Clay Layer) Atterberg Limits Results (4 pages)

We appreciate the opportunity to be of service to you on this phase of the project. If you have any questions regarding the enclosed information, or if we may be of further assistance, please contact us.

Sincerely,

INBERG-MILLER ENGINEERS

Jon C. Howell

Jon C. Howell, P.E.
Vice President

JCH:jlw:client ltrs\8152.1-RM

Enclosures as stated

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
194	15	3	N - 785582 E - 805086	103.9	21.6	100.1	Pass	Pass
195	15	3	N - 785847 E - 805228	106.2	20.9	102.3	Pass	Pass
196	15	3	N - 785810 E - 805183	110.0	20.6	106.0	Pass	Pass
197	15	3	N - 785723 E - 805127	104.5	21.2	100.7	Pass	Pass
198	15	3	N - 785589 E- 805147	103.1	21.6	99.3	Pass	Pass
199	15	3	N - 785925 E - 805255	110.6	19.1	106.6	Pass	Pass
200	15	3	N - 786212 E - 805612	105.9	20.7	102.0	Pass	Pass
201	15	3	N - 786247 E - 805704	102.7	21.4	98.9	Pass	Pass
202	15	3	N - 786320 E - 805599	111.0	19.6	106.9	Pass	Pass
203	15	3	N - 786301 E - 805814	104.8	20.7	101.0	Pass	Pass
204	15	3	N - 786074 E - 805601	101.3	21.6	97.6	Pass	Pass
205	15	3	N - 786040 E - 805857	101.4	22.1	97.7	Pass	Pass
206	15	3	N - 786130 E - 805578	108.9	19.1	104.9	Pass	Pass
207	15	3	N - 786176 E - 805798	101.3	21.3	97.6	Pass	Pass
208	15	3	N - 786294 E - 805767	101.9	22.9	98.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
209	16	3	N - 781073 E - 805352	105.4	20.2	101.4	Pass	Pass
210	16	3	N - 785961 E - 805388	101.2	22.1	97.3	Pass	Pass
211	16	3	N - 785823 E -805390	107.4	18.3	103.3	Pass	Pass
212	16	3	N - 785749 E - 805607	102.1	18.5	98.1	Pass	Pass
213	16	3	N - 785573 E - 805632	103.6	18.9	99.6	Pass	Pass
214	16	3	N - 785716 E - 805713	105.7	19.7	101.6	Pass	Pass
215	16	3	N - 785662 E - 805971	105.7	19.9	101.6	Pass	Pass
216	16	3	N - 785591 E - 805763	103.6	20.2	99.6	Pass	Pass
217	16	3	N - 785647 E - 806298	99.7	18.8	95.9	Pass	Pass
218	16	3	N - 786113 E - 805732	99.9	18.2	96.1	Pass	Pass
219	16	3	N - 786342 E - 805694	102.1	18.1	98.2	Pass	Pass
220	16	3	N - 786339 E - 805832	106.4	19.0	102.3	Pass	Pass
221	16	3	N - 786375 E - 805550	103.4	19.3	99.4	Pass	Pass
222	16	3	N - 786153 E - 805489	106.5	17.4	102.4	Pass	Fail
222R	16	3	N - 786347 E - 805962	106.6	19.2	97.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
223	16	3	N - 786321 E - 805907	104.9	19.7	100.9	Pass	Pass
224	14	3	N - 786284 E - 806043	104.9	21.4	100.0	Pass	Pass
225	14	3	N - 786335 E - 805943	103.2	20.0	98.4	Pass	Pass
226	14	3	N - 786604 E - 505909	107.2	19.3	102.2	Pass	Pass
227	14	3	N - 786691 E - 805982	104.9	20.8	100.0	Pass	Pass
228	14	3	N - 786406 E - 806019	101.8	22.0	97.0	Pass	Pass
229	14	3	N - 786334 E - 806106	101.4	21.3	96.7	Pass	Pass
230	14	3	N - 786463 E - 806134	105.9	18.0	101.0	Pass	Pass
231	14	3	N - 786741 E - 806127	98.8	21.2	94.2	Fail	Pass
231R	14	3	N - 786729 E - 806125	103.5	22.2	98.7	Pass	Pass
232	14	3	N - 786601 E - 806140	105.3	20.6	100.4	Pass	Pass
233	14	3	N - 786378 E - 806261	101.9	21.1	97.1	Pass	Pass
234	14	3	N - 786606 E - 806276	102.8	19.4	98.0	Pass	Pass
235	14	3	N - 786799 E - 806265	104.0	19.9	99.1	Pass	Pass
236	14	3	N - 786357 E - 806359	103.0	19.0	98.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
237	14	3	N - 786518 E - 806444	101.8	21.4	97.0	Pass	Pass
238	14	4	N - 786450 E - 805978	105.5	19.6	100.6	Pass	Pass
239	17	4	N - 786672 E - 805943	103.9	21.8	102.7	Pass	Pass
240	17	4	N - 786478 E - 806065	101.1	21.9	99.9	Pass	Pass
241	17	4	N - 786661 E - 806054	100.2	22.1	99.0	Pass	Pass
242	17	4	N - 786321 E - 806047	102.1	21.1	100.9	Pass	Pass
243	17	4	N - 786310 E - 806153	108.7	18.8	107.4	Pass	Pass
244	17	4	N - 786477 E - 806150	108.8	18.9	107.5	Pass	Pass
245	17	4	N - 786768 E - 806154	108.7	20.1	107.4	Pass	Pass
246	17	4	N - 786420 E - 806231	104.5	22.1	103.3	Pass	Pass
247	17	4	N - 786593 E - 806244	108.7	19.7	107.4	Pass	Pass
248	17	4	N - 786809 E - 806250	103.6	21.9	102.4	Pass	Pass
249	17	4	N - 786771 E - 806043	107.1	20.1	105.8	Pass	Pass
250	17	4	N - 786649 E - 806382	106.8	20.5	105.5	Pass	Pass
251	17	4	N - 786459 E - 806229	100.4	22.2	99.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
252	17	5	N - 786461 E - 805961	102.6	17.9	101.4	Pass	Pass
253	17	5	N - 786663 E - 805959	109.9	17.6	108.6	Pass	Pass
254	18	5	N - 786469 E - 806047	104.3	19.2	102.1	Pass	Pass
255	18	5	N - 786657 E - 806107	108.2	19.1	105.9	Pass	Pass
256	18	5	N - 786339 E - 806044	106.0	19.3	103.7	Pass	Pass
257	18	5	N - 786314 E - 806144	106.7	19.1	104.4	Pass	Pass
258	18	5	N - 786479 E - 806147	110.8	20.3	108.4	Pass	Pass
259	18	5	N - 786793 E - 806107	105.8	22.0	103.5	Pass	Pass
260	18	5	N - 786423 E - 806277	103.8	18.9	101.6	Pass	Pass
261	18	5	N - 786685 E - 806011	104.3	22.6	102.1	Pass	Pass
262	18	5	N - 786458 E - 806018	106.9	18.9	104.6	Pass	Pass
263	18	5	N - 786263 E - 806017	100.9	19.8	98.7	Pass	Pass
264	18	5	N - 786752 E - 806096	110.0	20.0	107.6	Pass	Pass
265	18	5	N - 786650 E - 806375	105.7	20.6	103.4	Pass	Pass
266	18	5	N - 786473 E - 806241	106.9	19.7	104.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
267	18	6	N - 786766 E - 806242	102.2	19.4	100.0	Pass	Pass
268	18	6	N - 786620 E - 806237	106.0	19.2	103.7	Pass	Pass
269	19	6	N - 786369 E - 806248	105.6	19.6	100.4	Pass	Pass
270	19	6	N - 786861 E - 806324	105.4	19.6	100.2	Pass	Pass
271	19	6	N - 786700 E - 806347	105.4	18.9	100.2	Pass	Pass
272	19	6	N - 786461 E - 806332	101.5	20.5	96.5	Pass	Pass
273	19	6	N - 786406 E - 806133	100.0	21.0	95.1	Pass	Pass
274	19	6	N - 786531 E - 806129	105.9	23.1	100.7	Pass	Pass
275	19	6	N - 786843 E - 806133	107.8	20.1	102.5	Pass	Pass
276	19	6	N - 786454 E - 806280	107.9	21.6	102.6	Pass	Pass
277	19	1	N - 786743 E - 806378	102.5	20.5	97.4	Pass	Pass
278	19	1	N - 786684 E - 806631	106.9	22.8	101.6	Pass	Pass
279	19	1	N - 786626 E - 806553	104.1	20.6	99.0	Pass	Pass
280	19	1	N - 786794 E - 806547	105.9	19.2	100.7	Pass	Pass
281	19	2	N - 786696 E - 806621	110.6	20.3	105.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
282	19	2	N - 786765 E - 806430	111.6	19.9	106.1	Pass	Pass
283	19	2	N - 786721 E - 806506	110.2	18.5	104.8	Pass	Pass
284	20	2	N - 786721 E - 806701	109.0	20.5	106.9	Pass	Pass
285	20	2	N - 786790 E - 806393	112.2	17.9	110.0	Pass	Pass
286	20	2	N - 786682 E - 806610	86.7	22.8	85.0	Fail	Pass
286R	20	2	N - 786673 E - 806616	114.4	19.1	112.2	Pass	Pass
287	20	3	N - 786740 E - 806360	110.4	21.9	108.2	Pass	Pass
288	20	3	N - 786857 E - 806429	100.4	18.5	98.4	Pass	Pass
289	20	3	N - 786696 E - 806509	106.4	17.7	104.3	Pass	Pass
290	20	3	N - 786596 E - 806582	105.7	22.0	103.6	Pass	Pass
291	20	3	N - 786847 E - 806545	102.3	18.8	100.3	Pass	Pass
292	20	4	N - 786781 E - 806409	106.7	20.6	104.6	Pass	Pass
293	20	4	N - 786580 E - 806408	105.8	20.2	103.7	Pass	Pass
294	20	4	N - 786769 E -806542	100.3	21.4	98.3	Pass	Pass
295	20	3	N - 786717 E - 806602	105.1	21.2	103.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
296	20	4	N - 786600 E - 806581	105.7	19.0	103.6	Pass	Pass
297	20	1	N - 786754 E - 806692	109.2	20.2	107.1	Pass	Pass
298	20	4	N - 786630 E - 806620	107.6	18.5	105.5	Pass	Pass
299	21	5	N - 786758 E - 806458	104.6	21.5	100.4	Pass	Pass
300	21	1	N - 786574 E - 805806	106.6	21.5	102.3	Pass	Pass
301	21	1	N - 786648 E - 805734	104.8	22.8	100.6	Pass	Pass
302	21	5	N - 786706 E - 806444	106.1	25.5	101.8	Pass	Fail
302R	21	5	N - 786685 E - 806548	106.3	22.7	102.0	Pass	Pass
303	21	5	N - 786764 E - 806549	111.3	19.7	106.8	Pass	Pass
304	21	1	N - 786581 E - 805531	93.9	19.9	90.1	Fail	Pass
304R	21	1	N - 786575 E - 805542	104.2	20.3	100.0	Pass	Pass
305	21	3	N - 786684 E - 806679	113.5	21.6	108.9	Pass	Pass
306	21	1	N - 786599 E - 805782	106.7	20.1	102.4	Pass	Pass
307	21	4	N - 786617 E - 806631	104.5	23.5	100.3	Pass	Pass
308	21	6	N - 786690 E - 806607	112.9	18.4	108.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
309	21	6	N - 786759 E - 806441	109.1	20.9	104.7	Pass	Pass
310	21	6	N - 786727 E - 806512	105.2	21.1	101.0	Pass	Pass
311	21	6	N - 786675 E - 806619	116.9	22.5	115.1	Pass	Pass
312	21	5	N - 786709 E - 806689	110.6	23.0	106.1	Pass	Pass
313	22	1	N - 786798 E - 805732	108.6	18.0	103.1	Pass	Pass
314	22	1	N - 786494 E - 806320	100.3	19.4	95.3	Pass	Pass
315	22	1	N - 786893 E - 805635	104.1	23.0	98.9	Pass	Pass
316	22	6	N - 786776 E - 806387	105.2	17.9	99.9	Pass	Pass
317	22	6	N - 786581 E - 806569	107.5	21.5	102.1	Pass	Pass
318	22	6	N - 786744 E - 806573	102.9	22.6	97.7	Pass	Pass
319	22	6	N - 786783 E - 806650	110.3	19.5	104.8	Pass	Pass
320	22	6	N - 786673 E - 806677	104.6	18.4	99.3	Pass	Pass
321	22	2	N - 786548 E - 805712	106.0	23.2	100.7	Pass	Pass
322	22	2	N - 786871 E - 805712	103.4	22.9	98.2	Pass	Pass
323	22	2	N - 786909 E - 805858	110.5	20.7	104.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
324	22	2	N - 786903 E - 805905	102.1	22.2	97.0	Pass	Pass
325	22	2	N - 786766 E - 805506	112.1	22.6	106.5	Pass	Pass
326	22	2	N - 786537 E - 805566	113.1	22.5	107.4	Pass	Pass
327	22	3	N - 786713 E - 805569	96.6	27.9	91.7	Fail	Fail
327R	22	3	N - 786703 E - 805560	103.4	18.5	98.2	Pass	Pass
328	23	3	N - 786797 E - 805915	108.6	18.0	102.2	Pass	Pass
329	23	1	N - 786548 E - 805809	101.0	20.4	95.1	Pass	Pass
330	23	3	N - 786545 E - 805688	112.7	19.8	106.1	Pass	Pass
331	23	3	N - 786825 E - 805680	105.8	23.2	99.6	Pass	Fail
331R	23	3	N - 786830 E - 805674	113.9	17.0	107.3	Pass	Pass
332	23	3	N - 786532 E - 805507	111.0	17.8	104.5	Pass	Pass
333	23	4	N - 786812 E - 805610	103.6	17.4	97.6	Pass	Pass
334	23	4	N - 786623 E - 805609	106.0	20.2	99.8	Pass	Pass
335	23	4	N - 786927 E - 805731	112.6	18.4	106.0	Pass	Pass
336	23	4	N - 786607 E - 805802	103.4	21.7	97.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
337	23	4	N - 786794 E - 805491	108.6	21.3	102.3	Pass	Pass
338	23	1	N - 786954 E - 806385	107.6	20.4	101.3	Pass	Pass
339	23	1	N - 786974 E - 806046	106.4	20.6	100.2	Pass	Pass
340	23	1	N - 786959 E - 805781	105.8	21.1	99.6	Pass	Pass
341	23	2	N - 786767 E - 805554	106.1	20.8	99.9	Pass	Pass
342	23	2	N - 786964 E - 806392	109.1	20.4	102.7	Pass	Pass
343	24	1	N - 786932 E - 806173	108.1	21.5	105.0	Pass	Pass
344	24	1	N - 787030 E - 806132	106.7	21.5	103.6	Pass	Pass
345	24	2	N - 786912 E - 805614	113.4	17.3	110.1	Pass	Pass
346	24	2	N - 786972 E - 806002	109.8	19.2	106.6	Pass	Pass
347	24	2	N - 786955 E - 806232	105.8	22.3	102.7	Pass	Pass
349	24	4	N - 786847 E - 805513	105.7	20.4	102.6	Pass	Pass
350	24	3	N - 786891 E - 805601	108.4	21.9	105.2	Pass	Pass
351	24	3	N - 786907 E - 805716	111.7	21.1	108.5	Pass	Pass
352	24	3	N - 786959 E - 805891	115.6	20.0	112.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
353	24	3	N - 786933 E - 806073	111.6	19.8	108.4	Pass	Pass
354	24	4	N - 786961 E - 806172	108.6	17.3	105.4	Pass	Pass
355	24	4	N - 786971 E - 806161	108.9	12.5	105.7	Pass	Fail
355R	24	4	N - 786953 E - 805369	106.1	21.5	103.0	Pass	Pass
356	24	4	N - 786901 E - 805563	109.8	19.6	106.6	Pass	Pass
357	24	5	N - 787024 E - 805706	114.7	17.7	111.4	Pass	Pass
358	24	5	N - 786934 E - 805645	104.0	23.6	101.0	Pass	Fail
358R	24	5	N - 786938 E - 805657	107.6	20.4	104.5	Pass	Pass
359	25	5	N - 786944 E - 805846	112.9	22.0	108.3	Pass	Pass
360	25	5	N - 786952 E - 806317	106.0	19.9	101.7	Pass	Pass
361	25	4	N - 786913 E - 805632	122.2	17.8	117.3	Pass	Pass
362	25	4	N - 786921 E - 806007	109.0	17.8	104.6	Pass	Pass
363	25	4	N - 786963 E - 806419	114.5	20.8	109.9	Pass	Pass
364	25	4	N - 787083 E - 805512	100.8	23.3	96.7	Pass	Pass
365	25	4	N - 787038 E - 806493	111.8	20.0	107.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
366	25	6	N - 786877 E - 805622	105.6	22.7	101.3	Pass	Pass
367	25	6	N - 786780 E - 805557	111.3	19.5	106.8	Pass	Pass
368	25	6	N - 786612 E - 806346	111.5	17.8	107.0	Pass	Pass
369	25	6	N - 786988 E - 805615	110.4	20.4	106.0	Pass	Pass
370	25	6	N - 786980 E - 805875	108.6	21.7	104.2	Pass	Pass
371	25	6	N - 786970 E - 806303	108.6	19.5	104.2	Pass	Pass
372	25	1	N - 786708 E - 805705	107.8	22.3	103.5	Pass	Pass
373	25	1	N - 787017 E - 806238	104.5	20.3	100.3	Pass	Pass
374	26	1	N - 787035 E - 805621	102.3	25.7	102.4	Pass	Fail
374R	26	1	N - 787017 E - 805642	105.2	23.7	105.3	Pass	Fail
374R	26	3	N - 787028 E - 805582	113.2	20.5	113.3	Pass	Pass
375	26	3	N - 787077 E - 805643	107.4	20.1	107.5	Pass	Pass
376	26	3	N - 787064 E - 805927	108.3	21.6	108.4	Pass	Pass
377	26	2	N - 787123 E - 805700	111.6	18.4	111.7	Pass	Pass
378	26	2	N - 787253 E - 805561	101.7	20.9	101.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
379	26	2	N - 786983 E - 805424	112.5	22.2	112.6	Pass	Pass
380	26	1	N - 787501 E - 805560	99.4	20.5	99.5	Pass	Pass
381	26	1	N - 787259 E - 805404	110.2	18.3	110.3	Pass	Pass
382	26	1	N - 787007 E - 805761	116.4	19.2	116.5	Pass	Pass
383	26	4	N - 786987 E - 806316	108.2	16.8	108.3	Pass	Pass
384	26	4	N - 786987 E - 805700	104.0	21.9	104.1	Pass	Pass
385	26	4	N - 787051 E - 805666	110.9	18.1	111.0	Pass	Pass
386	26	4	N - 787052 E - 806099	108.3	22.0	108.4	Pass	Pass
387	26	4	N - 787117 E - 805606	107.0	22.0	107.1	Pass	Pass
388	27	4	N - 786943 E - 806434	107.2	20.7	107.3	Pass	Pass
389	27	4	N - 786940 E - 806207	109.2	19.4	108.9	Pass	Pass
390	27	2	N - 787136 E - 805457	111.7	19.1	111.4	Pass	Pass
391	27	2	N - 786852 E - 805473	100.7	20.3	100.4	Pass	Pass
392	27	2	N - 786747 E - 805414	120.2	17.5	119.8	Pass	Fail
392R	27	2	N - 786740 E - 805402	105.0	18.4	104.7	Pass	Fail

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
393	27	2	N - 787209 E - 805420	105.6	22.1	105.3	Pass	Pass
394	27	3	N - 787006 E - 805536	104.8	21.8	104.5	Pass	Pass
395	27	2	N - 787156 E - 805581	95.9	28.6	95.6	Pass	Fail
395R	27	2	N - 787150 E - 805568	103.0	20.2	102.7	Pass	Pass
396	27	1	N - 787117 E - 805912	108.7	19.3	108.4	Pass	Pass
397	29	1	N - 787123 E - 806198	99.6	22.0	99.7	Pass	Pass
398	27	1	N - 787040 E - 805594	106.0	19.2	105.7	Pass	Pass
399	27	2	N - 787055 E - 805902	107.1	21.7	106.8	Pass	Pass
400	27	2	N - 787061 E - 806239	106.5	22.6	106.2	Pass	Pass
401	27	1	N - 787140 E - 805577	109.1	20.7	108.8	Pass	Pass
402	27	1	N - 787141 E - 805877	104.6	22.5	104.3	Pass	Pass
403	29	1	N - 788042 E - 806875	104.0	25.5	104.1	Pass	Pass
404	29	1	N - 787651 E - 806864	104.3	22.7	104.4	Pass	Pass
405	29	3	N - 787264 E - 806857	104.0	22.7	104.1	Pass	Pass
406	29	1	N - 788143 E - 806671	102.4	21.8	102.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
407	28	5	N - 786789 E - 805475	111.9	19.0	112.1	Pass	Pass
408	28	4	N - 787034 E - 805475	106.0	18.7	106.2	Pass	Pass
409	28	4	N - 787395 E - 805482	98.8	22.4	99.0	Pass	Fail
409R	28	4	N - 787390 E - 805476	106.8	19.3	107.0	Pass	Pass
410	28	4	N - 787168 E - 805464	104.0	19.3	104.2	Pass	Pass
411	28	6	N - 786933 E - 805728	112.9	18.2	113.1	Pass	Pass
412	28	6	N - 787005 E - 805755	104.6	20.9	104.8	Pass	Pass
413	28	6	N - 786992 E - 806162	81.2	12.9	81.4	Fail	Fail
413R	28	6	N - 786990 E - 806191	105.5	14.4	105.7	Pass	Fail
413R	28	6	N - 786986 E - 806185	105.1	20.5	105.3	Pass	Pass
414	28	6	N - 786940 E - 806291	98.3	20.8	98.5	Pass	Pass
415	28	4	N - 787034 E - 806046	107.1	21.1	107.3	Pass	Pass
416	28	4	N - 787046 E - 805804	109.0	17.1	109.2	Pass	Pass
417	28	4	N - 787133 E - 805775	109.4	18.8	109.6	Pass	Pass
418	28	4	N - 787259 E - 805971	106.9	20.9	107.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
419	28	4	N - 787304 E - 805478	107.8	17.6	108.0	Pass	Pass
420	28	4	N - 786854 E - 805478	103.5	18.1	103.7	Pass	Pass
421	29	2	N - 787961 E - 806897	110.3	20.6	110.4	Pass	Pass
422	29	2	N - 787794 E - 806906	109.2	21.4	109.3	Pass	Pass
423	29	2	N - 787597 E - 806905	110.5	21.4	110.6	Pass	Pass
424	29	2	N - 787218 E - 806871	111.5	20.7	111.6	Pass	Pass
425	29	2	N - 787656 E - 806853	108.3	21.2	108.4	Pass	Pass
426	28	5	N - 787137 E - 805472	105.9	19.1	106.1	Pass	Pass
427	30	5	N - 787266 E - 805443	104.6	18.4	103.0	Pass	Pass
428	30	1	N - 788234 E - 806386	106.8	19.8	105.1	Pass	Pass
429	30	1	N - 788157 E - 806428	105.3	19.2	103.6	Pass	Pass
430	30	5	N - 786913 E - 805440	108.4	22.5	106.7	Pass	Pass
431	30	5	N - 787013 E - 805424	113.5	18.5	111.7	Pass	Pass
432	30	1	N - 786933 E - 805343	106.1	20.3	104.4	Pass	Pass
433	30	1	N - 787121 E - 805361	107.0	22.6	105.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
434	30	1	N - 783302 E - 805399	109.4	19.8	107.7	Pass	Pass
435	30	1	N - 787130 E - 805320	100.6	21.7	99.0	Pass	Pass
436	30	2	N - 786974 E - 805354	108.5	21.6	106.8	Pass	Pass
437	30	2	N - 787244 E - 805374	114.1	19.1	112.3	Pass	Pass
438	30	2	N - 786894 E - 805314	104.6	23.9	103.0	Pass	Pass
439	30	2	N - 787120 E - 805284	109.7	18.8	108.0	Pass	Pass
440	30	2	N - 787293 E - 805290	107.7	20.7	106.0	Pass	Pass
441	30	2	N - 786930 E - 805216	108.2	19.2	106.5	Pass	Pass
442	31	3	N - 786954 E - 805359	107.8	20.8	103.7	Pass	Pass
443	31	3	N - 787234 E - 805367	110.1	18.4	105.9	Pass	Pass
443R	31	3	N - 787231 E - 805367	102.2	19.5	98.2	Pass	Pass
444	31	3	N - 786887 E - 805318	103.2	19.7	99.2	Pass	Pass
445	31	3	N - 787103 E - 805287	101.2	21.1	97.3	Pass	Pass
446	32	3	N - 787372 E - 805277	115.7	17.9	111.3	Pass	Pass
447	32	3	N - 786803 E - 805272	114.2	14.2	109.8	Pass	Fail

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
447R	34	3	N - 786905 E - 805266	104.6	18.7	102.5	Pass	Pass
448	34	3	N - 786874 E - 805274	97.4	20.0	95.5	Pass	Pass
449	34	4	N - 786890 E - 805374	97.3	18.9	95.4	Pass	Pass
450	34	4	N - 787265 E - 805364	100.5	18.9	98.5	Pass	Pass
451	34	4	N - 787161 E - 805327	103.8	18.3	101.8	Pass	Pass
452	29	2	N - 788100 E - 806689	110.9	20.9	111.0	Pass	Pass
453	29	2	N - 788104 E - 806827	106.2	20.9	106.3	Pass	Pass
454	29	2	N - 788227 E - 806436	105.2	22.8	105.3	Pass	Pass
455	29	2	N - 788167 E - 806500	104.8	18.5	104.9	Pass	Pass
455R	29	3	N - 788163 E - 806517	107.4	21.0	107.5	Pass	Pass
456	29	3	N - 788001 E - 806898	116.5	19.5	111.2	Pass	Pass
457	31	3	N - 787584 E - 806889	105.8	20.7	101.7	Pass	Pass
458	31	3	N - 787293 E - 806895	101.0	21.2	97.1	Pass	Pass
459	31	3	N - 786931 E - 807012	109.5	19.0	105.3	Pass	Pass
460	31	3	N - 787145 E - 806843	106.4	19.8	102.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
461	31	3	N - 788115 E - 806441	113.2	18.9	108.8	Pass	Pass
462	31	3	N - 788002 E - 806796	104.7	18.7	100.7	Pass	Pass
463	31	1	N - 788185 E - 806593	115.3	18.6	110.9	Pass	Pass
464	34	1	N - 788231 E -806513	102.9	17.7	100.9	Pass	Pass
465	34	1	N - 788256 E - 806870	104.2	14.3	102.2	Pass	Fail
465R	34	1	N - 786943 E - 805295	104.8	17.6	102.8	Pass	Pass
466	34	1	N - 788077 E - 806847	109.7	19.4	107.6	Pass	Pass
467	32	4	N - 787277 E - 805373	113.9	19.5	110.0	Pass	Pass
468	32	4	N - 786876 E - 805389	108.5	17.5	104.3	Pass	Pass
469	32	4	N - 787322 E - 805154	113.1	19.5	108.8	Pass	Pass
470	32	4	N - 787308 E - 805291	110.4	19.2	106.2	Pass	Pass
471	32	4	N - 787246 E - 805208	117.3	17.7	112.8	Pass	Pass
472	32	4	N - 787413 E - 805155	103.4	17.4	99.4	Pass	Pass
473	32	4	N - 786818 E - 805156	107.9	19.7	103.8	Pass	Pass
474	32	4	N - 787038 E - 805130	104.3	18.7	100.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
475	32	5	N - 787291 E - 805339	110.3	16.6	106.1	Pass	Pass
476	32	5	N - 787109 E - 805337	108.1	17.3	103.9	Pass	Pass
477	31	4	N - 788169 E - 806404	103.1	22.2	99.1	Pass	Pass
478	31	4	N - 787325 E - 806853	98.0	20.6	94.2	Fail	Pass
478R	31	4	N - 787320 E - 806851	106.6	20.4	102.5	Pass	Pass
479	31	4	N - 787029 E - 806819	113.7	19.2	109.3	Pass	Pass
480	31	4	N - 787586 E - 806865	106.4	22.4	102.3	Pass	Pass
481	31	4	N - 788104 E - 806880	102.1	20.3	98.1	Pass	Pass
482	31	4	N - 787893 E - 806810	106.2	21.1	102.1	Pass	Pass
483	31	4	N - 788178 E - 806853	111.5	19.0	107.2	Pass	Pass
484	31	4	N - 788195 E - 806611	110.4	19.4	106.2	Pass	Pass
485	36	4	N - 788136 E - 806463	105.1	20.9	101.1	Pass	Pass
486	36	5	N - 787185 E - 806862	113.4	18.3	109.0	Pass	Pass
487	36	5	N - 788117 E - 806893	113.2	18.7	108.9	Pass	Pass
488	36	5	N - 787902 E - 806882	114.6	20.6	110.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
489	36	5	N - 787580 E - 806869	112.1	20.6	107.8	Pass	Pass
490	36	5	N - 787345 E - 806879	112.7	21.2	108.9	Pass	Pass
491	32	6	N - 787275 E - 805066	108.0	20.3	103.9	Pass	Pass
492	32	6	N - 787156 E - 804979	111.4	17.3	107.1	Pass	Pass
493	32	6	N - 787019 E - 804937	106.2	20.7	102.2	Pass	Pass
494	32	2	N - 787353 E - 804924	107.2	16.1	103.1	Pass	Pass
494R*	32	2	N - 787351 E - 804929	111.3	19.1	107.0	Pass	Pass
495	32	1	N - 787509 E - 804932	107.5	19.9	103.4	Pass	Pass
496	34	1	N - 787699 E - 804935	108.6	19.7	106.5	Pass	Pass
497	34	1	N - 787483 E - 805057	107.5	18.7	105.4	Pass	Pass
498	34	1	N - 787716 E - 805071	106.6	20.6	104.5	Pass	Pass
499	33	2	N - 787136 E - 805113	106.3	14.8	102.2	Pass	Fail
499R	33	2	N - 787136 E - 805110	104.1	19.0	100.1	Pass	Pass
500	33	2	N - 787314 E - 805083	98.3	20.2	94.5	Fail	Pass
500R	33	2	N - 787314 E - 805086	101.2	19.2	97.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.
*Retest done due to possibility of high claystone concentrations skewing test results.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
501	33	2	N - 786889 E - 805078	100.4	20.6	96.5	Pass	Pass
502	33	3	N - 787051 E - 805165	100.1	20.2	96.2	Pass	Pass
503	33	3	N - 787839 E - 805068	101.9	21.0	98.1	Pass	Pass
504	33	3	N - 786945 E - 805140	106.4	19.7	102.3	Pass	Pass
505	33	3	N - 787419 E - 805080	108.8	21.1	104.6	Pass	Pass
506	33	3	N - 787071 E - 805070	108.0	20.9	103.9	Pass	Pass
507	33	3	N - 787231 E - 805143	107.4	19.5	103.3	Pass	Pass
508	34	4	N - 787147 E - 805181	106.9	19.5	104.8	Pass	Pass
509	34	4	N - 786944 E - 805181	108.1	18.9	106.0	Pass	Pass
510	33	4	N - 787322 E - 805132	109.2	19.8	105.0	Pass	Pass
511	33	4	N - 786848 E - 805133	106.8	23.2	102.7	Pass	Pass
512	33	4	N - 787407 E - 805069	105.6	20.2	101.5	Pass	Pass
513	33	4	N - 787228 E - 805069	106.0	20.7	101.9	Pass	Pass
514	33	4	N - 786992 E - 805046	110.1	19.1	105.9	Pass	Pass
515	36	1	N - 787688 E - 806571	110.3	19.2	106.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
516	36	1	N - 787477 E - 806563	100.2	18.2	96.4	Pass	Pass
517	36	1	N - 787919 E - 806522	115.1	17.7	110.7	Pass	Pass
518	36	1	N - 787368 E - 806532	99.4	18.3	95.6	Pass	Pass
519	36	1	N - 787873 E - 806579	102.2	20.1	98.3	Pass	Pass
520	36	1	N - 787832 E - 806472	111.2	18.6	106.9	Pass	Pass
521	36	1	N - 787451 E - 806456	113.5	14.9	109.1	Pass	Fail
521R	36	1	N - 787464 E - 806443	102.9	21.4	98.9	Pass	Pass
522	36	1	N - 787312 E - 806470	110.9	13.7	106.6	Pass	Fail
522R	36	1	N - 787317 E - 806475	104.4	18.7	100.4	Pass	Pass
523	36	1	N - 787912 E - 806350	111.7	19.5	107.4	Pass	Pass
524	38	1	N - 787744 E - 806374	106.5	19.7	100.5	Pass	Pass
525	38	1	N -787439 E - 806361	114.3	19.2	107.8	Pass	Pass
526	38	1	N - 787537 E - 806236	109.8	20.3	103.6	Pass	Pass
527	38	1	N - 806531 E - 787671	103.6	18.1	97.7	Pass	Pass
528	38	1	N - 787530 E - 806213	101.9	18.0	96.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
529	38	1	N - 787656 E - 806471	101.6	19.6	95.9	Pass	Pass
530	38	1	N - 788004 E - 806739	101.1	22.2	95.4	Pass	Pass
531	35	1	N - 787377 E - 804947	107.7	20.8	102.6	Pass	Pass
532	35	1	N - 787252 E - 804931	107.8	18.6	102.7	Pass	Pass
533	35	1	N - 786989 E - 804954	108.4	18.3	103.2	Pass	Pass
534	35	1	N - 787365 E - 804873	103.7	21.4	98.8	Pass	Pass
535	35	1	N - 787167 E - 804845	106.6	18.7	101.5	Pass	Pass
536	35	3	N - 786920 E - 805152	107.7	20.4	102.6	Pass	Pass
537	35	3	N - 787098 E - 805147	102.0	22.2	97.1	Pass	Pass
538	35	3	N - 787272 E - 805135	107.9	19.1	102.7	Pass	Pass
539	35	2	N - 787199 E - 805076	104.5	21.3	99.6	Pass	Pass
540	35	2	N - 786897 E - 805082	102.6	21.8	97.7	Pass	Pass
541	35	2	N - 787396 E - 805052	104.4	20.5	99.5	Pass	Pass
542	35	4	N - 787021 E - 804956	112.4	17.8	107.1	Pass	Pass
543	35	4	N - 787220 E - 804931	110.0	22.2	104.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
544	35	3	N - 787481 E - 804947	106.3	23.0	101.2	Pass	Pass
545	35	3	N - 787458 E - 804878	100.5	17.8	95.7	Pass	Pass
546	34	3	N - 787170 E - 804866	101.4	14.1	99.4	Pass	Fail
546R	34	3	N - 787155 E - 804845	110.1	21.0	107.9	Pass	Pass
547	34	3	N - 787273 E - 804751	106.0	18.0	103.9	Pass	Pass
548	34	5	N - 787465 E - 804971	106.5	20.4	104.4	Pass	Pass
549	37	5	N - 787269 E - 804968	106.6	21.9	102.5	Pass	Pass
550	37	5	N - 787013 E - 804963	106.1	19.0	102.0	Pass	Pass
551	37	4	N - 787167 E - 804865	109.8	21.3	105.6	Pass	Pass
552	37	4	N - 787311 E - 804864	110.8	20.9	106.5	Pass	Pass
553	37	4	N - 787482 E - 804867	109.6	19.2	105.4	Pass	Pass
554	37	3	N - 787278 E - 804793	112.1	19.5	107.8	Pass	Pass
555	37	3	N - 787400 E - 804669	99.5	17.5	95.7	Pass	Pass
556	38	2	N - 787933 E - 806577	103.6	18.1	97.7	Pass	Pass
557	38	2	N - 787758 E - 806565	108.0	22.8	101.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
558	38	2	N - 787514 E - 806517	110.2	18.0	104.0	Pass	Pass
559	37	2	N - 787362 E - 806575	116.1	18.0	111.6	Pass	Pass
560	37	6	N - 786829 E - 805327	104.9	22.5	100.9	Pass	Pass
561	37	6	N - 787064 E - 805372	105.2	23.2	101.2	Pass	Pass
562	38	6	N - 787389 E - 805375	113.1	19.2	106.7	Pass	Pass
563	38	2	N - 787965 E - 806470	104.3	22.7	98.4	Pass	Pass
564	38	2	N - 787780 E - 806468	107.8	21.4	101.7	Pass	Pass
565	38	2	N - 787635 E - 806456	104.5	20.9	98.6	Pass	Pass
566	38	2	N - 787407 E - 806467	101.7	21.0	95.9	Pass	Pass
567	38	3	N - 787757 E - 806379	101.4	13.7	95.7	Pass	Fail
567R	38	3	N - 787814 E - 806236	102.1	19.5	96.3	Pass	Pass
568	38	3	N - 787917 E - 806348	107.8	19.3	101.7	Pass	Pass
569	38	3	N - 787624 E - 806350	117.9	17.5	111.2	Pass	Pass
570	38	3	N - 787364 E - 806338	106.2	17.2	100.2	Pass	Pass
571	39	3	N - 787460 E - 806300	114.5	18.7	112.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
572	39	3	N - 787609 E - 806303	98.4	17.5	97.0	Pass	Pass
573	37	6	N - 787817 E - 806251	100.5	21.3	94.8	Fail	Pass
573R	37	6	N - 787859 E - 806259	103.5	19.2	99.5	Pass	Pass
574	37	6	N - 787555 E - 806012	104.9	17.7	99.0	Pass	Pass
575	37	6	N - 787350 E - 805762	105.3	19.5	99.3	Pass	Pass
576	37	6	N - 787258 E - 804813	104.7	23.3	98.7	Pass	Pass
577	37	6	N - 787398 E - 804669	109.1	21.3	102.9	Pass	Pass
578	40	6	N - 787284 E - 805271	99.3	20.6	97.7	Pass	Pass
579	40	6	N - 786841 E - 805308	103.6	21.7	102.0	Pass	Pass
580	40	6	N - 787378 E - 805207	105.8	21.6	104.1	Pass	Pass
581	40	6	N - 786992 E - 805208	109.1	20.1	107.4	Pass	Pass
582	40	6	N - 787137 E - 805150	97.2	21.0	95.7	Pass	Pass
583	40	6	N - 786931 E - 805142	103.9	20.7	102.3	Pass	Pass
584	40	6	N - 787017 E - 805063	101.2	22.2	99.6	Pass	Pass
585	40	5	N - 787369 E - 804674	102.9	20.6	101.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
586	40	6	N - 787434 E - 805005	93.9	24.4	92.4	Fail	Fail
586R	40	6	N - 787439 E - 804663	107.7	19.5	106.0	Pass	Pass
587	40	6	N - 787430 E - 805004	101.4	25.7	99.8	Pass	Fail
587R	40	6	N - 787412 E - 804968	101.1	20.7	99.5	Pass	Pass
589*	40	6	N - 787031 E - 804959	102.8	18.0	101.2	Pass	Pass
590	40	6	N - 787364 E - 804861	101.5	19.4	99.9	Pass	Pass
591	41	6	N - 787145 E - 804875	96.0	18.2	95.0	Pass	Pass
592	41	6	N - 787379 E - 804879	105.6	20.7	104.5	Pass	Pass
593	41	1	N - 787952 E - 805400	112.0	21.3	110.8	Pass	Pass
594	41	1	N - 788351 E - 805400	102.5	22.8	101.4	Pass	Pass
595	41	1	N - 787947 E - 805442	100.7	19.3	99.6	Pass	Pass
596	41	1	N - 787632 E - 805454	108.2	19.3	107.0	Pass	Pass
597	41	1	N - 787767 E - 805519	110.3	21.0	109.1	Pass	Pass
598	41	1	N - 787941 E - 805531	105.3	17.5	104.2	Pass	Fail
598R	41	1	N - 787943 E - 805531	108.0	18.2	106.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.
* Gap in number sequence.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
599	41	1	N - 788185 E - 805545	106.9	20.2	105.7	Pass	Pass
600	41	1	N - 787453 E - 805570	105.3	19.6	104.2	Pass	Pass
601	41	1	N - 788464 E - 805545	109.5	19.2	108.3	Pass	Pass
602	39	3	N - 787307 E - 806506	96.8	18.5	95.5	Pass	Pass
603	39	3	N - 787772 E - 806543	104.8	19.9	103.4	Pass	Pass
604	39	3	N - 787699 E - 806469	99.4	22.2	98.0	Pass	Pass
605	39	3	N - 787415 E - 806445	99.6	21.9	98.2	Pass	Pass
606	39	3	N - 787783 E - 806401	110.4	21.9	108.9	Pass	Pass
607	39	3	N - 787549 E - 806323	107.1	20.7	105.6	Pass	Pass
608	39	3	N - 787366 E - 806367	109.7	18.2	108.2	Pass	Pass
609	39	3	N - 787857 E - 806337	105.5	22.2	104.0	Pass	Pass
610	39	3	N - 787707 E - 806284	109.3	19.1	107.8	Pass	Pass
611	39	3	N - 787515 E - 806250	99.5	20.8	98.1	Pass	Pass
612	39	3	N - 787930 E - 806288	109.2	19.1	107.7	Pass	Pass
613	39	3	N - 787586 E - 806012	105.8	14.3	104.3	Pass	Fail

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
613R	39	3	N - 787427 E - 805869	106.6	19.4	105.1	Pass	Pass
614	39	3	N - 787496 E - 806015	107.0	13.5	105.5	Pass	Fail
614R	39	3	N - 787664 E - 806096	109.1	20.8	107.6	Pass	Pass
615	43	3	N - 787579 E - 806157	103.6	15.0	97.7	Pass	Fail
615R	43	3	N - 787563 E - 806161	104.5	18.5	98.6	Pass	Pass
616	43	4	N - 787613 E - 806550	111.5	19.7	105.2	Pass	Pass
617	43	4	N - 787856 E - 806570	109.0	21.0	102.8	Pass	Pass
618	43	4	N - 787347 E - 806524	102.9	19.6	97.1	Pass	Pass
619	41	1	N - 788505 E - 805646	99.9	18.3	98.8	Pass	Pass
620	41	1	N - 788263 E - 805645	106.2	21.8	105.0	Pass	Pass
621	41	1	N - 787939 E - 805650	98.0	20.1	96.9	Pass	Pass
622	41	1	N - 787676 E - 805658	105.5	22.3	104.5	Pass	Pass
623	42	1	N - 788428 E - 805733	105.2	20.4	104.2	Pass	Pass
624	42	1	N - 788193 E - 805737	107.0	19.6	105.9	Pass	Pass
625	42	1	N - 788020 E - 805751	99.9	23.4	98.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
626	42	1	N - 787887 E - 805769	101.2	23.9	100.2	Pass	Pass
627	42	1	N - 787686 E - 805712	112.2	18.4	111.1	Pass	Pass
628	42	1	N - 788280 E - 805806	109.5	20.9	108.4	Pass	Pass
629	42	1	N - 787871 E - 805811	105.2	23.1	104.2	Pass	Pass
630	42	1	N - 788506 E - 805853	102.0	21.1	101.0	Pass	Pass
631	42	1	N - 787765 E - 805871	100.9	20.8	99.9	Pass	Pass
632	42	1	N - 788069 E - 805873	113.0	20.1	111.9	Pass	Pass
633	42	1	N - 787971 E - 805961	98.5	21.6	97.5	Pass	Pass
634	42	2	N - 787759 E - 805396	109.5	20.5	108.4	Pass	Pass
635	42	2	N - 788282 E - 805396	99.1	21.5	98.1	Pass	Pass
636	42	2	N - 787815 E - 805504	107.6	18.7	106.5	Pass	Pass
637	44	2	N - 788232 E - 805512	105.3	22.2	97.5	Pass	Pass
638	44	2	N - 788416 E - 805591	102.8	20.0	99.0	Pass	Pass
639	44	2	N - 787821 E - 805612	106.8	20.5	104.9	Pass	Pass
640	44	2	N - 788453 E - 805555	111.6	20.2	109.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
641	44	2	N - 788008 E - 805558	100.6	21.7	98.8	Pass	Pass
642	44	2	N - 787456 E - 805579	108.4	19.9	106.5	Pass	Pass
643	44	2	N - 787814 E - 805601	112.0	20.6	110.0	Pass	Pass
644	44	2	N - 788063 E - 805635	100.2	22.2	98.4	Pass	Pass
645	44	2	N - 788262 E - 805635	101.6	23.5	99.8	Pass	Pass
646	44	2	N - 787581 E - 805667	104.5	19.6	102.7	Pass	Pass
647	44	2	N - 788468 E - 805649	111.6	18.0	109.6	Pass	Fail
647R	44	2	N - 788464 E - 805647	108.2	19.8	106.3	Pass	Pass
648	44	2	N - 787677 E - 805720	109.4	18.5	107.5	Pass	Fail
648R	44	2	N - 787671 E - 805724	108.6	20.1	106.7	Pass	Pass
649	44	2	N - 787882 E - 805744	111.0	20.7	109.0	Pass	Pass
650	44	2	N - 788079 E - 805761	100.8	19.3	99.0	Pass	Pass
651	44	2	N - 788228 E - 805784	104.9	21.4	103.0	Pass	Pass
652	45	2	N - 788443 E - 805784	105.3	19.7	104.1	Pass	Pass
653	45	2	N - 788592 E - 805803	99.9	19.4	98.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
654	45	2	N - 787910 E - 805861	102.8	20.6	101.6	Pass	Pass
655	45	2	N - 788090 E - 805884	112.1	19.5	110.8	Pass	Pass
656	45	2	N - 788340 E - 805861	114.5	19.4	113.1	Pass	Pass
657	45	2	N - 787895 E - 805950	102.7	23.0	101.5	Pass	Pass
658	45	2	N - 787645 E - 805971	102.7	22.0	101.5	Pass	Pass
659	45	2	N - 787326 E - 805932	103.9	20.3	102.7	Pass	Pass
660	43	4	N - 787891 E - 806306	101.6	20.5	95.8	Pass	Pass
661	43	4	N - 787684 E - 806288	107.2	22.3	101.1	Pass	Pass
662	43	4	N - 787391 E - 806274	105.9	21.6	99.9	Pass	Pass
663	43	4	N - 787842 E - 806467	110.4	20.2	104.2	Pass	Pass
664	43	4	N - 787673 E - 806439	100.2	20.9	94.5	Fail	Pass
664R	43	4	N - 787691 E - 806424	107.3	18.1	101.2	Pass	Pass
665	43	4	N - 787416 E - 806435	105.4	21.4	99.4	Pass	Pass
666	43	4	N - 787676 E - 806092	108.0	19.5	101.9	Pass	Pass
667	43	4	N - 787410 E - 805835	107.3	21.1	101.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
668	43	4	N - 787536 E - 806159	110.7	19.2	104.4	Pass	Pass
669	43	5	N - 787587 E - 806545	107.1	22.5	101.0	Pass	Pass
670	43	5	N - 787434 E - 806522	107.5	20.7	101.4	Pass	Pass
671	47	5	N - 787368 E - 806488	109.3	19.2	105.5	Pass	Pass
672	47	5	N - 787589 E - 806467	104.2	22.2	100.6	Pass	Pass
673	47	5	N - 787798 E - 806527	98.4	23.5	95.0	Pass	Pass
674	47	5	N - 787950 E - 806399	100.8	22.8	97.3	Pass	Pass
675	47	5	N - 787408 E - 806353	111.6	20.3	107.7	Pass	Pass
676	47	5	N - 787573 E - 806341	107.8	18.5	104.1	Pass	Fail
677	47	5	N - 787789 E - 806363	113.1	19.6	109.2	Pass	Pass
678	47	5	N - 787456 E - 806255	109.1	19.4	105.3	Pass	Pass
679	47	5	N - 787620 E - 806260	111.6	18.8	107.7	Pass	Pass
680	47	5	N - 787739 E - 806203	111.5	19.4	107.6	Pass	Pass
681	47	5	N - 787522 E - 806077	107.6	19.2	103.9	Pass	Pass
682	47	5	N - 787429 E - 805886	104.2	20.6	100.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
683	47	6	N - 787842 E - 806589	107.6	19.9	103.9	Pass	Pass
684	47	6	N - 787655 E - 806563	100.8	22.7	97.3	Pass	Pass
685	47	6	N - 787413 E - 806574	101.4	22.3	97.9	Pass	Pass
686	48	6	N - 787421 E - 806627	101.3	22.6	99.3	Pass	Pass
687	47	6	N - 787890 E - 806427	107.0	18.2	103.9	Pass	Fail
688	47	6	N - 787703 E - 806442	105.4	21.8	102.3	Pass	Pass
689	45	3	N - 788452 E - 805429	109.6	19.9	108.3	Pass	Pass
690	45	3	N - 787960 E - 805432	102.7	22.4	101.5	Pass	Pass
691	45	3	N - 787713 E - 805452	94.7	26.4	93.6	Fail	Fail
691R	45	3	N - 787713 E - 805473	106.6	24.6	105.3	Pass	Pass
692	45	3	N - 787531 E - 805461	102.7	21.7	101.5	Pass	Pass
693	45	3	N - 787787 E - 805485	104.0	24.1	102.8	Pass	Pass
694	45	3	N - 787581 E - 805511	98.6	23.4	97.4	Pass	Pass
695	45	3	N - 787915 E - 805529	105.8	21.1	104.5	Pass	Pass
696	45	3	N - 788295 E - 805517	99.7	23.0	98.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
697	46	3	N - 787759 E - 805555	101.6	24.3	98.9	Pass	Pass
698	46	3	N - 788032 E - 805559	107.9	21.7	105.1	Pass	Pass
699	48	6	N - 787913 E - 806348	108.6	19.7	106.5	Pass	Pass
700	48	6	N - 787672 E - 806317	103.1	21.9	101.1	Pass	Pass
701	48	6	N - 787369 E - 806370	106.8	21.7	104.7	Pass	Pass
702	48	6	N - 787436 E - 806275	111.4	19.4	109.2	Pass	Pass
703	48	6	N - 787549 E - 806273	111.3	19.5	109.1	Pass	Pass
704	46	3	N - 787802 E - 805609	106.2	19.9	103.4	Pass	Pass
705	46	3	N - 787474 E - 805638	103.7	21.2	101.0	Pass	Pass
706	46	3	N - 787953 E - 805650	100.4	23.7	97.8	Pass	Pass
707	46	3	N - 788154 E - 805677	104.5	20.6	101.8	Pass	Pass
708	46	3	N - 788391 E - 805646	101.1	23.5	98.4	Pass	Pass
709	46	3	N - 788380 E - 805731	102.0	20.1	99.3	Pass	Pass
710	46	3	N - 787912 E - 805642	102.6	22.8	99.9	Pass	Pass
711	46	3	N - 788104 E - 805769	105.5	22.8	102.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
712	46	3	N - 787755 E - 805728	110.1	20.9	107.2	Pass	Pass
713	46	1	N - 787711 E - 805351	107.1	19.8	104.3	Pass	Pass
714	46	1	N - 787889 E - 805355	107.2	18.9	104.4	Pass	Pass
715	46	1	N - 788169 E - 805365	101.4	19.9	98.7	Pass	Pass
716	46	1	N - 788433 E - 805372	101.2	22.5	98.5	Pass	Pass
717	49	1	N - 788427 E - 805281	106.0	21.4	106.0	Pass	Pass
718	49	1	N - 787893 E - 805276	109.5	18.9	109.5	Pass	Pass
719	49	1	N - 787017 E - 805242	104.0	21.9	104.0	Pass	Pass
720	49	1	N - 788288 E - 805188	97.6	23.0	97.6	Pass	Pass
721	49	1	N - 788050 E - 805174	101.9	22.6	101.9	Pass	Pass
722	49	1	N - 787922 E - 805136	105.8	19.8	105.8	Pass	Pass
723	49	1	N - 787186 E - 805142	106.8	18.6	106.8	Pass	Pass
724	49	2	N - 788183 E - 805371	104.9	20.1	104.9	Pass	Pass
725	49	2	N - 788462 E - 805330	102.2	21.1	102.2	Pass	Pass
726	49	2	N - 787781 E - 805350	106.5	20.0	106.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
727	49	2	N - 787657 E - 805330	111.9	17.3	111.9	Pass	Fail
727R	49	2	N - 787651 E - 805336	110.7	18.5	110.7	Pass	Pass
728	49	1	N - 788130 E - 805203	98.2	19.6	98.2	Pass	Pass
729	49	2	N - 788365 E - 805305	101.8	21.8	101.8	Pass	Pass
730	49	2	N - 788446 E - 805190	104.0	23.5	104.0	Pass	Pass
731	49	2	N - 787823 E - 805168	104.4	22.2	104.4	Pass	Pass
732	50	2	N - 788018 E - 805136	109.4	18.9	107.2	Pass	Pass
733	50	1	N - 788318 E - 805083	101.2	20.9	99.1	Pass	Pass
734	50	1	N - 787930 E - 805067	108.6	19.6	106.4	Pass	Pass
735	50	2	N - 787736 E - 805188	108.9	19.6	106.7	Pass	Pass
736	50	2	N - 787752 E - 805378	102.0	21.9	99.9	Pass	Pass
737	50	1	N - 788230 E - 805040	104.1	18.4	102.0	Pass	Pass
738	50	3	N - 787665 E - 805372	102.7	19.8	100.6	Pass	Pass
739	50	3	N - 787889 E - 805356	104.4	19.1	102.3	Pass	Pass
740	50	3	N - 788571 E - 805362	103.7	23.4	101.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
741	50	3	N - 788204 E - 805330	100.1	22.0	98.0	Pass	Pass
742	50	3	N - 787894 E - 805293	101.3	19.6	99.2	Pass	Pass
743	50	3	N - 788327 E - 805153	101.9	20.5	99.8	Pass	Pass
744	50	3	N - 788099 E - 805127	103.9	18.5	101.8	Pass	Pass
745	50	3	N - 787899 E - 805112	104.7	21.4	102.5	Pass	Pass
746	50	2	N - 788139 E - 805069	107.8	18.4	105.6	Pass	Pass
747	51	2	N - 787863 E - 805047	97.6	20.1	94.8	Fail	Pass
747R	51	2	N - 787887 E - 805041	106.3	18.7	103.2	Pass	Pass
748	51	2	N - 788335 E - 805021	109.0	19.8	105.8	Pass	Pass
749	51	3	N - 787686 E - 805790	103.6	19.7	100.6	Pass	Pass
750	51	3	N - 788535 E - 805801	104.7	22.8	101.7	Pass	Pass
751	51	3	N - 788057 E - 805835	105.5	20.0	102.4	Pass	Pass
752	51	3	N - 787919 E - 805883	101.0	22.6	98.1	Pass	Pass
753	51	3	N - 787795 E - 805983	105.8	22.7	102.7	Pass	Pass
754	51	3	N - 788029 E - 805957	107.1	19.4	104.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
755	51	3	N - 788061 E - 805498	108.5	23.6	105.3	Pass	Pass
756	51	3	N - 788538 E - 805484	112.8	19.6	109.5	Pass	Pass
757	51	3	N - 787809 E - 805458	110.3	19.4	107.1	Pass	Pass
758	51	3	N - 787508 E - 805454	102.7	19.0	99.7	Pass	Pass
759	51	3	N - 788257 E - 805427	107.0	23.0	103.9	Pass	Pass
760	51	3	N - 787591 E - 805375	104.6	22.1	101.6	Pass	Pass
761	51	4	N - 788096 E - 805344	103.9	23.4	100.9	Pass	Pass
762	53	4	N - 788538 E - 805367	98.2	23.2	97.2	Pass	Pass
763	53	4	N - 787819 E - 805337	101.8	22.5	100.8	Pass	Pass
764	53	4	N - 788301 E - 805351	106.6	23.8	105.5	Pass	Fail
764R	53	4	N - 788321 E - 805339	104.1	20.9	103.1	Pass	Pass
765	48	1	N - 787875 E - 806938	105.2	20.5	102.6	Pass	Pass
766	48	6	N - 787482 E - 805884	105.5	20.5	102.9	Pass	Pass
767	53	6	N - 787482 E - 805884	101.9	18.9	100.9	Pass	Pass
768	48	2	N - 787958 E - 806947	97.7	18.1	95.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor %	Compaction Results	Moisture Results
769	48	6	N - 787560 E - 806086	105.6	22.9	103.5	Pass	Pass
770	48	6	N - 787640 E - 806237	102.4	21.7	100.4	Pass	Pass
771	48	6	N - 788286 E - 806563	101.4	19.4	99.4	Pass	Pass
772	48	6	N - 787228 E - 806877	104.3	22.6	102.3	Pass	Pass
773	48	6	N - 787489 E - 806892	104.3	18.2	102.3	Pass	Pass
774	48	6	N - 787884 E - 806882	106.1	20.5	103.5	Pass	Pass
775	48	6	N - 787810 E - 807003	106.9	18.4	104.3	Pass	Pass
776	52	4	N - 787810 E - 806977	107.2	19.0	103.0	Pass	Pass
777	52	6	N - 787321 E - 806840	104.8	20.5	100.7	Pass	Pass
778	52	6	N - 787624 E - 806832	109.6	21.2	105.3	Pass	Pass
779	52	6	N - 787983 E - 806818	106.7	20.2	102.5	Pass	Pass
780	52	6	N - 788027 E - 806661	105.3	21.9	101.2	Pass	Pass
781	52	6	N - 788112 E - 806534	101.8	20.4	97.8	Pass	Pass
782	52	5	N - 787823 E - 806965	106.7	18.9	102.5	Pass	Pass
783	52	4	N - 788008 E - 805957	106.6	22.4	102.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
784	52	4	N - 787744 E - 805895	108.8	20.2	104.5	Pass	Pass
785	52	4	N - 787935 E - 805849	108.3	20.0	104.0	Pass	Pass
786	52	4	N - 788477 E - 805875	105.9	22.2	101.7	Pass	Pass
787	52	4	N - 788349 E - 805858	99.8	23.6	95.9	Pass	Fail
787R	52	4	N - 788354 E - 805857	99.9	20.4	96.0	Pass	Pass
788	52	4	N - 788003 E - 805891	106.6	21.6	102.4	Pass	Pass
789	52	4	N - 787875 E - 805792	106.8	23.0	102.6	Pass	Pass
790	52	4	N - 788055 E - 805795	106.3	19.5	102.1	Pass	Pass
791	54	4	N - 788241 E - 805779	106.9	19.1	103.2	Pass	Pass
792	54	4	N - 788556 E - 805754	99.3	23.7	95.8	Pass	Pass
793	53	4	N - 787543 E - 805666	109.9	11.7	108.8	Pass	Fail
793R	53	4	N - 788178 E - 804984	105.2	19.2	104.2	Pass	Pass
794	53	4	N - 788257 E - 805671	104.2	12.9	103.2	Pass	Fail
794R	53	4	N - 787905 E - 804911	105.1	21.9	104.1	Pass	Pass
795	53	1	N - 788572 E - 805695	105.9	20.6	104.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
796	53	1	N - 787645 E - 805670	102.8	21.9	101.8	Pass	Pass
797	53	4	N - 788254 E - 805644	109.1	19.7	108.0	Pass	Pass
798	53	4	N - 788026 E - 805633	99.1	21.6	98.1	Pass	Pass
799	53	4	N - 787688 E - 805601	108.4	19.8	107.3	Pass	Pass
800	55	1	N - 788484 E - 804957	105.8	21.4	105.0	Pass	Pass
801	53	4	N - 788547 E - 805576	98.8	19.3	97.8	Pass	Pass
802	53	4	N - 788174 E - 805583	101.8	19.9	100.8	Pass	Pass
803	53	4	N - 787567 E - 805558	100.9	20.5	99.9	Pass	Pass
804	53	1	N - 788326 E - 804883	104.8	20.4	103.8	Pass	Pass
805	55	1	N - 787927 E - 804816	97.3	19.6	96.5	Pass	Pass
806	55	4	N - 787835 E - 805289	106.0	23.4	105.2	Pass	Pass
807	55	4	N - 788381 E - 805295	99.0	21.7	98.2	Pass	Pass
808	55	4	N - 788073 E - 805727	99.0	20.6	98.2	Pass	Pass
809	55	4	N - 788261 E - 805713	108.9	21.9	108.0	Pass	Pass
810	55	4	N - 788136 E - 805816	107.9	19.7	107.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
811	55	4	N - 788290 E - 805175	108.6	20.5	107.7	Pass	Pass
812	55	4	N - 788090 E - 805154	100.7	20.3	99.9	Pass	Pass
813	55	4	N - 788469 E - 805130	99.2	20.4	98.4	Pass	Pass
814	55	4	N - 787903 E - 805134	108.0	20.7	107.1	Pass	Pass
815	55	3	N - 788435 E - 805093	104.0	23.3	103.2	Pass	Pass
816	55	3	N - 787929 E - 805080	103.9	19.3	103.1	Pass	Pass
817	55	3	N - 788288 E - 805017	114.1	20.8	113.2	Pass	Pass
818	55	2	N - 788486 E - 804956	100.9	22.4	100.1	Pass	Pass
819	56	2	N - 788258 E - 804944	104.6	21.3	104.6	Pass	Pass
820	56	2	N - 787696 E - 804956	99.5	21.6	99.5	Pass	Pass
821	56	2	N - 788207 E - 804991	106.8	21.1	106.8	Pass	Pass
822	56	2	N - 787938 E - 805006	101.1	21.2	101.1	Pass	Pass
823	56	1	N - 788088 E - 804710	106.5	21.8	106.5	Pass	Pass
824	56	1	N - 788413 E - 804844	106.6	22.9	106.6	Pass	Pass
825	56	5	N - 788407 E - 805523	103.3	19.9	103.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
826	56	5	N - 788214 E - 805509	103.2	20.5	103.2	Pass	Pass
827	56	5	N - 788004 E - 805557	102.6	21.7	102.6	Pass	Pass
828	56	5	N - 787784 E- 805582	101.7	22.2	101.7	Pass	Pass
829	56	5	N - 787546 E - 805585	103.3	21.0	103.3	Pass	Pass
830	56	5	N - 787629 E - 805648	101.8	20.0	101.8	Pass	Pass
831	56	5	N - 787829 E - 805666	107.8	20.7	107.8	Pass	Pass
832	56	5	N - 788013 E - 805692	99.7	18.9	99.7	Pass	Pass
833	56	5	N - 788200 E - 805630	105.2	21.4	105.2	Pass	Pass
834	57	5	N - 788537 E - 805700	100.9	19.5	101.0	Pass	Pass
835	57	5	N - 787630 E - 805713	103.0	23.4	103.1	Pass	Pass
836	57	5	N - 787925 E - 805734	108.6	19.7	108.7	Pass	Pass
837	57	1	N - 788040 E - 804760	107.8	19.8	107.9	Pass	Pass
838	57	5	N - 788210 E - 805728	104.3	21.4	104.4	Pass	Pass
839	57	5	N - 787993 E - 805756	108.4	21.2	108.5	Pass	Pass
840	57	5	N - 787510 E - 805779	100.0	20.3	100.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
841	57	4	N - 787882 E - 805878	101.5	23.1	101.6	Pass	Pass
842	57	4	N - 788113 E - 805855	104.6	19.8	104.7	Pass	Pass
843	57	4	N - 788563 E - 805844	108.3	22.0	108.4	Pass	Pass
844	57	4	N - 787868 E - 805954	113.4	21.5	113.5	Pass	Pass
845	57	4	N - 788117 E - 805960	100.9	18.7	101.0	Pass	Fail
845R	57	4	N - 788110 E - 805962	103.3	19.7	103.4	Pass	Pass
846	57	3	N - 788091 E - 804736	107.0	19.7	107.1	Pass	Pass
847	57	3	N - 788358 E - 804827	107.0	20.2	107.1	Pass	Pass
848	57	3	N - 788041 E - 804855	109.4	19.7	109.5	Pass	Pass
849	58	3	N - 788226 E - 804917	101.5	18.9	98.1	Pass	Pass
850	58	3	N - 788479 E - 804963	106.6	22.2	103.0	Pass	Pass
851	58	3	N - 788017 E - 804812	106.6	19.9	103.0	Pass	Pass
852	58	3	N - 788398 E - 804850	99.1	20.6	95.7	Pass	Pass
853	58	3	N - 787927 E - 805022	108.5	21.2	104.8	Pass	Pass
854	58	3	N - 788175 E - 805045	111.2	20.0	107.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
855	58	3	N - 788547 E - 805066	102.3	23.4	98.8	Pass	Pass
856	58	6	N - 787658 E - 805515	107.5	21.9	103.9	Pass	Pass
857	58	6	N - 788540 E - 805509	112.3	19.6	108.5	Pass	Pass
858	58	6	N - 787469 E - 805564	104.4	20.1	100.9	Pass	Pass
859	58	6	N - 787888 E - 805560	107.2	20.4	103.6	Pass	Pass
860	58	6	N - 788114 E - 805554	100.3	21.1	96.9	Pass	Pass
861	58	6	N - 788375 E - 805608	107.0	21.4	103.4	Pass	Pass
862	58	6	N - 787485 E - 805601	98.1	19.9	94.8	Fail	Pass
862R	58	6	N - 787497 E - 805648	105.4	18.5	101.8	Pass	Pass
863	58	6	N - 788092 E - 805645	112.0	20.4	108.2	Pass	Pass
864	59	6	N - 787622 E - 805660	112.6	19.8	112.3	Pass	Pass
865	59	6	N - 788639 E - 805732	102.6	22.6	97.8	Pass	Pass
866	59	6	N - 788384 E - 805713	104.1	20.8	103.7	Pass	Pass
867	59	6	N - 788129 E - 805754	94.1	24.1	93.8	Fail	Pass
867R	59	6	N - 788123 E - 805963	107.9	19.5	107.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
868	59	6	N - 767654 E - 805746	104.2	21.9	103.9	Pass	Pass
869	59	6	N - 787943 E - 805745	93.4	22.5	93.1	Fail	Pass
869R	59	6	N - 787976 E - 805741	99.9	19.6	99.6	Pass	Pass
870	59	6	N - 788585 E - 805844	101.3	20.0	100.1	Pass	Pass
871	59	6	N - 788334 E - 805812	106.7	21.1	106.4	Pass	Pass
872	59	6	N - 787997 E - 805593	102.5	21.9	102.2	Pass	Pass
873	59	6	N - 787781 E - 805828	103.8	21.8	103.5	Pass	Pass
874	59	6	N - 787941 E - 805940	104.0	22.9	103.7	Pass	Pass
875	59	1	N - 787709 E - 804636	104.2	21.1	103.9	Pass	Pass
876	59	1	N - 787845 E - 804513	105.7	21.4	105.4	Pass	Pass
877	59	2	N - 788273 E - 804732	103.4	21.9	103.1	Pass	Pass
878	59	2	N - 788007 E - 804748	101.8	20.2	101.5	Pass	Pass
879	60	4	N - 787906 E - 804802	99.9	21.6	97.0	Pass	Pass
880	60	4	N - 788168 E - 804818	102.4	21.5	99.4	Pass	Pass
881	60	4	N - 788481 E - 804843	107.1	21.5	104.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
882	60	4	N - 787873 E - 804931	101.3	19.5	98.4	Pass	Pass
883	60	2	N - 787774 E - 804668	101.7	22.4	98.7	Pass	Pass
884	60	2	N - 787784 E - 804510	103.4	22.5	100.4	Pass	Pass
885	60	4	N - 788321 E - 804961	99.6	22.6	96.7	Pass	Pass
886	60	4	N - 788116 E - 804907	109.0	19.5	105.8	Pass	Pass
887	60	4	N - 788347 E - 805036	103.6	20.0	100.6	Pass	Pass
888	60	4	N - 788411 E - 804974	100.3	19.7	97.4	Pass	Pass
889	60	4	N - 787971 E - 805004	100.5	21.5	97.6	Pass	Pass
890	60	4	N - 788113 E - 805051	104.9	22.2	101.8	Pass	Pass
891	60	4	N - 788479 E - 805058	106.2	23.9	103.1	Pass	Pass
892	60	4	N - 787894 E - 805106	100.2	22.2	97.3	Pass	Pass
893	60	3	N - 787792 E - 804538	106.4	21.1	103.3	Pass	Pass
894	61	3	N - 787872 E - 804654	106.4	19.9	105.3	Pass	Pass
895	61	3	N - 787769 E - 804624	106.3	19.1	105.2	Pass	Pass
896	61	5	N - 788372 E - 805112	105.8	21.4	104.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
897	61	5	N - 788017 E - 805117	103.2	20.7	102.2	Pass	Pass
898	61	5	N - 788210 E - 804961	103.6	22.0	102.6	Pass	Pass
899	61	5	N - 788114 E - 805163	105.8	20.6	104.8	Pass	Pass
900	61	5	N - 788246 E - 805207	99.0	22.2	98.0	Pass	Pass
901	61	5	N - 788024 E - 805245	103.2	22.0	102.2	Pass	Pass
902	61	5	N - 787648 E - 805292	102.4	19.3	101.4	Pass	Pass
903	61	5	N - 787798 E - 805361	102.2	20.1	101.4	Pass	Pass
904	61	5	N - 787937 E - 805370	106.5	14.7	105.4	Pass	Fail
904R	61	5	N - 787960 E - 805372	105.1	19.8	104.1	Pass	Pass
905	61	5	N - 787609 E - 805446	103.0	17.2	102.0	Pass	Fail
905R	61	5	N - 788450 E - 805353	103.7	20.2	102.7	Pass	Pass
906	61	5	N - 787912 E - 805438	100.9	22.0	99.9	Pass	Pass
907	61	5	N - 788499 E - 805413	114.2	18.7	113.1	Pass	Pass
908	61	5	N - 876641 E - 805665	105.3	19.8	104.3	Pass	Pass
909	62	5	N - 788011 E - 804781	107.0	19.4	107.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
910	62	5	N - 787949 E - 804883	107.6	19.1	107.7	Pass	Pass
911	62	5	N - 788411 E - 804862	108.8	18.9	108.9	Pass	Pass
912	62	5	N - 788465 E - 804960	103.6	21.1	103.7	Pass	Pass
913	62	5	N - 787916 E - 804966	99.3	22.9	99.4	Pass	Pass
914	62	5	N - 787942 E - 804752	106.1	20.2	106.2	Pass	Pass
915	62	5	N - 788207 E - 804831	107.3	21.2	107.4	Pass	Pass
916	62	5	N - 788232 E - 804932	104.6	20.1	104.7	Pass	Pass
917	62	6	N - 787617 E - 805434	105.8	19.8	105.9	Pass	Pass
918	62	6	N - 787797 E - 805461	106.9	19.9	107.0	Pass	Pass
919	62	6	N - 788357 E - 805436	103.4	19.5	103.5	Pass	Pass
920	62	6	N - 787984 E - 805417	106.4	20.1	106.5	Pass	Pass
921	62	6	N - 787565 E - 805357	111.4	19.6	111.5	Pass	Pass
922	62	6	N - 787812 E - 805358	106.9	20.2	107.0	Pass	Pass
923	62	6	N - 788216 E - 805327	104.7	22.9	104.8	Pass	Pass
924	63	6	N - 787952 E - 805371	101.5	19.4	100.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
925	63	5	N - 787859 E - 804683	107.9	20.5	106.6	Pass	Pass
926	63	5	N - 787754 E - 804545	110.6	18.2	109.3	Pass	Pass
927	63	5	N - 787681 E - 804627	108.4	20.4	107.1	Pass	Pass
928	63	6	N - 787558 E - 805263	107.3	19.7	106.0	Pass	Pass
929	63	6	N - 788207 E - 805270	102.9	19.0	101.7	Pass	Pass
930	63	6	N - 787612 E - 805216	109.3	19.3	108.0	Pass	Pass
931	63	6	N - 788455 E - 805145	99.3	21.0	98.1	Pass	Pass
932	63	6	N - 788422 E - 805055	110.5	18.1	109.2	Pass	Pass
933	63	6	N - 788473 E - 804918	110.7	20.9	109.4	Pass	Pass
934	63	6	N - 787958 E - 804967	99.2	21.0	98.0	Pass	Pass
935	63	6	N - 787861 E - 805079	101.4	20.0	100.2	Pass	Pass
936	63	6	N - 788328 E - 804863	108.2	18.0	106.9	Pass	Pass
937	63	6	N - 788022 E - 804882	107.6	18.7	106.3	Pass	Pass
938	63	6	N - 787938 E - 804692	104.6	21.9	103.4	Pass	Pass
939	64	6	N - 788248 E - 804722	102.6	22.8	99.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
940	64	6	N - 788211 E - 804637	103.5	20.1	100.5	Pass	Pass
941	64	6	N - 788426 E - 804678	106.5	20.4	103.4	Pass	Pass
942	64	6	N - 788026 E - 804771	108.1	19.4	105.0	Pass	Pass
943	54	1	N - 787385 E - 806935	102.4	18.8	98.8	Pass	Pass
944	64	6	N - 787774 E - 804697	104.6	19.5	101.6	Pass	Pass
945	64	6	N - 787747 E - 804593	97.6	21.8	94.8	Fail	Pass
945R	64	6	N - 787752 E - 804592	106.3	20.2	103.2	Pass	Pass
946	64	6	N - 787872 E - 804869	106.7	18.7	103.6	Pass	Pass
947	64	6	N - 788216 E - 804739	104.3	20.1	101.3	Pass	Pass
948	54	1	N - 786861 E - 806989	101.4	20.6	97.9	Pass	Pass
949	54	1	N - 787576 E - 806970	104.9	19.7	101.3	Pass	Pass
950	54	1	N - 787712 E - 807031	104.7	18.8	101.1	Pass	Pass
951	54	1	N - 787316 E - 807093	107.3	20.5	103.6	Pass	Pass
952	54	1	N - 787007 E - 807006	101.2	21.2	97.7	Pass	Pass
953	54	1	N - 787631 E - 807116	104.9	21.2	101.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
954	54	1	N - 786996 E - 807136	109.2	18.9	105.4	Pass	Pass
955	54	1	N - 787291 E - 807140	111.7	18.6	107.8	Pass	Pass
956	54	1	N - 788221 E - 806945	103.0	20.4	99.4	Pass	Pass
957	54	2	N - 786998 E - 806953	107.4	21.2	103.7	Pass	Pass
958	65	2	N - 787236 E - 806992	104.3	19.1	102.3	Pass	Pass
959	65	2	N - 787616 E - 806931	109.8	19.2	107.6	Pass	Pass
960	65	2	N - 787032 E - 807066	103.0	18.6	101.0	Pass	Pass
961	65	2	N - 787263 E - 807031	104.7	22.0	102.6	Pass	Pass
962	65	2	N - 787417 E - 807078	105.4	21.4	103.3	Pass	Pass
963	65	2	N - 787765 E - 807106	103.5	21.9	101.5	Pass	Pass
964	65	2	N - 787169 E - 807138	107.8	19.8	105.7	Pass	Pass
965	65	2	N - 786083 E - 807154	102.9	18.9	100.9	Pass	Pass
966	65	2	N - 787713 E - 807166	106.4	22.2	104.3	Pass	Pass
967	65	2	N - 788193 E - 806913	111.8	20.7	109.6	Pass	Pass
968	65	3	N - 787300 E - 807031	104.0	19.1	102.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
969	65	3	N - 786913 E - 806939	111.4	19.4	109.2	Pass	Pass
970	65	3	N - 787382 E - 806974	108.1	20.2	106.0	Pass	Pass
971	65	3	N - 787470 E - 806953	108.5	19.8	106.4	Pass	Pass
972	65	3	N - 787350 E - 807138	103.5	23.9	101.5	Pass	Pass
973	66	3	N - 788335 E - 806877	100.1	19.8	97.8	Pass	Pass
974	66	3	N - 787698 E - 807149	105.9	20.5	103.5	Pass	Pass
975	66	3	N - 787723 E - 807073	105.7	20.1	103.3	Pass	Pass
976	66	3	N - 788231 E - 906904	103.1	21.5	100.8	Pass	Pass
977	66	3	N - 789970 E - 807137	100.3	20.8	98.0	Pass	Pass
978	66	3	N - 787308 E - 807022	110.5	19.0	108.0	Pass	Pass
979	66	3	N - 787605 E - 807172	104.9	19.9	102.5	Pass	Pass
980	66	1	N - 788922 E - 805314	109.3	19.5	106.8	Pass	Pass
981	66	1	N - 789189 E - 805336	100.9	20.1	98.6	Pass	Pass
982	66	1	N - 789176 E - 805291	104.6	19.4	102.2	Pass	Pass
983	66	1	N - 788956 E - 805424	105.4	18.9	103.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
984	66	1	N - 789178 E - 805471	103.4	19.1	101.1	Pass	Pass
985	66	3	N - 787211 E - 806981	99.7	22.1	97.5	Pass	Pass
986	66	3	N - 787737 E - 807013	111.8	19.3	109.3	Pass	Pass
987	64	1	N - 789050 E - 805255	105.3	22.7	102.2	Pass	Pass
988	64	1	N - 788710 E - 805204	106.4	21.4	103.3	Pass	Pass
989	64	1	N - 788616 E - 805136	101.2	20.2	98.3	Pass	Pass
990	64	1	N - 780027 E - 805107	105.1	21.7	102.0	Pass	Pass
991	64	1	N - 788725 E - 805020	105.3	20.2	102.2	Pass	Pass
992	64	1	N - 788968 E - 805584	110.8	21.0	107.6	Pass	Pass
993	64	2	N - 789120 E - 805328	106.1	20.6	103.0	Pass	Pass
994	66	2	N - 788837 E - 805367	103.5	20.4	101.2	Pass	Pass
995	67	2	N - 788752 E - 805288	111.9	20.1	108.0	Pass	Pass
996	67	2	N - 789136 E - 805241	107.6	20.9	103.9	Pass	Pass
997	67	1	N - 788760 E - 805536	100.9	18.2	98.0	Pass	Pass
998	67	2	N - 788769 E - 805150	104.6	20.9	101.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
999	67	2	N - 789133 E - 805274	110.3	20.4	107.1	Pass	Pass
1000	67	2	N - 788830 E - 805322	103.5	20.4	100.5	Pass	Pass
1001	67	2	N - 788744 E - 805185	108.5	20.9	105.3	Pass	Pass
1002	67	2	N - 788784 E - 805252	76.4	13.9	74.2	Fail	Fail
1002R	67	2	N - 788721 E - 805261	106.4	20.9	103.3	Pass	Pass
1003	67	2	N - 788935 E - 805131	110.1	19.4	106.9	Pass	Pass
1004	67	2	N - 789013 E - 805523	103.9	18.3	100.9	Pass	Pass
1005	67	3	N - 788688 E - 805133	98.7	20.4	95.8	Pass	Pass
1006	67	3	N - 788779 E - 805010	110.4	19.6	107.2	Pass	Pass
1007	67	3	N - 788761 E - 805461	116.4	20.7	113.0	Pass	Pass
1008	67	3	N - 788989 E - 805492	103.0	22.4	100.0	Pass	Pass
1009	67	2	N - 789007 E - 805362	106.2	22.5	103.1	Pass	Pass
1010	67	3	N - 788732 E - 805381	100.3	23.2	97.4	Pass	Pass
1011	67	3	N - 789068 E - 805537	113.5	20.6	101.9	Pass	Pass
1012	67	3	N - 788971 E - 805281	103.9	23.6	100.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1013	67	3	N - 788727 E - 805260	107.2	20.6	104.1	Pass	Pass
1014	67	3	N - 789017 E - 805139	105.8	19.2	102.7	Pass	Pass
1015	68	4	N - 789083 E - 805316	110.7	19.5	107.6	Pass	Pass
1016	68	4	N - 788691 E - 805361	106.7	22.6	103.7	Pass	Pass
1017	68	4	N - 788991 E - 805257	103.1	21.8	100.2	Pass	Pass
1018	68	4	N - 788693 E - 805212	110.1	20.6	107.0	Pass	Pass
1019	68	4	N - 789042 E - 805171	104.3	22.2	101.4	Pass	Pass
1020	68	4	N - 788732 E - 805137	104.9	19.9	101.9	Pass	Pass
1021	68	4	N - 788714 E - 805412	102.0	23.2	99.1	Pass	Pass
1022	68	4	N - 789012 E - 805421	106.0	22.1	103.0	Pass	Pass
1023	68	4	N - 788743 E - 805003	103.2	22.6	100.3	Pass	Pass
1024	68	4	N - 788610 E - 805072	102.8	21.3	99.9	Pass	Pass
1025	68	4	N - 788699 E - 804936	104.1	21.9	101.2	Pass	Pass
1026	68	4	N - 788607 E - 804991	103.1	21.0	100.2	Pass	Pass
1027	68	5	N - 789100 E - 805260	104.0	22.5	101.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1028	68	5	N - 788711 E - 805181	106.4	21.5	103.4	Pass	Pass
1029	68	5	N - 788754 E - 805336	102.5	20.9	99.6	Pass	Pass
1030	69	5	N - 789119 E - 805384	102.6	22.1	100.5	Pass	Pass
1031	69	5	N - 789027 E - 805132	105.0	19.6	102.8	Pass	Pass
1032	69	5	N - 788733 E - 805212	103.0	19.3	100.9	Pass	Pass
1033	69	5	N - 788516 E - 805361	105.2	22.2	103.0	Pass	Pass
1034	69	5	N - 788762 E - 805412	107.0	18.3	104.8	Pass	Pass
1035	69	5	N - 789003 E - 805570	100.0	21.5	97.9	Pass	Pass
1036	69	5	N - 788646 E - 805031	108.6	20.0	106.4	Pass	Pass
1037	69	5	N - 788712 E - 805559	108.2	20.2	106.0	Pass	Pass
1038	69	5	N - 789070 E - 805461	102.6	23.8	100.5	Pass	Fail
1038R	69	5	N - 789079 E - 805543	102.9	20.3	100.8	Pass	Pass
1039	69	6	N - 788420 E - 805213	108.6	19.9	106.4	Pass	Pass
1040	70	1	N - 787540 E - 804604	100.0	22.9	97.1	Pass	Pass
1041	69	6	N - 788855 E - 805124	108.7	19.8	106.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1042	69	6	N - 788651 E - 805161	105.5	18.7	103.3	Pass	Pass
1043	69	6	N - 787541 E - 805188	109.5	18.7	107.2	Pass	Pass
1044	70	1	N - 788859 E - 805256	106.6	19.6	103.5	Pass	Pass
1045	70	1	N - 787704 E - 805002	107.5	21.2	104.4	Pass	Pass
1046	70	1	N - 787778 E - 804752	104.4	19.7	101.4	Pass	Pass
1047	69	6	N - 788892 E - 805512	107.0	20.8	104.8	Pass	Pass
1048	69	6	N - 788516 E - 805461	103.0	20.9	100.9	Pass	Pass
1049	71	6	N - 789002 E - 805312	105.0	20.8	102.9	Pass	Pass
1050	71	6	N - 788603 E - 805348	104.8	18.7	102.7	Pass	Pass
1051	70	2	N - 787585 E - 804810	102.7	23.1	99.7	Pass	Pass
1052	70	2	N - 787514 E - 804494	101.1	23.7	98.2	Pass	Pass
1053	71	6	N - 787555 E - 805080	102.4	20.7	100.4	Pass	Pass
1054	71	6	N - 789075 E - 805403	108.5	19.8	106.4	Pass	Pass
1055	70	2	N - 788819 E - 805365	102.3	21.9	99.3	Pass	Pass
1056	70	2	N - 787621 E - 804781	104.5	21.2	101.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1057	71	6	N - 787617 E - 805555	111.0	19.9	108.8	Pass	Pass
1058	70	3	N - 787623 E - 804792	101.6	22.0	98.6	Pass	Pass
1059	70	3	N - 787453 E - 804503	104.5	21.9	101.5	Pass	Pass
1060	70	3	N - 787590 E - 805191	107.9	21.1	104.8	Pass	Pass
1061	70	3	N - 787834 E - 804823	103.9	18.2	100.9	Pass	Pass
1062	70	4	N - 787503 E - 804725	106.2	23.5	103.1	Pass	Pass
1063	70	4	N - 787542 E - 805120	101.8	19.7	98.8	Pass	Pass
1064	70	4	N - 787728 E - 804927	106.4	21.3	103.3	Pass	Pass
1065	72	3	N - 787778 E - 804826	103.0	19.0	100.0	Pass	Pass
1066	72	4	N - 787517 E - 805126	104.4	22.0	101.4	Pass	Pass
1067	72	4	N - 787495 E - 804707	103.2	21.4	100.2	Pass	Pass
1068	71	1	N - 789767 E - 804878	107.2	19.2	105.1	Pass	Pass
1069	71	1	N - 789774 E - 804347	103.1	20.9	101.1	Pass	Pass
1070	71	1	N - 789740 E - 804751	101.7	23.8	99.7	Pass	Pass
1071	71	1	N - 789720 E - 804482	101.2	21.2	99.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1072	71	2	N - 789770 E - 804539	106.0	21.8	103.9	Pass	Pass
1073	71	2	N - 789757 E - 804769	106.9	20.5	104.8	Pass	Pass
1074	71	2	N - 789735 E - 804256	101.2	23.7	99.2	Pass	Pass
1075	72	5	N - 787740 E - 804857	98.4	18.0	95.5	Pass	Fail
1075R	72	5	N - 787717 E - 804962	98.6	23.4	95.7	Pass	Pass
1076	71	2	N - 789704 E - 804474	101.5	22.8	99.5	Pass	Pass
1077	72	5	N - 787786 E - 804895	103.6	22.5	100.6	Pass	Pass
1078	71	3	N - 789721 E - 804491	104.6	20.7	102.5	Pass	Pass
1079	71	3	N - 789763 E - 804335	108.9	19.3	106.8	Pass	Pass
1080	73	3	N - 789738 E - 804885	106.4	20.5	104.2	Pass	Pass
1081	73	3	N - 789721 E - 804563	106.1	19.3	103.9	Pass	Pass
1082	72	6	N - 787571 E - 805124	104.5	18.8	101.5	Pass	Pass
1083	72	6	N - 787565 E - 804765	109.6	19.1	106.4	Pass	Pass
1084	72	6	N - 787571 E - 787804	101.4	19.3	98.4	Pass	Pass
1085	72	6	N - 787804 E - 804836	100.7	19.7	97.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1086	73	4	N - 787742 E - 805012	99.5	21.8	97.5	Pass	Pass
1087	73	4	N -787486 E - 804861	100.4	18.4	98.3	Pass	Pass
1088	73	4	N - 787612 E - 805180	100.5	20.5	98.4	Pass	Pass
1089	73	4	N - 787681 E - 804737	106.9	18.8	104.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Proctor Results

Proctor #	Maximum Dry Density	Optimum Moisture Content
14	104.9	18.9
15	103.8	19.7
16	104.0	19.8
17	101.2	18.2
18	102.2	20.4
19	105.2	18.2
20	102.0	19.7
21	104.2	19.9
22	105.3	19.2
23	106.2	18.0
24	103.0	18.7
25	104.2	19.3
26	99.9	18.5
27	100.3	21.0
28	99.8	17.3
29	99.9	22.5
30	101.6	20.4
31	104.0	19.4
32	104.0	18.0
33	104.0	20.7
34	102.0	18.3
35	105.0	19.5
36	104.0	19.0
37	104.0	19.5
38	106.0	18.8
39	101.4	19.4
40	101.6	19.5
41	101.1	20.0
42	101.0	20.0
43	106.0	19.5

Specifications: Standard proctor performed according to ASTM D698. The material is considered acceptable if the maximum dry density is greater than or equal to 99 lb/ft^3.

Testing Interval: One proctor every 15 sandcones.

Notes: Proctors were sampled randomly from both east and west side borrow areas.

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Summary Report of Radon Barrier Proctor Results (continued)

Proctor #	Maximum Dry Density	Optimum Moisture Content
44	101.8	21.2
45	101.2	21.2
46	102.7	20.4
47	103.0	20.8
48	102.0	19.8
49	100.0	19.7
50	102.1	19.8
51	103.0	20.0
52	104.1	19.4
53	101.0	19.5
54	103.6	20.5
55	100.8	21.2
56	100.0	20.7
57	99.9	21.0
58	103.5	20.5
59	100.3	20.7
60	103.0	20.0
61	101.0	19.6
62	99.9	20.3
63	101.2	19.8
64	103.0	20.2
65	102.0	19.7
66	102.3	20.1
67	103.6	20.1
68	102.9	19.4
69	102.1	19.7
70	103.0	20.0
71	102.0	20.3
72	103.0	20.2
73	102.1	20.0

Specifications: Standard proctor performed according to ASTM D698. The material is considered acceptable if the maximum dry density is greater than or equal to 99 lb/ft^3.

Testing Interval: One proctor every 15 sandcones.

Notes: Proctors were sampled randomly from both east and west side borrow areas.

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Summary Report of Radon Barrier One-Point Proctor Results

One-Point #	Dry Density	Moisture Content
14A	101.7	16.9
14B	104.8	18.6
15A	100.6	18.5
15B	98.0	16.3
16A	97.4	21.2
16B	97.5	21.4
17A	99.5	16.8
17B	97.6	15.2
18A	96.9	17.0
18B	97.8	17.7
19A	89.1	14.2
19B	100.8	18.9
20A	97.8	17.1
20B	95.7	16.5
21A	95.8	16.3
21B	95.2	16.6
22A	97.0	18.2
22B	99.8	19.4
23A	101.3	21.7
23B	106.7	17.8
24A	101.1	20.1
24B	102.3	18.8
25A	100.3	21.1
25B	99.9	21.9
26A	100.6	19.3
26B	99.3	18.5
27A	96.7	16.4
27B	97.8	19.0
28A	94.2	10.0
28B	98.8	16.9
29A	100.3	17.0
29B	99.9	20.2
30A	100.6	18.7

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

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Summary Report of Radon Barrier One-Point Proctor Results (continued)

One-Point #	Dry Density	Moisture Content
30B	100.8	20.2
31A	101.4	16.0
31B	103.7	20.1
32A	92.5	21.3
32B	102.7	19.0
33A	103.3	19.3
33B	101.4	17.7
34A	102.4	14.5
34B	103.6	19.3
35A	103.7	17.7
35B	104.2	19.4
36A	105.3	16.4
36B	100.6	13.6
37A	104.4	19.1
37B	100.2	22.0
38A	105.7	14.6
38B	104.8	18.1
39A	103.0	18.0
39B	101.5	18.0
40A	105.3	19.6
40B	102.9	19.3
41A	100.1	23.4
41B	102.2	20.1
42A	101.6	19.2
42B	102.1	20.3
43A	101.6	22.6
43B	104.7	19.5
44A	105.9	17.6
44B	101.5	20.0
45A	100.5	19.7
45B	98.4	20.4
46A	98.9	22.6
46B	100.6	19.6

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier One-Point Proctor Results (continued)

One-Point #	Dry Density	Moisture Content
47A	103.2	20.1
47B	101.3	19.4
48A	96.2	22.3
48B	102.1	19.4
49A	99.0	22.3
49B	100.7	20.8
50A	100.9	19.6
50B	98.6	22.1
51A	102.3	20.9
51B	98.4	21.3
52A	102.4	21.9
52B	102.6	22.2
53A	98.3	21.2
53B	91.3	21.3
54A	103.0	20.9
54B	102.1	18.8
55A	101.9	20.9
55B	97.2	23.5
56A	95.3	19.3
56B	99.4	23.8
57A	98.6	24.4
57B	100.0	22.9
58A	99.8	23.7
58B	102.7	19.6
59A	100.0	21.1
59B	101.4	20.3
60A	102.7	19.9
60B	103.6	20.0
61A	101.2	20.2
61B	102.4	20.6
62A	100.0	20.8
62B	97.7	21.6
63A	101.4	19.6

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier One-Point Proctor Results (continued)

One-Point #	Dry Density	Moisture Content
63B	101.4	20.6
64A	103.1	18.8
64B	102.1	20.3
65A	102.1	20.4
65B	103.3	20.0
66A	102.3	18.9
66B	103.1	20.3
67A	103.9	20.4
67B	104.8	18.5
68A	99.8	20.5
68B	100.3	21.2
69A	99.8	21.3
69B	101.1	20.1
70A	100.4	22.5
70B	102.7	21.2
71A	99.6	22.5
72A	101.7	19.2
72B	103.4	20.7
73A	101.3	21.2

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
64	20-Apr-99	19	48	29	Pass
65	21-Apr-99	20	50	30	Pass
66	1-May-99	19	43	24	Pass
67	7-May-99	19	48	29	Pass
68	10-May-99	19	49	30	Pass
69	11-May-99	19	49	30	Pass
70	12-May-99	20	51	31	Pass
71	14-May-99	19	43	24	Pass
72	17-May-99	20	45	25	Pass
73	18-May-99	20	47	27	Pass
74	19-May-99	20	48	28	Pass
75	20-May-99	19	41	22	Pass
76	21-May-99	20	49	29	Pass
77	24-May-99	19	46	27	Pass
78	25-May-99	20	48	28	Pass
79	26-May-99	23	50	27	Pass
80	27-May-99	22	50	28	Pass
81	28-May-99	21	49	28	Pass
82	2-Jun-99	23	53	30	Pass
83	3-Jun-99	23	53	30	Pass
84	4-Jun-99	23	52	29	Pass
85	7-Jun-99	20	48	28	Pass
86	8-Jun-99	22	46	24	Pass
87	9-Jun-99	25	49	24	Pass
88	10-Jun-99	17	46	29	Pass
89	11-Jun-99	25	51	26	Pass
90	14-Jun-99	26	46	20	Pass
91	15-Jun-99	25	49	24	Pass
92	18-Jun-99	25	47	22	Pass
93	21-Jun-99	24	50	26	Pass
94	22-Jun-99	22	56	34	Pass
95	23-Jun-99	24	54	30	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
96	24-Jun-99	24	58	34	Pass
97	25-Jun-99	24	49	25	Pass
98	28-Jun-99	19	50	31	Pass
99	29-Jun-99	23	56	33	Pass
100	30-Jun-99	20	49	29	Pass
101	1-Jul-99	25	48	23	Pass
102	2-Jul-99	21	50	29	Pass
103	6-Jul-99	23	57	34	Pass
104	7-Jul-99	22	52	30	Pass
105	8-Jul-99	22	49	27	Pass
106	9-Jul-99	24	59	35	Pass
107	12-Jul-99	24	56	32	Pass
108	13-Jul-99	23	59	36	Pass
109	14-Jul-99	23	64	41	Pass
110	15-Jul-99	22	51	29	Pass
111	16-Jul-99	21	50	29	Pass
112	19-Jul-99	21	62	41	Pass
113	20-Jul-99	21	54	33	Pass
114	21-Jul-99	22	60	38	Pass
115	22-Jul-99	22	57	35	Pass
116	23-Jul-99	24	55	31	Pass
117	26-Jul-99	21	61	40	Pass
118	27-Jul-99	32	55	23	Pass
119	28-Jul-99	22	55	33	Pass
120	29-Jul-99	21	58	37	Pass
121	30-Jul-99	22	56	34	Pass
122	2-Aug-99	21	56	35	Pass
123	3-Aug-99	23	50	27	Pass
124	4-Aug-99	24	57	33	Pass
125	5-Aug-99	24	62	38	Pass
126	6-Aug-99	23	52	29	Pass
127	9-Aug-99	21	59	38	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
128	10-Aug-99	21	59	38	Pass
129	11-Aug-99	22	60	38	Pass
130	12-Aug-99	21	55	34	Pass
131	13-Aug-99	21	54	33	Pass
132	16-Aug-99	23	52	29	Pass
133	17-Aug-99	23	49	26	Pass
134	19-Aug-99	24	53	29	Pass
135	20-Aug-99	20	51	31	Pass
136	23-Aug-99	20	49	29	Pass
137	24-Aug-99	20	47	27	Pass
138	25-Aug-99	20	45	25	Pass
139	26-Aug-99	18	50	32	Pass
140	27-Aug-99	20	52	32	Pass
141	31-Aug-99	20	54	34	Pass
142	1-Sep-99	21	58	37	Pass
143	2-Sep-99	22	54	32	Pass
144	7-Sep-99	20	51	31	Pass
145	8-Sep-99	20	54	34	Pass
146	10-Sep-99	22	45	23	Pass
147	10-Sep-99	21	50	29	Pass
148	13-Sep-99	20	47	27	Pass
149	14-Sep-99	21	46	25	Pass
150	15-Sep-99	20	55	35	Pass
151	16-Sep-99	20	47	27	Pass
152	17-Sep-99	20	54	34	Pass
153	20-Sep-99	20	46	26	Pass
154	21-Sep-99	19	49	30	Pass
155	22-Sep-99	19	51	32	Pass
156	23-Sep-99	20	49	29	Pass
157	24-Sep-99	20	54	34	Pass
158	27-Sep-99	21	52	31	Pass
159	28-Sep-99	20	50	30	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 1999 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
160	29-Sep-99	21	50	29	Pass
161	30-Sep-99	22	52	30	Pass
162	1-Oct-99	22	53	31	Pass
163	4-Oct-99	23	52	29	Pass
164	5-Oct-99	22	53	31	Pass
165	6-Oct-99	22	52	30	Pass
166	7-Oct-99	22	52	30	Pass
167	8-Oct-99	23	51	28	Pass
168	11-Oct-99	21	52	31	Pass
169	12-Oct-99	21	51	30	Pass
170	13-Oct-99	22	53	31	Pass
171	14-Oct-99	22	53	31	Pass
172	15-Oct-99	22	52	30	Pass
173	18-Oct-99	22	53	31	Pass
174	19-Oct-99	23	53	30	Pass
175	20-Oct-99	21	53	32	Pass
176	21-Oct-99	23	54	31	Pass
177	22-Oct-99	23	54	31	Pass
178	25-Oct-99	23	53	30	Pass
179	26-Oct-99	23	52	29	Pass
180	27-Oct-99	22	53	31	Pass
181	28-Oct-99	22	53	31	Pass
182	29-Oct-99	23	54	31	Pass
183	3-Nov-99	19	50	31	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

RADON BARRIER CLAY PLACEMENT QC

2000

INBERG-MILLER ENGINEERS
124 EAST MAIN STREET RIVERTON, WYOMING 82501-4397 307-856-8136

December 22, 2000 8152.1-RM

RECEIVED
DEC 28 2000
By TWH

Mr. Tom Hardgrove
Pathfinder Mines Corporation
P.O. Box 831
Riverton, WY 82501

RE: SUMMARY REPORT OF TESTING RESULTS
2000 CONSTRUCTION SEASON
PATHFINDER LUCKY MC MINE RECLAMATION PROJECT
GAS HILLS, WYOMING

Dear Mr. Hardgrove:

The following is a summary of the field and laboratory test results performed on clay layer soils for the 2000 construction season on the above-referenced project. The results have been summarized in tables. We have attached the following Summary Reports:

1. Radon Barrier (Clay Layer) Compaction/Moisture Results (39 pages)
2. Radon Barrier (Clay Layer) Proctor Results (2 pages)
3. Radon Barrier (Clay Layer) One-Point Proctor Results (3 pages)
4. Radon Barrier (Clay Layer) Atterberg Limits Results (4 pages)

We appreciate the opportunity to be of service to you on this phase of the project. If you have any questions regarding the enclosed information, or if we may be of further assistance, please contact us.

Sincerely,

INBERG-MILLER ENGINEERS

Jon C. Howell

Jon C. Howell, P.E.
Vice President

JCH:ksp:\letters\8152.1-RM

Enclosures as stated

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1090	74	1	N - 786162 E - 807194	109.4	19.8	106.1	Pass	Pass
1091	74	1	N - 786348 E - 807271	109.6	15.3	106.3	Pass	Fail
1091R	74	1	N - 786351 N - 807270	104.9	20.8	101.7	Pass	Pass
1092	74	1	N - 785965 E - 806886	106.4	20.9	103.2	Pass	Pass
1093	74	1	N - 785985 E - 806930	109.2	19.6	105.9	Pass	Pass
1094	74	1	N - 786280 E - 806955	105.0	19.4	101.9	Pass	Pass
1095	74	1	N - 786122 E - 807048	103.7	20.8	100.5	Pass	Pass
1096	74	1	N - 786164 E - 807121	106.5	20.3	103.3	Pass	Pass
1097	74	1	N - 786410 E - 807152	112.0	20.8	108.6	Pass	Pass
1098	74	2	N - 786151 E - 806850	106.1	19.5	103.0	Pass	Pass
1099	74	2	N - 785918 E - 806896	113.5	20.7	110.1	Pass	Pass
1100	74	2	N - 786027 E - 806962	103.4	24.0	100.3	Pass	Pass
1101	74	2	N - 786336 E - 806999	104.8	21.7	101.6	Pass	Pass
1102	74	2	N - 786045 E - 807047	105.1	18.9	102.0	Pass	Pass
1103	74	2	N - 786187 E - 807078	109.2	18.8	105.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1104	74	2	N - 786146 E - 807142	101.5	21.6	98.5	Pass	Pass
1105	75	2	N - 786405 E - 807175	97.7	20.1	95.1	Pass	Pass
1106	75	2	N - 786347 E - 807264	107.4	22.1	104.6	Pass	Pass
1107	75	3	N - 786212 E - 806925	108.3	20.0	105.4	Pass	Pass
1108	75	3	N - 786066 E - 806865	110.1	19.1	107.2	Pass	Pass
1109	75	3	N - 785910 E - 806911	103.4	19.2	100.7	Pass	Pass
1110	75	3	N - 786171 E - 806952	109.4	20.0	106.5	Pass	Pass
1111	75	3	N - 786236 E - 807015	101.0	19.9	98.4	Pass	Pass
1112	75	3	N - 786135 E - 807112	112.7	16.7	109.8	Pass	Fail
1112R	75	3	N - 786135 E - 807117	104.4	14.0	101.6	Pass	Fail
1112R	75	3	N - 786142 E - 807114	114.6	18.5	111.6	Pass	Pass
1113	75	3	N - 786275 E - 807167	106.0	16.1	103.2	Pass	Fail
1113R	75	3	N - 786261 E - 807165	104.9	19.2	102.1	Pass	Pass
1114	75	3	N - 786341 E - 807230	103.5	20.9	100.8	Pass	Pass
1115	75	1	N - 785973 E - 806810	112.6	19.8	109.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1116	75	1	N - 785635 E - 806664	100.5	22.8	97.9	Pass	Pass
1117	75	1	N - 786089 E - 806738	107.8	19.7	105.0	Pass	Pass
1118	75	1	N - 785621 E - 806656	102.5	18.9	99.8	Pass	Pass
1119	75	1	N - 786093 E - 806720	101.1	18.4	98.4	Pass	Pass
1120	76	1	N - 785782 E - 806666	112.8	18.0	110.2	Pass	Pass
1121	76	1	N - 785619 E - 806571	109.5	20.0	107.1	Pass	Pass
1122	76	1	N - 785611 E - 806394	109.4	20.3	106.9	Pass	Pass
1123	76	1	N - 785471 E - 806185	103.1	19.6	100.8	Pass	Pass
1124	76	1	N - 785404 E - 805927	97.4	18.3	95.2	Pass	Pass
1125	76	1	N - 785342 E - 805705	107.9	18.2	105.5	Pass	Pass
1126	76	1	N - 784884 E - 805774	108.3	18.8	105.8	Pass	Pass
1127	76	1	N - 785257 E - 805904	109.3	15.2	106.8	Pass	Fail
1127R	76	1	N - 785259 E - 805898	98.5	18.0	96.3	Pass	Pass
1128	76	1	N - 785139 E - 805849	107.0	19.3	104.6	Pass	Pass
1129	76	1	N - 784842 E - 805860	113.7	13.5	111.2	Pass	Fail

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1129R	76	1	N - 784841 E - 805863	103.2	20.7	100.8	Pass	Pass
1130	76	1	N - 785218 E - 805698	108.4	18.9	106.0	Pass	Pass
1131	76	2	N - 786089 E - 806713	101.7	18.5	99.4	Pass	Pass
1132	76	2	N - 786006 E - 806779	97.3	18.6	95.1	Pass	Pass
1133	76	2	N - 785933 E - 806816	105.4	23.0	103.0	Pass	Pass
1134	76	2	N - 785761 E - 806670	102.7	22.6	100.4	Pass	Pass
1135	77	2	N - 785635 E - 806475	99.4	22.6	95.6	Pass	Pass
1136	77	2	N - 785532 E - 806233	105.0	19.1	101.0	Pass	Pass
1137	77	2	N - 785426 E - 805961	105.3	23.8	101.3	Pass	Pass
1138	77	2	N - 785333 E - 805698	110.9	20.0	106.7	Pass	Pass
1139	77	2	N - 785250 E - 805846	104.5	19.1	100.5	Pass	Pass
1140	77	2	N - 785116 E - 805908	102.2	18.7	98.3	Pass	Pass
1141	77	2	N - 784833 E - 805829	108.7	19.4	104.5	Pass	Pass
1142	77	2	N - 784845 E - 805735	113.2	21.9	108.8	Pass	Pass
1143	77	2	N - 785193 E - 805634	103.4	19.1	99.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1144	77	1	N - 789812 E - 803640	102.6	21.1	98.7	Pass	Pass
1145	77	1	N - 789592 E - 803531	111.2	19.1	106.9	Pass	Pass
1146	77	1	N - 789537 E - 803399	109.0	15.3	104.8	Pass	Fail
1146R	77	1	N - 789543 E - 803402	111.8	18.6	107.5	Pass	Pass
1147	77	1	N - 789502 E - 803305	106.0	20.5	101.9	Pass	Pass
1148	77	1	N - 789458 E - 803209	103.1	19.4	99.2	Pass	Pass
1149	77	1	N - 789457 E - 803150	94.2	18.4	90.6	Fail	Fail
1149R	77	1	N - 789460 E - 803154	100.8	20.2	96.9	Pass	Pass
1150	78	1	N - 789288 E - 803144	98.2	23.8	98.2	Pass	Pass
1151	78	1	N - 789229 E - 803130	96.4	21.8	96.4	Pass	Pass
1152	78	1	N - 789155 E - 803122	98.3	23.5	98.3	Pass	Pass
1153	78	1	N - 789074 E - 803116	102.2	20.1	102.2	Pass	Pass
1154	78	1	N - 789009 E - 803127	97.3	18.5	97.3	Pass	Pass
1155	78	1	N - 788950 E - 803142	105.4	20.3	105.4	Pass	Pass
1156	78	3	N - 786137 E - 806712	107.8	18.9	107.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1157	78	3	N - 786041 E - 806798	109.7	20.7	109.7	Pass	Pass
1158	78	3	N - 785801 E - 806718	112.0	18.3	112.0	Pass	Pass
1159	78	3	N - 785692 E - 806583	99.9	22.9	99.9	Pass	Pass
1160	78	3	N - 785520 E - 806234	96.3	21.7	96.3	Pass	Pass
1161	78	3	N - 785378 E - 805835	98.5	18.6	98.5	Pass	Pass
1162	78	3	N - 785323 E - 805828	114.5	18.6	114.5	Pass	Pass
1163	78	3	N - 785177 E - 805638	99.4	21.3	99.4	Pass	Pass
1164	78	3	N - 784816 E - 805779	100.7	23.5	100.7	Pass	Pass
1165	79	3	N - 784806 E - 805811	107.6	18.8	104.0	Pass	Pass
1166	79	3	N - 785249 E - 805895	99.3	22.5	96.0	Pass	Pass
1167	79	2	N - 789720 E - 803775	99.3	20.1	95.9	Pass	Pass
1168	79	2	N - 789663 E - 803650	98.6	22.8	95.3	Pass	Pass
1169	79	2	N - 789597 E - 803599	99.8	20.5	96.4	Pass	Pass
1170	79	2	N - 789512 E - 803486	104.9	21.9	101.3	Pass	Pass
1171	79	2	N - 789523 E - 803412	105.2	21.4	101.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1172	79	2	N - 789540 E - 803309	100.5	19.7	97.1	Pass	Pass
1173	79	2	N - 789494 E - 803429	103.8	18.8	100.3	Pass	Pass
1174	79	2	N - 789415 E - 803374	106.8	20.7	103.2	Pass	Pass
1175	79	2	N - 789339 E - 803253	103.4	23.6	99.9	Pass	Pass
1176	79	2	N - 789183 E - 803126	106.6	23.7	103.0	Pass	Pass
1177	79	2	N - 789095 E - 803062	100.4	20.9	97.0	Pass	Pass
1178	79	2	N - 788996 E - 803019	94.4	13.0	91.2	Fail	Fail
1178R	79	1	N - 788995 E - 803017	108.0	20.9	104.3	Pass	Pass
1179	79	1	N - 785853 E - 805605	113.5	18.0	109.7	Pass	Pass
1180	80	1	N - 785829 E - 805836	110.0	20.8	105.5	Pass	Pass
1181	80	1	N - 785904 E - 806154	106.4	10.7	102.0	Pass	Fail
1181R	80	1	N - 785912 E - 806150	106.4	17.3	102.0	Pass	Pass
1182	80	1	N - 786114 E - 806414	105.0	17.7	100.7	Pass	Pass
1183	80	1	N - 785959 E - 806056	102.8	22.3	98.5	Pass	Pass
1184	80	1	N - 785906 E - 805821	106.5	17.2	102.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1185	80	1	N - 786058 E - 806193	106.2	18.2	101.8	Pass	Pass
1186	80	1	N - 786171 E - 806254	110.7	16.9	106.1	Pass	Pass
1187	80	1	N - 786209 E - 806397	102.1	22.0	97.9	Pass	Pass
1188	80	1	N - 785783 E - 805744	109.3	18.2	104.8	Pass	Pass
1189	80	1	N - 785772 E - 805907	102.4	17.2	98.2	Pass	Pass
1190	80	1	N - 785794 E - 806096	110.4	18.0	105.9	Pass	Pass
1191	80	1	N - 785862 E - 806218	105.3	19.8	101.0	Pass	Pass
1192	80	1	N - 785886 E - 806329	100.4	19.4	96.2	Pass	Pass
1193	80	1	N - 785680 E - 806277	99.7	15.7	95.6	Pass	Fail
1193R	80	1	N - 785674 E - 806275	108.7	20.0	104.2	Pass	Pass
1194	80	1	N - 785660 E - 806385	102.6	18.2	98.4	Pass	Pass
1195	81	1	N - 785746 E - 806554	102.5	20.8	100.3	Pass	Pass
1196	81	1	N - 785997 E - 806580	106.9	18.3	104.6	Pass	Pass
1197	81	3	N - 789790 E - 803774	103.7	21.1	101.4	Pass	Pass
1198	81	3	N - 789742 E - 803696	90.0	17.4	88.1	Fail	Fail

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1198R	81	3	N - 789740 E - 803694	105.6	19.2	103.4	Pass	Pass
1199	81	3	N - 789666 E - 803614	101.9	20.7	99.7	Pass	Pass
1200	81	3	N - 789623 E - 803513	98.0	19.3	95.9	Pass	Pass
1201	81	3	N - 789525 E - 803375	106.2	20.0	104.0	Pass	Pass
1202	81	3	N - 789426 E - 803304	106.4	18.4	104.1	Pass	Pass
1203	81	3	N - 789288 E - 803242	108.1	18.3	105.8	Pass	Pass
1204	81	3	N - 789230 E - 803159	110.2	20.5	107.8	Pass	Pass
1205	81	3	N - 789155 E - 803121	102.8	18.5	100.6	Pass	Pass
1206	81	3	N - 789063 E - 803114	106.1	19.5	103.8	Pass	Pass
1207	81	3	N - 788690 E - 803089	99.1	18.3	96.9	Pass	Pass
1208	81	3	N - 789691 E - 803401	100.2	19.4	98.1	Pass	Pass
1209	81	1	N - 786297 E - 806641	110.0	18.6	107.7	Pass	Pass
1210	82	1	N - 786512 E - 806883	108.3	19.0	103.2	Pass	Pass
1211	82	1	N - 786344 E - 806579	102.1	18.4	97.3	Pass	Pass
1212	82	1	N - 786470 E - 806678	107.5	21.7	102.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1213	82	1	N - 786549 E - 806834	103.5	22.0	98.6	Pass	Pass
1214	82	1	N - 786701 E - 807005	103.2	19.2	98.3	Pass	Pass
1215	82	1	N - 786624 E - 807228	102.3	19.6	97.4	Pass	Pass
1216	82	1	N - 786580 E - 807124	101.7	19.4	96.9	Pass	Pass
1217	82	1	N - 786358 E - 806834	99.9	20.7	95.2	Pass	Pass
1218	82	1	N - 786549 E - 807008	107.8	22.0	102.7	Pass	Pass
1219	82	2	N - 785894 E - 805654	100.3	20.9	95.5	Pass	Pass
1220	82	2	N - 785901 E - 805789	104.3	22.5	99.3	Pass	Pass
1221	82	2	N - 785922 E - 805921	107.1	20.1	102.0	Pass	Pass
1222	82	2	N - 785986 E - 806063	108.6	19.4	103.4	Pass	Pass
1223	82	2	N - 786049 E - 806277	107.2	23.3	102.1	Pass	Pass
1224	82	2	N - 786247 E - 806466	101.9	21.0	97.0	Pass	Pass
1225	83	2	N - 785778 E - 805735	97.8	22.6	97.7	Pass	Pass
1226	83	2	N - 785763 E - 805923	107.5	20.0	107.4	Pass	Pass
1227	83	2	N - 785783 E - 806091	112.9	20.6	112.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1228	83	2	N - 785841 E - 805956	105.4	22.8	105.3	Pass	Pass
1229	83	2	N - 785850 E - 805638	111.0	20.0	110.8	Pass	Pass
1230	83	2	N - 785911 E - 806199	114.1	18.8	114.0	Pass	Pass
1231	83	2	N - 786078 E - 806385	106.4	20.0	106.3	Pass	Pass
1232	83	2	N - 786004 E - 806379	109.2	19.1	109.1	Pass	Pass
1233	83	2	N - 787787 E - 806177	109.3	19.7	109.2	Pass	Pass
1234	83	2	N - 785702 E - 806384	100.7	19.1	100.6	Pass	Pass
1235	83	2	N - 785861 E - 806631	108.1	20.6	108.0	Pass	Pass
1236	83	2	N - 786068 E - 806632	106.8	21.0	106.7	Pass	Pass
1237	83	2	N - 786358 E - 806552	107.2	19.1	107.1	Pass	Pass
1238	83	2	N - 785454 E - 806675	106.1	18.5	106.0	Pass	Pass
1239	83	2	N - 786570 E - 806829	101.1	18.5	101.0	Pass	Pass
1240	84	2	N - 786699 E - 807009	101.3	19.2	100.3	Pass	Pass
1241	84	2	N - 786768 E - 807159	101.2	19.3	100.2	Pass	Pass
1242	84	2	N - 786529 E - 806914	100.0	15.8	99.0	Pass	Fail

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1242R	84	2	N - 786533 E - 806923	105.2	20.4	104.1	Pass	Pass
1243	84	2	N - 786353 E - 806172	97.8	18.9	96.9	Pass	Pass
1244	84	2	N - 786405 E - 806875	104.9	19.0	103.8	Pass	Pass
1245	84	2	N - 786550 E - 807034	105.1	18.9	104.1	Pass	Pass
1246	84	2	N - 786498 E - 807182	107.5	19.9	106.4	Pass	Pass
1247	84	2	N - 786708 E - 807223	102.8	23.0	101.8	Pass	Pass
1248	84	3	N - 785853 E - 805626	99.6	19.1	98.6	Pass	Pass
1249	84	3	N - 785893 E - 805719	113.9	20.8	112.8	Pass	Pass
1250	84	3	N - 785909 E - 805865	90.7	18.1	89.8	Fail	Fail
1250R	84	3	N - 785912 E - 805861	101.5	19.1	100.5	Pass	Pass
1251	84	3	N - 785851 E - 805995	109.2	22.6	108.1	Pass	Pass
1252	84	3	N - 785967 E - 806062	108.1	22.9	107.0	Pass	Pass
1253	84	3	N - 786062 E - 806123	110.1	23.0	109.0	Pass	Pass
1254	84	3	N - 785936 E - 806237	104.7	23.2	103.6	Pass	Pass
1255	85	3	N - 786075 E - 806320	108.3	19.1	106.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1256	85	3	N - 786214 E - 806398	102.6	22.0	100.6	Pass	Pass
1257	85	3	N - 786335 E - 806493	97.9	18.4	96.0	Pass	Pass
1258	85	3	N - 786419 E - 806664	90.0	26.5	88.3	Fail	Fail
1258R	85	3	N - 786423 E - 806669	113.2	21.8	111.0	Pass	Pass
1259	85	3	N - 786542 E - 806852	101.7	18.5	99.7	Pass	Pass
1260	85	3	N - 786665 E - 806963	105.9	21.8	103.8	Pass	Pass
1261	85	3	N - 786807 E - 807160	111.4	20.6	109.2	Pass	Pass
1262	85	3	N - 786775 E - 807232	106.9	20.7	104.8	Pass	Pass
1263	85	3	N - 786432 E - 806829	97.0	19.8	95.1	Pass	Pass
1264	85	3	N - 785802 E - 805663	101.1	21.3	99.2	Pass	Pass
1265	85	3	N - 785765 E - 805807	103.1	20.0	101.0	Pass	Pass
1266	85	3	N - 785771 E - 806032	99.8	19.5	97.8	Pass	Pass
1267	85	3	N - 785821 E - 806146	107.5	20.3	105.3	Pass	Pass
1268	85	3	N - 785891 E - 806310	102.9	22.0	100.9	Pass	Pass
1269	85	3	N - 786023 E - 806459	104.5	18.6	102.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1270	86	3	N - 785959 E - 806574	103.2	18.9	101.2	Pass	Pass
1271	86	3	N - 785825 E - 806422	109.2	19.7	107.0	Pass	Pass
1272	86	3	N - 785644 E - 806237	105.2	21.3	103.2	Pass	Pass
1273	86	3	N - 786286 E - 806784	105.6	18.9	103.5	Pass	Pass
1274	86	3	N - 786458 E - 806968	105.1	22.6	103.1	Pass	Pass
1275	86	3	N - 786629 E - 807169	105.5	23.4	103.4	Pass	Pass
1276	86	1	N - 788611 E - 803126	97.1	20.5	95.2	Pass	Pass
1277	86	1	N - 787896 E - 803180	101.6	19.1	99.6	Pass	Pass
1278	86	1	N - 788392 E - 803178	98.7	20.7	96.8	Pass	Pass
1279	86	1	N - 788542 E - 803246	114.1	19.7	111.9	Pass	Pass
1280	86	1	N - 788495 E - 803328	106.5	19.0	104.4	Pass	Pass
1281	86	1	N - 788382 E - 803432	104.2	22.7	102.2	Pass	Pass
1282	86	1	N - 788400 E - 803440	108.7	22.1	106.5	Pass	Pass
1283	86	1	N - 788428 E - 803071	97.8	18.6	95.9	Pass	Pass
1284	86	1	N - 788306 E - 803087	108.0	18.8	105.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1285	87	1	N - 788166 E - 803100	107.1	19.3	104.0	Pass	Pass
1286	87	1	N - 788316 E - 803579	98.2	19.7	95.4	Pass	Pass
1287	87	1	N - 787905 E - 803256	105.7	21.7	102.7	Pass	Pass
1288	87	1	N - 788041 E - 803302	103.6	20.3	100.6	Pass	Pass
1289	87	1	N - 788007 E - 803382	110.7	21.5	107.5	Pass	Pass
1290	87	1	N - 787929 E - 803445	107.5	18.8	104.4	Pass	Pass
1291	87	1	N - 787915 E - 803532	105.8	21.8	102.8	Pass	Pass
1292	87	1	N - 788078 E - 803577	109.9	18.9	106.7	Pass	Pass
1293	87	1	N - 788153 E - 803578	111.6	19.0	108.3	Pass	Pass
1294	87	1	N - 786520 E - 804609	100.2	22.7	97.3	Pass	Pass
1295	87	1	N - 786940 E - 804326	103.5	20.7	100.5	Pass	Pass
1296	87	1	N - 787026 E - 804262	105.3	20.4	102.2	Pass	Pass
1297	87	1	N - 786691 E - 804585	109.2	20.3	106.0	Pass	Pass
1298	87	1	N - 786823 E - 804492	109.5	19.2	106.3	Pass	Pass
1299	87	1	N - 786986 E - 804398	116.1	19.5	112.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1300	88	1	N - 786787 E - 804650	109.5	20.5	109.5	Pass	Pass
1301	88	1	N - 786943 E - 804547	107.9	21.8	107.9	Pass	Pass
1302	88	1	N - 787084 E - 804482	111.3	19.3	111.3	Pass	Pass
1303	88	2	N - 787884 E - 803156	93.6	14.9	93.6	Fail	Fail
1303R	88	2	N - 787889 E - 803150	109.5	19.4	109.5	Pass	Pass
1304	88	2	N - 788032 E - 803189	89.6	20.5	89.6	Fail	Pass
1304R	88	2	N - 788037 E - 803185	101.5	23.3	101.5	Pass	Pass
1305	88	2	N - 788169 E - 803090	106.4	21.1	106.4	Pass	Fail
1305R	88	2	N - 788162 E - 803091	100.9	18.8	100.9	Pass	Pass
1306	88	2	N - 788401 E - 803132	106.8	19.5	106.8	Pass	Pass
1307	88	2	N - 788583 E - 803041	97.7	21.5	97.7	Pass	Pass
1308	88	2	N - 788585 E - 803178	107.4	20.9	107.4	Pass	Pass
1309	88	2	N - 788329 E - 803246	102.4	22.8	102.4	Pass	Pass
1310	88	2	N - 788445 E - 803302	101.3	19.7	101.3	Pass	Pass
1311	88	2	N - 788557 E - 803374	102.4	21.2	102.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1312	88	2	N - 788325 E - 803418	100.4	21.2	100.4	Pass	Pass
1313	88	2	N - 788386 E - 803479	104.8	22.0	104.8	Pass	Pass
1314	88	2	N - 788424 E - 803586	106.0	21.3	106.0	Pass	Pass
1315	89	2	N - 788143 E - 803221	101.1	24.1	100.0	Pass	Pass
1316	89	2	N - 787896 E - 803340	103.6	23.5	102.5	Pass	Pass
1317	89	2	N - 788006 E - 803415	100.9	23.8	99.8	Pass	Pass
1318	89	2	N - 787792 E - 803519	107.4	20.9	106.3	Pass	Pass
1319	89	2	N - 788149 E - 803493	101.7	19.2	100.6	Pass	Pass
1320	89	2	N - 788025 E - 803598	99.1	23.7	98.0	Pass	Pass
1321	89	2	N - 786739 E - 804489	102.2	21.4	101.0	Pass	Pass
1322	89	2	N - 786563 E - 804585	105.8	23.8	104.6	Pass	Pass
1323	89	2	N - 787015 E - 804317	105.8	20.3	104.7	Pass	Pass
1324	89	2	N - 786991 E - 804432	105.3	23.0	104.1	Pass	Pass
1325	89	2	N - 786716 E - 804581	97.6	21.1	96.5	Pass	Pass
1326	89	2	N - 786886 E - 804542	106.3	22.3	105.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1327	89	2	N - 787074 E - 804490	105.0	23.5	103.8	Pass	Pass
1328	89	2	N - 786820 E - 804692	109.8	21.8	108.6	Pass	Pass
1329	89	3	N - 788125 E - 803138	107.2	24.5	106.0	Pass	Pass
1330	90	3	N - 787977 E - 803184	106.6	21.9	104.5	Pass	Pass
1331	90	3	N - 788264 E - 803076	107.7	23.2	105.6	Pass	Pass
1332	90	3	N - 788488 E - 803110	113.2	19.0	110.9	Pass	Pass
1333	90	3	N - 788605 E - 803041	111.0	19.0	108.8	Pass	Pass
1334	90	3	N - 788346 E - 803242	106.7	18.6	104.6	Pass	Pass
1335	90	3	N - 788472 E - 803192	110.3	18.5	108.1	Pass	Pass
1336	90	3	N - 788351 E - 803319	112.5	19.2	110.3	Pass	Pass
1337	90	3	N - 788495 E - 803402	108.5	20.1	106.4	Pass	Pass
1338	90	3	N - 788338 E - 803469	109.2	22.5	107.1	Pass	Pass
1339	90	3	N - 788434 E - 803548	108.1	22.5	105.9	Pass	Pass
1340	90	3	N - 788474 E - 803624	114.0	19.8	111.7	Pass	Pass
1341	90	3	N - 787963 E - 803239	110.5	19.2	108.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1342	90	3	N - 787848 E - 803307	105.5	23.4	103.4	Pass	Pass
1343	90	3	N - 788164 E - 803399	111.1	20.4	109.0	Pass	Pass
1344	90	3	N - 787776 E - 803461	103.5	23.5	101.4	Pass	Pass
1345	91	3	N - 788150 E - 803564	103.3	22.2	102.2	Pass	Pass
1346	91	3	N - 787807 E - 803528	107.7	20.0	106.6	Pass	Pass
1347	91	3	N - 787020 E - 804293	102.8	19.7	101.8	Pass	Pass
1348	91	3	N - 786814 E - 804446	106.5	22.6	105.4	Pass	Pass
1349	91	3	N - 786541 E - 804590	109.1	22.3	108.1	Pass	Pass
1350	91	3	N - 786950 E - 804418	107.1	22.8	106.0	Pass	Pass
1351	91	3	N - 786689 E - 804602	109.7	22.6	108.6	Pass	Pass
1352	91	3	N - 786842 E - 804552	105.9	19.9	104.8	Pass	Pass
1353	91	3	N - 786835 E - 804691	111.0	19.5	109.9	Pass	Pass
1354	91	3	N - 787042 E - 804439	111.4	20.4	110.3	Pass	Pass
1355	91	2	N - 788226 E - 803352	101.3	23.9	100.3	Pass	Pass
1356	91	4	N - 788298 E - 803212	111.0	23.6	109.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1357	91	4	N - 788450 E - 803285	107.9	24.2	106.8	Pass	Pass
1358	91	4	N - 788417 E - 803349	108.2	19.8	107.1	Pass	Pass
1359	91	4	N - 788495 E - 803407	102.1	19.6	101.0	Pass	Pass
1360	92	4	N - 788324 E - 803441	110.1	19.1	107.9	Pass	Pass
1361	92	4	N - 788526 E - 803551	102.2	20.7	100.2	Pass	Pass
1362	92	4	N - 788411 E - 803598	104.4	21.8	102.4	Pass	Pass
1363	92	4	N - 788090 E - 803232	102.5	23.9	100.4	Pass	Pass
1364	92	4	N - 787891 E - 803304	112.8	20.0	110.6	Pass	Pass
1365	92	4	N - 788001 E - 803368	102.0	22.0	100.0	Pass	Pass
1366	92	4	N - 788116 E - 803431	102.1	15.0	100.1	Pass	Fail
1366R	92	4	N - 788112 E - 803435	102.5	19.3	100.5	Pass	Pass
1367	92	4	N - 787859 E - 803477	102.7	14.6	100.7	Pass	Fail
1367R	92	4	N - 787855 E - 803475	103.0	19.5	101.0	Pass	Pass
1368	92	4	N - 787978 E - 803582	98.2	24.4	96.3	Pass	Pass
1369	92	4	N - 787093 E - 804485	104.7	20.7	102.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1370	92	4	N - 787020 E - 804251	110.8	20.5	108.6	Pass	Pass
1371	92	4	N - 786578 E - 804565	102.9	23.8	100.9	Pass	Pass
1372	92	4	N - 786861 E - 804452	101.0	23.5	99.0	Pass	Pass
1373	92	4	N - 786701 E - 804613	97.0	22.0	95.1	Pass	Pass
1374	92	4	N - 787024 E - 804397	112.8	20.5	110.6	Pass	Pass
1375	95	4	N - 786959 E - 804498	107.5	20.0	104.0	Pass	Pass
1376	95	4	N - 786841 E - 804593	112.0	19.2	108.3	Pass	Pass
1377	95	4	N - 786892 E - 804688	102.0	18.8	98.6	Pass	Pass
1378	95	1	N - 788051 E - 803842	109.8	21.5	106.2	Pass	Pass
1379	95	1	N - 788675 E - 803948	109.2	22.2	105.6	Pass	Pass
1380	95	1	N - 788823 E - 804475	113.8	18.5	110.1	Pass	Pass
1381	95	1	N - 788351 E - 803996	114.3	19.4	110.5	Pass	Pass
1382	95	1	N - 788799 E - 804186	107.8	20.4	104.3	Pass	Pass
1383	95	1	N - 788740 E - 804249	114.3	18.2	110.5	Pass	Pass
1384	95	1	N - 788085 E - 804040	106.2	23.2	102.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1385	95	1	N - 788647 E - 804099	99.6	18.3	96.3	Pass	Pass
1386	95	1	N - 788496 E - 804096	107.0	21.8	103.5	Pass	Pass
1387	95	1	N - 788164 E - 803978	102.8	18.9	99.4	Pass	Pass
1388	95	1	N - 788472 E - 803894	105.9	21.7	102.4	Pass	Pass
1389	95	1	N - 788544 E - 803981	110.0	18.2	106.4	Pass	Pass
1390	96	1	N - 788602 E - 804201	103.1	19.3	101.9	Pass	Pass
1391	96	1	N - 788380 E - 804152	104.6	18.0	103.3	Pass	Pass
1392	96	1	N - 788693 E - 804368	101.8	20.1	100.6	Pass	Pass
1393	96	4	N - 788225 E - 803432	106.2	18.3	105.0	Pass	Pass
1394	96	1	N - 787602 E - 804248	106.1	19.3	104.8	Pass	Pass
1395	96	1	N - 787447 E - 804051	102.6	21.9	101.4	Pass	Pass
1396	96	1	N - 787594 E - 804053	106.8	19.7	105.5	Pass	Pass
1397	93	1	N - 787741 E - 804199	109.8	20.7	107.7	Pass	Pass
1398	93	1	N - 787809 E - 804088	106.8	22.6	104.7	Pass	Pass
1399	93	1	N - 787871 E - 804149	102.1	22.5	100.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1400	93	1	N - 787955 E - 804076	106.0	20.5	103.9	Pass	Pass
1401	93	1	N - 788020 E - 804281	101.5	22.7	99.5	Pass	Pass
1402	96	1	N - 788098 E - 804168	104.7	21.5	103.4	Pass	Pass
1403	96	1	N - 788154 E - 804293	104.9	21.5	103.7	Pass	Pass
1404	96	1	N - 788221 E - 804389	102.8	21.2	101.6	Pass	Pass
1405	96	1	N - 788329 E - 804336	104.5	21.1	103.3	Pass	Pass
1406	96	1	N - 788415 E - 804400	98.6	19.3	97.4	Pass	Pass
1407	96	1	N - 788427 E - 804512	109.2	20.8	107.9	Pass	Pass
1408	96	1	N - 788556 E - 804528	103.9	21.8	102.7	Pass	Pass
1409	96	2	N - 788803 E - 804095	100.4	17.3	99.2	Pass	Pass
1410	97	2	N - 788759 E - 804290	112.3	19.1	110.7	Pass	Pass
1411	97	2	N - 788826 E - 804509	101.9	22.3	100.4	Pass	Pass
1412	97	2	N - 788690 E - 804417	109.5	21.6	107.9	Pass	Pass
1413	97	2	N - 788663 E - 804142	109.1	20.5	107.5	Pass	Pass
1414	97	2	N - 788587 E - 803975	113.5	19.0	111.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1415	97	2	N - 788562 E - 804240	113.2	19.5	111.5	Pass	Pass
1416	97	2	N - 788495 E - 804286	108.6	20.9	107.0	Pass	Pass
1417	97	2	N - 788452 E - 804007	108.4	18.6	106.8	Pass	Pass
1418	97	2	N - 788381 E - 803938	108.0	22.7	106.5	Pass	Pass
1419	97	2	N - 788347 E - 804042	104.4	20.0	102.9	Pass	Pass
1420	97	2	N - 788258 E - 803922	108.5	22.3	106.9	Pass	Pass
1421	97	2	N - 788214 E - 804083	109.5	22.4	107.9	Pass	Pass
1422	97	2	N - 788139 E - 803981	113.7	18.9	112.0	Pass	Pass
1423	97	2	N - 788092 E - 804078	110.0	19.8	108.4	Pass	Pass
1424	93	2	N - 787463 E - 804093	104.0	23.9	102.0	Pass	Pass
1425	93	2	N - 787536 E - 804206	108.0	21.4	105.9	Pass	Pass
1426	93	2	N - 788593 E - 804519	97.7	20.0	95.8	Pass	Pass
1427	93	2	N - 787584 E - 804221	97.7	23.8	95.8	Pass	Pass
1428	93	2	N - 787592 E - 804125	97.0	25.9	95.1	Pass	Fail
1428R	93	2	N - 787582 E - 804119	102.3	21.4	100.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1429	93	2	N - 787562 E - 804078	110.0	19.9	107.8	Pass	Pass
1430	93	2	N - 787831 E - 804311	111.1	20.3	109.0	Pass	Pass
1431	93	2	N - 787854 E - 804143	99.9	22.7	98.0	Pass	Pass
1432	93	2	N - 787951 E - 804087	107.7	21.7	105.6	Pass	Pass
1433	94	2	N - 787975 E - 804296	108.8	19.8	107.3	Pass	Pass
1434	94	2	N - 788083 E - 804346	109.8	23.0	108.2	Pass	Pass
1435	94	2	N - 788173 E - 804235	103.8	20.4	102.4	Pass	Pass
1436	97	2	N - 788220 E - 804407	104.0	21.2	102.5	Pass	Pass
1437	98	2	N - 788351 E - 804362	95.3	29.5	92.5	Fail	Fail
1437R	98	2	N - 788362 E - 804359	111.5	18.8	108.2	Pass	Pass
1438	98	2	N - 788468 E - 804504	92.7	29.0	90.0	Fail	Fail
1438R	98	2	N - 788460 E - 804519	101.6	19.8	98.6	Pass	Pass
1439	98	3	N - 788147 E - 803826	107.0	22.6	103.9	Pass	Pass
1440	98	3	N - 788462 E - 803858	102.8	23.1	99.8	Pass	Pass
1441	98	3	N - 788828 E - 804306	100.9	22.7	98.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1442	98	3	N - 788750 E - 804040	102.7	19.2	99.7	Pass	Pass
1443	98	3	N - 788741 E - 804416	112.3	18.7	109.0	Pass	Pass
1444	98	3	N - 788690 E - 804195	108.7	19.1	105.5	Pass	Pass
1445	98	3	N - 788583 E - 803984	108.3	18.5	105.1	Pass	Pass
1446	98	3	N - 788612 E - 804298	104.5	18.9	101.5	Pass	Pass
1447	98	3	N - 788520 E - 804162	103.4	20.0	100.4	Pass	Pass
1448	98	3	N - 788446 E - 803990	102.3	23.2	99.3	Pass	Pass
1449	98	3	N - 788416 E - 804191	100.6	23.8	97.6	Pass	Pass
1450	98	3	N - 788324 E - 803987	106.0	22.6	102.9	Pass	Pass
1451	98	3	N - 788250 E - 804058	101.1	23.4	98.2	Pass	Pass
1452	99	3	N - 788182 E - 803921	109.0	19.1	106.7	Pass	Pass
1453	99	3	N - 788113 E - 804049	105.6	23.3	103.3	Pass	Pass
1454	99	3	N - 787845 E - 804045	107.1	19.8	104.8	Pass	Pass
1455	99	3	N - 787511 E - 804208	104.6	18.9	102.3	Pass	Pass
1456	99	3	N - 787436 E - 804051	101.6	22.4	99.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1457	99	3	N - 787628 E - 804201	108.8	18.9	106.5	Pass	Pass
1458	99	3	N - 787720 E - 804085	102.9	20.1	100.7	Pass	Pass
1459	99	3	N - 787922 E - 804219	98.2	22.2	96.1	Pass	Pass
1460	99	3	N - 788029 E - 804306	112.3	22.5	109.8	Pass	Pass
1461	99	3	N - 788148 E - 804347	106.5	21.5	104.2	Pass	Pass
1462	99	3	N - 788163 E - 804193	106.5	21.9	104.2	Pass	Pass
1463	99	3	N - 788346 E - 804288	93.9	15.1	91.9	Fail	Fail
1463R	99	3	N - 788341 E - 804279	112.5	14.5	110.1	Pass	Fail
1463R	99	3	N - 788351 E - 804282	102.5	19.9	100.3	Pass	Pass
1464	99	1	N - 784732 E - 805521	109.1	19.5	106.7	Pass	Pass
1465	99	1	N - 784650 E - 805726	109.6	20.1	107.2	Pass	Pass
1466	99	1	N - 784387 E - 805560	103.4	19.4	101.2	Pass	Pass
1467	100	1	N - 784506 E - 805820	102.9	18.9	98.9	Pass	Pass
1468	94	3	N - 788351 E - 804472	107.7	20.9	106.3	Pass	Pass
1469	94	3	N - 788462 E - 804561	110.6	22.0	109.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1470	94	3	N - 788590 E - 804498	113.2	19.8	111.7	Pass	Pass
1471	94	3	N - 788493 E - 804391	105.1	19.8	103.6	Pass	Pass
1472	94	1	N - 784621 E - 805912	113.2	20.1	111.6	Pass	Pass
1473	94	3	N - 788049 E - 804112	105.2	20.7	103.7	Pass	Pass
1474	94	4	N - 788212 E - 803867	108.2	20.1	106.7	Pass	Pass
1475	94	4	N - 788805 E - 804027	106.6	20.7	105.1	Pass	Pass
1476	94	4	N - 788747 E - 804157	103.8	18.9	102.4	Pass	Pass
1477	94	4	N - 788790 E - 804483	106.0	20.5	104.6	Pass	Pass
1478	94	4	N - 788651 E - 804326	110.2	22.6	108.7	Pass	Pass
1479	94	4	N - 788619 E - 804030	104.7	23.3	103.3	Pass	Pass
1480	101	4	N - 788534 E - 803908	115.2	14.8	112.7	Pass	Fail
1480R	101	4	N - 788525 E - 803914	110.8	19.7	108.4	Pass	Pass
1481	101	4	N - 788520 E - 804142	108.0	20.1	105.7	Pass	Pass
1482	101	4	N - 788698 E - 803944	97.3	29.5	95.2	Pass	Fail
1482R	101	4	N - 788691 E - 803944	101.6	23.3	99.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1483	101	4	N - 788406 E - 804129	108.5	20.8	106.1	Pass	Pass
1484	101	4	N - 788342 E - 803961	110.4	21.5	108.0	Pass	Pass
1485	100	2	N - 784665 E - 805278	103.9	22.5	99.8	Pass	Pass
1486	100	2	N - 784730 E - 805511	107.3	22.8	103.1	Pass	Pass
1487	100	2	N - 784348 E - 805526	100.7	20.4	96.7	Pass	Pass
1488	100	2	N - 784506 E - 805630	99.3	22.4	95.4	Pass	Pass
1489	101	2	N - 784511 E - 805901	106.7	20.7	104.4	Pass	Pass
1490	100	2	N - 784620 E - 805789	102.1	21.3	98.0	Pass	Pass
1491	100	4	N - 788256 E - 804093	108.2	22.5	103.9	Pass	Pass
1492	100	4	N - 788197 E - 803940	108.9	21.5	104.6	Pass	Pass
1493	100	4	N - 788087 E - 804011	107.4	19.8	103.2	Pass	Pass
1494	100	4	N - 784545 E - 805690	109.6	20.0	105.3	Pass	Pass
1495	100	4	N - 788525 E - 804382	107.8	20.6	103.6	Pass	Pass
1496	100	4	N - 788446 E - 804391	102.6	22.5	98.6	Pass	Pass
1497	100	4	N - 788344 E - 804277	105.7	22.2	101.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1498	100	4	N - 788250 E - 804252	103.6	22.2	99.6	Pass	Pass
1499	102	4	N - 788011 E - 804108	103.2	19.4	103.2	Pass	Pass
1500	102	4	N - 787863 E - 804051	103.2	21.8	103.2	Pass	Pass
1501	101	4	N - 788536 E - 804552	101.9	23.5	99.7	Pass	Pass
1502	101	4	N - 787670 E - 803992	105.4	19.0	103.1	Pass	Pass
1503	101	4	N - 787485 E - 804166	104.5	21.2	102.2	Pass	Pass
1504	101	4	N - 787598 E - 804219	102.3	23.5	100.1	Pass	Pass
1505	101	4	N - 787736 E - 804153	109.4	19.9	107.1	Pass	Pass
1506	101	4	N - 787975 E - 804243	104.3	22.2	102.1	Pass	Pass
1507	101	4	N - 788075 E - 804348	112.8	19.4	110.4	Pass	Pass
1508	101	4	N - 788332 E - 804465	106.8	20.7	104.5	Pass	Pass
1509	101	3	N - 784729 E - 805568	105.8	22.3	103.5	Pass	Pass
1510	104	4	N - 788068 E - 804161	100.9	23.1	97.0	Pass	Pass
1511	104	3	N - 784683 E - 805776	101.7	21.6	97.8	Pass	Pass
1512	104	3	N - 784380 E - 805561	111.2	22.8	106.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1513	102	3	N - 784519 E - 805723	107.7	22.0	107.7	Pass	Pass
1514	102	3	N - 784689 E - 805932	106.1	20.5	106.1	Pass	Pass
1515	102	3	N - 784620 E - 805244	103.2	22.1	103.2	Pass	Pass
1516	102	1	N - 788681 E - 804890	108.1	20.3	108.1	Pass	Pass
1517	102	1	N - 788793 E - 804865	109.0	20.6	109.0	Pass	Pass
1518	102	1	N - 788890 E - 804953	109.1	21.4	109.1	Pass	Pass
1519	104	1	N - 789001 E - 804899	109.9	19.4	105.6	Pass	Pass
1520	104	1	N - 789087 E - 804977	102.7	21.2	98.7	Pass	Pass
1521	104	1	N - 789160 E - 805114	102.6	20.9	98.6	Pass	Pass
1522	104	1	N - 789347 E - 805224	103.1	22.4	99.1	Pass	Pass
1523	102	1	N - 789304 E - 805071	108.2	20.4	108.2	Pass	Pass
1524	102	1	N - 787364 E - 805682	106.1	23.0	106.1	Pass	Pass
1525	102	1	N - 787428 E - 805796	106.1	23.6	106.1	Pass	Pass
1526	102	1	N - 787642 E - 805893	103.5	23.4	103.5	Pass	Pass
1527	102	1	N - 787703 E - 806055	107.5	19.9	107.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1528	102	1	N - 787942 E - 806191	104.7	22.2	104.7	Pass	Pass
1529	102	1	N - 788112 E - 806204	105.7	23.2	105.7	Pass	Pass
1530	103	2	N - 788743 E - 804933	107.2	20.1	103.3	Pass	Pass
1531	103	2	N - 788867 E - 804925	106.2	23.0	102.3	Pass	Pass
1532	103	2	N - 788970 E - 804987	105.4	23.0	101.5	Pass	Pass
1533	103	2	N - 789106 E - 804939	104.0	23.8	100.2	Pass	Pass
1534	103	2	N - 789148 E - 805112	108.4	20.7	104.4	Pass	Pass
1535	103	2	N - 789243 E - 805173	104.8	22.4	101.0	Pass	Pass
1536	103	2	N - 788346 E - 805246	101.7	23.3	98.0	Pass	Pass
1537	103	2	N - 788320 E - 805096	100.9	24.5	97.3	Pass	Pass
1538	103	3	N - 788756 E - 804946	102.5	23.7	98.8	Pass	Pass
1539	103	3	N - 788731 E - 804803	104.0	21.5	100.2	Pass	Pass
1540	103	3	N - 788864 E - 804907	102.2	22.3	98.4	Pass	Pass
1541	103	3	N - 788972 E - 804919	106.0	21.5	102.2	Pass	Pass
1542	103	3	N - 789083 E - 805071	105.5	23.0	101.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1543	103	3	N - 789214 E - 805183	105.7	23.3	101.8	Pass	Pass
1544	103	3	N - 789226 E - 805029	111.8	21.3	107.7	Pass	Pass
1545	106	3	N - 789370 E - 805247	106.8	21.1	104.2	Pass	Pass
1546	106	4	N - 788711 E - 804839	102.2	23.1	99.7	Pass	Pass
1547	106	4	N - 788814 E - 804844	100.9	23.8	98.5	Pass	Pass
1548	106	4	N - 788802 E - 804967	99.8	24.1	97.4	Pass	Pass
1549	106	4	N - 788946 E - 804942	103.0	19.2	100.5	Pass	Pass
1550	106	4	N - 789075 E - 804998	103.8	20.0	101.3	Pass	Pass
1551	106	4	N - 789173 E - 805140	109.8	19.8	107.1	Pass	Pass
1552	106	4	N - 789265 E - 805082	114.7	20.5	111.9	Pass	Pass
1553	106	4	N - 789327 E - 805241	111.6	18.5	108.9	Pass	Pass
1554	106	1	N - 788083 E - 806401	105.2	22.2	102.6	Pass	Pass
1555	106	1	N - 787948 E - 806626	108.2	20.4	105.5	Pass	Pass
1556	106	2	N - 787342 E - 805679	104.5	24.4	101.9	Pass	Pass
1557	106	2	N - 787391 E - 805786	105.4	23.0	102.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1558	106	2	N - 787614 E - 805863	105.7	20.7	103.1	Pass	Pass
1559	106	2	N - 787683 E - 806042	105.5	23.7	103.0	Pass	Pass
1560	108	2	N - 787950 E - 806109	102.7	21.9	101.7	Pass	Pass
1561	108	2	N - 787984 E - 806265	95.2	31.8	94.2	Fail	Fail
1561R	108	2	N - 787988 E - 806259	99.9	23.9	98.9	Pass	Pass
1562	108	5	N - 789183 E - 805216	109.5	21.4	108.4	Pass	Pass
1563	108	5	N - 788803 E - 804971	103.2	23.2	102.1	Pass	Pass
1564	108	2	N - 788056 E - 808392	108.2	22.5	107.1	Pass	Pass
1565	108	2	N - 787993 E - 806604	99.6	21.6	98.7	Pass	Pass
1566	108	2	N - 787780 E - 806620	109.9	19.5	108.8	Pass	Pass
1567	108	2	N - 787895 E - 806742	102.5	21.9	101.5	Pass	Pass
1568	108	1	N - 787732 E - 806690	107.9	21.8	106.9	Pass	Pass
1569	108	1	N - 787613 E - 806645	106.9	23.3	105.9	Pass	Pass
1570	108	1	N - 787442 E - 806790	106.0	22.2	104.9	Pass	Pass
1571	108	1	N - 787363 E - 806652	106.9	19.5	105.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1572	108	1	N - 787064 E - 806712	108.4	19.0	107.3	Pass	Pass
1573	108	1	N - 786950 E - 806638	109.9	19.7	108.8	Pass	Pass
1574	108	1	N - 787194 E - 806485	107.0	16.1	105.9	Pass	Fail
1574R	108	1	N - 787184 E - 806481	108.7	21.8	107.6	Pass	Pass
1575	109	1	N - 787292 E - 805992	112.4	19.5	110.4	Pass	Pass
1576	109	3	N - 787338 E - 806654	100.1	24.2	98.4	Pass	Pass
1577	109	3	N - 787706 E - 805946	104.5	23.5	102.6	Pass	Pass
1578	109	3	N - 787448 E - 805790	105.8	22.9	103.9	Pass	Pass
1579	109	3	N - 787603 E - 805912	106.3	23.0	104.4	Pass	Pass
1580	109	3	N - 787849 E - 806101	104.0	23.3	102.1	Pass	Pass
1581	109	3	N - 788094 E - 806225	103.3	23.2	101.5	Pass	Pass
1582	109	1	N - 787258 E - 806201	104.0	24.6	102.2	Pass	Pass
1583	109	1	N - 786725 E - 806761	105.0	19.2	103.1	Pass	Pass
1584	109	3	N - 788043 E - 806457	98.3	23.3	96.5	Pass	Pass
1585	109	3	N - 787936 E - 806563	108.5	20.5	106.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1586	109	3	N - 787799 E - 806645	100.6	23.9	98.9	Pass	Pass
1587	109	2	N - 787451 E - 806735	107.8	22.3	105.9	Pass	Pass
1588	109	1	N - 787217 E - 806304	101.2	22.4	99.4	Pass	Pass
1589	109	1	N - 787299 E - 805790	110.2	20.1	108.3	Pass	Pass
1590	110	2	N - 787261 E - 806683	110.3	17.5	111.2	Pass	Fail
1590R	110	2	N - 787273 E - 806680	106.6	21.6	107.5	Pass	Pass
1591	110	2	N - 786953 E - 806694	105.1	19.7	106.0	Pass	Pass
1592	110	2	N - 787086 E - 806485	105.7	14.7	106.5	Pass	Fail
1592R	110	2	N - 787069 E - 806481	107.8	22.7	108.7	Pass	Pass
1593	110	2	N - 787290 E - 806453	110.9	20.0	111.8	Pass	Pass
1594	110	2	N - 787185 E - 806263	99.0	24.6	99.8	Pass	Pass
1595	110	2	N - 787329 E - 806172	99.5	20.9	100.3	Pass	Pass
1596	110	2	N - 787204 E - 806572	101.5	21.4	102.3	Pass	Pass
1597	110	2	N - 786748 E - 806835	97.0	24.9	97.8	Pass	Pass
1598	110	2	N - 787294 E - 805862	103.2	22.1	104.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1599	110	2	N - 787426 E - 806004	106.1	21.6	107.0	Pass	Pass
1600	110	2	N - 787112 E - 806716	101.2	20.6	102.0	Pass	Pass
1601	110	3	N - 787530 E - 806662	99.4	19.8	100.2	Pass	Pass
1602	110	3	N - 787443 E - 806789	105.3	22.4	106.1	Pass	Pass
1603	104	3	N - 787244 E - 806630	105.6	21.9	101.6	Pass	Pass
1604	104	3	N - 787185 E - 806728	101.9	22.1	98.0	Pass	Pass
1605	104	3	N - 787079 E - 806656	97.5	27.0	93.7	Fail	Fail
1605R	104	3	N - 787061 E - 806651	99.7	21.6	95.8	Pass	Pass
1606	104	4	N - 787442 E - 805721	104.6	23.1	100.6	Pass	Pass
1607	104	4	N - 787590 E - 805852	111.5	20.3	107.2	Pass	Pass
1608	104	4	N - 788054 E - 806190	110.8	20.1	106.5	Pass	Pass
1609	104	3	N - 786752 E - 806813	102.4	22.8	98.4	Pass	Pass
1610	104	4	N - 787596 E - 805960	99.6	22.1	95.8	Pass	Pass
1611	105	4	N - 787839 E - 806118	111.1	19.7	109.0	Pass	Pass
1612	105	4	N - 787958 E - 806193	107.5	21.1	105.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1613	110	3	N - 786734 E - 806725	102.2	25.0	103.0	Pass	Pass
1614	110	3	N - 787120 E - 806449	99.8	17.9	100.6	Pass	Fail
1614R	110	3	N - 787118 E - 806443	107.8	20.1	108.7	Pass	Pass
1615	111	3	N - 787226 E - 806416	104.8	23.7	101.0	Pass	Pass
1616	111	3	N - 787243 E - 806154	106.1	22.5	102.2	Pass	Pass
1617	111	3	N - 787261 E - 805791	104.2	21.4	100.4	Pass	Pass
1618	111	3	N - 787412 E - 805963	102.8	23.9	99.0	Pass	Pass
1619	111	4	N - 788106 E - 806421	104.4	22.8	100.6	Pass	Pass
1620	111	4	N - 787939 E - 806563	93.8	24.1	90.4	Fail	Pass
1620R	111	4	N - 787938 E - 806571	99.8	22.2	96.1	Pass	Pass
1621	111	4	N - 787724 E - 806720	100.8	20.6	97.1	Pass	Pass
1622	111	4	N - 787471 E - 806811	100.1	21.2	96.4	Pass	Pass
1623	111	4	N - 787435 E - 806674	110.9	24.4	106.9	Pass	Pass
1624	105	4	N - 787184 E - 806711	97.3	24.0	95.5	Pass	Pass
1625	105	4	N - 787301 E - 806704	102.5	23.3	100.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1626	105	1	N - 786063 E - 806543	112.5	18.3	110.4	Pass	Fail
1626R	105	1	N - 786055 E - 806538	103.7	21.0	101.8	Pass	Pass
1627	105	4	N - 786735 E - 806768	100.8	22.4	98.9	Pass	Pass
1628	105	4	N - 787340 E - 806184	108.5	24.1	106.5	Pass	Pass
1629	105	4	N - 786924 E - 806718	104.1	20.7	102.2	Pass	Pass
1630	105	4	N - 787054 E - 806554	109.6	19.7	107.6	Pass	Pass
1631	105	4	N - 787196 E - 806492	100.5	20.7	98.6	Pass	Pass
1632	105	4	N - 787232 E - 806255	107.1	19.6	105.1	Pass	Pass
1633	111	4	N - 787342 E - 805893	104.2	23.3	100.4	Pass	Pass
1634	111	4	N - 787366 E - 806056	99.1	23.9	95.4	Pass	Pass
1635	111	6	N - 789198 E - 805236	112.4	21.5	108.3	Pass	Pass
1636	111	6	N - 789104 E - 805120	102.9	20.9	99.2	Pass	Pass
1637	111	1	N - 787352 E - 804211	102.0	23.3	98.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Proctor Results

Proctor #	Maximum Dry Density	Optimum Moisture Content
74	103.1	20.1
75	102.7	20.3
76	102.3	20.0
77	104.0	20.5
78	100.0	20.2
79	103.5	20.0
80	104.3	18.7
81	102.2	20.0
82	105.0	19.8
83	100.1	20.3
84	101.0	20.8
85	102.0	18.8
86	102.0	20.4
87	103.0	20.0
88	100.0	19.5
89	101.1	20.8
90	102.0	20.2
91	101.0	20.6
92	102.0	21.0
93	102.0	21.5
94	101.4	20.1
95	103.4	20.0
96	101.2	19.3
97	101.5	19.7
98	103.0	20.2
99	102.2	20.7
100	104.1	20.8
101	102.2	20.1
102	100.0	21.1
103	103.8	20.7

Specifications: Standard proctor performed according to ASTM D698. The material is considered acceptable if the maximum dry density is greater than or equal to 99 lb/ft^3.

Testing Interval: One proctor every 15 sandcones.

Notes: Proctors were sampled randomly from both east and west side borrow areas.

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Summary Report of Radon Barrier Proctor Results (continued)

Proctor #	Maximum Dry Density	Optimum Moisture Content
104	104.0	20.5
105	101.9	21.5
106	102.5	20.5
107	101.2	20.3
108	101.0	20.3
109	101.8	21.0
110	99.2	21.5
111	103.8	21.3
112	101.2	21.2

Specifications: Standard proctor performed according to ASTM D698. The material is considered acceptable if the maximum dry density is greater than or equal to 99 lb/ft^3.

Testing Interval: One proctor every 15 sandcones.

Notes: Proctors were sampled randomly from both east and west side borrow areas.

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Summary Report of Radon Barrier One-Point Proctor Results

One-Point #	Dry Density	Moisture Content
74A	100.3	16.7
74B	97.6	15.4
75A	101.4	17.2
75B	103.1	20.4
76A	103.3	19.7
76B	97.6	22.3
77A	100.7	18.0
77B	103.2	20.6
78A	98.5	23.7
78B	100.6	19.6
79A	102.3	17.4
79B	102.3	18.2
80A	103.3	17.9
80B	102.1	17.2
81A	101.4	20.4
81B	101.3	19.4
82A	104.9	19.3
82B	98.9	25.5
83A	101.2	21.5
83B	101.5	20.6
84A	99.9	18.9
84B	100.7	20.7
85A	100.2	21.0
85B	100.3	22.7
86A	100.5	23.8
86B	101.0	19.1
87A	99.0	21.5
87B	99.6	19.3
88A	98.9	21.7
88B	97.4	24.5
89A	100.9	19.5
89B	96.9	23.5
90A	100.3	19.0

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

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Summary Report of Radon Barrier One-Point Proctor Results

One-Point #	Dry Density	Moisture Content
90B	98.7	17.7
91A	100.1	20.5
91B	98.7	22.8
92A	100.6	19.9
92B	101.1	20.4
93A	101.2	21.9
93B	100.2	22.2
94A	101.2	19.8
94B	99.1	18.4
95A	102.4	21.0
95B	102.8	19.9
96A	101.5	18.6
96B	101.5	17.3
97A	100.2	18.5
97B	97.1	24.8
98A	101.4	22.2
98B	101.7	20.7
99A	102.7	20.1
99B	101.7	20.0
100A	102.4	20.6
100B	101.4	20.7
101A	101.4	20.1
101B	100.8	22.0
102A	99.7	20.7
102B	102.0	21.2
103A	102.1	18.7
103B	99.5	23.6
104A	103.4	18.3
104B	103.2	18.6
105A	97.7	23.5
106A	99.6	21.2
106B	101.5	20.0
108A	100.4	21.9

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

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Summary Report of Radon Barrier One-Point Proctor Results

One-Point #	Dry Density	Moisture Content
108B	102.2	20.9
109A	99.2	17.7
109B	100.3	18.8
110A	99.8	21.8
110B	99.8	19.9
111A	103.6	21.3
111B	102.2	19.8

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

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Summary Report of Radon Barrier Atterberg Limits Results

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
184	16-May-00	21	49	28	Pass
185	17-May-00	20	49	29	Pass
186	23-May-00	21	50	29	Pass
187	24-May-00	19	49	30	Pass
188	25-May-00	20	49	29	Pass
189	26-May-00	20	46	26	Pass
190	30-May-00	19	45	26	Pass
191	31-May-00	21	50	29	Pass
192	01-Jun-00	21	50	29	Pass
193	02-Jun-00	20	50	30	Pass
194	05-Jun-00	21	49	28	Pass
195	06-Jun-00	20	56	36	Pass
196	07-Jun-00	20	51	31	Pass
197	08-Jun-00	20	52	32	Pass
198	09-Jun-00	21	52	31	Pass
199	12-Jun-00	20	53	33	Pass
200	13-Jun-00	22	52	30	Pass
201	14-Jun-00	19	48	29	Pass
202	15-Jun-00	20	50	30	Pass
203	16-Jun-00	17	43	26	Pass
204	19-Jun-00	17	43	26	Pass
205	20-Jun-00	18	45	27	Pass
206	21-Jun-00	21	50	29	Pass
207	22-Jun-00	20	48	28	Pass
208	23-Jun-00	20	48	28	Pass
209	26-Jun-00	21	52	31	Pass
210	27-Jun-00	20	49	29	Pass
211	28-Jun-00	20	51	31	Pass
212	29-Jun-00	21	50	29	Pass
213	30-Jun-00	19	49	30	Pass
214	05-Jul-00	19	49	30	Pass
215	07-Jul-00	20	50	30	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
216	10-Jul-00	20	49	29	Pass
217	11-Jul-00	20	48	28	Pass
218	12-Jul-00	20	50	30	Pass
219	13-Jul-00	18	45	27	Pass
220	14-Jul-00	18	44	26	Pass
221	18-Jul-00	20	50	30	Pass
222	19-Jul-00	18	47	29	Pass
223	20-Jul-00	22	51	29	Pass
224	21-Jul-00	20	51	31	Pass
225	24-Jul-00	24	65	41	Pass
226	25-Jul-00	25	67	42	Pass
227	26-Jul-00	21	57	36	Pass
228	27-Jul-00	21	58	37	Pass
229	28-Jul-00	21	52	31	Pass
230	31-Jul-00	20	51	31	Pass
231	01-Aug-00	20	51	31	Pass
232	02-Aug-00	22	59	37	Pass
233	03-Aug-00	22	55	33	Pass
234	04-Aug-00	25	67	42	Pass
235	07-Aug-00	21	50	29	Pass
236	08-Aug-00	20	52	32	Pass
237	09-Aug-00	23	56	33	Pass
238	10-Aug-00	20	48	28	Pass
239	11-Aug-00	19	46	27	Pass
240	14-Aug-00	25	63	38	Pass
241	15-Aug-00	22	59	37	Pass
242	16-Aug-00	22	54	32	Pass
243	17-Aug-00	25	61	36	Pass
244	18-Aug-00	20	47	27	Pass
245	21-Aug-00	21	53	32	Pass
246	22-Aug-00	20	49	29	Pass
247	23-Aug-00	21	52	31	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered *satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.*

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
248	24-Aug-00	26	60	34	Pass
249	25-Aug-00	25	60	35	Pass
250	28-Aug-00	25	60	35	Pass
251	29-Aug-00	24	57	33	Pass
252	30-Aug-00	20	52	32	Pass
253	31-Aug-00	26	61	35	Pass
254	01-Sep-00	22	60	38	Pass
255	05-Sep-00	22	56	34	Pass
256	06-Sep-00	21	57	36	Pass
257	07-Sep-00	26	63	37	Pass
258	08-Sep-00	19	47	28	Pass
259	11-Sep-00	20	48	28	Pass
260	12-Sep-00	24	58	34	Pass
261	13-Sep-00	23	58	35	Pass
262	14-Sep-00	27	61	34	Pass
263	15-Sep-00	25	59	34	Pass
264	18-Sep-00	25	58	33	Pass
265	19-Sep-00	26	63	37	Pass
266	20-Sep-00	22	48	26	Pass
267	21-Sep-00	24	60	36	Pass
268	27-Sep-00	25	59	34	Pass
269	28-Sep-00	25	55	30	Pass
270	29-Sep-00	24	55	31	Pass
271	02-Oct-00	25	57	32	Pass
272	03-Oct-00	21	48	27	Pass
273	04-Oct-00	20	54	34	Pass
274	05-Oct-00	26	61	35	Pass
275	09-Oct-00	23	54	31	Pass
276	10-Oct-00	21	57	36	Pass
277	11-Oct-00	23	55	32	Pass
278	12-Oct-00	24	57	33	Pass
279	13-Oct-00	23	58	35	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 2000 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
280	16-Oct-00	23	56	33	Pass
281	17-Oct-00	21	51	30	Pass
282	18-Oct-00	24	68	44	Pass
283	19-Oct-00	25	62	37	Pass
284	20-Oct-00	23	53	30	Pass
285	23-Oct-00	22	53	31	Pass
286	24-Oct-00	23	56	33	Pass
287	25-Oct-00	21	53	32	Pass
288	26-Oct-00	22	50	28	Pass
289	30-Oct-00	22	56	34	Pass
290	31-Oct-00	24	58	34	Pass
291	01-Nov-00	26	59	33	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

RADON BARRIER CLAY PLACEMENT QC

2001

Pathfinder Lucky McMine Reclamation Project - 2000/2001 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1626	105	1	N - 786063 E - 806543	112.5	18.3	110.4	Pass	Fail
1626R	105	1	N - 786055 E - 806538	103.7	21.0	101.8	Pass	Pass
1627	105	4	N - 786735 E - 806768	100.8	22.4	98.9	Pass	Pass
1628	105	4	N - 787340 E - 806184	108.5	24.1	106.5	Pass	Pass
1629	105	4	N - 786924 E - 806718	104.1	20.7	102.2	Pass	Pass
1630	105	4	N - 787054 E - 806554	109.6	19.7	107.6	Pass	Pass
1631	105	4	N - 787196 E - 806492	100.5	20.7	98.6	Pass	Pass
1632	105	4	N - 787232 E - 806255	107.1	19.6	105.1	Pass	Pass
1633	111	4	N - 787342 E - 805893	104.2	23.3	100.4	Pass	Pass
1634	111	4	N - 787366 E - 806056	99.1	23.9	95.4	Pass	Pass
1635	111	6	N - 789198 E - 805236	112.4	21.5	108.3	Pass	Pass
1636	111	6	N - 789104 E - 805120	102.9	20.9	99.2	Pass	Pass
1637	111	1	N - 787352 E - 804211	102.0	23.3	98.3	Pass	Pass
1638	114	1	N - 794062 E - 804582	107.7	19.4	104.7	Pass	Pass
1639	114	1	N - 794038 E - 804500	101.4	24.6	98.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1640	114	1	N - 794665 E - 804593	105.1	20.3	102.3	Pass	Pass
1641	114	1	N - 794783 E - 804460	106.2	22.0	103.3	Pass	Pass
1642	114	1	N - 794617 E - 804542	102.5	19.3	99.7	Pass	Pass
1643	114	1	N - 794516 E - 804556	103.2	24.3	100.4	Pass	Pass
1644	114	1	N - 794440 E - 804725	106.9	20.2	104.0	Pass	Pass
1645	114	1	N - 794352 E - 804636	100.7	24.4	97.9	Pass	Pass
1646	114	5	N - 787673 E - 806645	98.8	21.8	96.1	Pass	Pass
1647	114	5	N - 787804 E - 806651	115.2	15.1	112.0	Pass	Fail
1647R	114	5	N - 787812 E - 806658	105.9	19.6	103.0	Pass	Pass
1648	114	5	N - 787926 E - 806738	108.2	21.2	105.2	Pass	Pass
1649	114	5	N - 788035 E - 806230	105.2	20.0	102.3	Pass	Pass
1650	114	5	N - 788116 E - 806382	107.9	19.8	105.0	Pass	Pass
1651	114	1	N - 794314 E - 804786	104.2	22.4	101.3	Pass	Pass
1652	114	1	N - 794226 E - 804812	99.7	24.3	97.0	Pass	Pass
1653	115	1	N - 794295 E - 804580	105.8	21.2	105.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1654	115	1	N - 794138 E - 804750	104.2	19.6	103.8	Pass	Pass
1655	115	1	N - 794028 E - 804841	107.3	21.3	106.9	Pass	Pass
1656	115	5	N - 787993 E - 806465	110.0	19.8	109.5	Pass	Pass
1657	115	5	N - 787361 E - 805680	110.8	20.3	110.4	Pass	Pass
1658	115	5	N - 787590 E - 805858	111.1	24.3	110.7	Pass	Pass
1659	115	5	N - 787832 E - 806049	100.3	19.7	99.9	Pass	Pass
1660	115	5	N - 787911 E - 806195	104.6	19.9	104.1	Pass	Pass
1661	115	5	N - 787709 E - 806034	103.3	20.5	102.9	Pass	Pass
1662	115	5	N - 787448 E - 805803	102.4	19.5	101.9	Pass	Pass
1663	115	5	N - 787526 E - 806650	103.3	20.0	102.9	Pass	Pass
1664	115	5	N - 787051 E - 806657	100.0	12.5	99.6	Pass	Fail
1664R	115	5	N - 787056 E - 806650	103.0	13.1	102.6	Pass	Fail
1664R	115	5	N - 787041 E - 806671	95.8	23.7	95.4	Pass	Pass
1665	115	5	N - 787345 E - 806745	96.0	24.2	95.6	Pass	Pass
1666	115	5	N - 787247 E - 806635	101.8	15.8	101.4	Pass	Fail

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1666R	115	5	N - 787258 E - 806653	98.7	22.2	98.3	Pass	Pass
1667	116	2	N - 794801 E - 804520	99.5	23.4	96.4	Pass	Pass
1668	116	2	N - 794734 E - 804449	99.4	21.9	96.3	Pass	Pass
1669	116	2	N - 794615 E - 804612	99.5	19.8	96.4	Pass	Pass
1670	116	2	N - 794420 E - 804687	105.8	21.3	102.5	Pass	Pass
1671	116	2	N - 794493 E - 804579	105.6	19.8	102.3	Pass	Pass
1672	116	2	N - 794328 E - 804538	99.8	24.2	96.7	Pass	Pass
1673	116	2	N - 794125 E - 804816	100.8	20.7	97.6	Pass	Pass
1674	116	2	N - 793961 E - 804853	101.7	19.3	98.5	Pass	Pass
1675	116	2	N - 794092 E - 804720	104.9	19.9	101.7	Pass	Pass
1676	116	2	N - 794240 E - 804736	105.5	18.8	102.2	Pass	Pass
1677	116	2	N - 794186 E - 804622	105.2	16.8	101.9	Pass	Fail
1677R	116	2	N - 794180 E - 804625	99.4	22.8	96.3	Pass	Pass
1678	116	2	N - 794301 E - 804671	100.3	21.7	97.2	Pass	Pass
1679	116	6	N - 805763 E - 787426	111.2	20.8	107.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1680	116	6	N - 787682 E - 805954	111.6	19.6	108.1	Pass	Pass
1681	116	6	N - 787986 E - 806132	100.9	18.9	97.7	Pass	Pass
1682	117	6	N - 787448 E - 805842	103.8	21.3	98.9	Pass	Pass
1683	117	6	N - 787738 E - 805858	102.4	19.4	97.5	Pass	Pass
1684	117	6	N - 787872 E - 806183	107.6	19.9	102.5	Pass	Pass
1685	117	6	N - 788040 E - 806226	109.9	18.6	104.6	Pass	Pass
1686	117	6	N - 788053 E - 806371	104.6	19.1	99.6	Pass	Pass
1687	117	6	N - 788143 E - 806449	111.2	20.8	105.9	Pass	Pass
1688	117	6	N - 787965 E - 806585	112.9	20.6	107.5	Pass	Pass
1689	117	6	N - 787759 E - 806607	104.2	22.0	99.2	Pass	Pass
1690	117	6	N - 787652 E - 806771	102.4	24.2	97.5	Pass	Pass
1691	117	6	N - 787848 E - 806768	111.6	19.6	106.3	Pass	Pass
1692	117	1	N - 793960 E - 804693	105.3	23.3	100.3	Pass	Pass
1693	117	1	N - 793879 E - 804682	105.9	19.1	100.9	Pass	Pass
1694	117	1	N - 793802 E - 804857	110.0	19.7	104.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1695	117	1	N - 794217 E - 803652	106.4	21.6	101.3	Pass	Pass
1696	117	1	N - 794053 E - 803738	107.0	22.0	101.9	Pass	Pass
1697	118	1	N - 794170 E - 803772	102.5	19.4	98.4	Pass	Pass
1698	118	1	N - 794228 E - 803846	103.2	18.9	99.0	Pass	Pass
1699	118	1	N - 794087 E - 803874	102.4	17.9	98.3	Pass	Pass
1700	118	1	N - 794201 E - 803985	104.8	20.1	100.6	Pass	Pass
1701	118	1	N - 794162 E - 804052	100.0	18.6	96.0	Pass	Pass
1702	118	1	N - 794117 E - 804048	104.5	20.6	100.3	Pass	Pass
1703	118	1	N - 794085 E - 804140	106.3	21.9	102.0	Pass	Pass
1704	118	1	N - 793618 E - 804798	102.0	23.0	97.9	Pass	Pass
1705	118	1	N - 793426 E - 804885	102.7	20.6	98.5	Pass	Pass
1706	118	1	N - 793972 E - 803970	105.9	18.6	101.7	Pass	Pass
1707	118	1	N - 793988 E - 803848	108.0	17.9	103.6	Pass	Pass
1708	118	1	N - 793935 E - 804056	104.7	22.4	100.5	Pass	Pass
1709	118	1	N - 792950 E - 804830	104.5	22.7	100.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1710	118	1	N - 792786 E - 804876	101.4	20.6	97.3	Pass	Pass
1711	118	1	N - 793917 E - 804164	100.6	20.1	96.5	Pass	Pass
1712	119	1	N - 792690 E - 804871	105.8	23.7	101.7	Pass	Pass
1713	119	1	N - 792498 E - 804850	104.3	20.1	100.3	Pass	Pass
1714	119	1	N - 792376 E - 804916	108.2	20.1	104.1	Pass	Pass
1715	119	1	N - 792525 E - 805006	100.7	23.3	96.9	Pass	Pass
1716	119	1	N - 792893 E - 805019	107.0	19.2	102.9	Pass	Pass
1717	119	2	N - 793946 E - 804672	105.8	20.2	101.8	Pass	Pass
1718	119	2	N - 793775 E - 804865	104.8	19.8	100.8	Pass	Pass
1719	119	2	N - 793720 E - 804733	112.5	18.9	108.2	Pass	Pass
1720	119	2	N - 793542 E - 804860	105.3	22.0	101.2	Pass	Pass
1721	119	1	N - 793856 E - 804238	108.3	21.4	104.1	Pass	Pass
1722	119	1	N - 792740 E - 805090	102.1	15.6	98.2	Pass	Fail
1722R	119	1	N - 792745 E - 805084	103.2	23.3	99.2	Pass	Pass
1723	119	2	N - 794059 E - 804558	108.5	19.6	104.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1724	119	2	N - 793836 E - 804793	110.8	16.9	106.6	Pass	Fail
1724R	119	2	N - 793841 E - 804782	100.6	20.2	96.7	Pass	Pass
1725	119	2	N - 793679 E - 804826	100.7	21.2	96.8	Pass	Pass
1726	119	5	N - 786930 E - 806642	111.1	19.8	106.9	Pass	Pass
1727	120	5	N - 787218 E - 806407	110.3	19.0	105.9	Pass	Pass
1728	120	5	N - 787185 E - 806253	110.9	21.4	106.5	Pass	Pass
1729	120	5	N - 787263 E - 806720	104.4	22.3	100.3	Pass	Pass
1730	120	5	N - 786725 E - 806742	104.7	19.1	100.6	Pass	Pass
1731	120	1	N - 793571 E - 804095	107.2	20.8	103.0	Pass	Pass
1732	120	1	N - 793682 E - 804146	101.3	22.8	97.3	Pass	Pass
1733	120	1	N - 794098 E - 803608	102.3	18.6	98.3	Pass	Pass
1734	120	1	N - 793932 E - 803641	105.0	20.0	100.9	Pass	Pass
1735	120	1	N - 793985 E - 803592	104.3	19.7	100.2	Pass	Pass
1736	120	1	N - 793726 E - 803262	107.9	21.1	103.6	Pass	Pass
1737	120	1	N - 793928 E - 803228	106.4	21.7	102.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1738	120	1	N - 793680 E - 803357	106.8	21.9	102.6	Pass	Pass
1739	120	1	N - 793861 E - 803386	101.3	19.9	97.3	Pass	Pass
1740	120	1	N - 794018 E - 803401	105.2	19.3	101.0	Pass	Pass
1741	120	2	N - 793920 E - 803442	107.9	19.6	103.6	Pass	Pass
1742	121	2	N - 793742 E - 803472	105.7	19.9	102.4	Pass	Pass
1743	121	2	N - 794076 E - 803527	105.8	18.5	102.5	Pass	Pass
1744	121	2	N - 794172 E - 803485	105.9	22.6	102.6	Pass	Pass
1745	121	2	N - 793960 E - 803576	108.5	22.9	105.1	Pass	Pass
1746	121	2	N - 793907 E - 803650	103.7	19.2	100.5	Pass	Pass
1747	121	2	N - 794149 E - 803682	103.2	19.6	100.0	Pass	Pass
1748	121	2	N - 793998 E - 803725	98.1	21.9	95.1	Pass	Pass
1749	121	2	N - 794250 E - 803768	107.8	18.5	104.4	Pass	Pass
1750	121	2	N - 794076 E - 803726	106.7	20.6	103.4	Pass	Pass
1751	121	2	N - 794085 E - 803950	102.7	21.6	99.6	Pass	Pass
1752	121	2	N - 793856 E - 804149	100.2	23.9	97.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1753	121	2	N - 793834 E - 804036	102.4	22.9	99.2	Pass	Pass
1754	121	2	N - 793947 E - 804220	100.7	22.8	97.5	Pass	Pass
1755	121	2	N - 793685 E - 804238	102.2	22.5	99.0	Pass	Pass
1756	121	2	N - 794080 E - 804113	101.7	23.8	98.6	Pass	Pass
1757	122	2	N - 793989 E - 803229	104.5	20.2	101.4	Pass	Pass
1758	122	2	N - 793688 E - 803250	99.5	23.8	96.6	Pass	Pass
1759	122	2	N - 792706 E - 804827	100.5	23.1	97.5	Pass	Pass
1760	122	2	N - 792587 E - 805001	100.3	19.2	97.3	Pass	Pass
1761	122	6	N - 787440 E - 806798	102.9	21.8	100.0	Pass	Pass
1762	122	6	N - 787236 E - 806744	101.9	18.4	98.9	Pass	Pass
1763	122	6	N - 787013 E - 806720	102.9	22.3	99.9	Pass	Pass
1764	122	6	N - 787291 E - 806663	105.2	19.2	102.1	Pass	Pass
1765	122	6	N - 787483 E - 806645	102.5	18.5	99.5	Pass	Pass
1766	122	2	N - 792906 E - 804847	101.1	22.8	98.1	Pass	Pass
1767	122	2	N - 792875 E - 805020	103.4	19.6	100.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1768	122	2	N - 792450 E - 804899	107.3	18.5	104.2	Pass	Pass
1769	122	2	N - 792368 E - 804970	102.1	23.2	99.1	Pass	Pass
1770	122	2	N - 792775 E - 805048	99.9	23.9	97.0	Pass	Pass
1771	122	5	N - 787246 E - 805821	102.2	20.8	99.2	Pass	Pass
1772	123	1	N - 793227 E - 804317	108.1	21.3	105.9	Pass	Pass
1773	123	1	N - 793603 E - 804385	107.1	18.5	105.0	Pass	Pass
1774	123	1	N - 792548 E - 804342	101.2	23.4	99.2	Pass	Pass
1775	123	1	N - 792915 E - 804391	104.3	22.0	102.3	Pass	Pass
1776	123	1	N - 793442 E - 804400	104.0	19.5	102.0	Pass	Pass
1777	123	1	N - 793308 E - 804430	104.0	21.2	101.9	Pass	Pass
1778	123	1	N - 793101 E - 804478	105.9	18.4	103.8	Pass	Pass
1779	123	1	N - 792842 E - 804497	108.4	18.6	106.3	Pass	Pass
1780	123	1	N - 792570 E - 804468	110.0	18.5	107.8	Pass	Pass
1781	123	1	N - 793439 E - 804500	104.6	19.4	102.5	Pass	Pass
1782	123	1	N - 793287 E - 804514	102.1	23.2	100.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1783	123	1	N - 792825 E - 804526	103.4	18.8	101.3	Pass	Pass
1784	123	1	N - 792726 E - 804613	101.9	23.0	99.9	Pass	Pass
1785	123	2	N - 792701 E - 804328	105.1	18.2	103.0	Pass	Pass
1786	123	2	N - 793156 E - 804365	104.4	23.4	102.3	Pass	Pass
1787	124	2	N - 792862 E - 804317	101.4	23.1	98.4	Pass	Pass
1788	124	2	N - 793610 E - 804504	105.7	22.8	102.6	Pass	Pass
1789	124	6	N - 787163 E - 806257	103.9	23.2	100.8	Pass	Pass
1790	124	6	N - 787340 E - 806280	108.1	18.5	105.0	Pass	Pass
1791	124	6	N - 787144 E - 806546	104.5	22.4	101.5	Pass	Pass
1792	124	2	N - 793390 E - 804356	101.3	23.1	98.4	Pass	Pass
1793	124	2	N - 793278 E - 804372	104.1	22.8	101.1	Pass	Pass
1794	124	2	N - 792967 E - 804411	106.1	20.8	103.0	Pass	Pass
1795	124	2	N - 792768 E - 804391	105.2	18.9	102.2	Pass	Pass
1796	124	2	N - 792536 E - 804500	107.3	18.0	104.2	Pass	Pass
1797	124	2	N - 793427 E - 804497	101.9	18.3	98.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1798	124	2	N - 793520 E - 804561	98.3	22.8	95.5	Pass	Pass
1799	124	2	N - 793295 E - 804586	101.1	21.3	98.1	Pass	Pass
1800	124	2	N - 793031 E - 804602	99.6	23.1	96.7	Pass	Pass
1801	124	2	N - 792861 E - 804618	106.6	20.1	103.5	Pass	Pass
1802	125	2	N - 793625 E - 804107	100.2	16.4	97.1	Pass	Fail
1802R	125	2	N - 793619 E - 804117	102.9	19.6	99.7	Pass	Pass
1803	125	1	N - 786351 E - 806490	103.0	20.5	99.8	Pass	Pass
1804	125	1	N - 785983 E - 805920	107.2	19.0	103.8	Pass	Pass
1805	125	6	N - 788825 E - 806783	106.7	18.8	103.4	Pass	Pass
1806	125	6	N - 787348 E - 806034	102.5	20.3	99.3	Pass	Pass
1807	125	6	N - 787250 E - 805726	99.4	22.6	96.4	Pass	Pass
1808	125	1	N - 789336 E - 805560	105.5	22.4	102.3	Pass	Pass
1809	125	1	N - 789350 E - 805750	101.2	20.9	98.0	Pass	Pass
1810	125	1	N - 789182 E - 805699	102.7	21.8	99.5	Pass	Pass
1811	125	1	N - 789256 E - 805846	100.1	23.7	97.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1812	125	1	N - 789063 E - 805805	102.3	18.5	99.1	Pass	Pass
1813	125	1	N - 789080 E - 805914	102.6	21.4	99.4	Pass	Pass
1814	125	1	N - 789194 E - 805975	104.9	18.9	101.6	Pass	Pass
1815	125	1	N - 789382 E - 805683	108.3	21.8	104.9	Pass	Pass
1816	125	1	N - 789137 E - 806021	100.2	23.0	97.1	Pass	Pass
1817	126	1	N - 789266 E - 805676	103.1	21.4	101.1	Pass	Pass
1818	126	2	N - 789428 E - 805780	104.2	20.5	102.1	Pass	Pass
1819	126	1	N - 788326 E - 804639	101.3	18.8	99.3	Pass	Pass
1820	126	1	N - 787872 E - 804443	100.9	22.1	99.0	Pass	Pass
1821	126	2	N - 789326 E - 805581	107.6	18.7	105.5	Pass	Pass
1822	126	2	N - 789350 E - 805768	103.6	22.2	101.5	Pass	Pass
1823	126	2	N - 789285 E - 805688	103.7	19.2	101.6	Pass	Pass
1824	126	2	N - 789239 E - 805775	101.9	18.8	99.9	Pass	Pass
1825	126	1	N - 795160 E - 804276	105.8	18.7	103.8	Pass	Pass
1826	126	1	N - 795023 E - 804382	108.2	18.6	106.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1827	126	1	N - 795050 E - 804197	102.9	18.3	100.9	Pass	Pass
1828	126	1	N - 794901 E - 804045	103.1	21.9	101.1	Pass	Pass
1829	126	1	N - 788150 E - 804644	102.9	19.4	100.8	Pass	Pass
1830	126	1	N - 787793 E - 804465	104.3	18.5	102.2	Pass	Pass
1831	126	1	N - 788156 E - 804482	98.9	23.9	96.9	Pass	Pass
1832	127	1	N - 788238 E - 804600	103.1	24.1	99.4	Pass	Pass
1833	127	2	N - 789227 E - 805886	99.6	20.3	96.0	Pass	Pass
1834	127	2	N - 789114 E - 805779	107.1	19.5	103.3	Pass	Pass
1835	127	2	N - 789119 E - 805893	101.7	22.3	98.1	Pass	Pass
1836	127	2	N - 789091 E - 805982	102.0	23.1	98.4	Pass	Pass
1837	127	2	N - 789200 E - 805640	104.3	20.7	100.6	Pass	Pass
1838	127	3	N - 789390 E - 805654	101.6	22.9	98.0	Pass	Pass
1839	127	1	N - 794712 E - 804124	99.3	21.2	95.8	Pass	Pass
1840	127	1	N - 794608 E - 804211	99.9	21.5	96.3	Pass	Pass
1841	127	1	N - 794791 E - 804246	101.6	23.0	98.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1842	127	1	N - 794687 E - 804313	101.7	19.8	98.1	Pass	Pass
1843	127	3	N - 789330 E - 805648	107.6	22.0	103.8	Pass	Pass
1844	127	3	N - 789177 E - 805849	109.5	14.4	105.6	Pass	Fail
1844R	127	3	N - 789180 E - 805837	100.3	21.8	96.7	Pass	Pass
1845	127	3	N - 789265 E - 805876	103.1	21.1	99.5	Pass	Pass
1846	127	3	N - 789200 E - 805680	104.5	18.8	100.8	Pass	Pass
1847	128	3	N - 789322 E - 805763	109.4	19.1	106.0	Pass	Pass
1848	128	1	N - 794251 E - 803348	106.7	19.0	103.3	Pass	Pass
1849	128	1	N - 794350 E - 803448	107.1	20.0	103.7	Pass	Pass
1850	128	1	N - 794282 E - 803206	108.1	18.6	104.7	Pass	Pass
1851	128	1	N - 794216 E - 803082	107.2	18.1	103.8	Pass	Pass
1852	128	2	N - 795149 E - 804325	107.8	21.6	104.4	Pass	Pass
1853	128	2	N - 795086 E - 804216	101.4	22.9	98.2	Pass	Pass
1854	128	2	N - 795065 E - 804376	91.6	29.5	88.7	Fail	Fail
1854R	128	2	N - 795063 E - 804355	100.9	19.7	97.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1855	128	2	N - 794962 E - 804099	101.2	19.8	98.0	Pass	Pass
1856	128	2	N - 794812 E - 803902	105.3	21.8	102.0	Pass	Pass
1857	128	3	N - 789084 E - 805840	109.0	19.0	105.6	Pass	Pass
1858	128	3	N - 789128 E - 805944	103.8	18.3	100.5	Pass	Pass
1859	128	1	N - 793570 E - 804640	96.6	17.8	93.5	Fail	Fail
1859R	128	1	N - 792687 E - 804774	101.2	18.8	97.9	Pass	Pass
1860	128	1	N - 793406 E - 804629	101.8	19.0	98.5	Pass	Pass
1861	128	1	N - 793616 E - 804621	108.8	19.2	105.4	Pass	Pass
1862	129	3	N - 789056 E - 805962	108.0	21.6	106.6	Pass	Pass
1863	129	1	N - 789421 E - 805570	103.1	19.9	101.7	Pass	Pass
1864	129	4	N - 789382 E - 805640	97.9	22.7	96.7	Pass	Pass
1865	129	1	N - 793911 E - 804602	106.5	19.0	105.2	Pass	Pass
1866	129	1	N - 793820 E - 804583	103.5	20.5	102.2	Pass	Pass
1867	129	1	N - 793700 E - 804470	101.0	22.0	99.7	Pass	Pass
1868	129	1	N - 793519 E - 804667	104.8	21.5	103.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1869	129	4	N - 789326 E - 805664	102.0	23.1	100.6	Pass	Pass
1870	129	4	N - 789348 E - 805679	105.4	18.0	104.1	Pass	Fail
1870R	129	4	N - 789340 E - 805621	96.8	19.1	95.6	Pass	Pass
1871	129	4	N - 789260 E - 805773	104.2	19.0	102.9	Pass	Pass
1872	129	4	N - 789212 E - 805716	103.4	20.8	102.0	Pass	Pass
1873	129	4	N - 789130 E - 805710	104.6	19.9	103.3	Pass	Pass
1874	129	4	N - 789236 E - 805875	104.0	23.1	102.7	Pass	Pass
1875	129	4	N - 789057 E - 805862	107.7	18.8	106.3	Pass	Pass
1876	129	4	N - 789101 E - 806035	101.6	20.3	100.3	Pass	Pass
1877	130	2	N - 788451 E - 804693	102.6	19.5	99.6	Pass	Pass
1878	130	2	N - 788243 E - 804627	105.8	18.9	102.7	Pass	Pass
1879	130	2	N - 788070 E - 804588	106.7	18.6	103.6	Pass	Pass
1880	130	2	N - 787938 E - 804463	103.1	19.7	100.1	Pass	Pass
1881	130	2	N - 788193 E - 804514	103.6	18.6	100.6	Pass	Pass
1882	130	2	N - 793576 E - 804641	110.1	18.0	106.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1883	130	1	N - 792870 E - 804713	101.7	18.9	98.8	Pass	Pass
1884	130	1	N - 792424 E - 804762	104.5	21.8	101.4	Pass	Pass
1885	130	1	N - 792298 E - 804790	100.3	19.2	97.3	Pass	Pass
1886	130	2	N - 794884 E - 804295	109.3	18.8	106.1	Pass	Pass
1887	130	2	N - 794752 E - 804103	104.5	21.1	101.4	Pass	Pass
1888	130	5	N - 789421 E - 805733	103.9	17.8	100.9	Pass	Pass
1889	130	5	N - 789387 E - 805685	104.1	19.2	101.1	Pass	Pass
1890	130	2	N - 794680 E - 804358	102.7	20.3	99.7	Pass	Pass
1891	130	2	N - 794708 E - 804191	102.2	19.4	99.2	Pass	Pass
1892	131	2	N - 794602 E - 804315	101.0	19.1	97.7	Pass	Pass
1893	131	2	N - 792170 E - 804798	98.6	19.7	95.3	Pass	Pass
1894	131	2	N - 792456 E - 804821	99.1	23.3	95.8	Pass	Pass
1895	131	2	N - 792738 E - 804800	103.4	19.6	100.0	Pass	Pass
1896	131	2	N - 792986 E - 804790	101.2	22.4	97.9	Pass	Pass
1897	131	2	N - 793180 E - 804620	105.7	18.8	102.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1898	131	2	N - 793353 E - 804698	102.1	19.7	98.7	Pass	Pass
1899	131	2	N - 793478 E - 804643	102.8	19.6	99.4	Pass	Pass
1900	131	2	N - 793604 E - 804641	103.8	21.3	100.4	Pass	Pass
1901	131	2	N - 793728 E - 804595	98.6	18.6	95.3	Pass	Pass
1902	131	2	N - 792901 E - 804817	102.4	22.2	99.1	Pass	Pass
1903	131	2	N - 794372 E - 803401	108.1	22.1	104.6	Pass	Pass
1904	131	2	N - 794298 E - 803262	104.0	21.2	100.6	Pass	Pass
1905	131	2	N - 794298 E - 803106	104.2	20.9	100.7	Pass	Pass
1906	131	2	N - 794314 E - 803241	98.4	19.6	95.2	Pass	Pass
1907	132	5	N - 789244 E - 805630	101.2	18.6	97.7	Pass	Pass
1908	132	5	N - 789270 E - 805771	104.8	18.9	101.1	Pass	Pass
1909	132	5	N - 789284 E - 805890	104.1	19.6	100.5	Pass	Pass
1910	132	5	N - 789221 E - 805894	98.8	19.0	95.3	Pass	Pass
1911	132	5	N - 789082 E - 805827	105.0	19.7	101.3	Pass	Pass
1912	132	5	N - 789117 E - 805978	104.8	20.3	101.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1913	132	5	N - 788338 E - 806573	100.5	20.1	97.0	Pass	Pass
1914	132	1	N - 789059 E - 805984	92.2	23.5	89.0	Fail	Pass
1914R	132	1	N - 788354 E - 806441	105.4	19.3	101.7	Pass	Pass
1915	132	1	N - 788354 E - 806441	102.8	21.8	99.2	Pass	Pass
1916	132	1	N - 788421 E - 806562	99.2	19.9	95.7	Pass	Pass
1917	132	1	N - 788463 E - 806350	103.0	18.9	99.4	Pass	Pass
1918	132	1	N - 788519 E - 806484	108.4	18.9	104.6	Pass	Pass
1919	132	1	N - 788559 E - 806269	102.2	19.4	98.7	Pass	Pass
1920	132	1	N - 788592 E - 806427	98.5	18.8	95.1	Pass	Pass
1921	132	1	N - 788723 E - 806407	98.6	20.7	95.1	Pass	Pass
1922	133	1	N - 788711 E - 806247	104.8	18.7	103.0	Pass	Pass
1923	133	1	N - 788779 E - 806290	108.1	19.6	106.3	Pass	Pass
1924	133	1	N - 788641 E - 806143	99.3	22.4	97.6	Pass	Pass
1925	133	1	N - 786372 E - 806253	100.3	20.8	98.6	Pass	Pass
1926	133	3	N - 788239 E - 804653	103.7	20.4	101.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1927	133	3	N - 788038 E - 804608	98.8	18.4	97.1	Pass	Pass
1928	133	3	N - 787627 E - 804472	100.2	19.6	98.5	Pass	Pass
1929	133	3	N - 787974 E - 804413	100.4	18.6	98.7	Pass	Pass
1930	133	3	N - 788100 E - 804519	105.1	19.8	103.4	Pass	Pass
1931	133	3	N - 788385 E - 804627	105.7	20.0	104.0	Pass	Pass
1932	133	1	N - 788607 E - 805261	100.0	21.7	98.4	Pass	Pass
1933	133	1	N - 788740 E - 805620	103.6	20.4	101.9	Pass	Pass
1934	133	1	N - 788747 E - 805444	103.9	19.6	102.2	Pass	Pass
1935	133	6	N - 789354 E - 805599	104.2	21.7	102.5	Pass	Pass
1936	133	6	N - 789336 E - 805741	98.2	22.9	96.6	Pass	Pass
1937	134	6	N - 789211 E - 805671	97.9	18.7	95.3	Pass	Pass
1938	134	6	N - 789253 E - 805814	104.5	19.4	101.6	Pass	Pass
1939	134	6	N - 789158 E - 805742	102.6	18.9	99.8	Pass	Pass
1940	134	6	N - 789178 E - 805926	100.8	21.3	98.1	Pass	Pass
1941	134	6	N - 789043 E - 805849	102.2	19.8	99.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1942	134	6	N - 780088 E - 805990	99.7	21.6	96.9	Pass	Pass
1943	134	2	N - 788741 E - 806172	100.6	21.0	97.9	Pass	Pass
1944	134	2	N - 788716 E - 806375	104.9	20.7	102.0	Pass	Pass
1945	134	2	N - 788568 E - 806139	99.2	23.5	96.5	Pass	Pass
1946	134	2	N - 788543 E - 806321	99.7	22.1	97.0	Pass	Pass
1947	134	2	N - 788650 E - 806526	106.3	19.8	103.4	Pass	Pass
1948	134	2	N - 788482 E - 806472	103.5	20.2	100.7	Pass	Pass
1949	134	2	N - 788397 E - 806334	102.8	20.7	100.0	Pass	Pass
1950	134	2	N - 788360 E - 806513	101.6	20.4	98.8	Pass	Pass
1951	134	2	N - 788310 E - 806378	109.1	21.1	106.1	Pass	Pass
1952	135	2	N - 788355 E - 806704	102.8	20.0	100.2	Pass	Pass
1953	135	2	N - 788646 E - 806284	105.2	21.9	102.6	Pass	Pass
1954	135	1	N - 786698 E - 805157	105.3	19.4	102.6	Pass	Pass
1955	135	1	N - 786718 E - 805039	105.5	22.2	102.8	Pass	Pass
1956	135	1	N - 786663 E - 804970	108.7	21.3	106.0	Pass	Pass

Specifications:. 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1957	135	1	N - 786957 E - 804909	105.8	20.2	103.1	Pass	Pass
1958	135	1	N - 787212 E - 804669	106.5	19.3	103.8	Pass	Pass
1959	135	1	N - 787344 E - 804503	104.6	19.7	101.9	Pass	Pass
1960	135	1	N - 786650 E - 804885	101.9	19.8	99.3	Pass	Pass
1961	135	1	N - 786518 E - 805017	98.7	21.2	96.2	Pass	Pass
1962	135	1	N - 786621 E - 805302	105.8	20.1	103.1	Pass	Pass
1963	135	1	N - 786485 E - 805284	106.9	20.1	104.2	Pass	Pass
1964	135	1	N - 786425 E - 805356	104.6	18.9	102.0	Pass	Pass
1965	135	1	N - 786834 E - 804861	103.2	21.9	100.6	Pass	Pass
1966	135	1	N - 788374 E - 805236	98.2	21.9	95.7	Pass	Pass
1967	136	1	N - 788203 E - 805328	104.8	20.4	101.0	Pass	Pass
1968	136	1	N - 788170 E - 805449	99.5	23.3	95.8	Pass	Pass
1969	136	1	N - 788355 E - 805468	100.7	23.5	97.0	Pass	Pass
1970	136	3	N - 788342 E - 806553	104.1	22.6	100.3	Pass	Pass
1971	136	3	N - 788354 E - 806281	99.9	19.6	96.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1972	136	3	N - 788391 E - 806673	106.8	18.8	102.9	Pass	Pass
1973	136	3	N - 788425 E - 806448	101.3	21.5	97.6	Pass	Pass
1974	136	3	N - 788486 E - 806559	103.3	19.3	99.5	Pass	Pass
1975	136	3	N - 788524 E - 806290	101.4	18.8	97.7	Pass	Pass
1976	136	3	N - 788600 E - 806542	105.3	22.1	101.4	Pass	Pass
1977	136	3	N - 788649 E - 806362	107.0	20.8	103.1	Pass	Pass
1978	136	3	N - 788565 E - 806136	106.1	19.9	102.2	Pass	Pass
1979	136	3	N - 788706 E - 806178	99.8	22.4	96.2	Pass	Pass
1980	136	3	N - 788814 E - 806270	104.0	22.8	100.2	Pass	Pass
1981	136	3	N - 788769 E - 806389	101.8	20.2	98.1	Pass	Pass
1982	137	2	N - 788840 E - 805764	102.4	23.0	99.6	Pass	Pass
1983	137	2	N - 788762 E - 805523	107.5	19.6	104.6	Pass	Pass
1984	137	2	N - 788627 E - 805336	102.0	24.0	99.2	Pass	Pass
1985	137	3	N - 788213 E - 804612	103.9	22.7	101.1	Pass	Pass
1986	137	3	N - 787783 E - 804364	106.0	20.0	103.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
1987	137	3	N - 787996 E - 804501	97.9	18.9	95.3	Pass	Pass
1988	137	3	N - 788144 E - 804478	104.6	19.7	101.7	Pass	Pass
1989	137	3	N - 788362 E - 804420	103.6	22.0	100.8	Pass	Pass
1990	137	3	N - 787964 E - 804593	103.0	19.5	100.2	Pass	Pass
1991	137	3	N - 788421 E - 804689	105.2	20.2	102.3	Pass	Pass
1992	137	2	N - 786483 E - 805458	107.4	20.0	104.5	Pass	Pass
1993	137	2	N - 786125 E - 805424	106.0	19.3	103.1	Pass	Pass
1994	137	4	N - 788439 E - 806721	103.7	20.8	100.9	Pass	Pass
1995	137	4	N - 788341 E - 806590	102.5	19.9	99.7	Pass	Pass
1996	137	4	N - 788362 E - 806253	109.4	20.0	106.5	Pass	Pass
1997	138	4	N - 788439 E - 806375	107.7	21.6	104.1	Pass	Pass
1998	138	4	N - 788483 E - 806582	106.6	21.2	103.0	Pass	Pass
1999	138	4	N - 788535 E - 806298	103.5	21.6	100.0	Pass	Pass
2000	138	4	N - 788579 E - 806642	106.0	20.7	102.4	Pass	Pass
2001	138	4	N - 788593 E - 806382	103.0	19.5	99.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2002	138	4	N - 788684 E - 806426	107.0	20.1	103.4	Pass	Pass
2003	138	4	N - 788623 E - 806158	101.8	22.9	98.3	Pass	Pass
2004	138	4	N - 788739 E - 806187	99.6	22.4	96.2	Pass	Pass
2005	138	4	N - 788780 E - 806349	107.8	19.4	104.2	Pass	Pass
2006	138	3	N - 788539 E - 805245	107.0	21.1	103.4	Pass	Pass
2007	138	3	N - 788680 E - 805461	104.1	20.5	100.6	Pass	Pass
2008	138	3	N - 788851 E - 805782	104.5	20.8	101.0	Pass	Pass
2009	138	3	N - 788837 E - 805612	105.7	23.2	102.2	Pass	Pass
2010	138	2	N - 786184 E - 805340	104.1	18.8	100.6	Pass	Pass
2011	138	2	N - 786442 E - 805389	108.7	18.7	105.0	Pass	Pass
2012	139	2	N - 786305 E - 805286	100.4	23.0	97.2	Pass	Pass
2013	139	2	N - 786412 E - 805221	107.6	16.9	104.1	Pass	Fail
2013R	139	2	N - 786395 E - 805238	105.0	18.2	101.6	Pass	Pass
2014	139	2	N - 786542 E - 805240	104.7	18.6	101.4	Pass	Pass
2015	139	2	N - 786476 E - 804946	103.9	19.8	100.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2016	139	2	N - 786627 E - 805257	112.9	18.2	109.3	Pass	Pass
2017	139	2	N - 786561 E - 805074	104.9	20.7	101.6	Pass	Pass
2018	139	2	N - 786679 E - 804937	104.9	19.7	101.6	Pass	Pass
2019	139	2	N - 786730 E - 804842	110.1	19.0	106.6	Pass	Pass
2020	139	2	N - 788859 E - 804779	107.7	20.2	104.3	Pass	Pass
2021	139	5	N - 789098 E - 806051	101.4	22.4	98.1	Pass	Pass
2022	139	5	N - 789043 E - 805840	105.9	18.3	102.5	Pass	Pass
2023	139	5	N - 789176 E - 805964	102.4	19.7	99.1	Pass	Pass
2024	139	5	N - 789132 E - 805869	103.5	20.2	100.2	Pass	Pass
2025	139	5	N - 789093 E - 805716	105.0	18.8	101.6	Pass	Pass
2026	139	5	N - 789285 E - 805891	98.6	20.5	95.5	Pass	Pass
2027	140	5	N - 789246 E - 805728	94.9	21.6	92.4	Fail	Pass
2027R	140	5	N - 787241 E - 805736	106.4	21.3	103.6	Pass	Pass
2028	140	5	N - 789412 E - 805877	101.2	22.8	98.6	Pass	Pass
2029	140	5	N - 789438 E - 805743	104.8	20.8	102.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2030	140	5	N - 789330 E - 805662	103.7	19.4	100.9	Pass	Pass
2031	140	5	N - 789348 E - 805539	97.7	21.1	95.1	Pass	Pass
2032	140	3	N - 788546 E - 805214	110.0	18.6	107.1	Pass	Pass
2033	140	4	N - 788150 E - 804623	104.5	19.8	101.7	Pass	Pass
2034	140	4	N - 787984 E - 804551	110.5	18.0	107.6	Pass	Pass
2035	140	4	N - 788341 E - 804637	100.3	23.0	97.6	Pass	Pass
2036	140	4	N - 787860 E - 804436	102.5	22.2	99.8	Pass	Pass
2037	140	4	N - 787975 E - 804412	103.3	19.6	100.6	Pass	Pass
2038	140	3	N - 788687 E - 805443	99.3	19.8	96.7	Pass	Pass
2039	140	3	N - 788812 E - 805662	101.9	20.2	99.2	Pass	Pass
2040	140	4	N - 788104 E - 804482	101.9	22.6	99.2	Pass	Pass
2041	140	4	N - 788226 E - 804579	105.4	18.9	102.7	Pass	Pass
2042	141	4	N - 788472 E - 804673	99.2	21.7	95.4	Pass	Pass
2043	141	2	N - 786738 E - 805196	105.7	18.9	101.6	Pass	Pass
2044	141	2	N - 787334 E - 804173	102.2	20.7	98.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2045	141	2	N - 787220 E - 804246	107.1	19.5	103.0	Pass	Pass
2046	141	1	N - 786058 E - 806029	110.7	19.2	106.5	Pass	Pass
2047	141	1	N - 786266 E - 806320	99.2	20.4	95.4	Pass	Pass
2048	141	2	N - 786883 E - 804959	103.6	18.2	99.6	Pass	Pass
2049	141	2	N - 787028 E - 804836	105.3	17.8	101.2	Pass	Pass
2050	141	2	N - 787162 E - 804802	99.9	18.9	96.1	Pass	Pass
2051	141	2	N - 787246 E - 804598	112.5	12.2	108.2	Pass	Fail
2051R	141	2	N - 787251 E - 804608	102.8	18.7	98.8	Pass	Pass
2052	141	2	N - 786553 E - 804900	77.1	12.9	74.2	Fail	Fail
2052R	141	2	N - 786551 E - 804950	111.7	12.8	107.4	Pass	Fail
2052R	141	2	N - 786558 E - 804900	100.7	18.3	96.8	Pass	Pass
2053	141	3	N - 786381 E - 805468	100.3	18.6	96.4	Pass	Pass
2054	141	2	N - 785924 E - 805733	101.2	22.9	97.3	Pass	Pass
2055	141	2	N - 786107 E - 806113	102.9	22.4	99.0	Pass	Pass
2056	141	2	N - 786447 E - 806620	110.3	18.3	106.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2057	142	3	N - 786171 E - 805443	106.9	20.5	103.4	Pass	Pass
2058	142	3	N - 786314 E - 805382	109.6	19.7	106.0	Pass	Pass
2059	142	6	N - 788350 E - 806481	105.4	22.8	101.9	Pass	Pass
2060	142	6	N - 788367 E - 806649	103.1	24.1	99.8	Pass	Pass
2061	142	6	N - 788412 E - 806436	102.1	20.3	98.8	Pass	Pass
2062	142	6	N - 788269 E - 806518	101.2	21.2	97.9	Pass	Pass
2063	142	6	N - 788479 E - 806541	104.1	20.7	100.7	Pass	Pass
2064	142	6	N - 788542 E - 806372	102.5	20.5	99.1	Pass	Pass
2065	142	6	N - 788590 E - 806485	99.9	19.1	96.6	Pass	Pass
2066	142	6	N - 788624 E - 806270	101.0	19.9	97.7	Pass	Pass
2067	142	6	N - 788729 E - 806395	102.2	15.5	98.9	Pass	Fail
2067R	142	6	N - 788721 E - 806451	103.5	19.4	100.1	Pass	Pass
2068	142	6	N - 788685 E - 806187	100.6	19.8	97.2	Pass	Pass
2069	142	6	N - 788750 E - 806257	101.4	21.7	98.1	Pass	Pass
2070	142	6	N - 788518 E - 806198	101.4	22.7	98.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2071	142	5	N - 788793 E - 805526	104.5	19.5	101.1	Pass	Pass
2072	143	5	N - 788768 E - 805720	103.6	21.7	99.6	Pass	Pass
2073	143	3	N - 785940 E - 805782	103.5	21.1	99.5	Pass	Pass
2074	143	3	N - 788215 E - 806248	108.3	19.7	104.0	Pass	Pass
2075	143	3	N - 786453 E - 806594	104.8	19.2	100.6	Pass	Pass
2076	143	3	N - 786436 E - 805387	108.1	18.9	103.9	Pass	Pass
2077	143	3	N - 786382 E - 805312	109.0	14.6	104.7	Pass	Fail
2077R	143	3	N - 786389 E - 805320	100.9	18.6	96.9	Pass	Pass
2078	143	3	N - 786340 E - 805264	102.9	22.0	98.8	Pass	Pass
2079	143	3	N - 788370 E - 805091	106.0	18.7	101.9	Pass	Pass
2080	143	3	N - 788462 E - 804839	107.1	18.9	102.9	Pass	Pass
2081	143	3	N - 786532 E - 805183	104.5	18.4	100.3	Pass	Pass
2082	143	3	N - 786569 E - 804926	107.7	18.7	103.5	Pass	Pass
2083	143	3	N - 786682 E - 804880	102.3	21.1	98.3	Pass	Pass
2084	143	5	N - 788620 E - 805309	103.8	21.1	99.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2085	143	1	N - 788314 E - 806002	106.8	21.4	102.6	Pass	Pass
2086	143	1	N - 788574 E - 806114	99.4	18.9	95.5	Pass	Pass
2087	144	1	N - 788114 E - 806093	100.9	23.2	97.8	Pass	Pass
2088	144	1	N - 788427 E - 805972	99.5	22.7	96.4	Pass	Pass
2089	144	1	N - 788456 E - 806075	102.5	21.2	99.3	Pass	Pass
2090	144	5	N - 788421 E - 804616	106.9	19.6	103.6	Pass	Pass
2091	144	5	N - 788156 E - 804486	103.5	22.8	100.3	Pass	Pass
2092	144	5	N - 787888 E - 804390	108.2	18.4	104.9	Pass	Pass
2093	144	5	N - 787742 E - 804441	101.4	20.1	98.2	Pass	Pass
2094	144	5	N - 788277 E - 804592	102.5	21.8	99.3	Pass	Pass
2095	144	5	N - 788135 E - 804614	100.7	22.1	97.6	Pass	Pass
2096	144	5	N - 788072 E - 804537	98.4	19.8	95.3	Pass	Pass
2097	144	5	N - 787963 E - 804512	98.4	19.9	95.4	Pass	Pass
2098	144	1	N - 788312 E - 806028	100.4	19.1	97.3	Pass	Pass
2099	144	3	N - 788879 E - 804705	104.4	19.6	101.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2100	144	3	N - 787106 E - 804880	109.3	19.2	106.0	Pass	Pass
2101	144	3	N - 786687 E - 805164	100.9	18.4	97.8	Pass	Pass
2102	145	3	N - 786714 E - 805016	101.3	20.3	97.5	Pass	Pass
2103	145	3	N - 786983 E - 804938	112.9	19.7	108.8	Pass	Pass
2104	145	3	N - 787276 E - 804582	109.4	19.8	105.4	Pass	Pass
2105	145	3	N - 787224 E - 804280	101.9	18.9	98.1	Pass	Pass
2106	145	3	N - 787281 E - 804036	99.8	21.2	96.2	Pass	Pass
2107	145	3	N - 786587 E - 805055	96.4	14.8	92.8	Fail	Fail
2107R	145	3	N - 786581 E - 805012	99.1	19.6	95.5	Pass	Pass
2108	145	3	N - 787350 E - 804412	100.2	19.6	96.5	Pass	Pass
2109	145	6	N - 788561 E - 805264	99.4	21.4	95.8	Pass	Pass
2110	145	6	N - 788750 E - 805393	108.3	19.2	104.4	Pass	Pass
2111	145	6	N - 788774 E - 805586	101.9	22.3	98.2	Pass	Pass
2112	145	6	N - 788892 E - 805748	101.0	20.1	97.3	Pass	Pass
2113	145	2	N - 785963 E - 806573	104.5	19.5	100.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2114	145	2	N - 788520 E - 805986	105.6	18.7	101.8	Pass	Pass
2115	145	2	N - 788263 E - 806009	100.4	20.9	96.7	Pass	Pass
2116	145	2	N - 788441 E - 806045	102.6	19.9	98.8	Pass	Pass
2117	146	2	N - 788386 E - 806142	100.0	19.8	98.1	Pass	Pass
2118	146	2	N - 788150 E - 805998	107.2	19.2	105.1	Pass	Pass
2119	146	2	N - 788219 E - 806193	100.7	19.2	98.7	Pass	Pass
2120	146	1	N - 787935 E - 803742	108.3	18.6	106.2	Pass	Pass
2121	146	1	N - 787694 E - 803790	100.8	20.7	98.8	Pass	Pass
2122	146	1	N - 787743 E - 803836	97.8	22.4	95.9	Pass	Pass
2123	146	1	N - 789871 E - 805172	99.9	19.6	98.0	Pass	Pass
2124	146	1	N - 789934 E - 804966	101.4	22.7	99.4	Pass	Pass
2125	146	1	N - 789982 E - 804899	98.4	20.0	96.4	Pass	Pass
2126	146	1	N - 787974 E - 803874	106.2	19.8	104.1	Pass	Pass
2127	146	1	N - 787482 E - 803900	102.6	14.2	100.6	Pass	Fail
2127R	146	1	N - 787473 E - 803912	99.1	19.5	97.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2128	146	1	N - 787987 E - 804008	105.5	18.8	103.4	Pass	Pass
2129	146	1	N - 789938 E - 804849	110.2	19.1	108.0	Pass	Pass
2130	146	1	N - 789960 E - 804786	105.5	23.5	103.4	Pass	Pass
2131	146	1	N - 789964 E - 805061	105.8	23.8	103.7	Pass	Pass
2132	147	1	N - 787874 E - 803691	106.9	20.4	101.9	Pass	Pass
2133	147	3	N - 788364 E - 806062	106.7	19.8	101.7	Pass	Pass
2134	147	3	N - 788159 E - 806140	107.8	20.4	102.8	Pass	Pass
2135	147	3	N - 788538 E - 806059	106.3	18.5	101.4	Pass	Pass
2136	147	3	N - 788219 E - 806024	107.0	18.9	102.0	Pass	Pass
2137	147	3	N - 788425 E - 805983	108.0	18.9	103.0	Pass	Pass
2138	147	3	N - 788690 E - 806000	103.4	19.5	98.6	Pass	Pass
2139	147	4	N - 786689 E - 804987	110.0	20.3	104.8	Pass	Pass
2140	147	4	N - 786724 E - 804875	109.6	19.1	104.5	Pass	Pass
2141	147	4	N - 786931 E - 804886	101.6	19.4	96.9	Pass	Pass
2142	147	4	N - 787156 E - 804663	105.0	18.8	100.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2143	147	3	N - 787238 E - 804224	106.4	19.5	101.4	Pass	Pass
2144	147	2	N - 787729 E - 803698	108.5	21.5	103.4	Pass	Pass
2145	147	2	N - 787880 E - 803734	102.8	23.9	98.0	Pass	Pass
2146	147	2	N - 787663 E - 803792	104.3	22.1	99.4	Pass	Pass
2147	148	2	N - 787815 E - 803829	103.6	21.4	98.6	Pass	Pass
2148	148	2	N - 787583 E - 803861	102.8	21.5	97.9	Pass	Pass
2149	148	2	N - 787564 E - 803940	105.8	20.7	100.7	Pass	Pass
2150	148	2	N - 787952 E - 803958	100.9	22.2	96.1	Pass	Pass
2151	148	2	N - 787839 E - 803672	104.6	23.3	99.6	Pass	Pass
2152	148	1	N - 794286 E - 803975	100.2	23.4	95.4	Pass	Pass
2153	148	1	N - 794390 E - 803826	102.1	21.0	97.2	Pass	Pass
5154	148	1	N - 794418 E - 804013	109.1	19.5	103.9	Pass	Pass
2155	148	1	N - 794481 E - 803948	100.2	19.7	95.4	Pass	Pass
2156	148	1	N - 794523 E - 803879	105.7	18.4	100.7	Pass	Pass
2157	148	1	N - 794563 E - 803974	107.3	21.4	102.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2158	148	1	N - 794953 E - 804160	105.4	20.0	100.4	Pass	Pass
2159	148	1	N - 794821 E - 803915	108.5	20.7	103.3	Pass	Pass
2160	148	1	N - 794635 E - 803629	101.4	23.2	96.5	Pass	Pass
2161	148	1	N - 789869 E - 805063	106.6	21.0	101.5	Pass	Pass
2162	149	1	N - 789839 E - 804826	103.8	20.0	99.8	Pass	Pass
2163	149	1	N - 789850 E - 804553	105.8	19.2	101.7	Pass	Pass
2164	149	1	N - 789941 E - 804662	104.6	20.8	100.5	Pass	Pass
2165	149	1	N - 790026 E - 804559	105.4	20.9	101.3	Pass	Pass
2166	149	1	N - 789950 E - 804477	107.2	20.7	103.1	Pass	Pass
2167	149	1	N - 789998 E - 804362	107.0	18.8	102.8	Pass	Pass
2168	149	1	N - 794996 E - 804332	107.8	21.8	103.7	Pass	Pass
2169	149	1	N - 789891 E - 804285	103.2	19.1	99.2	Pass	Pass
2170	149	1	N - 790098 E - 804230	110.7	19.1	106.4	Pass	Pass
2171	149	1	N - 789941 E - 804172	106.9	21.1	102.8	Pass	Pass
2172	149	1	N - 789850 E - 804138	105.2	19.2	101.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2173	149	1	N - 789993 E - 804061	106.7	19.4	102.6	Pass	Pass
2174	149	1	N - 789873 E - 804457	103.1	18.6	99.2	Pass	Pass
2175	149	4	N - 787140 E - 804807	108.1	18.9	103.9	Pass	Pass
2176	149	4	N - 787269 E - 804503	105.3	18.1	101.2	Pass	Pass
2177	150	4	N - 787384 E - 804521	107.7	17.4	102.4	Pass	Pass
2178	150	4	N - 788840 E - 804982	106.6	19.1	101.3	Pass	Pass
2179	150	4	N - 786789 E - 805141	106.2	20.0	101.0	Pass	Pass
2180	150	4	N - 786753 E - 805265	101.1	19.8	96.1	Pass	Pass
2181	150	3	N - 787890 E - 803928	111.5	18.7	106.0	Pass	Pass
2182	150	3	N - 787766 E - 803862	111.1	19.1	105.6	Pass	Pass
2183	150	3	N - 787520 E - 803871	107.8	20.7	102.5	Pass	Pass
2184	150	3	N - 787640 E - 803755	107.4	18.3	102.1	Pass	Pass
2185	150	3	N - 787539 E - 803974	106.1	19.2	100.9	Pass	Pass
2186	150	3	N - 787971 E - 803780	102.1	19.2	97.0	Pass	Pass
2187	150	3	N - 787835 E - 803784	107.9	17.3	102.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2188	150	3	N - 787820 E - 803695	100.1	20.4	95.1	Pass	Pass
2189	150	3	N - 787945 E - 803648	100.7	18.3	95.7	Pass	Pass
2190	150	3	N - 787716 E - 803639	108.4	16.9	103.0	Pass	Pass
2191	150	1	N - 790048 E - 804107	105.5	22.3	100.3	Pass	Pass
2192	151	1	N - 789941 E - 803948	101.5	21.1	96.2	Pass	Pass
2193	151	1	N - 789870 E - 804017	96.6	25.4	91.6	Fail	Fail
2193R	151	1	N - 789856 E - 804036	101.3	19.7	96.1	Pass	Pass
2194	151	1	N - 789984 E - 803864	103.0	22.9	97.7	Pass	Pass
2195	151	1	N - 790069 E - 804412	105.3	22.2	99.8	Pass	Pass
2196	151	5	N - 788706 E - 806964	108.0	19.9	102.4	Pass	Pass
2197	151	5	N - 788391 E - 806987	102.9	21.8	97.6	Pass	Pass
2198	151	5	N - 788236 E - 806173	102.7	20.4	97.4	Pass	Pass
2199	151	5	N - 788532 E - 806025	103.5	22.0	98.1	Pass	Pass
2200	151	2	N - 789973 E - 804536	103.5	20.3	98.1	Pass	Pass
2201	151	2	N - 790178 E - 805000	102.9	20.9	97.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2202	151	2	N - 789936 E - 805036	100.9	22.3	95.6	Pass	Pass
2203	151	4	N - 788810 E - 806104	103.7	19.9	98.2	Pass	Pass
2204	151	4	N - 788361 E - 806048	107.0	21.7	101.4	Pass	Pass
2205	151	2	N - 789974 E - 805186	105.9	19.0	100.3	Pass	Pass
2206	151	2	N - 790246 E - 805097	100.6	18.4	95.4	Pass	Pass
2207	152	2	N - 789975 E - 804930	105.9	18.5	102.1	Pass	Pass
2208	152	2	N - 789836 E - 805182	104.4	19.6	100.7	Pass	Pass
2209	152	2	N - 790290 E - 805112	98.8	20.0	95.3	Pass	Pass
2210	152	2	N - 790226 E - 804827	106.3	20.5	102.5	Pass	Pass
2211	152	2	N - 790183 E - 804851	101.4	21.9	97.8	Pass	Pass
2212	152	2	N - 789973 E - 804810	105.8	19.8	102.0	Pass	Pass
2213	152	2	N - 789850 E - 804861	104.5	22.3	100.8	Pass	Pass
2214	152	4	N - 787924 E - 803762	101.1	21.7	97.5	Pass	Pass
2215	152	4	N - 787764 E - 803722	100.5	22.0	96.9	Pass	Pass
2216	152	4	N - 787630 E - 803813	108.3	19.3	104.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2217	152	4	N - 787918 E - 803848	106.2	22.1	102.4	Pass	Pass
2218	152	4	N - 787783 E - 803975	106.5	18.9	102.7	Pass	Pass
2219	152	4	N - 787936 E - 803952	107.4	18.6	103.6	Pass	Pass
2220	152	4	N - 787511 E - 803908	106.9	19.5	103.1	Pass	Pass
2221	152	2	N - 789982 E - 804750	111.7	18.8	107.7	Pass	Pass
2222	153	2	N - 790083 E - 804708	111.1	18.2	106.6	Pass	Pass
2223	153	4	N - 787275 E - 804258	102.7	14.5	98.6	Pass	Fail
2223R	153	4	N - 787280 E - 804264	105.0	19.0	100.8	Pass	Pass
2224	153	4	N - 787336 E - 804226	103.8	20.0	99.6	Pass	Pass
2225	153	4	N - 787148 E - 804180	94.6	16.7	90.8	Fail	Fail
2225R	153	4	N - 787141 E - 804172	104.2	20.2	100.0	Pass	Pass
2226	153	2	N - 790017 E - 804620	102.8	18.6	98.7	Pass	Pass
2227	153	2	N - 789881 E - 804673	105.1	21.6	100.8	Pass	Pass
2228	153	2	N - 789926 E - 803517	105.4	18.4	101.2	Pass	Pass
2229	153	2	N - 788983 E - 803667	108.0	19.9	103.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2230	153	2	N - 789982 E - 803825	106.1	19.7	101.8	Pass	Pass
2231	153	3	N - 789968 E - 805150	100.4	21.4	96.4	Pass	Pass
2232	153	2	N - 789914 E - 804032	100.9	19.5	96.8	Pass	Pass
2233	153	5	N - 786671 E - 804872	103.1	20.5	98.9	Pass	Pass
2234	153	5	N - 788826 E - 804815	101.0	20.4	97.0	Pass	Pass
2235	154	3	N - 789812 E - 805259	107.2	20.2	103.6	Pass	Pass
2236	154	3	N - 789907 E - 805218	104.4	18.8	100.9	Pass	Pass
2237	154	3	N - 789876 E - 805127	105.1	20.0	101.6	Pass	Pass
2238	154	5	N - 787093 E - 804726	100.9	21.3	97.5	Pass	Pass
2239	154	5	N - 787173 E - 804864	98.5	21.2	95.2	Pass	Pass
2240	154	3	N - 789956 E - 805030	106.1	23.6	102.6	Pass	Pass
2241	154	3	N - 789651 E - 805083	105.2	19.4	101.7	Pass	Pass
2242	154	3	N - 790043 E - 804962	104.0	20.8	100.5	Pass	Pass
2243	154	3	N - 789940 E - 804917	107.7	20.2	104.1	Pass	Pass
2244	154	3	N - 789926 E - 804523	102.6	18.8	99.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2245	154	3	N - 790076 E - 804662	107.1	19.1	103.5	Pass	Pass
2246	154	3	N - 789973 E - 804781	99.7	23.0	96.4	Pass	Pass
2247	154	3	N - 790185 E - 804416	108.0	19.8	104.4	Pass	Pass
2248	154	2	N - 794782 E - 803986	99.5	20.8	96.1	Pass	Pass
2249	154	2	N - 794940 E - 804243	100.5	18.5	97.1	Pass	Pass
2250	155	2	N - 794599 E - 803780	106.0	22.6	103.0	Pass	Pass
2251	155	2	N - 794423 E - 803617	101.0	19.6	98.1	Pass	Pass
2252	155	2	N - 794573 E - 803600	98.7	22.3	95.9	Pass	Pass
2253	155	5	N - 787255 E - 804603	104.4	15.6	101.4	Pass	Fail
2253R	155	5	N - 787261 E - 804596	103.0	20.6	100.1	Pass	Pass
2254	155	2	N - 794462 E - 803846	102.8	18.1	99.9	Pass	Pass
2255	155	5	N - 787456 E - 804527	105.2	19.9	102.2	Pass	Pass
2256	155	5	N - 787026 E - 804882	112.2	14.8	109.0	Pass	Fail
2256R	155	5	N - 787020 E - 804873	104.6	21.3	101.7	Pass	Pass
2257	155	2	N - 794263 E - 803427	107.6	20.0	104.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2258	155	2	N - 794356 E - 804021	101.5	23.3	98.6	Pass	Pass
2259	155	2	N - 794416 E - 803949	107.0	22.2	104.0	Pass	Pass
2260	155	5	N - 786659 E - 805121	99.1	21.8	96.3	Pass	Pass
2261	155	5	N - 788135 E - 806078	102.0	20.3	99.2	Pass	Pass
2262	155	5	N - 788336 E - 806020	108.8	19.1	105.8	Pass	Pass
2263	155	5	N - 788230 E - 806053	113.7	16.7	110.5	Pass	Fail
2263R	155	5	N - 788235 E - 806042	99.5	22.1	96.7	Pass	Pass
2264	155	5	N - 788442 E - 806023	101.1	21.6	98.3	Pass	Pass
2265	156	5	N - 788690 E - 806038	103.0	18.0	99.8	Pass	Pass
2266	156	5	N - 788355 E - 806110	106.1	19.4	102.8	Pass	Pass
2267	156	3	N - 789932 E - 804120	99.4	21.3	96.3	Pass	Pass
2268	156	3	N - 790063 E - 804198	102.4	21.3	99.2	Pass	Pass
2269	156	3	N - 789967 E - 804100	101.1	23.2	98.0	Pass	Pass
2270	156	3	N - 789894 E - 803936	102.6	12.2	99.4	Pass	Fail
2270R	156	3	N - 789946 E - 803928	104.6	21.9	101.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2271	156	3	N - 789945 E - 803842	104.0	19.5	100.8	Pass	Pass
2272	156	3	N - 789789 E - 803761	109.3	21.1	105.9	Pass	Pass
2273	156	3	N - 789914 E - 803684	104.6	21.3	101.4	Pass	Pass
2274	156	3	N - 789995 E - 803578	106.7	19.6	103.3	Pass	Pass
2275	156	5	N - 788610 E - 806091	100.3	20.7	97.2	Pass	Pass
2276	156	4	N - 787386 E - 804101	102.7	19.4	99.5	Pass	Pass
2277	156	3	N - 786725 E - 805638	101.6	19.9	98.4	Pass	Pass
2278	156	3	N - 787694 E - 803672	110.2	19.8	106.8	Pass	Pass
2279	156	3	N - 787879 E - 803618	98.1	20.2	95.1	Pass	Pass
2280	157	3	N - 788073 E - 803690	100.9	19.6	98.5	Pass	Pass
2281	157	2	N - 794148 E - 803200	101.1	20.6	98.7	Pass	Pass
2282	157	2	N - 794226 E - 804128	99.8	19.3	97.3	Pass	Pass
2283	157	4	N - 789867 E - 804150	100.1	22.2	97.7	Pass	Pass
2284	157	4	N - 789850 E - 804246	105.8	19.5	103.2	Pass	Pass
2285	157	4	N - 789782 E - 804000	102.2	20.3	99.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2286	157	4	N - 789849 E - 804532	105.6	22.8	103.0	Pass	Pass
2287	157	4	N - 789864 E - 804756	98.7	22.8	96.3	Pass	Pass
2288	157	4	N - 789835 E - 804968	99.3	18.4	96.9	Pass	Pass
2289	157	4	N - 789793 E - 805042	99.0	21.5	96.6	Pass	Pass
2290	157	2	N - 794406 E - 803857	100.4	8.8	97.9	Pass	Fail
2290R	157	2	N - 794414 E - 803862	100.1	19.7	97.7	Pass	Pass
2291	157	6	N - 787103 E - 804877	103.5	19.3	101.0	Pass	Pass
2292	157	6	N - 787285 E - 804661	105.2	19.1	102.7	Pass	Pass
2293	157	6	N - 786740 E - 805151	104.8	19.6	102.2	Pass	Pass
2294	157	6	N - 786648 E - 804903	106.9	19.9	104.3	Pass	Pass
2295	158	6	N - 786679 E - 805068	107.2	18.4	103.9	Pass	Pass
2296	158	6	N - 786824 E - 804903	113.7	18.4	110.2	Pass	Pass
2297	158	6	N - 787340 E - 804555	108.7	18.5	105.3	Pass	Pass
2298	158	6	N - 787150 E - 804862	108.1	19.3	104.7	Pass	Pass
2299	158	6	N - 787227 E - 804790	102.3	22.4	99.1	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2300	158	6	N - 788324 E - 806189	105.0	20.5	101.7	Pass	Pass
2301	158	6	N - 788335 E - 805946	108.5	20.3	105.2	Pass	Pass
2302	158	6	N - 788497 E - 805978	103.4	21.1	100.2	Pass	Pass
2303	158	6	N - 788617 E - 805964	104.4	18.4	101.2	Pass	Pass
2304	158	6	N - 788463 E - 806071	102.9	22.9	99.7	Pass	Pass
2305	158	6	N - 788294 E - 806090	103.5	20.2	100.3	Pass	Pass
2306	158	1	N - 790406 E - 804382	99.5	21.5	96.4	Pass	Pass
2307	158	1	N - 790320 E - 804176	99.5	23.7	96.4	Pass	Pass
2308	158	1	N - 790375 E - 803968	101.4	19.4	98.2	Pass	Pass
2309	158	1	N - 790400 E - 803839	104.0	19.7	100.7	Pass	Pass
2310	159	1	N - 790468 E - 804185	105.0	20.8	102.0	Pass	Pass
2311	159	1	N - 790538 E - 804400	98.5	21.5	95.7	Pass	Pass
2312	159	1	N - 790586 E - 804261	102.8	23.6	99.9	Pass	Pass
2313	159	1	N - 790482 E - 803996	100.5	20.0	97.6	Pass	Pass
2314	159	1	N - 790510 E - 803827	99.2	21.1	96.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2315	159	1	N - 791141 E - 803515	98.3	21.8	95.5	Pass	Pass
2316	159	1	N - 791076 E - 803564	101.7	22.4	98.8	Pass	Pass
2317	159	1	N - 790880 E - 803491	102.9	18.5	100.0	Pass	Pass
2318	159	1	N - 790705 E - 803549	97.9	19.6	95.1	Pass	Pass
2319	159	1	N - 790561 E - 803563	107.3	18.5	104.3	Pass	Pass
2320	159	1	N - 790304 E - 803432	104.3	19.6	101.4	Pass	Pass
2321	159	1	N - 790396 E - 803600	102.9	18.0	100.0	Pass	Pass
2322	159	1	N - 790570 E - 803620	105.7	20.4	102.7	Pass	Pass
2323	159	1	N - 790799 E - 803672	101.7	19.3	98.8	Pass	Pass
2324	159	1	N - 790948 E - 803591	105.3	21.8	102.4	Pass	Pass
2325	160	1	N - 790996 E - 803700	102.7	19.3	100.0	Pass	Pass
2326	160	1	N - 791096 E - 803612	109.6	18.8	106.7	Pass	Pass
2327	160	1	N - 791235 E - 803740	105.1	21.4	102.4	Pass	Pass
2328	160	1	N - 791187 E - 803810	101.3	22.0	98.6	Pass	Pass
2329	160	1	N - 790853 E - 803792	106.8	21.0	104.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2330	160	1	N - 790668 E - 803731	104.4	22.1	101.6	Pass	Pass
2331	160	1	N - 790480 E - 803865	107.1	19.1	104.3	Pass	Pass
2332	160	1	N - 790641 E - 803812	100.5	19.4	97.9	Pass	Pass
2333	160	1	N - 790692 E - 803926	102.2	21.5	99.5	Pass	Pass
2334	160	1	N - 790924 E - 803901	103.4	19.0	100.7	Pass	Pass
2335	160	1	N - 791136 E - 803850	105.6	22.6	102.8	Pass	Pass
2336	160	1	N - 790979 E - 803952	104.7	18.8	102.0	Pass	Pass
2337	160	2	N - 790387 E - 804416	98.9	23.8	96.3	Pass	Pass
2338	160	2	N - 790451 E - 804198	103.9	23.9	101.2	Pass	Pass
2339	160	2	N - 790484 E - 804016	102.2	22.6	99.5	Pass	Pass
2340	161	2	N - 790501 E - 804186	101.7	19.8	98.5	Pass	Pass
2341	161	2	N - 790515 E - 804359	104.9	20.7	101.7	Pass	Pass
2342	161	2	N - 790553 E - 804378	104.4	19.4	101.2	Pass	Pass
2343	161	2	N - 791015 E - 803876	99.8	20.2	96.7	Pass	Pass
2344	161	1	N - 790821 E - 803987	109.0	20.7	105.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2345	161	1	N - 790617 E - 804070	108.9	18.9	105.5	Pass	Pass
2346	161	1	N - 790636 E - 804299	106.5	20.5	103.2	Pass	Pass
2347	161	1	N - 790720 E - 804320	103.7	19.2	100.5	Pass	Pass
2348	161	1	N - 790796 E - 804128	106.6	19.4	103.3	Pass	Pass
2349	161	1	N - 790874 E - 804295	105.0	19.9	101.7	Pass	Pass
2350	161	1	N - 780896 E - 804081	105.0	18.6	101.8	Pass	Pass
2351	161	1	N - 791123 E - 804048	108.9	20.1	105.6	Pass	Pass
2352	161	1	N - 790954 E - 804286	106.7	21.5	103.4	Pass	Pass
2353	161	2	N - 790560 E - 803921	102.1	20.2	99.0	Pass	Pass
2354	161	2	N - 790494 E - 803827	103.0	21.1	99.8	Pass	Pass
2355	162	2	N - 790782 E - 803736	107.9	19.3	103.8	Pass	Pass
2356	162	2	N - 791183 E - 803759	106.6	18.7	102.6	Pass	Pass
2357	162	2	N - 791262 E - 803711	99.4	19.8	95.6	Pass	Pass
2358	162	6	N - 786679 E - 805287	117.5	11.5	113.1	Pass	Fail
2358R	162	6	N - 786654 E - 805261	104.4	19.4	100.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2359	162	2	N - 790439 E - 803748	99.7	20.0	96.0	Pass	Pass
2360	162	2	N - 790425 E - 803662	103.0	18.7	99.2	Pass	Pass
2361	162	2	N - 790658 E - 803590	100.7	10.7	96.9	Pass	Fail
2361R	162	2	N - 790674 E - 803571	103.1	21.1	99.2	Pass	Pass
2362	162	2	N - 790903 E - 803538	102.1	19.0	98.2	Pass	Pass
2363	162	2	N - 791036 E - 803571	106.8	20.0	102.8	Pass	Pass
2364	162	2	N - 791124 E - 803526	99.8	21.4	96.1	Pass	Pass
2365	162	2	N - 791216 E - 803597	100.8	19.8	97.0	Pass	Pass
2366	162	2	N - 790916 E - 803481	105.4	20.7	101.5	Pass	Pass
2367	162	2	N - 790798 E - 803480	103.7	19.2	99.9	Pass	Pass
2368	162	2	N - 790631 E - 803513	103.7	20.5	99.8	Pass	Pass
2369	162	2	N - 790382 E - 803460	102.6	20.5	98.8	Pass	Pass
2370	163	2	N - 791132 E - 803849	101.7	18.2	97.6	Pass	Pass
2371	163	2	N - 790629 E - 803867	103.3	19.4	99.1	Pass	Pass
2372	163	2	N - 790580 E - 803628	105.6	19.2	101.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2373	163	2	N - 790573 E - 804026	105.3	19.3	101.1	Pass	Pass
2374	163	2	N - 790618 E - 804355	103.4	19.0	99.2	Pass	Pass
2375	163	2	N - 790682 E - 803985	102.0	18.7	97.9	Pass	Pass
2376	163	2	N - 790715 E - 804325	102.9	18.8	98.8	Pass	Pass
2377	163	2	N - 790758 E - 803976	102.5	19.0	98.3	Pass	Pass
2378	163	2	N - 790900 E - 803904	104.0	19.5	99.8	Pass	Pass
2379	163	2	N - 790830 E - 804035	102.2	18.7	98.1	Pass	Pass
2380	163	2	N - 790862 E - 804293	109.6	13.6	105.2	Pass	Fail
2380R	163	2	N - 790870 E - 804276	107.1	20.1	102.8	Pass	Pass
2381	163	2	N - 790927 E - 804287	108.8	18.7	104.4	Pass	Pass
2382	163	2	N - 790974 E - 803962	105.9	19.3	101.6	Pass	Pass
2383	163	2	N - 791000 E - 804139	99.7	18.6	95.7	Pass	Pass
2384	163	2	N - 791086 E - 804040	103.0	19.4	98.8	Pass	Pass
2385	164	2	N - 790912 E - 803692	106.3	21.8	102.3	Pass	Pass
2386	164	2	N - 790783 E - 804280	107.9	19.9	103.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2387	164	1	N - 792735 E - 803727	104.1	19.2	100.1	Pass	Pass
2388	164	1	N - 792820 E - 803776	106.7	18.1	102.6	Pass	Pass
2389	164	1	N - 792764 E - 803836	108.3	19.6	104.2	Pass	Pass
2390	164	1	N - 792846 E - 803850	105.8	21.9	101.7	Pass	Pass
2391	164	1	N - 793004 E - 803895	105.2	19.0	101.1	Pass	Pass
2392	164	1	N - 792743 E - 803916	100.3	22.0	96.4	Pass	Pass
2393	164	1	N - 792818 E - 804025	107.7	18.5	103.5	Pass	Pass
2394	164	1	N - 792906 E - 803975	104.8	22.5	100.8	Pass	Pass
2395	164	1	N - 790211 E - 803498	110.0	21.0	105.7	Pass	Pass
2396	164	1	N - 790218 E - 803580	100.1	18.7	96.3	Pass	Pass
2397	164	2	N - 792780 E - 803726	101.0	22.6	97.1	Pass	Pass
2398	164	2	N - 792763 E - 803775	99.0	22.6	95.2	Pass	Pass
2399	164	2	N - 792826 E - 803812	102.0	22.6	98.1	Pass	Pass
2400	165	2	N - 792768 E - 803900	98.5	23.4	95.3	Pass	Pass
2401	165	2	N - 792714 E - 803978	103.0	23.9	99.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2402	165	2	N - 792879 E - 804008	100.6	24.0	97.3	Pass	Pass
2403	165	2	N - 792916 E - 803875	104.6	22.1	101.3	Pass	Pass
2404	165	2	N - 793032 E - 803945	98.6	23.8	95.4	Pass	Pass
2405	165	2	N - 790823 E - 804589	103.5	23.8	100.2	Pass	Pass
2406	165	2	N - 793325 E - 804311	101.6	21.1	98.3	Pass	Pass
2407	165	2	N - 790216 E - 803612	104.9	18.6	101.5	Pass	Pass
2408	165	1	N - 789693 E - 803817	106.2	22.7	102.8	Pass	Pass
2409	165	1	N - 789615 E - 803788	102.6	22.2	99.3	Pass	Pass
2410	165	1	N - 789575 E - 803642	102.0	23.5	98.8	Pass	Pass
2411	165	1	N - 789086 E - 803351	101.3	20.3	98.0	Pass	Pass
2412	165	1	N - 789350 E - 803428	103.4	20.3	100.1	Pass	Pass
2413	165	1	N - 789314 E - 803641	101.5	22.9	98.3	Pass	Pass
2414	165	1	N - 789390 E - 803763	101.5	18.5	98.3	Pass	Pass
2415	166	1	N - 789173 E - 803822	107.4	20.9	104.1	Pass	Pass
2416	166	1	N - 789326 E - 803874	110.0	18.8	106.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2417	166	1	N - 789623 E - 803925	103.5	20.5	100.4	Pass	Pass
2418	166	1	N - 789195 E - 803990	105.5	19.0	102.4	Pass	Pass
2419	166	1	N - 789482 E - 804046	100.8	21.9	97.8	Pass	Pass
2420	166	1	N - 789245 E - 804118	103.0	20.8	99.9	Pass	Pass
2421	166	1	N - 789557 E - 804165	104.0	20.5	100.8	Pass	Pass
2422	166	1	N - 788970 E - 803418	104.9	18.6	101.7	Pass	Pass
2423	166	1	N - 789392 E - 804220	100.0	20.3	97.0	Pass	Pass
2424	166	1	N - 789572 E - 804276	106.9	20.8	103.6	Pass	Pass
2425	166	1	N - 789538 E - 804325	106.0	20.5	102.8	Pass	Pass
2426	166	1	N - 789382 E - 804418	98.6	20.6	95.6	Pass	Pass
2427	166	1	N - 789290 E - 804389	102.3	23.5	99.2	Pass	Pass
2428	166	1	N - 789346 E - 804522	102.6	19.5	99.5	Pass	Pass
2429	166	1	N - 789635 E - 804470	102.4	20.8	99.3	Pass	Pass
2430	167	1	N - 789663 E - 804562	102.4	22.4	99.0	Pass	Pass
2431	167	1	N - 789491 E - 804612	98.3	22.6	95.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2432	167	1	N - 789390 E - 804689	100.7	22.2	97.3	Pass	Pass
2433	167	1	N - 789501 E - 803864	101.9	22.7	98.4	Pass	Pass
2434	167	2	N - 789623 E - 803782	102.3	20.7	98.9	Pass	Pass
2435	167	2	N - 789440 E - 803679	107.7	21.5	104.0	Pass	Pass
2436	167	2	N - 789250 E - 803480	100.5	23.1	97.1	Pass	Pass
2437	167	2	N - 789072 E - 803396	101.8	22.9	98.4	Pass	Pass
2438	167	2	N - 789417 E - 803763	106.8	20.1	103.2	Pass	Pass
2439	167	2	N - 789538 E - 803854	99.6	22.4	96.2	Pass	Pass
2440	167	2	N - 789200 E - 803890	110.7	19.8	106.9	Pass	Pass
2441	167	2	N - 789235 E - 803792	104.5	20.6	101.0	Pass	Pass
2442	167	2	N - 789378 E - 803940	102.4	22.0	98.9	Pass	Pass
2443	167	2	N - 789100 E - 803982	102.6	20.7	99.1	Pass	Pass
2444	167	2	N - 789588 E - 804026	107.1	19.9	103.4	Pass	Pass
2445	168	2	N - 789423 E - 804063	106.5	19.3	103.0	Pass	Pass
2446	168	2	N - 789562 E - 804118	101.1	21.6	97.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2447	168	2	N - 789307 E - 804169	99.3	22.2	96.0	Pass	Pass
2448	168	2	N - 789635 E - 804213	99.2	18.8	96.0	Pass	Pass
2449	168	2	N - 789450 E - 804260	101.8	19.5	98.4	Pass	Pass
2450	168	2	N - 789246 E - 804298	100.6	25.5	97.3	Pass	Fail
2450R	168	2	N - 789243 E - 804278	101.6	22.1	98.3	Pass	Pass
2451	168	2	N - 789271 E - 804385	103.2	22.3	99.8	Pass	Pass
2452	168	2	N - 789604 E - 804328	108.5	19.6	104.9	Pass	Pass
2453	168	2	N - 789536 E - 804426	104.1	21.6	100.7	Pass	Pass
2454	168	2	N - 789380 E - 804483	105.1	22.3	101.6	Pass	Pass
2455	168	2	N - 789687 E - 804500	105.4	22.5	102.0	Pass	Pass
2456	168	2	N - 789380 E - 804597	101.9	23.4	98.5	Pass	Pass
2457	168	2	N - 789422 E - 804618	101.7	22.2	98.4	Pass	Pass
2458	168	2	N - 789290 E - 804028	103.7	20.3	100.3	Pass	Pass
2459	168	2	N - 789727 E - 804384	101.7	23.0	98.4	Pass	Pass
2460	169	3	N - 789571 E - 803748	103.4	22.9	99.4	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2461	169	3	N - 789346 E - 803559	100.8	20.9	97.0	Pass	Pass
2462	169	3	N - 789604 E - 803712	99.6	21.8	95.7	Pass	Pass
2463	169	3	N - 789449 E - 803728	105.4	20.6	101.4	Pass	Pass
2464	169	3	N - 789590 E - 803872	108.0	18.8	103.9	Pass	Pass
2465	169	3	N - 789352 E - 803793	106.8	20.1	102.6	Pass	Pass
2466	169	3	N - 789295 E - 803560	108.0	18.9	103.8	Pass	Pass
2467	169	3	N - 789672 E - 803900	105.0	19.7	101.0	Pass	Pass
2468	169	3	N - 789182 E - 803824	101.9	21.6	97.9	Pass	Pass
2469	169	3	N - 789185 E - 803901	102.4	21.6	98.4	Pass	Pass
2470	169	3	N - 789440 E - 803961	104.4	22.0	100.4	Pass	Pass
2471	169	3	N - 789630 E - 804006	104.6	18.7	100.5	Pass	Pass
2472	169	3	N - 789335 E - 804078	103.2	18.6	99.2	Pass	Pass
2473	169	3	N - 789135 E - 804021	103.4	20.3	99.5	Pass	Pass
2474	169	3	N - 789463 E - 804138	105.2	18.1	101.2	Pass	Pass
2475	170	3	N - 789290 E - 804169	101.9	21.7	98.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2476	170	3	N - 789382 E - 804240	108.8	19.2	104.6	Pass	Pass
2477	170	3	N - 789530 E - 804296	104.8	19.8	100.8	Pass	Pass
2478	170	3	N - 789647 E - 804320	106.4	19.0	102.3	Pass	Pass
2479	170	3	N - 789417 E - 804474	106.8	21.1	102.7	Pass	Pass
2480	170	3	N - 789638 E - 804418	102.7	21.6	98.7	Pass	Pass
2481	170	3	N - 789236 E - 804382	103.4	19.0	99.4	Pass	Pass
2482	170	3	N - 789327 E - 804528	107.7	19.7	103.6	Pass	Pass
2483	170	3	N - 789561 E - 804600	101.5	20.0	97.6	Pass	Pass
2484	170	3	N - 789432 E - 804673	107.5	18.4	103.3	Pass	Pass
2485	170	4	N - 789020 E - 803306	105.1	19.6	101.1	Pass	Pass
2486	170	4	N - 789325 E - 803579	102.2	21.5	98.2	Pass	Pass
2487	170	4	N - 789596 E - 803741	105.6	19.1	101.5	Pass	Pass
2488	170	4	N - 789480 E - 803742	106.6	22.0	102.5	Pass	Pass
2489	170	4	N - 789187 E - 803448	102.0	20.7	98.1	Pass	Pass
2490	171	4	N - 789325 E - 803793	105.8	21.6	101.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2491	171	4	N - 789596 E - 803877	100.7	19.1	96.7	Pass	Pass
2492	171	4	N - 789148 E - 803820	106.1	20.1	101.9	Pass	Pass
2493	171	4	N - 789438 E - 803941	101.2	20.7	97.2	Pass	Pass
2494	171	4	N - 789210 E - 803949	105.6	22.2	101.4	Pass	Pass
2495	171	4	N - 789246 E - 804032	107.8	21.1	103.6	Pass	Pass
2496	171	4	N - 789574 E - 804051	109.7	18.7	105.4	Pass	Pass
2497	171	4	N - 789415 E - 804073	106.9	21.8	102.7	Pass	Pass
2498	171	4	N - 789257 E - 804128	107.5	20.9	103.2	Pass	Pass
2499	171	4	N - 789726 E - 804163	104.5	18.7	100.4	Pass	Pass
2500	171	4	N - 789347 E - 804287	104.0	22.0	99.9	Pass	Pass
2501	171	4	N - 789525 E - 804241	109.5	19.2	105.2	Pass	Pass
2502	171	4	N - 789297 E - 804365	106.0	20.1	101.8	Pass	Pass
2503	171	4	N - 789576 E - 804317	101.7	20.2	97.7	Pass	Pass
2504	171	4	N - 789336 E - 804447	105.7	19.3	101.5	Pass	Pass
2505	172	4	N - 789570 E - 804489	107.9	21.3	103.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2506	172	1	N - 789208 E - 803607	108.8	19.3	104.5	Pass	Pass
2507	172	1	N - 789017 E - 803550	108.1	19.2	103.9	Pass	Pass
2508	172	1	N - 789084 E - 803683	100.3	22.4	96.3	Pass	Pass
2509	172	1	N - 788936 E - 803701	106.5	19.4	102.4	Pass	Pass
2510	172	4	N - 789417 E - 804523	108.0	19.6	103.7	Pass	Pass
2511	172	1	N - 788874 E - 803379	101.9	22.8	97.9	Pass	Pass
2512	172	1	N - 788731 E - 803461	107.3	19.6	103.1	Pass	Pass
2513	172	1	N - 788679 E - 803552	101.7	19.2	97.7	Pass	Pass
2514	172	1	N - 788614 E - 803781	103.1	21.6	99.0	Pass	Pass
2515	172	1	N - 788461 E - 803718	104.3	22.6	100.2	Pass	Pass
2516	172	2	N - 788945 E - 803480	107.6	20.4	103.3	Pass	Pass
2517	172	2	N - 789112 E - 803506	105.3	20.6	101.2	Pass	Pass
2518	172	2	N - 789141 E - 803651	105.2	21.6	101.0	Pass	Pass
2519	172	2	N - 788973 E - 803627	104.2	20.0	100.1	Pass	Pass
2520	173	2	N - 788886 E - 803694	104.5	18.1	99.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2521	173	2	N - 788931 E - 803782	107.0	19.1	101.9	Pass	Pass
2522	173	2	N - 788863 E - 803317	113.3	17.5	107.9	Pass	Pass
2523	173	2	N - 788714 E - 803389	104.7	20.4	99.7	Pass	Pass
2524	173	4	N - 789526 E - 804582	104.1	18.6	99.1	Pass	Pass
2525	173	2	N - 788746 E - 803567	103.8	21.4	98.9	Pass	Pass
2526	173	2	N - 788842 E - 803482	107.0	18.4	101.9	Pass	Pass
2527	173	2	N - 788591 E - 803654	100.5	18.7	95.8	Pass	Pass
2528	173	2	N - 788524 E - 803761	104.9	20.4	99.9	Pass	Pass
2529	173	2	N - 788413 E - 803800	106.5	19.1	101.4	Pass	Pass
2530	173	2	N - 788359 E - 803694	102.1	20.6	97.2	Pass	Pass
2531	173	2	N - 788417 E - 803806	102.5	18.6	97.6	Pass	Pass
2532	173	4	N - 789408 E - 804627	109.2	19.1	104.0	Pass	Pass
2533	173	3	N - 789173 E - 803542	102.9	21.9	98.0	Pass	Pass
2534	173	3	N - 788950 E - 803485	106.8	22.6	101.7	Pass	Pass
2535	174	3	N - 789055 E - 803623	110.6	19.1	106.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2536	174	3	N - 788936 E - 803597	102.1	19.4	98.5	Pass	Pass
2537	174	3	N - 788971 E - 803728	109.8	20.2	105.9	Pass	Pass
2538	174	3	N - 788859 E - 803382	102.2	20.1	98.5	Pass	Pass
2539	174	3	N - 788786 E - 803649	105.1	19.9	101.3	Pass	Pass
2540	174	3	N - 788728 E - 803241	104.4	21.8	100.7	Pass	Pass
2541	174	3	N - 788675 E - 803412	105.2	21.0	101.4	Pass	Pass
2542	174	3	N - 788517 E - 803552	105.1	20.5	101.3	Pass	Pass
2543	174	3	N - 788563 E - 803742	103.0	22.1	99.4	Pass	Pass
2544	174	3	N - 788473 E - 803694	102.2	21.1	98.5	Pass	Pass
2545	174	3	N - 788320 E - 803763	101.0	21.9	97.4	Pass	Pass
2546	174	4	N - 788901 E - 803476	103.6	20.9	99.9	Pass	Pass
2547	174	4	N - 788771 E - 803349	103.7	19.4	100.0	Pass	Pass
2548	174	4	N - 788817 E - 803227	109.2	22.8	105.3	Pass	Pass
2549	174	4	N - 789028 E - 803572	96.2	23.3	92.7	Fail	Pass
2549R	174	4	N - 789036 E - 803541	101.7	22.2	98.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2550	175	4	N - 788684 E - 803482	102.9	22.1	99.1	Pass	Pass
2551	175	4	N - 788843 E - 803487	102.8	19.3	99.0	Pass	Pass
2552	175	4	N - 788971 E - 803659	102.0	24.3	98.3	Pass	Pass
2553	175	4	N - 788694 E - 803602	104.2	22.5	100.4	Pass	Pass
2554	175	4	N - 788775 E - 803738	105.0	21.3	101.2	Pass	Pass
2555	175	4	N - 788591 E - 803770	104.7	21.4	100.9	Pass	Pass
2556	175	1	N - 788941 E - 803942	102.8	21.5	99.0	Pass	Pass
2557	175	1	N - 789082 E - 804125	104.7	21.9	100.9	Pass	Pass
2558	175	4	N - 788817 E - 803826	101.1	21.2	97.4	Pass	Pass
2559	175	4	N - 788440 E - 803784	104.0	22.7	100.2	Pass	Pass
2560	175	4	N - 788369 E - 803835	103.5	21.8	99.7	Pass	Pass
2561	175	4	N - 789553 E - 804677	109.9	20.7	105.8	Pass	Pass
2562	175	1	N - 788973 E - 804106	102.1	20.4	98.4	Pass	Pass
2563	175	1	N - 789148 E - 804347	102.3	20.7	98.6	Pass	Pass
2564	175	1	N - 789070 E - 804379	103.7	19.8	99.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2565	176	1	N - 789263 E - 804631	103.7	23.2	100.5	Pass	Pass
2566	176	1	N - 789214 E - 804685	108.3	22.6	105.0	Pass	Pass
2567	176	1	N - 789094 E - 804581	103.3	23.0	100.1	Pass	Pass
2568	176	1	N - 789108 E - 804694	106.4	21.1	103.1	Pass	Pass
2569	176	1	N - 788938 E - 804519	102.1	23.6	98.9	Pass	Pass
2570	176	1	N - 788957 E - 804763	100.9	23.4	97.8	Pass	Pass
2571	176	1	N - 788804 E - 804691	107.0	18.3	103.7	Pass	Pass
2572	176	1	N - 789225 E - 804849	109.1	20.6	105.7	Pass	Pass
2573	176	1	N - 789048 E - 804817	99.6	19.5	96.5	Pass	Pass
2574	176	1	N - 788700 E - 804652	105.8	19.6	102.6	Pass	Pass
2575	176	2	N - 789016 E - 803987	100.1	21.6	97.0	Pass	Pass
2576	176	2	N - 788966 E - 804006	101.3	19.0	98.2	Pass	Pass
2577	176	2	N - 789065 E - 804238	104.4	22.8	101.2	Pass	Pass
2578	176	2	N - 788947 E - 804198	112.6	18.6	109.1	Pass	Pass
2579	176	2	N - 789020 E - 804379	101.5	23.4	98.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2580	177	2	N - 789251 E - 804557	99.1	24.0	95.9	Pass	Pass
2581	177	2	N - 789135 E - 804526	109.0	19.7	105.5	Pass	Pass
2582	177	2	N - 788964 E - 804493	101.7	22.3	98.5	Pass	Pass
2583	177	2	N - 788963 E - 804621	110.7	19.4	107.1	Pass	Pass
2584	177	2	N - 789350 E - 804793	108.6	19.6	105.1	Pass	Pass
2585	177	2	N - 788652 E - 804603	100.5	21.2	97.3	Pass	Pass
2586	177	2	N - 789237 E - 804890	98.4	19.1	95.2	Pass	Pass
2587	177	2	N - 788904 E - 804745	102.8	21.7	99.5	Pass	Pass
2588	177	3	N - 789106 E - 804078	106.6	18.6	103.1	Pass	Pass
2589	177	3	N - 788976 E - 804034	103.3	21.6	100.0	Pass	Pass
2590	177	3	N - 789060 E - 804162	101.4	20.8	98.1	Pass	Pass
2591	177	3	N - 789176 E - 804358	103.9	19.5	100.6	Pass	Pass
2592	177	3	N - 788936 E - 804289	105.2	18.9	101.8	Pass	Pass
2593	177	3	N - 789069 E - 804427	107.1	23.6	103.7	Pass	Pass
2594	177	3	N - 789184 E - 804503	104.2	19.1	100.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2595	178	3	N - 788952 E - 804586	107.4	19.4	103.2	Pass	Pass
2596	178	3	N - 789245 E - 804714	101.6	23.4	97.6	Pass	Pass
2597	178	3	N - 789068 E - 804695	106.1	19.8	101.9	Pass	Pass
2598	178	3	N - 789215 E - 804813	107.6	19.4	103.4	Pass	Pass
2599	178	3	N - 788879 E - 804712	102.5	22.1	98.5	Pass	Pass
2600	178	3	N - 788154 E - 804862	100.5	20.1	96.6	Pass	Pass
2601	178	4	N - 788702 E - 804687	106.1	20.8	101.9	Pass	Pass
2602	178	1	N - 804287 E - 793506	106.9	18.6	102.7	Pass	Pass
2603	178	1	N - 804410 E - 793734	109.2	17.6	104.9	Pass	Pass
2604	178	4	N - 788970 E - 803972	106.3	20.5	102.1	Pass	Pass
2605	178	4	N - 789165 E - 804183	103.3	21.5	99.3	Pass	Pass
2606	178	3	N - 788698 E - 804552	98.0	20.1	94.1	Fail	Pass
2606R	178	3	N - 788712 E - 805561	99.4	21.4	95.5	Pass	Pass
2607	178	1	N - 793615 E - 804386	104.3	22.9	100.2	Pass	Pass
2608	178	4	N - 788963 E - 804125	103.9	20.2	99.8	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2609	178	4	N - 789140 E - 804389	103.0	21.5	99.0	Pass	Pass
2610	179	4	N - 789115 E - 804180	111.0	18.8	107.2	Pass	Pass
2611	179	4	N - 788946 E - 804361	104.1	21.7	100.5	Pass	Pass
2612	179	4	N - 789210 E - 804602	102.2	22.3	98.7	Pass	Pass
2613	179	4	N - 789137 E - 804617	105.6	20.9	101.9	Pass	Pass
2614	179	4	N - 789262 E - 804785	108.4	20.6	104.6	Pass	Pass
2615	179	4	N - 788976 E - 804562	100.4	23.8	96.9	Pass	Pass
2616	179	4	N - 788991 E - 804740	102.8	21.7	99.2	Pass	Pass
2617	179	4	N - 788782 E - 804627	101.8	23.6	98.3	Pass	Pass
2618	179	4	N - 788655 E - 804653	107.8	19.7	104.1	Pass	Pass
2619	179	4	N - 789233 E - 804900	101.8	23.1	98.2	Pass	Pass
2620	179	2	N - 793421 E - 804220	100.3	20.7	96.8	Pass	Pass
2621	179	2	N - 793608 E - 804367	103.9	21.4	100.3	Pass	Pass
2622	179	2	N - 793775 E - 804426	99.7	22.2	96.2	Pass	Pass
2623	179	2	N - 793482 E - 804246	112.1	20.4	108.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2624	179	1	N - 788755 E - 803056	105.7	19.5	102.1	Pass	Pass
2625	180	1	N - 788874 E - 804873	108.0	19.3	104.7	Pass	Pass
2626	180	1	N - 789175 E - 804957	105.5	18.8	102.2	Pass	Pass
2627	180	1	N - 789036 E - 804966	104.4	19.9	101.2	Pass	Pass
2628	180	1	N - 789305 E - 804989	99.1	21.6	96.0	Pass	Pass
2629	180	1	N - 788744 E - 804738	106.1	19.3	102.8	Pass	Pass
2630	180	1	N - 788952 E - 804863	99.7	21.8	96.6	Pass	Pass
2631	180	1	N - 788615 E - 804720	102.9	20.2	99.7	Pass	Pass
2632	180	2	N - 788661 E - 803168	103.3	23.1	100.1	Pass	Pass
2633	180	2	N - 789438 E - 805103	101.1	22.9	97.9	Pass	Pass
2634	180	2	N - 789247 E - 804950	101.4	21.6	98.3	Pass	Pass
2635	180	2	N - 788987 E - 804892	106.3	19.3	103.0	Pass	Pass
2636	180	2	N - 788895 E - 804807	92.7	21.6	89.8	Fail	Pass
2636R	180	2	N - 788878 E - 804820	102.6	21.9	99.4	Pass	Pass
2637	180	2	N - 789134 E - 804963	94.2	25.8	91.3	Fail	Fail

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2637R	180	2	N - 789138 E - 804970	102.1	20.3	98.9	Pass	Pass
2638	180	2	N - 788707 E - 804728	102.7	22.6	99.5	Pass	Pass
2639	180	2	N - 788891 E - 803056	102.0	18.0	98.8	Pass	Pass
2640	181	3	N - 788852 E - 805116	102.8	19.0	100.0	Pass	Pass
2641	181	1	N - 791203 E - 804096	101.6	22.3	98.8	Pass	Pass
2642	181	1	N - 791116 E - 804416	97.7	21.9	95.0	Pass	Pass
2643	181	1	N - 791294 E - 804300	103.5	20.1	100.7	Pass	Pass
2644	181	1	N - 791388 E - 804070	102.3	20.4	99.5	Pass	Pass
2645	181	1	N - 791495 E - 804162	102.8	23.7	100.0	Pass	Pass
2646	181	1	N - 791462 E - 804282	103.5	19.0	100.7	Pass	Pass
2647	181	1	N - 791326 E - 804507	100.1	23.3	97.3	Pass	Pass
2648	181	3	N - 788796 E - 805098	102.7	19.8	99.9	Pass	Pass
2649	181	1	N - 791499 E - 804438	102.8	20.3	100.0	Pass	Pass
2650	181	1	N - 791600 E - 804312	102.7	20.1	99.9	Pass	Pass
2651	181	1	N - 791583 E - 804489	108.9	18.8	105.9	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2652	181	2	N - 791210 E - 804157	102.9	20.6	100.1	Pass	Pass
2653	181	2	N - 791168 E - 804386	110.4	18.8	107.4	Pass	Pass
2654	181	2	N - 791303 E - 804513	100.8	22.7	98.1	Pass	Pass
2655	182	2	N - 791327 E - 804290	106.6	19.5	103.5	Pass	Pass
2656	182	3	N - 788853 E - 804878	108.0	19.5	104.9	Pass	Pass
2657	182	3	N - 789216 E - 805023	106.2	20.2	103.1	Pass	Pass
2658	182	3	N - 788957 E - 804856	103.3	15.4	100.3	Pass	Fail
2658R	182	3	N - 788936 E - 804812	98.3	23.1	95.5	Pass	Pass
2659	182	3	N - 788669 E - 804742	106.3	19.8	103.2	Pass	Pass
2660	182	3	N - 789098 E - 804921	102.1	22.5	99.1	Pass	Pass
2661	182	3	N - 789215 E - 804938	105.5	20.9	102.4	Pass	Pass
2662	182	1	N - 789425 E - 805340	97.8	13.5	95.0	Pass	Fail
2662R	182	1	N - 789431 E - 805335	99.3	19.4	96.4	Pass	Pass
2663	182	2	N - 791406 E - 804162	105.3	22.7	102.2	Pass	Pass
2664	182	2	N - 791395 E - 804419	105.6	19.5	102.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2665	182	2	N - 791419 E - 804299	102.2	22.8	99.2	Pass	Pass
2666	182	2	N - 791438 E - 803945	105.9	23.0	102.8	Pass	Pass
2667	182	2	N - 791612 E - 804336	104.0	22.5	101.0	Pass	Pass
2668	182	2	N - 791586 E - 804472	103.8	22.3	100.8	Pass	Pass
2669	182	2	N - 791490 E - 804556	99.3	23.0	96.4	Pass	Pass
2670	183	2	N - 791682 E - 804506	103.2	22.9	99.6	Pass	Pass
2671	183	3	N - 791112 E - 804411	102.5	20.1	98.9	Pass	Pass
2672	183	3	N - 791201 E - 804426	102.5	22.7	98.8	Pass	Pass
2673	183	3	N - 791257 E - 804187	101.0	22.8	97.4	Pass	Pass
2674	183	3	N - 791387 E - 804073	101.3	20.2	97.7	Pass	Pass
2675	183	3	N - 791421 E - 804276	99.3	21.7	95.8	Pass	Pass
2676	183	3	N - 791456 E - 804389	101.2	21.8	97.5	Pass	Pass
2677	183	3	N - 791310 E - 804315	108.6	19.0	104.7	Pass	Pass
2678	183	3	N - 791354 E - 804490	101.7	23.1	98.1	Pass	Pass
2679	183	3	N - 791507 E - 804208	102.0	22.6	98.3	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2680	183	4	N - 789172 E - 804986	106.3	20.8	102.5	Pass	Pass
2681	183	4	N - 788907 E - 804895	106.4	20.5	102.6	Pass	Pass
2682	183	4	N - 789135 E - 804936	103.3	22.9	99.6	Pass	Pass
2683	183	4	N - 788749 E - 804715	101.1	22.9	97.5	Pass	Pass
2684	183	4	N - 788996 E - 804871	102.2	23.4	98.6	Pass	Pass
2685	184	1	N - 789526 E - 805322	105.1	20.7	101.4	Pass	Pass
2686	184	4	N - 788630 E - 804728	103.2	22.5	99.5	Pass	Pass
2687	184	1	N - 789364 E - 805039	99.7	22.3	96.1	Pass	Pass
2688	184	1	N - 789449 E - 805450	103.5	18.6	99.8	Pass	Pass
2689	184	1	N - 789506 E - 805607	102.6	20.1	98.9	Pass	Pass
2690	184	1	N - 789516 E - 805772	100.9	20.6	97.3	Pass	Pass
2691	184	3	N - 791582 E - 804398	102.4	22.2	98.8	Pass	Pass
2692	184	3	N - 791724 E - 804507	102.9	21.4	99.3	Pass	Pass
2693	184	4	N - 791276 E - 804293	102.5	23.0	98.9	Pass	Pass
2694	184	4	N - 791370 E - 804267	104.2	19.4	100.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2695	184	4	N - 791185 E - 804409	105.7	21.0	101.9	Pass	Pass
2696	184	4	N - 791382 E - 803986	99.9	23.2	96.3	Pass	Pass
2697	184	4	N - 791463 E - 804082	109.7	18.8	105.8	Pass	Pass
2698	184	4	N - 791492 E - 804420	109.1	18.9	105.2	Pass	Pass
2699	184	4	N - 791571 E - 804288	107.9	18.2	104.1	Pass	Pass
2700	185	4	N - 791668 E - 804436	103.7	20.0	100.3	Pass	Pass
2701	185	2	N - 791517 E - 804538	114.7	18.5	110.9	Pass	Pass
2702	185	4	N - 791325 E - 804417	106.2	18.1	102.7	Pass	Pass
2703	185	4	N - 791682 E - 804400	100.8	19.5	97.5	Pass	Pass
2704	185	2	N - 791336 E - 804520	109.6	17.5	106.0	Pass	Fail
2704R	185	2	N - 791330 E - 804532	100.8	22.8	97.5	Pass	Pass
2705	185	1	N - 791102 E - 804479	107.2	18.8	103.7	Pass	Pass
2706	185	1	N - 790912 E - 804536	108.3	19.8	104.7	Pass	Pass
2707	185	1	N - 790682 E - 804411	101.4	20.8	98.0	Pass	Pass
2708	185	1	N - 790476 E - 804785	103.7	21.7	100.2	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2709	185	2	N - 791063 E - 804178	106.6	20.4	103.1	Pass	Pass
2710	185	2	N - 789587 E - 805072	102.1	22.5	98.7	Pass	Pass
2711	185	2	N - 789360 E - 805138	105.6	21.3	102.1	Pass	Pass
2712	185	3	N - 791580 E - 804527	105.0	19.6	101.5	Pass	Pass
2713	185	3	N - 791382 E - 804545	104.2	20.5	100.8	Pass	Pass
2714	185	2	N - 970877 E - 804476	102.5	21.3	99.1	Pass	Pass
2715	186	2	N - 789498 E - 805361	99.4	20.9	95.5	Pass	Pass
2716	186	2	N - 789611 E - 805162	102.1	22.0	98.1	Pass	Pass
2717	186	2	N - 789562 E - 805196	106.2	20.5	102.0	Pass	Pass
2718	186	2	N - 789731 E - 805320	105.0	19.3	100.8	Pass	Pass
2719	186	2	N - 789685 E - 805156	99.3	20.2	95.4	Pass	Pass
2720	186	2	N - 791682 E - 804610	100.2	21.0	96.3	Pass	Pass
2721	186	4	N - 788871 E - 803009	98.9	18.5	95.0	Pass	Pass
2722	186	4	N - 788745 E - 803068	112.4	19.2	108.0	Pass	Pass
2723	186	4	N - 791715 E - 804529	105.9	21.6	101.7	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2724	186	4	N - 791534 E - 804578	105.8	23.2	101.7	Pass	Pass
2725	186	4	N - 791287 E - 804536	107.1	18.4	102.9	Pass	Pass
2726	186	3	N - 790844 E - 804431	102.9	20.6	98.9	Pass	Pass
2727	186	3	N - 789609 E - 804982	105.6	23.2	101.5	Pass	Pass
2728	186	3	N - 789532 E - 805027	108.5	20.2	104.2	Pass	Pass
2729	186	3	N - 789527 E - 805536	100.8	20.1	96.8	Pass	Pass
2730	187	3	N - 789547 E - 805345	98.2	19.3	95.3	Pass	Pass
2731	187	3	N - 789498 E - 805190	100.5	18.8	97.6	Pass	Pass
2732	187	3	N - 789601 E - 805276	98.2	20.3	95.3	Pass	Pass
2733	187	3	N - 789446 E - 805386	101.4	21.7	98.5	Pass	Pass
2734	187	4	N - 789458 E - 805220	105.8	18.7	102.7	Pass	Pass
2735	187	4	N - 789533 E - 805115	107.5	19.3	104.4	Pass	Pass
2736	187	4	N - 789560 E - 805307	79.4	19.8	77.1	Fail	Pass
2736R	187	4	N - 789571 E - 805328	104.5	20.4	101.5	Pass	Pass
2737	187	4	N - 789576 E - 805487	99.9	18.9	97.0	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2738	187	4	N - 789662 E - 805390	101.8	19.2	98.8	Pass	Pass
2739	187	1	N - 786671 E - 804467	103.1	21.4	100.1	Pass	Pass
2740	187	1	N - 786430 E - 804615	111.2	19.8	108.0	Pass	Pass
2741	187	2	N - 787064 E - 804046	105.5	19.4	102.4	Pass	Pass
2742	187	4	N - 789415 E - 805336	105.4	18.8	102.4	Pass	Pass
2743	187	4	N - 789382 E - 805442	104.6	18.6	101.6	Pass	Pass
2744	187	3	N - 786584 E - 804481	112.5	18.7	109.2	Pass	Pass
2745	188	4	N - 786974 E - 804221	103.6	19.4	99.8	Pass	Pass
2746	188	4	N - 786769 E - 804400	102.0	20.4	98.2	Pass	Pass
2747	188	3	N - 785824 E - 805237	106.9	19.4	103.0	Pass	Pass
2748	188	6	N - 789404 E - 805469	110.3	19.6	106.2	Pass	Pass
2749	188	6	N - 789404 E - 805687	108.6	18.3	104.6	Pass	Pass
2750	188	6	N - 789008 E - 806218	105.4	15.3	101.5	Pass	Fail
2750R	188	6	N - 789008 E - 806218	103.3	23.3	99.6	Pass	Pass
2751	188	6	N - 789036 E - 806211	108.5	18.2	104.5	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Compaction/Moisture Results (continued)

Sandcone #	Proctor #	Lift #	Northing Easting	Dry Density (lbs/ft3)	Moisture Content (%)	Percent Proctor (%)	Compaction Results	Moisture Results
2752	188	4	N - 788788 E - 802926	112.8	18.3	108.6	Pass	Pass

Specifications: 95% of compaction of standard proctor and +4 or -2% of optimum moisture.

Testing Frequencies: One sandcone every 500 yards of material placed.

Notes: R = Retest. Sandcones were performed according to ASTM D1556.

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Summary Report of Radon Barrier Proctor Results

Proctor #	Maximum Dry Density	Optimum Moisture Content
104	104.0	20.5
105	101.9	21.5
106	102.5	20.5
107	101.2	20.3
108	101.0	20.3
109	101.8	21.0
110	99.2	21.5
111	103.8	21.3
112	101.2	21.2
113	101.7	19.5
114	102.8	21.0
115	100.4	21.3
116	103.2	20.7
117	105.0	20.3
118	104.2	19.6
119	104.0	20.9
120	104.1	20.3
121	103.2	20.3
122	103.0	20.0
123	102.0	20.1
124	103.0	19.7
125	103.2	20.2
126	102.0	20.2
127	103.7	20.3
128	103.3	20.0
129	101.3	20.3
130	103.0	19.8
131	103.4	20.2
132	103.6	20.6
133	101.7	20.0

Specifications: Standard proctor performed according to ASTM D698. The material is considered acceptable if the maximum dry density is greater than or equal to 99 lb/ft^3.

Testing Interval: One proctor every 15 sandcones.

Notes: Proctors were sampled randomly from both east and west side borrow areas.

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Summary Report of Radon Barrier Proctor Results (continued)

Proctor #	Maximum Dry Density	Optimum Moisture Content
134	102.8	20.0
135	102.6	20.2
136	103.8	20.3
137	102.8	20.2
138	103.5	20.1
139	103.3	20.2
140	102.7	19.5
141	104.0	19.8
142	103.4	20.5
143	104.1	19.9
144	103.2	20.2
145	103.8	19.6
146	102.0	20.5
147	104.9	20.0
148	105.0	20.1
149	104.0	19.8
150	105.2	18.9
151	105.5	19.3
152	103.7	19.7
153	104.2	19.4
154	103.5	19.8
155	102.9	19.8
156	103.2	19.3
157	102.5	20.4
158	103.2	20.0
159	102.9	19.8
160	102.7	20.3
161	103.2	20.5
162	103.9	19.2
163	104.2	19.5

Specifications: Standard proctor performed according to ASTM D698. The material is considered acceptable if the maximum dry density is greater than or equal to 99 lb/ft^3.

Testing Interval: One proctor every 15 sandcones.

Notes: Proctors were sampled randomly from both east and west side borrow areas.

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Summary Report of Radon Barrier Proctor Results (continued)

Proctor #	Maximum Dry Density	Optimum Moisture Content
164	104.0	20.0
165	103.3	20.3
166	103.1	20.3
167	103.5	19.8
168	103.4	20.2
169	104.0	19.8
170	104.0	19.8
171	104.1	20.0
172	104.1	20.4
173	105.0	19.0
174	103.7	20.5
175	103.8	20.4
176	103.2	20.1
177	103.3	20.6
178	104.1	19.5
179	103.6	20.3
180	103.2	19.5
181	102.8	20.1
182	103.0	20.0
183	103.7	19.7
184	103.7	19.2
185	103.4	19.9
186	104.1	20.3
187	103.0	20.0
188	103.8	19.9

Specifications: Standard proctor performed according to ASTM D698. The material is considered acceptable if the maximum dry density is greater than or equal to 99 lb/ft^3.

Testing Interval: One proctor every 15 sandcones.

Notes: Proctors were sampled randomly from both east and west side borrow areas.

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Summary Report of Radon Barrier One-Point Proctor Results

One-Point #	Dry Density	Moisture Content
108B	102.2	20.9
109A	99.2	17.7
109B	100.3	18.8
110A	99.8	21.8
110B	99.8	19.9
111A	103.6	21.3
111B	102.2	19.8
113A	101.2	21.0
113B	100.8	19.1
114A	102.5	21.1
114B	102.8	21.2
115A	102.0	20.7
115B	100.7	22.0
116A	103.0	19.6
116B	101.3	21.8
117A	103.8	20.0
117B	101.9	22.0
118A	104.7	19.3
118B	103.1	20.6
119A	102.8	19.8
119B	103.3	18.7
120A	103.1	20.8
120B	103.8	19.2
121A	102.1	21.4
121B	104.8	18.6
122A	103.5	19.6
122B	102.9	20.2
123A	103.1	19.7
123B	102.2	21.2
124A	103.2	20.1
124B	102.4	20.6
125A	102.8	20.9
125B	103.0	19.5

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing. Proctor 112 not used.

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Summary Report of Radon Barrier One-Point Proctor Results (continued)

One-Point #	Dry Density	Moisture Content
126A	101.3	21.1
126B	103.3	19.5
127A	103.2	20.5
127B	103.6	20.6
128A	102.8	20.4
128B	103.4	19.1
129A	102.3	19.6
129B	100.1	22.2
130A	101.9	21.4
130B	101.8	21.1
131A	103.3	20.1
131B	102.0	21.9
132A	101.3	22.6
132B	102.6	19.8
133A	101.8	20.5
133B	102.2	20.4
134A	101.8	21.5
134B	102.2	20.8
135A	103.2	20.1
135B	101.7	18.4
136A	103.7	20.2
136B	102.4	21.3
137A	102.2	20.6
137B	102.5	19.2
138A	102.0	21.3
138B	103.0	21.0
139A	103.2	19.8
139B	102.0	20.8
140A	102.7	19.9
140B	103.2	20.3
141A	103.3	21.2
141B	102.0	21.8
142A	102.3	21.4

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier One-Point Proctor Results (continued)

One-Point #	Dry Density	Moisture Content
142B	102.6	20.1
143A	104.2	18.6
143B	103.1	19.5
144A	103.6	20.3
144B	102.7	21.0
145A	102.8	21.2
145B	102.2	20.8
146A	102.9	19.0
146B	100.9	22.3
147A	102.6	20.5
147B	103.3	20.8
148A	103.6	18.8
148B	103.9	20.2
149A	101.7	21.8
149B	101.8	21.8
150A	103.6	21.5
150B	101.7	21.3
151A	103.5	21.1
151B	102.6	21.6
152A	103.2	20.4
152B	102.8	20.5
153A	100.5	22.7
153B	102.3	21.1
154A	102.7	20.6
154B	102.5	21.3
155A	102.1	21.1
155B	103.1	19.6
156A	101.1	22.4
156B	103.2	19.6
157A	102.4	20.2
157B	100.1	22.8
158A	101.8	21.9
158B	102.4	21.3

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier One-Point Proctor Results (continued)

One-Point #	Dry Density	Moisture Content
159A	103.1	19.7
159B	102.6	19.1
160A	102.3	18.4
160B	103.1	19.7
161A	101.1	22.2
161B	100.7	22.3
162A	101.0	22.1
162B	102.5	20.4
163A	102.6	20.5
163B	103.0	20.6
164A	102.8	21.0
164B	102.8	20.6
165A	102.0	21.2
165B	103.5	19.9
166A	103.4	19.9
166B	102.9	20.6
167A	103.6	20.1
167B	103.3	20.4
168A	102.7	19.9
168B	101.0	22.5
169A	103.8	19.5
169B	103.1	20.9
170A	102.5	20.6
170B	102.4	21.0
171A	104.2	19.6
171B	103.2	20.6
172A	103.8	19.8
172B	101.2	22.1
173A	102.1	21.6
173B	103.9	20.3
174A	102.8	21.4
174B	103.2	20.7
175A	103.0	20.9

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier One-Point Proctor Results (continued)

One-Point #	Dry Density	Moisture Content
175B	103.6	19.5
176A	102.7	21.5
176B	102.4	21.1
177A	103.6	20.1
177B	103.3	19.8
178A	102.2	21.5
178B	103.3	20.0
179A	103.3	20.2
179B	103.7	19.6
180A	103.9	20.0
180B	103.2	19.6
181A	102.3	21.1
181B	102.8	20.3
182A	101.8	21.0
182B	102.5	20.4
183A	102.9	20.0
183B	104.0	19.3
184A	101.9	22.3
184B	103.5	20.1
185A	103.3	20.4
185B	103.7	19.6
186A	103.8	19.5
186B	103.6	20.2
187A	102.5	20.1
187B	102.3	21.3

Testing Interval: A one-point proctor for every five sandcones (with standard proctors supplementing the frequency ratio).

Notes: One-points were sampled from emplaced radon barrier. One-Point # = proctor that the one-point is applied to with "A" & "B" indicating the order of testing.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
292	22-May-01	18	57	39	Pass
293	23-May-01	21	56	35	Pass
294	24-May-01	20	62	42	Pass
295	25-May-01	18	57	39	Pass
296	29-May-01	19	58	39	Pass
297	30-May-01	17	62	45	Pass
298	01-Jun-01	19	59	40	Pass
299	05-Jun-01	18	58	40	Pass
300	06-Jun-01	19	58	39	Pass
301	07-Jun-01	21	68	47	Pass
302	11-Jun-01	16	52	36	Pass
303	12-Jun-01	18	64	46	Pass
304	13-Jun-01	21	67	46	Pass
305	15-Jun-01	20	50	30	Pass
306	18-Jun-01	18	56	38	Pass
307	19-Jun-01	22	72	50	Pass
308	20-Jun-01	19	64	45	Pass
309	21-Jun-01	23	62	39	Pass
310	22-Jun-01	19	62	43	Pass
311	26-Jun-01	21	59	38	Pass
312	27-Jun-01	18	56	38	Pass
313	28-Jun-01	20	62	42	Pass
314	29-Jun-01	18	59	41	Pass
315	30-Jun-01	19	53	34	Pass
316	01-Jul-01	20	70	50	Pass
317	02-Jul-01	20	60	40	Pass
318	03-Jul-01	20	63	43	Pass
319	08-Jul-01	20	59	39	Pass
320	09-Jul-01	17	66	49	Pass
321	10-Jul-01	20	54	34	Pass
322	11-Jul-01	23	68	45	Pass
323	12-Jul-01	20	56	36	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
324	13-Jul-01	19	53	34	Pass
325	16-Jul-01	20	58	38	Pass
326	17-Jul-01	19	56	37	Pass
327	18-Jul-01	17	52	35	Pass
328	19-Jul-01	21	59	38	Pass
329	20-Jul-01	21	59	38	Pass
330	23-Jul-01	19	52	33	Pass
331	24-Jul-01	21	62	41	Pass
332	25-Jul-01	19	53	34	Pass
333	26-Jul-01	22	63	41	Pass
334	27-Jul-01	21	53	32	Pass
335	30-Jul-01	19	52	33	Pass
336	31-Jul-01	18	56	38	Pass
337	01-Aug-01	19	54	35	Pass
338	02-Aug-01	20	61	41	Pass
339	06-Aug-01	18	70	52	Pass
340	07-Aug-01	18	59	41	Pass
341	08-Aug-01	19	61	42	Pass
342	09-Aug-01	20	61	41	Pass
343	10-Aug-01	18	60	42	Pass
344	13-Aug-01	20	55	35	Pass
345	14-Aug-01	20	56	36	Pass
346	15-Aug-01	20	62	42	Pass
347	16-Aug-01	20	58	38	Pass
348	17-Aug-01	20	53	33	Pass
349	20-Aug-01	17	66	49	Pass
350	22-Aug-01	20	63	43	Pass
351	23-Aug-01	18	56	38	Pass
352	24-Aug-01	19	54	35	Pass
353	26-Aug-01	20	57	37	Pass
354	27-Aug-01	16	54	38	Pass
355	28-Aug-01	19	52	33	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

Pathfinder Lucky McMine Reclamation Project - 2001 Construction Season

Summary Report of Radon Barrier Atterberg Limits Results (continued)

Test #	Date	Plastic Limit	Liquid Limit	Plasticity Index	Pass/Fail
356	29-Aug-01	22	73	51	Pass
357	21-Sep-01	19	61	42	Pass
358	24-Sep-01	22	60	38	Pass
359	25-Sep-01	20	59	39	Pass
360	26-Sep-01	20	57	37	Pass
361	27-Sep-01	18	56	38	Pass
362	28-Sep-01	19	52	33	Pass
363	01-Oct-01	18	48	30	Pass
364	02-Oct-01	22	58	36	Pass
365	03-Oct-10	20	55	35	Pass
366	08-Oct-01	22	65	43	Pass
367	09-Oct-01	20	57	37	Pass
368	10-Oct-01	18	56	38	Pass
369	11-Oct-01	20	53	33	Pass
370	15-Oct-01	18	61	43	Pass
371	16-Oct-01	20	59	39	Pass
372	17-Oct-01	20	55	35	Pass
373	19-Oct-01	17	59	42	Pass
374	22-Oct-01	22	62	40	Pass
375	23-Oct-01	19	73	54	Pass
376	24-Oct-01	19	52	33	Pass
377	25-Oct-01	20	61	41	Pass
378	26-Oct-01	18	53	35	Pass
379	27-Oct-01	18	55	37	Pass
380	29-Oct-01	17	60	43	Pass
381	30-Oct-01	22	58	36	Pass

Specifications: Three point Atterberg Limits test performed according to ASTM D4318. Material is considered satisfactory if the liquid limit is greater than 40 and the plasticity index is greater than 16.

Testing Interval: One atterberg performed every day that emplaced volume exceeds 150 yards.

RADON BARRIER CLAY PLACEMENT QC

2002

Date 1-2 & 1-3 2002

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician [illegible]

Client PMC

Contractor Carr Const.

Job No. 8152.1 RM

Sand Density 83.28 P.C.F.

Date Calibrated 10-22-01

Project Lucky Mc. Min

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT. JUG FULL	WT. JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT. JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
[illegible]	D/5709.6	4144.0	1565.6	3596.0	Y/289.6	3306.4	I/5374.1	1601.9	3792.2	1565.6	2226.6	.0589	3644.7	3107.2	537.5	D3/337.5	2769.7	19.4	123.7	1[illegible]
[illegible]	B/5907.7			3420.2	2/290.8	3129.4	[illegible]	1811.7	3636.0	1565.6	2070.4	.0548	3465.0	2884.3	580.7	A 338.6	2545.7	22.8	125.88	101.3
2755	E/5372.0			3829.2	338.2	3491.0	5372.0	1447.0	3925.0	1565.6	2359.4	.06246	3829.2	3207.1	622.1	A 338.2	2868.9	21.7	123.2	101.2
2756	A/5082.9			4051.4	320.5	3730.9	5056.9	964.8	4092.1	1565.6	2526.2	.06687	3957.0	3295.7	661.3	D3 337.6	2958.1	22.3	123.0	100.6

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
2753	N-787121 E-804014	1st lift	Cody Shale	189	19.4	103.6	19.3	101.2	102.4
2754	N-787106 E-804073	"	"	189	22.8	104.6	19.3	101.2	101.3
2755	N-787815 E-804098	2nd lift	"	189	21.7	101.2	19.3	101.2	100.1
2756	N-787134 E-804027	"	"	189	22.3	100.6	19.3	101.2	99.3

Date 7-11-02

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician [illegible]

Client Pathfinder

Contractor Carr Const.

Job No. 8152.1RM

Sand Density 77.27 P.C.F.

Date Calibrated 7-11-02

Project Lucky McMins

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT. JUG FULL	WT. JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT. JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
2757	—	—	1420.16	—	—	4142.3	5204.93	1393.6	3811.33	1420.16	2391.17	.06822	4142.3	3426.3	716.0	338.6	3087.7	23.2	133.86	108.7

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
2757	N-787116 E-804032	2nd lift	Cody Shale	189	23.2	108.7	19.3	101.2	107.4

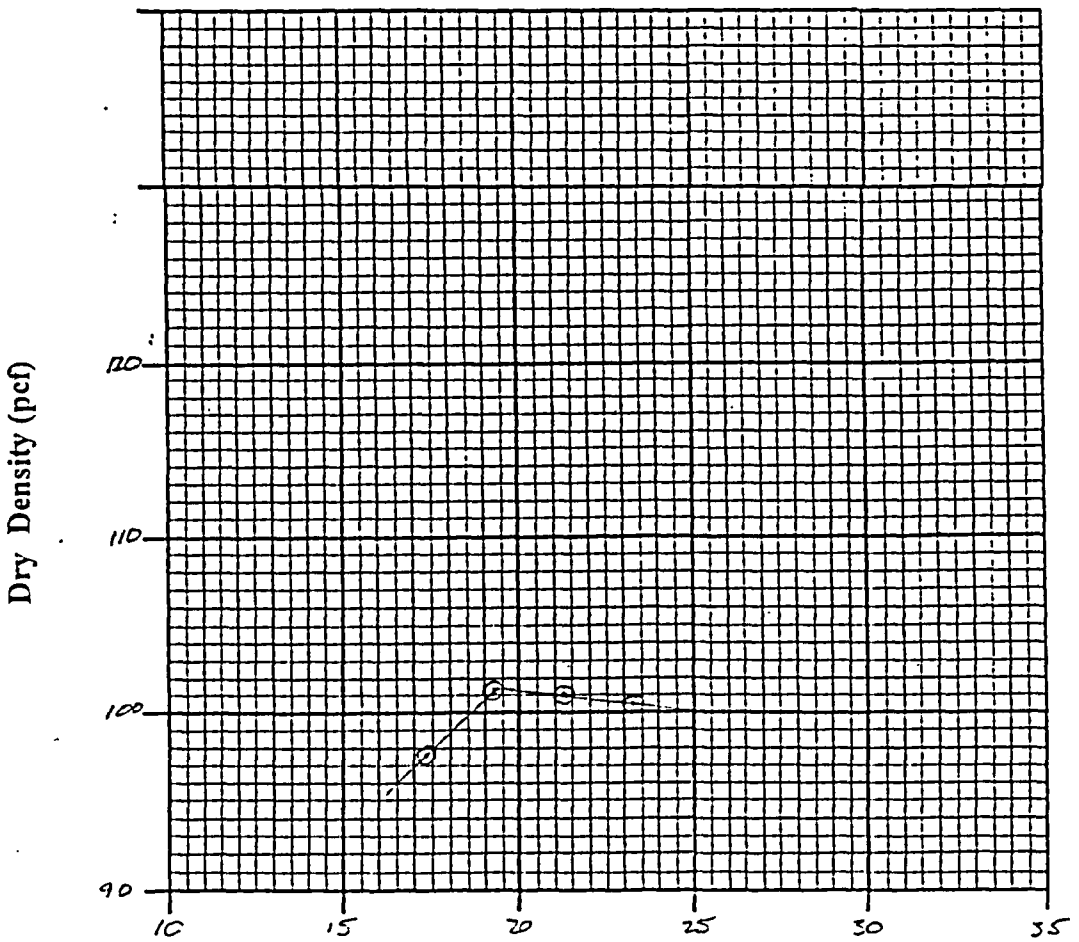
COMPACTION TEST

(ASTM D 698 & ASTM D 1557)

Project: Lucky McMine Rec
Client: Pathfinder
Job No.: 8182.1RM
Boring No.:
Sample No.: 189
Soil Description: Cody Shale
Depth:
Source: Composite - Sandcones
Test Date: 7-8-02
Method: "A"
Tested By: JPM

Desired Moisture Content	+18	+20	+4	+10			
Wt. of Mold and Moist Soil (lbs)	13.34	13.54	13.60	13.64			
Wt. of Mold (lbs)	9.52	9.52	9.52	9.52			
Wt. of Moist Soil (lbs)	3.82	4.02	4.08	4.12			
Vol. of Mold (ft^3)	.0333	.0333	.0333	.0333			
WET DENSITY (pcf)	114.71	120.72	122.52	123.72			

Tare No.	229	3B	Reg	6X			
Wt. of Soil & Tare (wet)	1056.06	1187.29	783.71	919.5			
Wt. of Soil & Tare (dry)	933.56	1030.78	670.03	787.46			
Wt. of Tare	229.87	218.99	136.24	219.54			
MOISTURE CONTENT (%)	17.4	19.3	21.3	23.3			
DRY DENSITY (pcf)	97.7	101.2	101.0	100.3			



Maximum Dry Density = 101.2 pcf

Optimum Moisture Content = 19.3 %

SUBJECT Sand Calibration PROJECT NO. PAGE 1 of 1

CLIENT Pathfinder DATE 7-8-02 BY JPM

PROJECT Lucky McMine CHECKED BY

Funnel Calibration	1	2	3	4
F. Jug	5014.9	5026.7	5004.0	
E. Jug	3596.3	3603.7	3584.2	
Sand Used	1417.7	1423.0	1419.8	
% Dif.	.17	+.2	-.03	

Sand Density			
F. Mold	8290.5	8298.6	8291.3
Wt. of Mold	5664.5	5664.5	5664.5
Sand Used (lbs)	5.78924	5.8071	5.79101
PCF	77.19	77.42	77.21
% Dif.	-.1	+.19	-.08

Wt. of Mold; 5664.5
Volume of Mold; .075

Sand in Funnel; 1420.16
Sand Density; 77.27

RADON BARRIER CLAY PLACEMENT QC

2004

Date 11-9-04

Client Rattlesnake Lucky McMine

Job No. 8152.RM

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Sand Density 97.68 P.C.F.

Date Calibrated 9-17-04

Technician C.M.

Contractor Rapid

Project Lucky McMine

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT JUG FULL	WT JUG EMPTY	WT SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT TARE	WT. SOIL	WT JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
1	—	—	—	—	—	4.98048	5344	2008.3	3340.7	1618.4	3.79696	.03911	950.93	837.93	112.9	ASG 138.3	699.63	16.1	127.3	109.6
2						6.35562	5635.5	1792.8	3846.2	1618.4	4.91138	.05059	660.2	583.64	76.56	T 140.1	50.1	14.7	125.6	109.5
1R						6.3557	5548	1684.2	3863.8	1618.4	4.95018	.05097	873.61	760.27	113.34	MOO 142.6	617.67	18.4	134.5	113.6
3						6.15101	5371	1720.1	3650.9	1618.4	4.48082	.04616	820.74	710.29	110.45	Ø 135.7	574.59	19.2	133.3	111.8
2R						6.79717	5320	1495.7	3824.3	1618.4	4.8631	.05009	785.2	688.32	96.88	JPL 139.4	548.92	17.6	135.7	115.4

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
1	N-793080 E-803165	6" below grade	Cody Shale	1	16.1	109.6	19.1	116.8	94
2	N-793130 E-803040	6" below grade	Cody Shale	1	14.7	109.5	"	"	94
1R	N-793075 E-803160	6" below grade	Cody Shale	1	18.4	113.6	"	"	98
3	N-793170 E-802950	6" below grade	Cody Shale	1	19.2	111.8	"		96
2R	N-793130 E-803035	6" below grade	Cody Shale	1	17.6	115.4	"	"	99

Date 11-9-04

Technician J

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Client Pathfinder

Contractor Rapid

Job No. 8152RM

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky McMine

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO	WT JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
4	—	—	—	—	—	7.11177 3225.9	5343.97	H3 1378.8	3965.2	1618.4	5.17366	.05329	916.3	792.6	123.7	ASG 138.3	654.3	18.9	133.5	112.3
5						7.62037 3456.6	5836.2	H8 1730.9	4105.3	1618.4	5.48258	.05647	1023.3	880.6	142.7	SRH 140.4	740.2	19.3	134.9	113.1
6						8.3276 3777.4	5549.1	H4 1275.6	4273.5	1618.4	5.8534	.06089	928.0	795.4	132.6	135.8	659.6	20.1	138.1	115.0
7						7.64396 3467.3	5695	H6 1685.7	3953.8	1618.4	5.14859	.06303	806.6	700.1	108.5	137.0	563.1	19.3	144.1	120.9
8						7.72929 3506.0	5836.2	H2(2) 1912.8	3923.4	1618.4	5.08157	.05234	792.0	680.3	111.7	MOO 142.7	537.6	20.8	147.7	122.2
9						7.93135 3552.3	5720.5	1588.4	4132.1	1618.4	5.54167	.05708	826.4	705.9	120.5	VLM 137.4	568.5	21.2	137.2	113.3

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
4	N-793230 E-802040	1st lift	Clay	1	18.9	112.3	19.1	116.2	97
5	N-793270 E-802825	"	"	1	19.3	113.1	"	"	97
6	N-793315 E-802670	"	"	1	20.1	115.0	"	"	99
7	N-793345 E-803030	"	"	1	19.3	120.8	"	"	104
8	N-793375 E-802890	"	"	1	20.8	122.2	"	"	105
9	N-793385 E-802560	"	"	1	21.2	113.3	"	"	98

Date 11-12

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician [illegible]

Client Pathfinder

Contractor Rapid

Job No. 8152.RP

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky McMine

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT. JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST	WET P.C.F.	DRY P.C.F.
10	—	—	—	—	—	7.3631 3337.9	5428.9	1395.1	4033.8	1618.4	5.32496 2115.4	.05435	844.7	740.7	104.0	A26 138.4	602.3	17.3	134.2	114.4
11						7.12434 3231.6	5150.4	1288.7	3861.7	1618.4	4.94555 2243.3	.05094	686.0	593.1	92.9	Ø 135.9	457.2	20.3	139.9	116.3
12						7.58642 3441.2	5699.0	1684.4	4014.6	1618.4	5.25263 2396.2	.05442	766.4	663.4	103.0	SRH 140.5	522.9	19.7	139.4	116.5
13						7.78373 3530.7	5826.9	1756.1	4070.8	1618.4	5.40653 2452.4	.05509	695.8	599.6	96.2	M00 142.6	457.0	21.1	139.8	115.4
14						6.41602 2934.8	4602.2	876.8	3725.4	1618.4	4.64506 2107.0	.04785	863.1	756.8	106.3	W000 136.9	619.9	17.2	135.2	115.4
15						6.73347 3054.3	5314.5	1483.5	3831.0	1618.4	4.87187 2212.6	.05025	781.6	687.3	94.3	ULD 137.2	550.1	17.1	134.0	114.4

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
10	N-793440 E-802610	1st lift	Clay	1	17.3	114.4	19.1	116.2	98
11	N-793475 E-803070	"	"	1	20.3	116.3	"	"	100
12	N-793540 E-803030	"	"	1	19.7	116.5	"	"	100
13	N-793080 E-803000	2nd lift	"	1	21.1	115.4	"	"	99
14	N-793140 E-803160	"	"	1	17.2	115.4	"	"	99
15	N-793165 E-803105	"	"	1	17.1	114.4	"	"	98.5

Date 11-15-04

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician [illegible]

Client Pathfinder

Contractor Rapid

Job No. 3152RM

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky McMine

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT. JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
16	—	—	—	—	—	7.92761 3596	H3 5131.3	958.0	4173.3	1618.4	5.6325	.05802	794.4	681.2	113.2	135.7	545.5	20.8	136.6	113.1
17						7.09215 3217	H4 4882.6	917.0	3965.6	1618.4	5.1746	.0533	802.1	693.6	108.5	137.1	556.5	19.5	133.1	111.4
18						7.74771 3513	H8 5669.6	930.0	4129.6	1618.4	5.53616	.05703	783.6	687.8	95.8	137.4	550.4	17.4	135.8	115.7
19						6.26543 2842	H6 4760.1	1140.0	3620.1	1618.4	4.41292	.04546	785.1	673.2	111.9	139.4	533.8	21.0	137.8	113.9
20						6.77676 3075	2 5312.6	1468.1	3844.5	1618.4	4.9063	.05055	850.3	744.5	105.8	139.2	605.3	17.5	134.1	114.1
21						7.66775 3479	H4 4684.6	575.0	4109.0	1618.4	5.4074	.05656	765.2	671.7	93.5	140.7	530.4	17.6	135.6	115.3

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
16	N-773180 E-802810	2nd lift	Clay	2	20.8	113.1	18.6	117.3	96
17	N-773225 E-802850	"	"	2	19.5	111.4	"	"	95
18	N-773275 E-802970	"	"	2	17.4	115.7	"	"	99
19	N-773330 E-802920	"	"	2	21.0	113.9	"	"	97
20	N-773380 E-803160	"	"	2	17.5	114.1	"	"	97
21	N-773320 E-802715	"	"	2	17.6	115.3	"	"	98

Date 11-15-04

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician [illegible]

Client Pathfinder

Contractor Rapid

Job No. 8152.RM

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky Mc

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
22	—	—	—	—	—	7.43166 3371	4188	945	4043	1618.4	5.34524	.05506	787.1	671.1	96.0	138.5	552.6	17.4	135.0	115.0
23						6.33157 2872	4853	1282	3571	1618.4	4.30467	.04434	820.6	721.3	99.3	142.6	578.7	17.2	142.8	121.8
24						6.46164 2931	5129	1423	3706	1618.4	4.6029	.04741	931.5	805.1	126.4	121.9	683.2	18.5	136.3	115.0
25						7.9206 3620	5385	1260	4125	1618.4	5.5201	.05682	817.6	697.4	120.2	122.3	575.1	20.9	146.2	116.0
26						7.54409 3422	4961	932	4029	1618.4	5.31437	.05474	854.8	734.6	120.2	127.5	607.1	19.8	137.8	115.0
27						7.14506 3241	5122	1199	3923	1618.4	5.0309	.05234	782.4	675.2	107.2	128.4	546.8	19.6	126.5	114.1

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
22	N-793435 E-802595	2nd lift	Clay	2	17.4	115.0	18.6	117.3	98
23	N-793420 E-	"	"	2	17.2	121.8	"	"	104
24	N-793480 E-802830	"	"	2	18.5	115.0	"	"	98
25	N-793470 E-802680	"	"	2	20.9	116.0	"	"	99
26	N-793520 E-802715	1st lift	"	2	19.8	115.0	"	"	98
27	N-793530 E-802915	1st lift	"	2	19.6	114.1	"	"	97

Date 11-16-04

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician J.I.

Client Pathfinder

Contractor Rapid

Job No. 8152RM

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky Mc.

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT. JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
28	—	—	—	—	—	7.34604	5475	1485	3990	1618.4	5.2284	.05386	845.2	729.7	115.5	140.4	589.3	19.6	136.4	114.0
29						6.17618	5642	2009	3633	1618.4	4.44136	.04575	780.9	668.7	112.2	136.8	531.9	21.1	135.0	111.5
30						6.93303	5083	1176	3907	1618.4	5.04541	.05197	835.1	724.9	110.2	135.6	589.3	18.7	133.4	112.4
31						6.66756	5455	1723	3732	1618.4	4.65961	.048	690.0	600.9	89.1	139.2	461.7	19.3	138.9	116.4
32						6.69148	4961	1127	3834	1618.4	4.88448	.05031	872.9	757.9	115.0	142.7	615.2	18.7	133.0	112.0
33						6.97296	5597	1730	3867	1618.4	4.95723	.05106	794.0	685.2	108.8	138.3	546.9	19.9	136.6	113.9

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
28	N-773580 E-803180	1st lift	Clay	2	19.6	114.0	18.6	117.3	97
29	N-773570 E-802825	"	"	2	21.1	111.5	"	"	95
30	N-773550 E-802540	"	"	2	18.7	112.4	"	"	96
31	N-773550 E-802775	2nd lift	"	3	19.3	116.4	19.4	115.7	101
32	N-773575 E-802660	"	"	3	18.7	112.0	"	"	97
33	N-773510 E-803180	"	"	3	19.9	113.9	"	"	98

Date 11-16-04

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician S.M

Client Path'nFinder

Contractor Rapid

Job No. 8152RM

Sand Density 97.08 P.C.F.

Date Calibrated 4-17-04

Project Lucky Mc.

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT. JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT. JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
34	—	—	—	—	—	7.92312	114 5483	1329	4154	1618.4	5.58975	.05758	936.5	810.0	126.5	3 201.6	608.4	20.8	137.6	113.9
35						7.9666	118 5196	982	4214	1618.4	5.72222	.05894	870.4	761.7	108.7	4A 207.4	554.3	19.6	135.2	113.0
36						6.90191	2 5475	1586	3889	1618.4	5.0573	.05156	663.1	556.2	96.9	R 32.6	532.6	18.2	133.9	113.3
37						8.06789	116 5641	1470	4171	1618.4	5.62743	.05797	709.0	630.7	78.3	6A 204.9	425.8	18.4	139.5	117.8
38						7.8241	113 5580	1363	4217	1618.4	5.72884	.05901	961.4	835.2	126.2	9 205.2	630.0	20.0	132.6	110.5
39						8.00787	114 5367	1198	4169	1618.4	5.62302 ~~5.550~~	.05792	905.5	796.8	108.7	1 205.8	591.0	18.4	138.3	116.8

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
34	N-793620 E-802950	1st lift	Cody Shale	3	20.8	113.9 ~~137.6~~	19.4	115.7	98
35	N-793650 E-802780	"	"	3	19.6	113.0 ~~135.2~~	"	"	98
36	N-793690 E-802670	"	"	3	18.2	113.3 ~~133.9~~	"	"	98
37	N-793625 E-802625	2nd lift	"	3	18.4	117.8 ~~139.5~~	"	"	102
38	N-793630 E-803140	"	"	3	20.0	110.5 ~~132.6~~	"	"	96
39	N-793680 E-803050	"	"	3	18.4	116.8 ~~138.3~~	"	"	101

Date 11-17-04

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician JPM

Client Pathfinder

Contractor Rapid

Job No. 8152RM

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky McGuire

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT. JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT. JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
40	—	—	—	—	—	6.63624	HG 5444	1695	3749	1618.4	4.67709	.04838	915.7	793.2	122.5	ASD 138.5	654.7	18.7	137.2	115.6
41						7.18205	HH 5640	1645	3995	1618.4	5.23942	.05397	824.9	772.1	112.8	P 135.7	636.4	17.7	133.2	113.2
42						7.10031	2 5947	2050	3897	1618.4	5.02337	.05174	834.3	720.4	113.9	BFD 139.2	581.2	19.6	137.2	114.7
43						6.64131	HE 5949	2211	3738	1618.4	4.67284	.04813	837.7	713.4	124.3	1320 142.6	570.8	21.8	138.0	113.3
44						7.07096	PB 5635	1593	4042	1618.4	5.34303	.05504	661.1	574.8	86.3	CRU 140.7	434.1	19.9	127.9	106.7
45						7.76188	HH 5491	1387	4104	1618.4	5.47772	.05415	719.8	636.9	82.9	BA 204.9	432.0	19.2	137.5	115.4

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
40	N-793730 E-802950	1st lift	Cody Shale	3	18.7	115.6	19.4	115.7	100
41	N-793760 E-803150	"	"	3	17.7	113.2	"	"	98
42	N-793820 E-803060	"	"	3	19.6	114.7	"	"	99
43	N-793885 E-803075	"	"	3	21.8	113.3	"	"	98
44	N-793780 E-803175	2nd lift	"	3	19.9	106.7	"	"	92
45	N-793770 E-803020	"	"	3	19.2	115.4	"	"	100

Date 11-13-04

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician SM

Client Pathfinder

Contractor Rapid

Job No. 8152RM

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky McMine

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT. JUG FULL	WT. JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT. JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
46	—	—	—	—	—	7.89242	5280	1120	4160	1618.4	5.60317	.05772	1092	960.6	141.4	135.9	814.7	17.4	136.7	116.4
47						7.2134	5429	1483	3945	1618.4	5.12969	.05283	694.8	592.8	102.0	32.9	559.9	18.2	136.5	115.5
48						7.42459	5144	1102	4042	1618.4	5.34303	.05504	625.3	534.4	90.9	31.6	502.8	18.1	134.9	114.2
49						7.26652	5205	1298	3907	1618.4	5.04541	.05199	672.2	571.9	100.3	32.7	539.2	18.6	137.9	118.0
50						7.57134	5649	1555	4094	1618.4	5.45761	.05622	547.1	458.7	88.4	33.0	425.7	20.8	134.7	111.5
44R						7.53585	5498	1435	4063	1618.4	5.39933	.05551	712.9	630.0	82.9	204.7	425.1	19.5	135.7	113.6

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
46	N- 793930 E- 803150	1st lift	Cody Shale	4	17.4	116.4	19.0	116.6	100
47	N- 793980 E- 802990	"	"	4	18.2	115.5	"	"	99
48	N- 793850 E- 802940	2nd lift	"	4	18.1	114.2	"	"	98
49	N- 793740 E- 802785	"	"	4	18.6	118.0	"	"	101
50	N- 793880 E- 803170	"	"	4	20.8	111.5	"	"	96
44R	N- 793750 E- 803010	1st lift	"	3	19.5	113.6	19.4	115.7	98

Date 11-[illegible]-04

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician [illegible]

Client: Pathfinder

Contractor Rapid

Job No. 8152PM

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky McMine

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT. JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
51	—	—	—	—	—	6.39189	5816	2121	3695	1618.4	4.57804	.04716	811.9	706.6	105.3	Sau 140.5	566.1	18.6	135.5	114.2
52						6.96649	5574	1763	3811	1618.4	4.83377	.04979	739.2	645.7	93.5	moo 142.5	503.2	18.6	139.9	118.0
53						5.96779	5376	1727	3649	1618.4	4.47663	.04611	891.6	768.2	123.6	BAD 139.4	628.8	19.7	129.4	108.1

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
51	N-793825 E 802730	1st lift	Cody Shale	4	18.6	114.2	19.0	116.6	98
52	N-793920 E-802800	"	"	4	18.6	118.0	"	"	101
53.	N-793870 E-803030	"	"	4	19.7	108.1	"	"	93

Date 11-19-04

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician JAM

Client Pathfinder

Contractor Rapid

Job No. 8152RM

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky McMine

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT. JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
54	—	—	—	—	—	7.09069	5873	2026	3847	1618.4	4.91314	.05061	6267	538.9	87.8	87 33.0	505.9	17.4	140.1	119.3
55						6.91159	5899	2046	3,853	1618.4	4.92637	.05075	6735	562.9	110.6	16067 32.8	530.1	20.9	136.2	112.7
56						6.34806	5727	2062	3665	1618.4	4.5119	.04648	480.9	406.2	74.7	00812 32.6	373.6	20.0	136.6	113.8
57						6.22085	6171	2571	3600	1618.4	4.3681	.045	810.3	697.3	113.0	1000 142.5	554.8	20.4	138.2	114.8
58						5.86613	5899	2384	3515	1618.4	4.18122	.04307	864.5	745.8	118.7	5R4 1403	605.5	19.6	136.2	113.9
53R						6.25658	5430	1780	3650	1618.4	4.47824	.04614	931.8	805.8	126.0	910 139.2	666.6	18.9	135.6	114.0

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
54	N-793840 E-802615	1st lift	Cody Shale	4	17.4	119.3	19.0	116.6	102
55	N-793780 E-802680	2nd lift	"	4	20.9	112.7	"	"	97
56	N-793820 E-802975	"	"	4	20.0	113.8	"	"	98
57	N-794020 E-802930	"	"	4	20.4	114.8	"	"	98
58	N-793940 E-802920	"	"	4	19.6	113.9	"	"	98
53R	N-793880 E-803030	1st lift	"	4	18.9	114.0	"	"	98

3955.278
3221
3710

Date 11-22-04

UNIT WEIGHT BY SAND CONE METHOD
ASTM D1556
INBERG-MILLER ENGINEERS

Technician JAM

Client Pathfinder

Contractor ~~Pathfinder~~ Rapid

Job No. 8152pm

Sand Density 97.08 P.C.F.

Date Calibrated 9-17-04

Project Lucky Mc.

	FUNNEL CALIBRATION			WEIGHT OF WET SOIL			VOLUME OF HOLE						MOISTURE CONTENT						DENSITY	
TEST NO.	WT JUG FULL	WT JUG EMPTY	WT. SAND IN FUNNEL	WT. WET SOIL W/ TARE	WT. TARE	WT. SOIL	WT JUG FULL	WT. JUG EMPTY	WT. SAND USED	WT. SAND IN FUNNEL	WT. SAND TO FILL HOLE	HOLE VOL.	WT. WET SOIL W/ TARE	WT. DRY SOIL W/ TARE	WT. WATER	WT. TARE	WT. DRY SOIL	% MOIST.	WET P.C.F.	DRY P.C.F.
59	—	—	—	—	—	5.90168	5709	2077	3632	1618.4	4.43915	.04573	484.5	407.7	76.8	LLN 31.7	376.0	20.4	129.1	107.2
60						7.8085	5899	1794	4105	1618.4	5.48192	.05647	960.5	835.6	124.9	SRH 140.3	695.3	18.0	138.3	117.2
59R						6.8749	5737	920	3817	1618.4	4.847	.04993	1033.1	866.6	166.5	EHO 139.2	727.4	22.9	137.6	112.0

REPORT DATA

TEST NO.	LOCATION	TEST ELEVATION	MATERIAL DESCRIPTION	STD. PROCTOR NO.	% MOISTURE	DRY DENSITY	OPT. MOISTURE CONTENT	MAX. DRY DENSITY	% COMP.
59	N- 794020 E- 803055	2nd lift	Cody Shale	4	20.4	107.2	19.0	116.6	92
60	N- 793830 E- 202820	"	"	4	18.0	117.2	"	"	101
59R	N- 794215 E- 803055	"	"	4	22.9	112.0	"	"	96

ATTERBERG LIMITS

ASTM D-4318

CLIENT: Pathfinder

JOB NO.: 8152 RM

PROJECT: Lucky McMine

DATE: 11-9-04

SAMPLE NO.: 1

DEPTH: 6"

TECH.: JPM

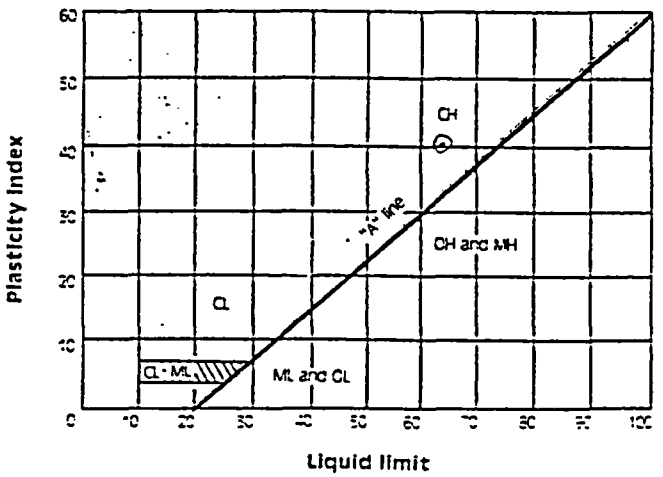
Results	
LL:	64
PL:	24
PI:	40

SAMPLE DESCRIPTION: Cody Shale

PLASTIC LIMIT		
TRIAL NO.	1	2
TARE ID	K	M.1
WT. TARE & WET SOIL	22.98	20.56
WT. TARE & DRY SOIL	21.67	19.32
WT. TARE	16.27	14.17
% MOISTURE	24.0	24.1
AVG. PLASTIC LIMIT	24	

1.31
1.24

Plasticity Chart

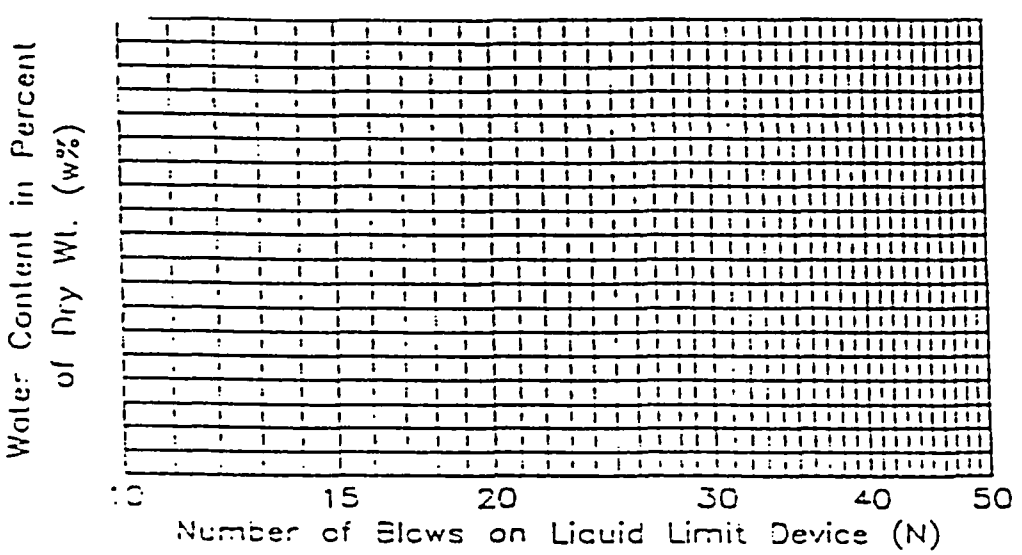


LIQUID LIMIT			
TRIAL NO.	1	2	3
TARE ID	3M	O	
WT. TARE & WET SOIL	25.48	27.55	
WT. TARE & DRY SOIL	21.22	23.0	
WT. TARE	14.42	15.84	
% MOISTURE	62.6	63.5	
NO. OF BLOWS	29	28	
LIQUID LIMIT	64.03	64.64	
AVG. LIQUID LIMIT	64		

4.56
6.8
4.55
7.16

CLASSIFICATION: CH

ONE POINT DETERMINATION
W.C.(N/25)^.121 = LIQUID LIMIT
W.C = % MOISTURE
N = NO. OF BLOWS (>20, <30)



ATTERBERG LIMITS

ASTM D-4318

CLIENT: Pathfinder

PROJECT: Lucky McMine

SAMPLE NO.: 2

DEPTH: Barrow

JOB NO.: 8152RM

DATE: 11-11-04

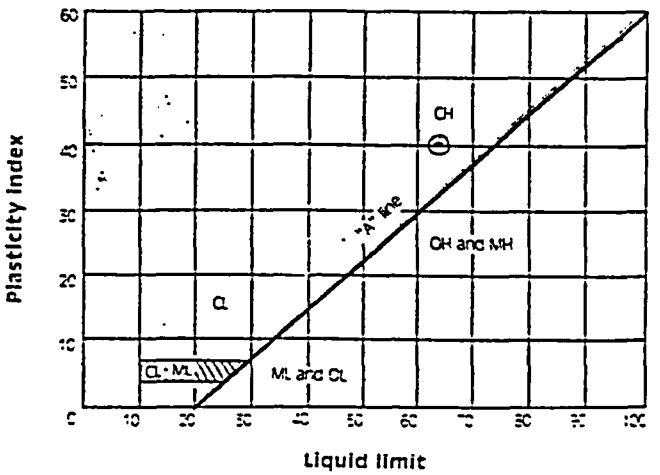
TECH.: JPM

Results	
LL:	64
PL:	24
PI:	40

SAMPLE DESCRIPTION: Cody Shale

PLASTIC LIMIT		
TRIAL NO.	1	2
TARE ID	k	6
WT. TARE & WET SOIL	22.37	20.98
WT. TARE & DRY SOIL	21.9	19.67
WT. TARE	16.27	14.41
% MOISTURE	23.98	24.9
AVG. PLASTIC LIMIT	24	

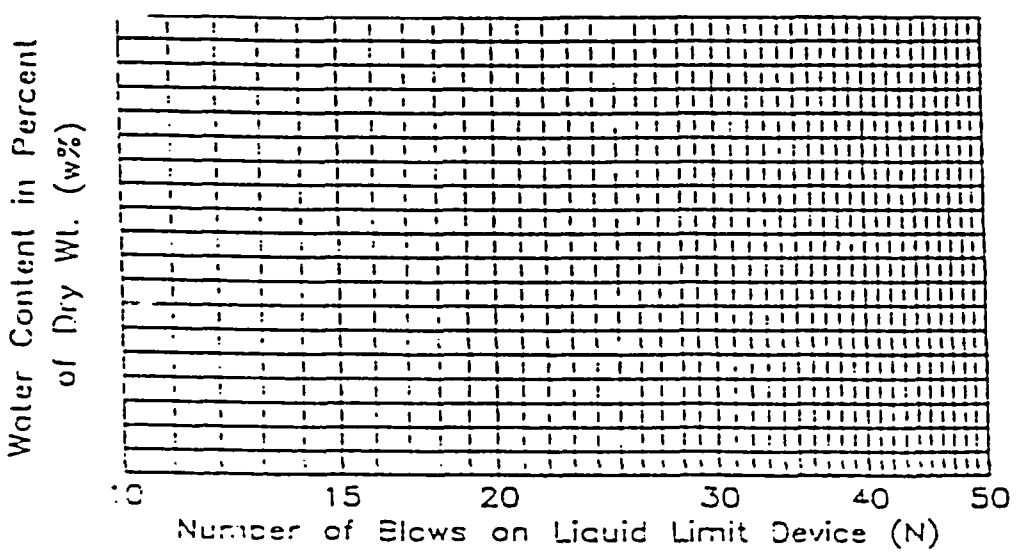
Plasticity Chart



LIQUID LIMIT			
TRIAL NO.	1	2	3
TARE ID	0	3T	
WT. TARE & WET SOIL	27.17	29.22	
WT. TARE & DRY SOIL	22.46	23.41	
WT. TARE	15.86	14.44	
% MOISTURE	63.91	64.77	
NO. OF BLOWS	24	23	
LIQUID LIMIT	63.59	64.12	
AVG. LIQUID LIMIT	64		

CLASSIFICATION: CH

ONE POINT DETERMINATION
W.C.(N/25)^.121 = LIQUID LIMIT
W.C = % MOISTURE
N = NO. OF BLOWS (>20, <30)



ATTERBERG LIMITS

ASTM D-4318

CLIENT: Pathfinder

JOB NO.: 8152RM

PROJECT: Lucky McMine

DATE: 11-12-04

SAMPLE NO.: 3

DEPTH: Bottom

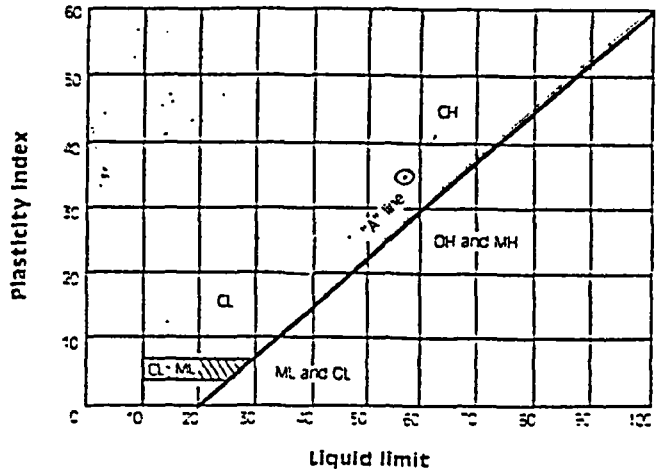
TECH.: JPM

SAMPLE DESCRIPTION: Coal Shale

Results	
LL:	58
PL:	23
PI:	35

PLASTIC LIMIT		
TRIAL NO.	1	2
TARE ID	6k	6L
WT. TARE & WET SOIL	29.86	29.04
WT. TARE & DRY SOIL	28.19	28.04
WT. TARE	23.52	23.69
% MOISTURE	22.63	22.99
AVG. PLASTIC LIMIT	23	

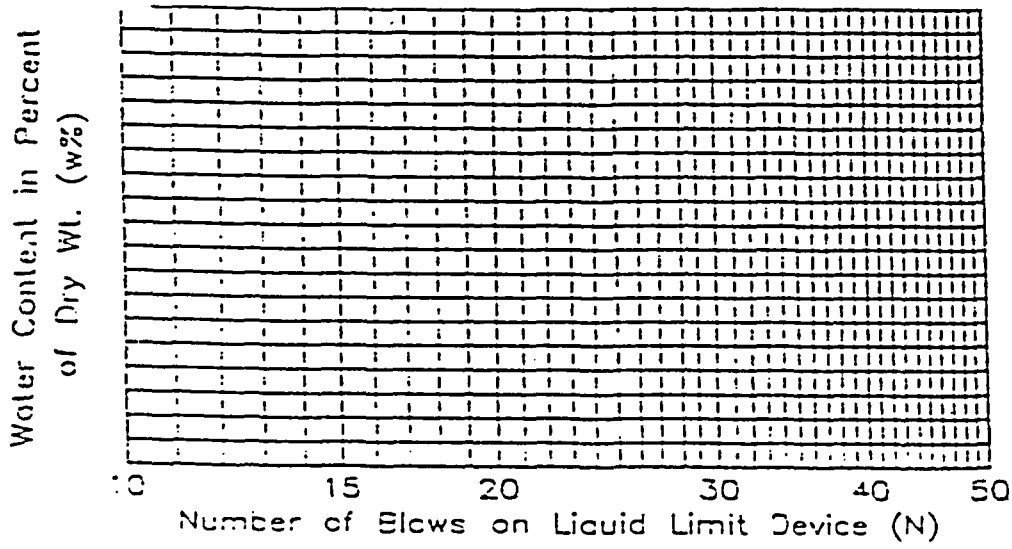
Plasticity Chart



LIQUID LIMIT			
TRIAL NO.	1	2	3
TARE ID	20	25	
WT. TARE & WET SOIL	24.04	25.18	
WT. TARE & DRY SOIL	20.34	21.17	
WT. TARE	13.9	14.36	
% MOISTURE	57.45	58.88	
NO. OF BLOWS	23	23	
LIQUID LIMIT	56.88	58.59	
AVG. LIQUID LIMIT	58		

CLASSIFICATION: CH

ONE POINT DETERMINATION
W.C.(N/25)^.121 = LIQUID LIMIT
W.C = % MOISTURE
N = NO. OF BLOWS (>20, <30)



ATTERBERG LIMITS

ASTM D-4318

CLIENT: PathFinder

JOB NO.: 8152RM

PROJECT: Lucky Mc.

DATE: 11-15-04

SAMPLE NO.: 4

DEPTH: Barrow

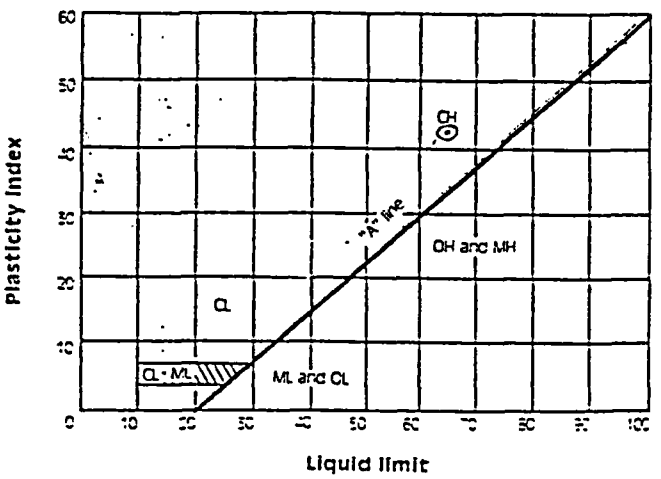
TECH.: JFM

SAMPLE DESCRIPTION: Cody Shale

Results	
LL:	65
PL:	27
PI:	43

PLASTIC LIMIT		
TRIAL NO.	1	2
TARE ID	11B	5L
WT. TARE & WET SOIL	12.88	17.12
WT. TARE & DRY SOIL	11.75	15.85
WT. TARE	6.32	10.14
% MOISTURE	20.81	22.24
AVG. PLASTIC LIMIT	22	

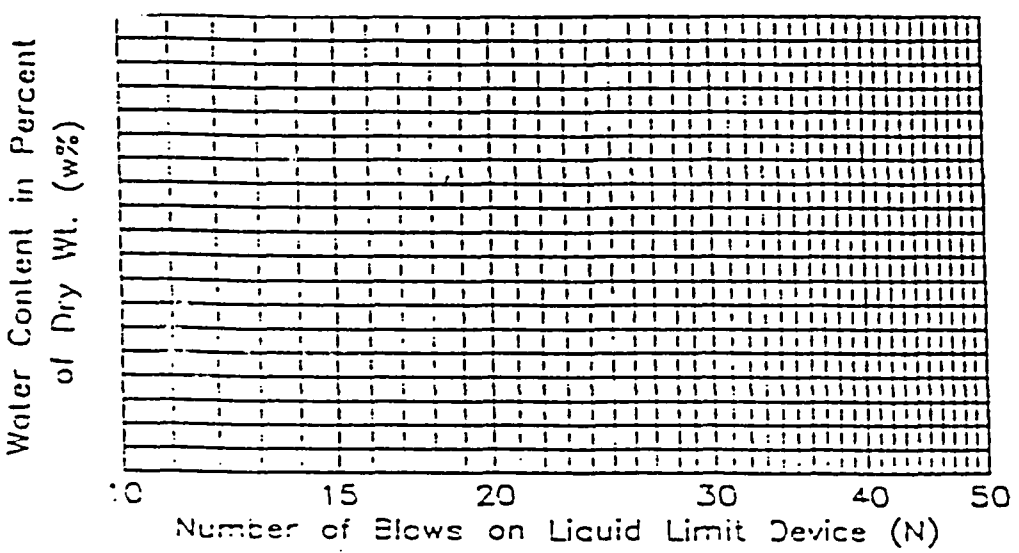
Plasticity Chart



LIQUID LIMIT			
TRIAL NO.	1	2	3
TARE ID	2A	10A	
WT. TARE & WET SOIL	41.39	43.67	
WT. TARE & DRY SOIL	37.22	38.75	
WT. TARE	30.88	31.08	
% MOISTURE	65.77	64.15	
NO. OF BLOWS	24	26	
LIQUID LIMIT	65.44	64.47	
AVG. LIQUID LIMIT	65		

CLASSIFICATION: CH

ONE POINT DETERMINATION
W.C.(N/25)^.121 = LIQUID LIMIT
W.C = % MOISTURE
N = NO. OF BLOWS (>20, <30)



ATTERBERG LIMITS

ASTM D-4318

CLIENT: Pathfinder

JOB NO.: 8152RM

PROJECT: Lucky McMine

DATE: 11-16-04

SAMPLE NO.: 5

DEPTH: Barrow

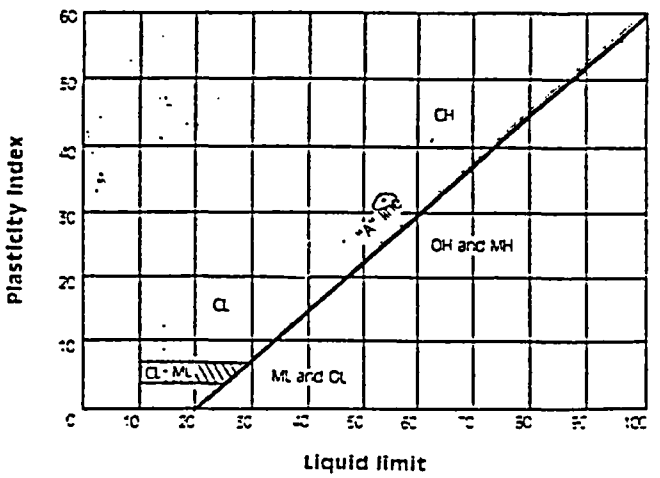
TECH.: JPM

SAMPLE DESCRIPTION: Cody Shale

Results	
LL:	54
PL:	22
PI:	32

PLASTIC LIMIT		
TRIAL NO.	1	2
TARE ID	9B	6B
WT. TARE & WET SOIL	12.74	12.33
WT. TARE & DRY SOIL	11.58	11.23
WT. TARE	6.32	6.3
% MOISTURE	22.05	22.31
AVG. PLASTIC LIMIT	22	

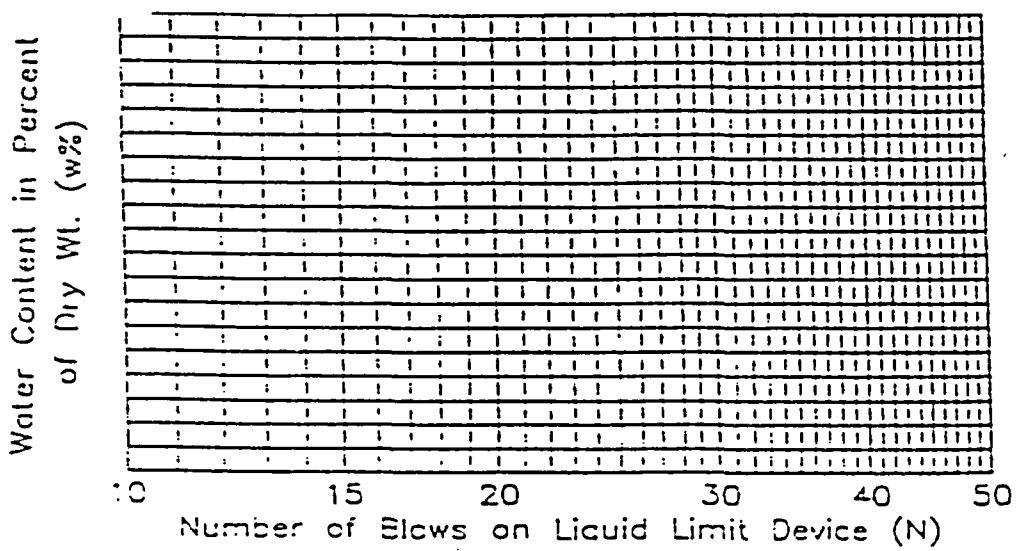
Plasticity Chart



LIQUID LIMIT			
TRIAL NO.	1	2	3
TARE ID	3A	5K	
WT. TARE & WET SOIL	41.28	34.55	
WT. TARE & DRY SOIL	37.72	30.74	
WT. TARE	30.99	23.55	
% MOISTURE	52.9	52.99	
NO. OF BLOWS	29	29	
LIQUID LIMIT	53.85	53.94	
AVG. LIQUID LIMIT	54		

CLASSIFICATION: CH

ONE POINT DETERMINATION
W.C.(N/25)^.121 = LIQUID LIMIT
W.C = % MOISTURE
N = NO. OF BLOWS (>20, <30)



ATTERBERG LIMITS

ASTM D-4318

CLIENT: Pathfinder

JOB NO.: 8152RM

PROJECT: Lucky McMine

DATE: 11-17-04

SAMPLE NO.: 6

DEPTH: Barrow

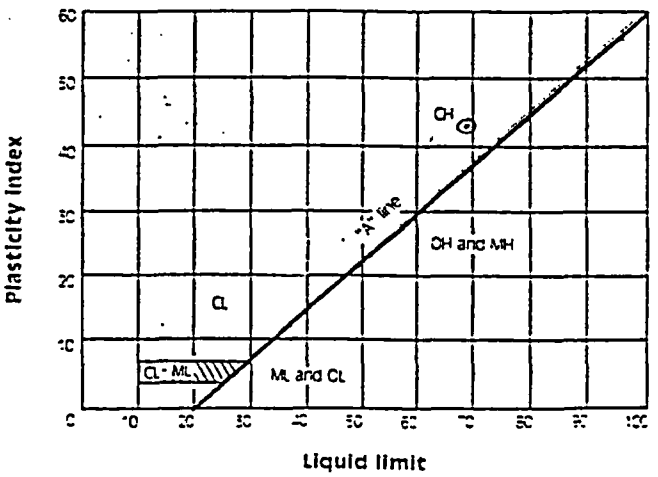
TECH.: JPM

Results	
LL:	69
PL:	25
PI:	44

SAMPLE DESCRIPTION: Cody Shale

PLASTIC LIMIT		
TRIAL NO.	1	2
TARE ID	6B	5K
WT. TARE & WET SOIL	13.11	29.78
WT. TARE & DRY SOIL	11.74	28.54
WT. TARE	6.32	23.56
% MOISTURE	25.28	24.40
AVG. PLASTIC LIMIT	25	

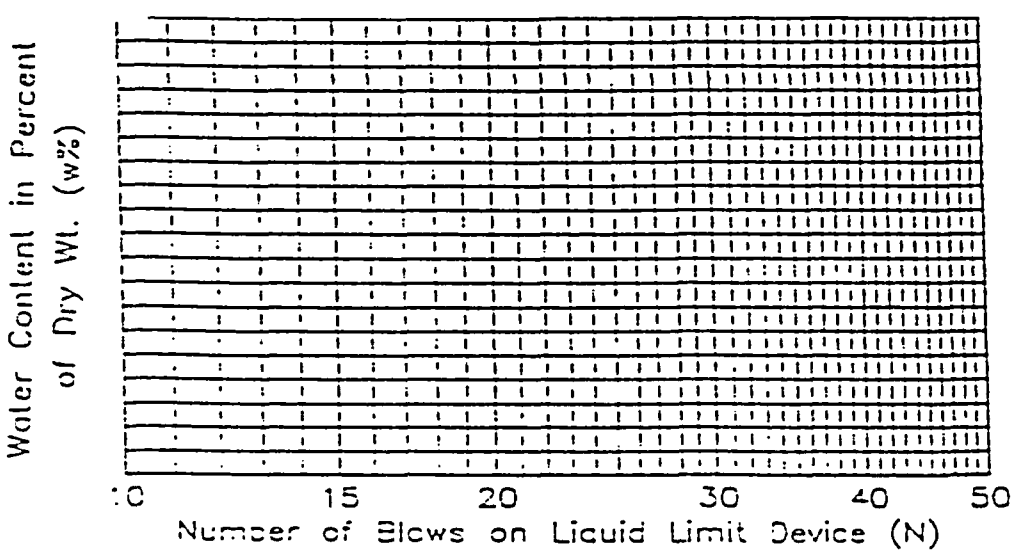
Plasticity Chart



LIQUID LIMIT			
TRIAL NO.	1	2	3
TARE ID	3A	2A	
WT. TARE & WET SOIL	42.14	40.99	
WT. TARE & DRY SOIL	37.65	36.85	
WT. TARE	31.02	30.88	
% MOISTURE	67.72	69.35	
NO. OF BLOWS	27	26	
LIQUID LIMIT	68.33	69.7	
AVG. LIQUID LIMIT	69		

CLASSIFICATION: CH

ONE POINT DETERMINATION
W.C.(N/25)^.121 = LIQUID LIMIT
W.C = % MOISTURE
N = NO. OF BLOWS (>20, <30)



ATTERBERG LIMITS

ASTM D-4318

CLIENT: Pathfinder

PROJECT: Lucky McMine

SAMPLE NO.: 7

DEPTH: Bottom

JOB NO.: 8152RM

DATE: 11-18-04

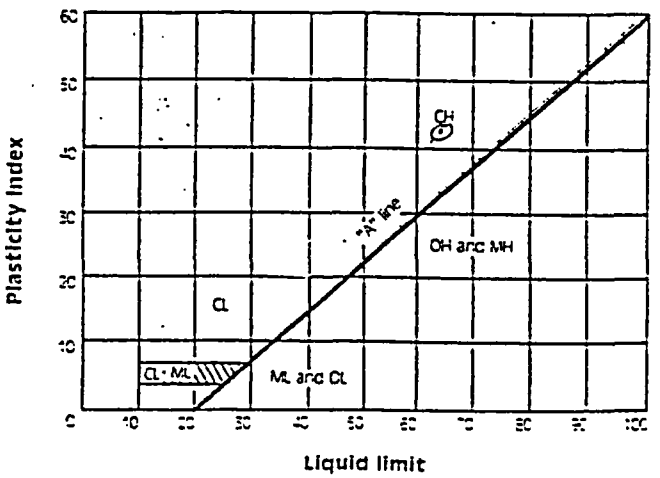
TECH.: JPM

Results	
LL:	64
PL:	21
PI:	43

SAMPLE DESCRIPTION: Cody Shale

PLASTIC LIMIT		
TRIAL NO.	1	2
TARE ID	9B	5L
WT. TARE & WET SOIL	12.67	16.22
WT. TARE & DRY SOIL	11.55	15.2
WT. TARE	6.32	10.14
% MOISTURE	21.41	20.16
AVG. PLASTIC LIMIT	21	

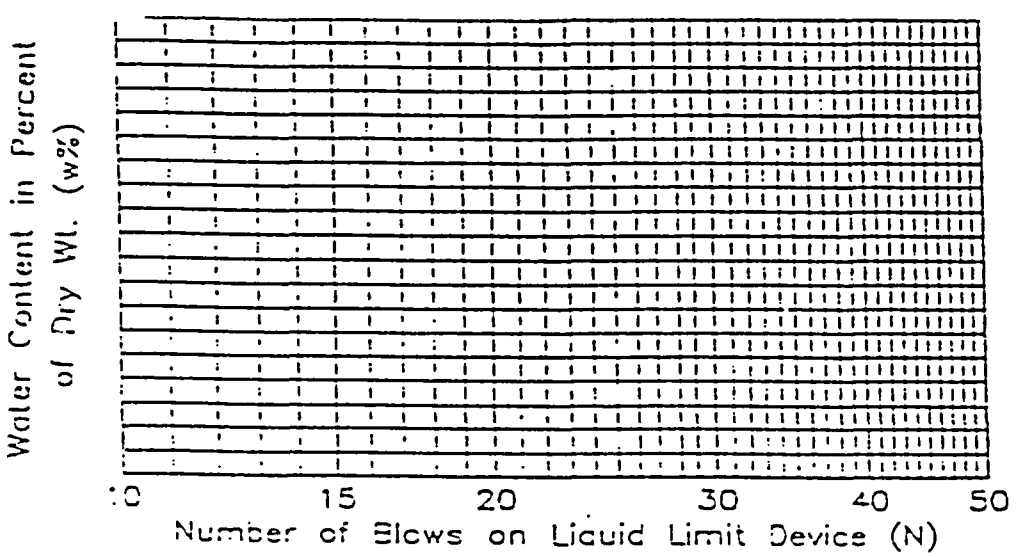
Plasticity Chart



LIQUID LIMIT			
TRIAL NO.	1	2	3
TARE ID	6K	10A	
WT. TARE & WET SOIL	24.59	42.87	
WT. TARE & DRY SOIL	24.18	38.33	
WT. TARE	23.54	31.11	
% MOISTURE	64.06	62.88	
NO. OF BLOWS	26	26	
LIQUID LIMIT	64.38	63.19	
AVG. LIQUID LIMIT	64		

CLASSIFICATION: CH

ONE POINT DETERMINATION
W.C.(N/25)^.121 = LIQUID LIMIT
W.C = % MOISTURE
N = NO. OF BLOWS (>20, <30)



ATTERBERG LIMITS

ASTM D-4318

CLIENT: Pathfinder

JOB NO.: 8152RM

PROJECT: Lucky McMine

DATE: 11-9-04

SAMPLE NO.: 8

DEPTH: Barrow

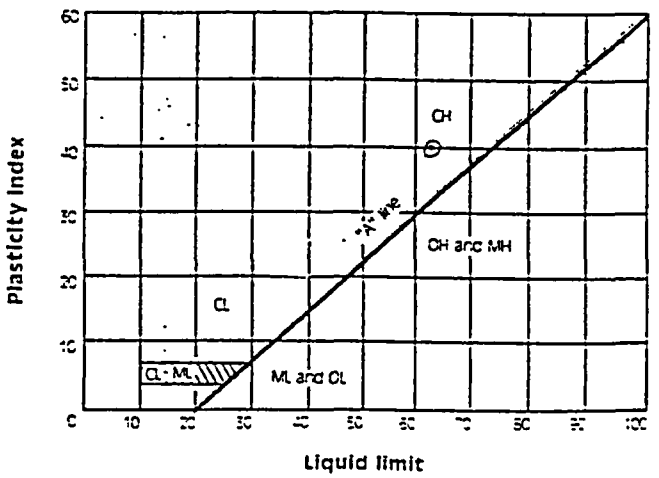
TECH.: JAM

SAMPLE DESCRIPTION: Cody Shale

Results
LL: 63
PL: 23
PI: 40

PLASTIC LIMIT		
TRIAL NO.	1	2
TARE ID	6L	6
WT. TARE & WET SOIL	29.74	20.72
WT. TARE & DRY SOIL	28.61	19.54
WT. TARE	23.7	14.45
% MOISTURE	23.01	23.18
AVG. PLASTIC LIMIT	23	

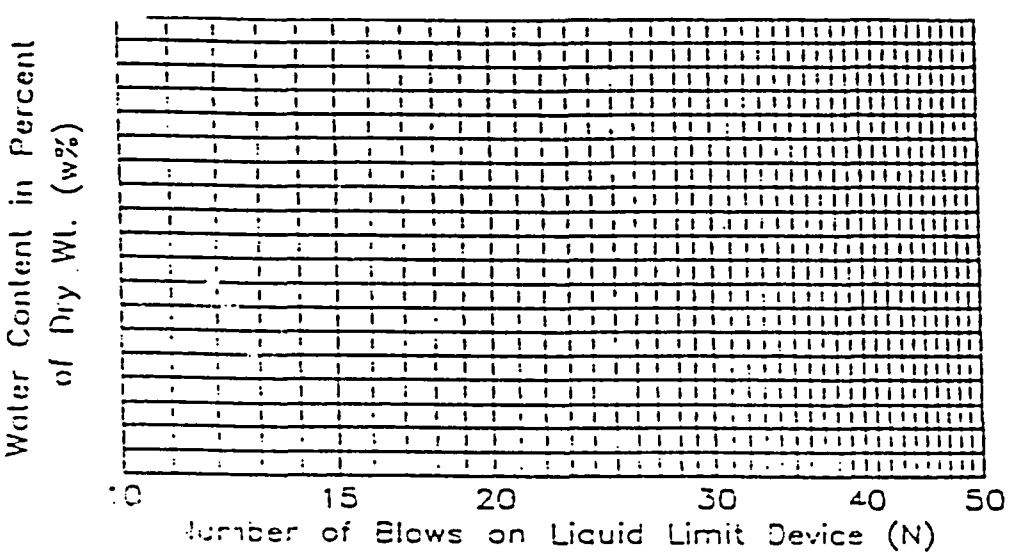
Plasticity Chart



LIQUID LIMIT			
TRIAL NO.	1	2	3
TARE ID	25	20	
WT. TARE & WET SOIL	27.45	25.66	
WT. TARE & DRY SOIL	22.34	21.12	
WT. TARE	14.36	13.9	
% MOISTURE	64.64	62.88	
NO. OF BLOWS	25	23	
LIQUID LIMIT	64.04	62.25	
AVG. LIQUID LIMIT	63.		

CLASSIFICATION: CH

ONE POINT DETERMINATION
W.C.(N/25)^.121 = LIQUID LIMIT
W.C = % MOISTURE
N = NO. OF BLOWS (>20, <30)



ATTERBERG LIMITS

ASTM D-4318

CLIENT: Pathfinder

JOB NO.: 8152RM

PROJECT: Lucky McMine

DATE: 11-22-04

SAMPLE NO.: 9

DEPTH: Borrow

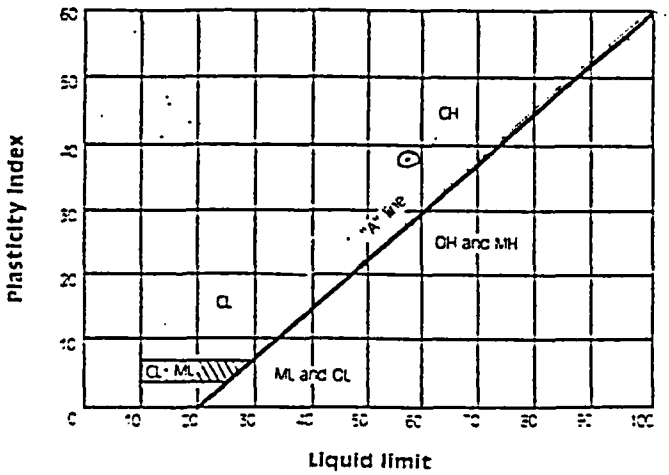
TECH.: JPM

Results
LL: 58
PL: 20
PI: 38

SAMPLE DESCRIPTION: Cody Shale

PLASTIC LIMIT		
TRIAL NO.	1	2
TARE ID	K	JT-1
WT. TARE & WET SOIL	22.91	21.05
WT. TARE & DRY SOIL	21.79	19.91
WT. TARE	16.27	14.17
% MOISTURE	20.29	19.86
AVG. PLASTIC LIMIT	20	

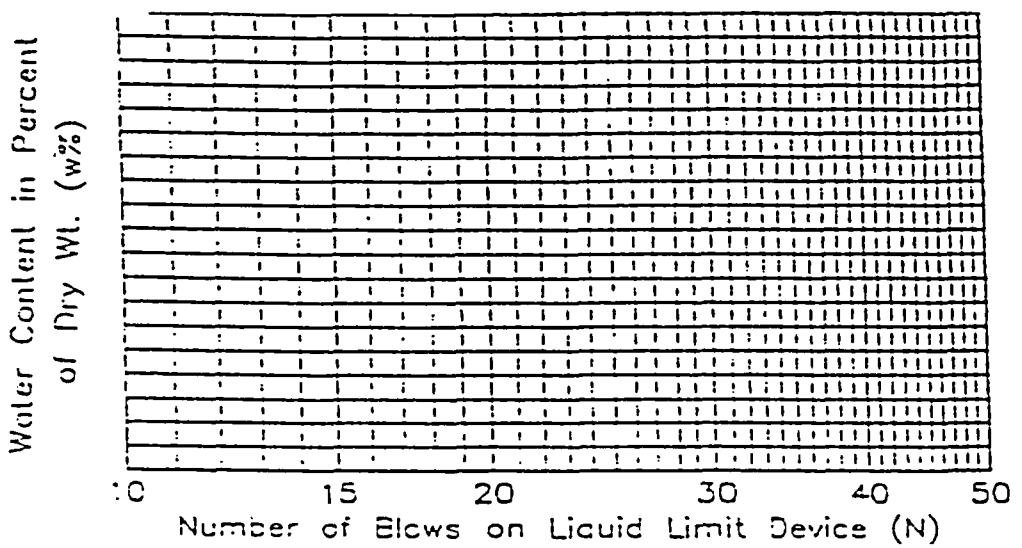
Plasticity Chart



LIQUID LIMIT			
TRIAL NO.	1	2	3
TARE ID	3TA	Ø	
WT. TARE & WET SOIL	28.24	26.32	
WT. TARE & DRY SOIL	23.16	22.51	
WT. TARE	14.46	15.86	
% MOISTURE	58.39	57.29	
NO. OF BLOWS	24	25	
LIQUID LIMIT	58.1	57.29	
AVG. LIQUID LIMIT	58		

CLASSIFICATION: CH

ONE POINT DETERMINATION
W.C.(N/25)^.121 = LIQUID LIMIT
W.C = % MOISTURE
N = NO. OF BLOWS (>20, <30)



COMPACTION TEST

(ASTM D 698 & ASTM D 1557)

Project: Lucky McMine — Job No.: 8152RM

Client: Pathfinder — Boring No.:

Sample No.: 1

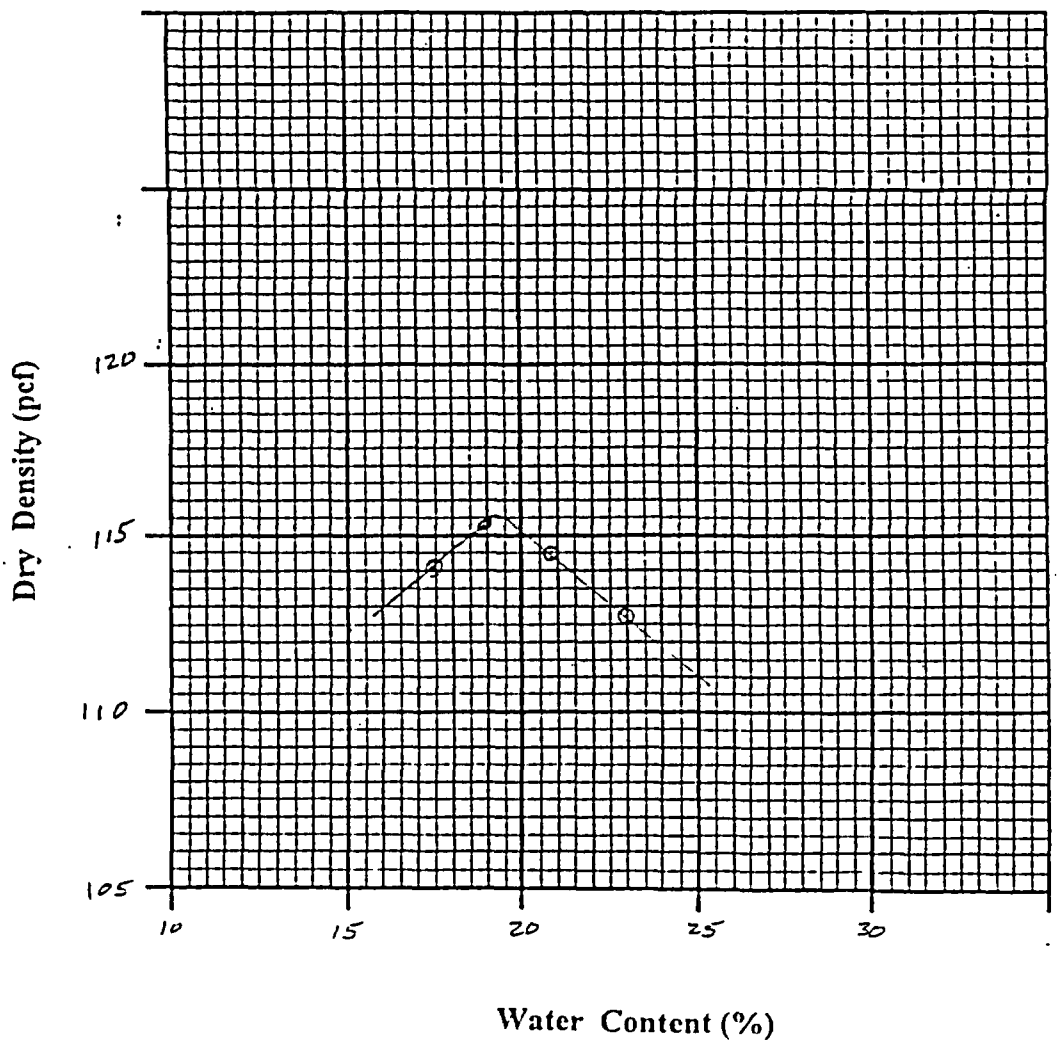
Soil Description: Cody Shale — Depth:

Source: Borrow — Test Date: 11-7-04

Method: "A" – 3/4 — Tested By: JPM

Desired Moisture Content	+4	+6	+8	+10			
Wt. of Mold and Moist Soil (lbs)	13.79	13.9	13.94	13.95			
Wt. of Mold (lbs)	9.32	9.32	9.32	9.32			
Wt. of Moist Soil (lbs)	4.47	4.58	4.62	4.63			
Vol. of Mold (ft^3)	.0334	.0334	.0334	.0334			
WET DENSITY (pcf)	133.8	137.1	138.3	138.6			

Tare No.	4A	6A	1	3			
Wt. of Soil & Tare (wet)	736.5	928.4	782.4	841.8			
Wt. of Soil & Tare (dry)	658.1	813.4	683.1	722.1			
Wt. of Tare	207.4 [452.7]	204.9 [608.5]	205.8 [477.3]	201.6 [119.7]			
MOISTURE CONTENT (%)	17.4	18.9	20.8	23.0			
DRY DENSITY (pcf)	114.0	115.3	114.5	112.7			



Maximum Dry Density = 115.5 pcf — Optimum Moisture Content = 19.1 %

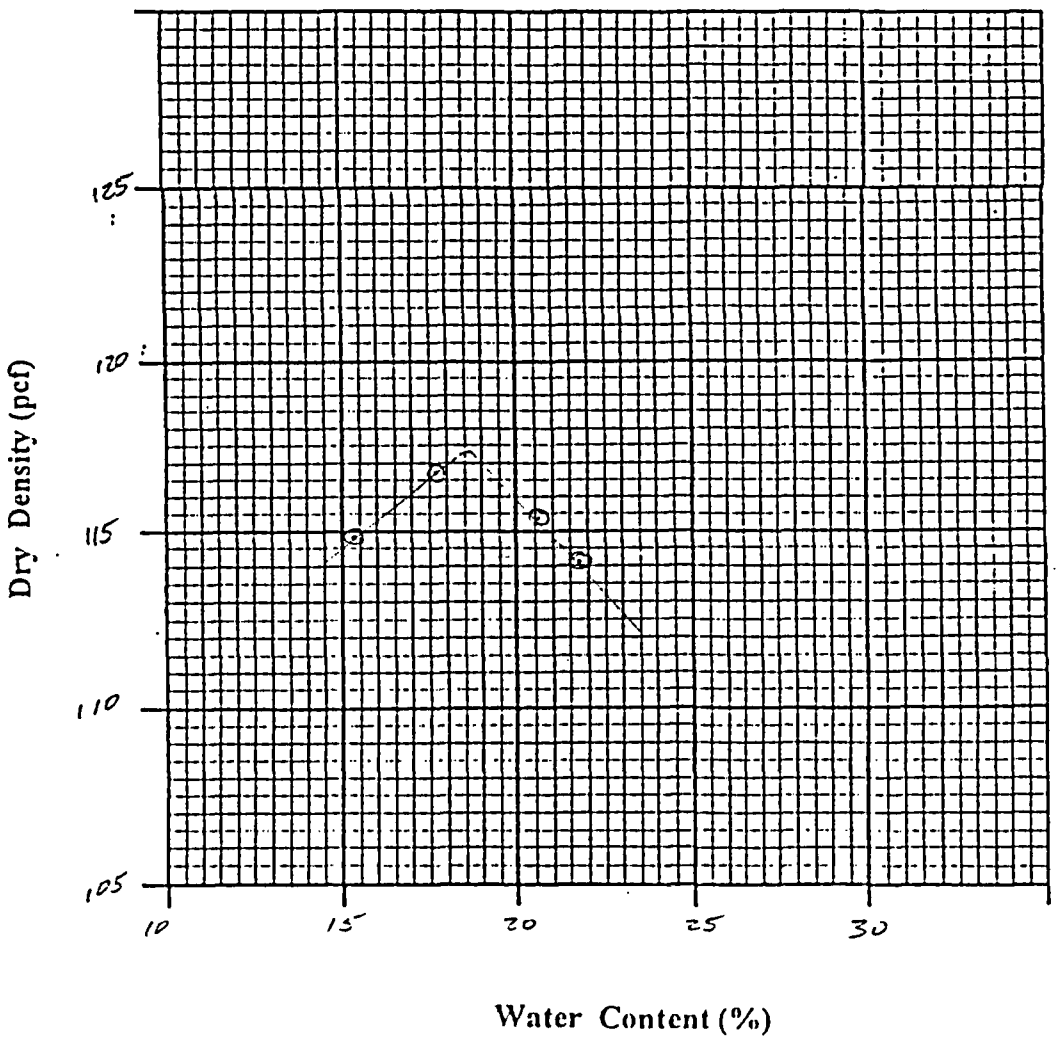
COMPACTION TEST

(ASTM D 698 & ASTM D 1557)

Project: Lucky McMine
Job No.: 8152RM
Client: Pathfinder
Boring No.:
Sample No.: 2
Soil Description: Cody Shale
Depth:
Source: Fill
Test Date: 11-9-05
Method: "A" - 3/4
Tested By: JPM

Desired Moisture Content	+6	+8	+10	+4			
Wt. of Mold and Moist Soil (lbs)	13.91	13.97	13.96	13.74			
Wt. of Mold (lbs)	9.32	9.32	9.32	9.32			
Wt. of Moist Soil (lbs)	4.59	4.65	4.64	4.42			
Vol. of Mold (ft^3)	.0334	.0334	.0334	.0334			
WET DENSITY (pcf)	137.425	139.222	138.922	132.335			

Tare No.	6A	3	4A	1			
Wt. of Soil & Tare (wet)	791.5	861.4	757.9	714.8			
Wt. of Soil & Tare (dry)	703.3	748.7	657.3	647.3			
Wt. of Tare	204.9 495.4	201.6 547.1	207.4 449.9	205.8 441.5			
MOISTURE CONTENT (%)	17.7	20.6	21.7	15.3			
DRY DENSITY (pcf)	116.8	115.4	114.2	114.8			



Maximum Dry Density = 117.3 pcf

Optimum Moisture Content = 18.6 %

STANDARD PROCTOR ASTM

COMPACTION TEST

(ASTM D 698 & ASTM D 1557)

Project: Lucky McMine — Job No.: 8152RM

Client: Pathfinder — Boring No.:

Sample No.: 3

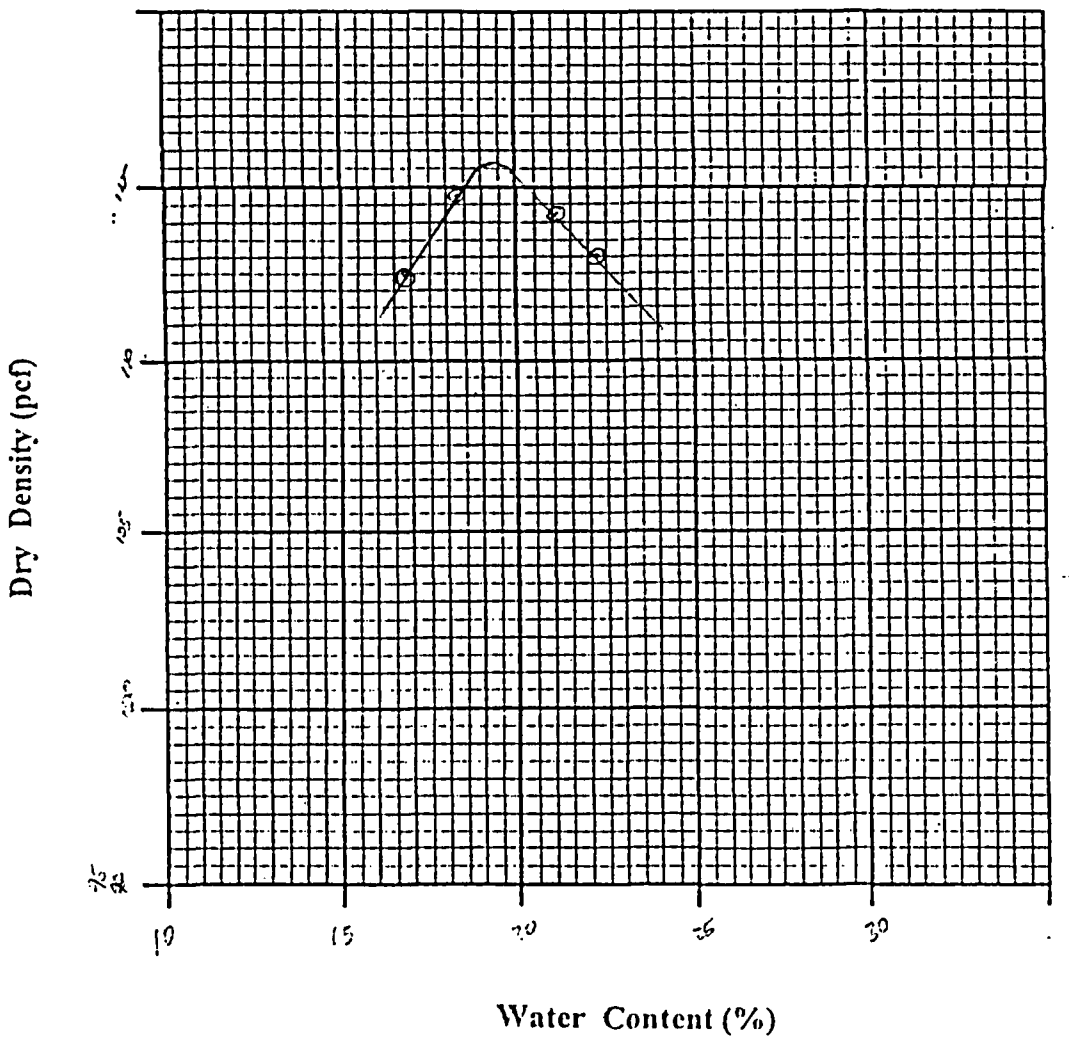
Soil Description: Cody Shale — Depth:

Source: Fill — Test Date: 11-14-05

Method: "A" - 3/4 — Tested By: JPM

Desired Moisture Content	+8	+10	+12	+6			
Wt. of Mold and Moist Soil (lbs)	14.04	14.13	14.12	13.9			
Wt. of Mold (lbs)	9.52	9.52	9.52	9.52			
Wt. of Moist Soil (lbs)	4.52	4.61	4.6	4.38			
Vol. of Mold (ft^3)	.0333	.0333	.0333	.0333			
WET DENSITY (pcf)	135.74	138.4	138.14	131.53			

Tare No.	1	3	6A	4A			
Wt. of Soil & Tare (wet)	793.5	826.4	870.4	791.5			
Wt. of Soil & Tare (dry)	702.6	717.5	749.3	707.1			
Wt. of Tare	205.8	201.9	204.7	207.6			
MOISTURE CONTENT (%)	18.3	21.1	22.2	16.9			
DRY DENSITY (pcf)	114.7	114.3	113.0	112.5			



Maximum Dry Density = 115.7 pcf — Optimum Moisture Content = 19.4 %

STANDARD PROCTOR (ASTM D-698) — MODIFIED PROCTOR (ASTM D-1557)

COMPACTION TEST

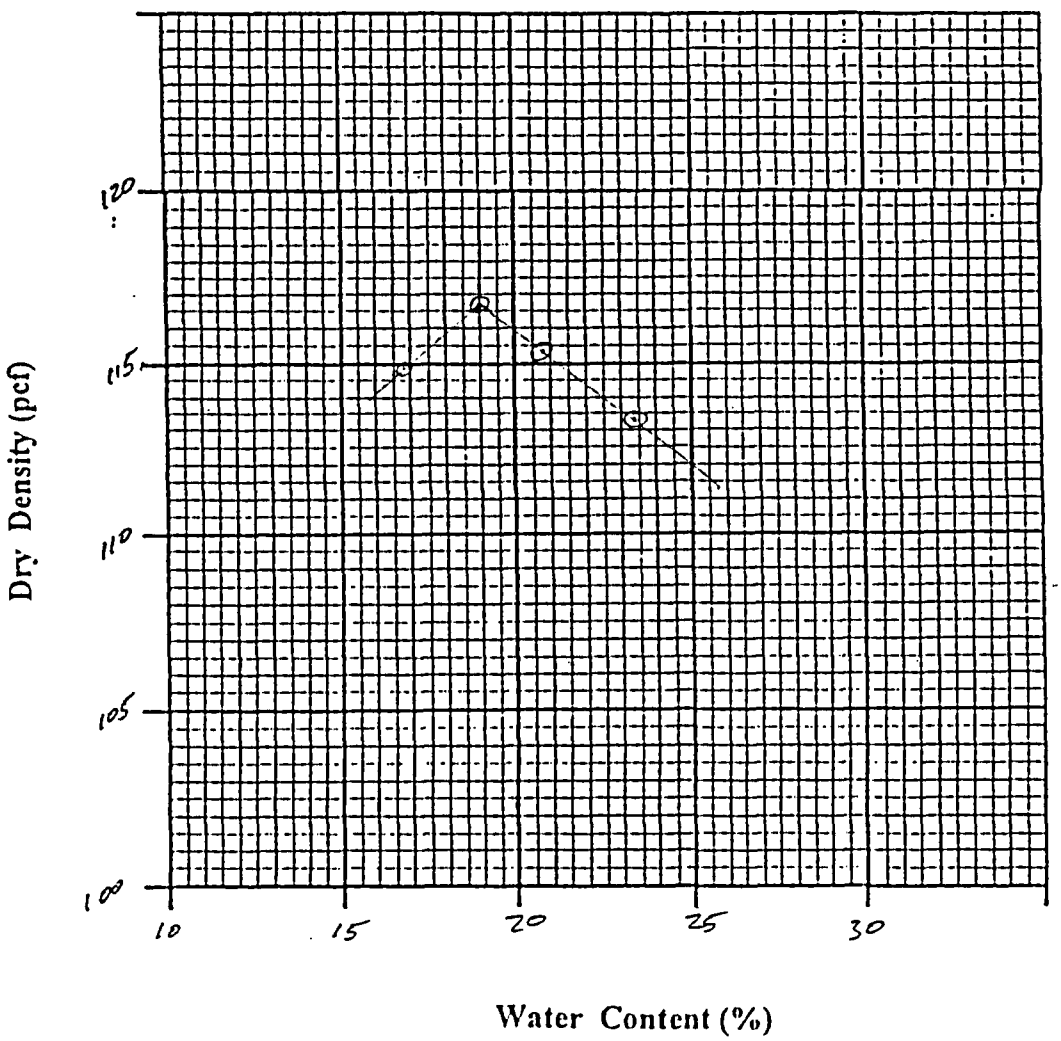
(ASTM D 698 & ASTM D 1557)

Project: Lucky McMore
Client: Pathfinder
Soil Description: Cody Shale
Source: Ramaw
Method: "A" -3/4

Job No.: 8152RM
Boring No.:
Sample No.: 4
Depth:
Test Date: 11-14-05
Tested By: JAM

Desired Moisture Content	-4	+6	+8	+10			
Wt. of Mold and Moist Soil (lbs)	13.99	14.14	14.16	14.18			
Wt. of Mold (lbs)	9.52	9.52	9.52	9.52			
Wt. of Moist Soil (lbs)	4.47	4.62	~~4.62~~ 4.64	4.66			
Vol. of Mold (ft^3)	.0333	.0333	.0333	.0333			
WET DENSITY (pcf)	134.23	138.74	139.34	139.94			

Tare No.	Ø	JPK	RAD	SRH			
Wt. of Soil & Tare (wet)	862.5	714.8	913.4	885.4			
Wt. of Soil & Tare (dry)	757.1	640.1	780.7	744.2			
Wt. of Tare	135.8	139.2	139.4	140.7			
MOISTURE CONTENT (%)	16.8	19.0	20.7	23.4			
DRY DENSITY (pcf)	114.9	116.6	115.4	113.4			



Maximum Dry Density = 116.6 pcf

Optimum Moisture Content = 19.0 %

STANDARD PROCTOR (ASTM D-698)

MODIFIED PROCTOR (ASTM D-1557)

COMPACTION TEST

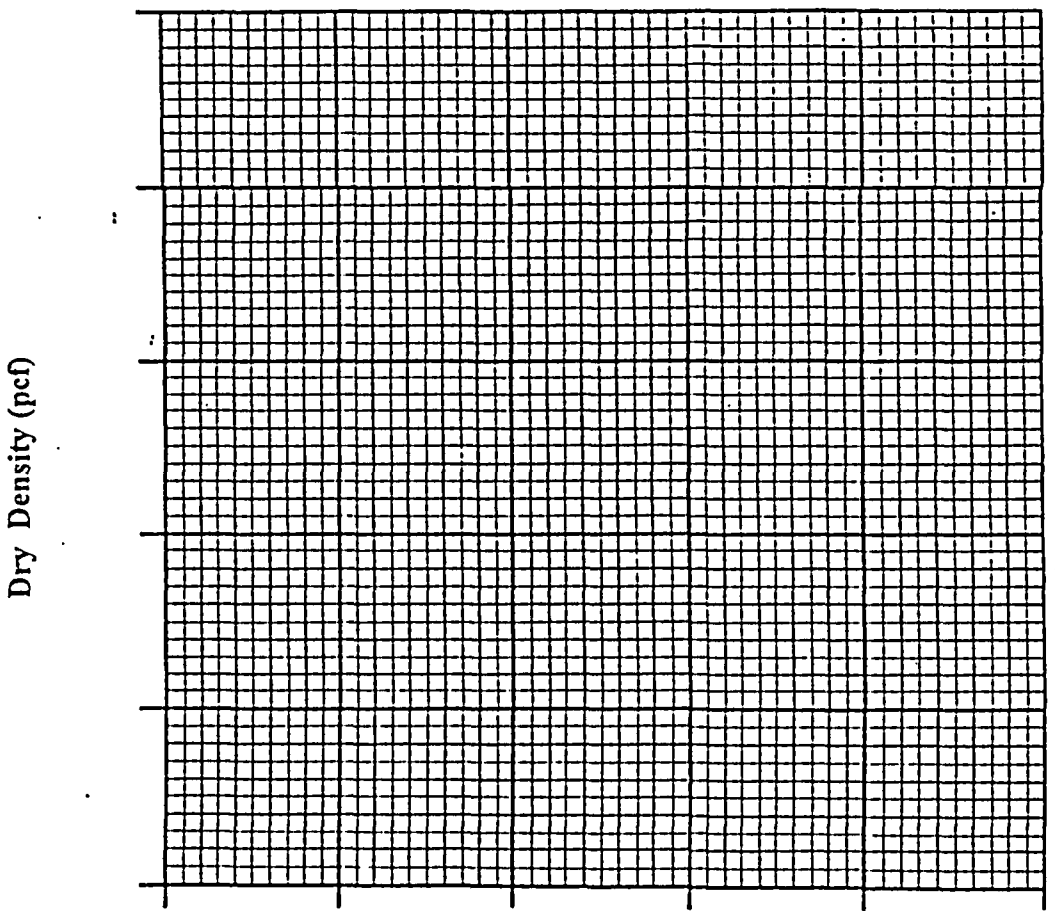
(ASTM D 698 & ASTM D 1557)

Project: Lucky McMine
Client: Pathfinder
Soil Description: one-points
Source: Fill
Method: "A" & ½"

Job No.: 8152RM
Boring No.:
Sample No.:
Depth:
Test Date: 2004
Tested By: JPM

Desired Moisture Content	1A	1B	2A	2B	3A	3B	4A	4B
Wt. of Mold and Moist Soil (lbs)	13.94	13.83	13.85	13.74	13.47	13.87	14.16	13.8
Wt. of Mold (lbs)	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52
Wt. of Moist Soil (lbs)	4.32	4.31	4.33	4.22	3.95	4.35	4.64	4.32
Vol. of Mold (ft^3)	.0333	.0333	.0333	.0333	.0333	.0333	.0333	.0333
WET DENSITY (pcf)	129.73	129.43	130.03	126.73	118.62	130.63	139.34	129.

Tare No.	622	622	622	105	105	622	622	105
Wt. of Soil & Tare (wet)	641.3	790.8	736.4	671.9	840.2	596.4	731.3	742.3
Wt. of Soil & Tare (dry)	559.5	691.8	647.7	597.4	756.3	516.9	617.7	651.1
Wt. of Tare	32.0	32.1	32.0	32.6	32.7	32.0	32.0	32.6
MOISTURE CONTENT (%)	15.5	15.0	14.4	13.2	11.6	16.4	19.4	14.7
DRY DENSITY (pcf)	112.3	112.5	113.7	111.9	106.3	112.2	116.7	113.1



Water Content (%)

Maximum Dry Density = _____ pcf

Optimum Moisture Content = _____ %

N 794200.00
E 802400.00

N 794200.00
E 803400.00

N

N 793100.00
E 802400.00

N 793100.00
E 803400.00