

October 12, 2006

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U.S. Nuclear Regulatory Commission
ATTN: Mr. Myron Fliegel, Senior Project Manager
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
And Safeguards, NMSS
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738

Subject: Sequoyah Fuels Corporation, Docket – 40-8027
Response to OIs on the Final Safety Evaluation Report –
Reclamation Plan (TAC L52511)

Dear Mike,

You identified 3 open issues (OI) on the Reclamation Plan (OI.21, OI.22, and OI.24) that were not closed by SFC's initial response to these items. We discussed the OIs and a possible resolution to each one in a telephone conference held September 18, 2006. Please find enclosed with this letter SFC responses to the OIs discussed in that telephone conference.

We have not yet received the petrographic analysis report from the laboratory but expect to have it in a few days. A preliminary report received from the lab indicates that the rock we have selected is acceptable without additional changes to the specifications presented here. The final report will be forwarded to you when we receive it.

If you have any questions, don't hesitate to call me at (918) 489-5511, ext. 13.

Sincerely,



John H. Ellis
President

Enclosure

XC: Alvin Gutterman, MLB
Rita Ware, EPA
Clint Strachen, MFG

Jeanine Hale, CN
Trevor Hammons, OAG

**Sequoyah Fuels Corporation
Draft Safety Evaluation Report (DSER)
Remaining Open Issues as of September 2006**

DSER OI.20

The licensee needs to provide a design for rock armor protection of stream 005, and clarification of the bed slope and depth to sedimentary rock along the 005 drainage.

Response:

The rock armor protection at the 005 drainage has been enlarged, based on discussions with NRC. The updated rock armor protection layout is shown in Figure 1. Figure 2 provides a plan and profile along the 005 drainage, showing depth to sedimentary rock (from available drill hole information and surface reconnaissance) and planned excavation at the toe of the disposal cell.

On the north, west, and south sides of the disposal cell, runoff at the toe of the slopes is directed over the perimeter apron to natural ground. On the west side of the disposal cell above the 005 drainage, runoff will be directed over the rock armor protection into the 005 drainage.

On the east side of the disposal cell, runoff from the top of the cell and a small catchment east of the cell will be collected and directed to the northeast and southeast corners of the cell. As shown on the reclaimed disposal cell layout (Reclamation Plan Attachment A), approximately 5.4 acres of land between the cell and the east facility boundary line will drain towards the east side of the cell. This flow and runoff from the top of the cell will be intercepted by the diversion channel on the east side of the cell, and will direct flow to the northeast and southeast corners of the cell (Reclamation Plan, Attachment A). The perimeter apron on the east side of the cell is extended to a 60-foot width and will be shaped as a trapezoidal channel with a depth of one foot to form the diversion channel. The rock channel will have the same rock size as the perimeter apron rock, and will be placed in a minimum 24-inch thick layer.

The rock apron on the west side of the disposal cell has been enlarged to provide protection in the unlikely event of headward erosion from Stream 005. The rock apron is a downstream extension of the perimeter apron at the toe of the disposal cell slopes and is located where runoff from the west slope of the disposal cell discharges into the east end of the 005 drainage. The rock apron will be constructed with the perimeter apron rock and keyed into underlying shale.

DSER OI.21

The licensee needs to clarify the specifications for riprap rock gradation for three issues: (1) the gradation requirements are not stringent enough ensure that the required median particle size (D_{50}) can be achieved; (2) the gradation requirements should be adjusted to reflect placement of erosion protection rock only (with fines addition as a second step); and (3) the gradation requirements should be based on use of angular material only (if the licensee is sure that the nearby limestone quarry will be the only material source). The licensee may also adjust the gradation requirements of the erosion protection rock on the various side slopes of the disposal cell, since all of the side slope material has been sized for the most conservative flow case.

Response:

The gradations for the rock mulch layer on the side slopes of the disposal cell have been modified for construction in two stages: (1) placement of the rock portion of the rock mulch layer, and (2) placement and working of soil into the rock to form the rock mulch layer. This modification has been made upon discussions with NRC, to facilitate construction quality assurance testing for the rock portion of the rock mulch layer.

The gradation for the rock portion of the rock mulch layer has been limited to angular rock (since the licensee has selected a limestone quarry as the preferred riprap source), and has been separated by individual side slope (due to the difference in catchment area and design storm runoff). The north and west slopes of the disposal cell will have runoff from precipitation on the side slopes only. The calculated median (D₅₀) rock size of north and west slope rock is 2.7 inches. The south and east slopes of the disposal cell will have runoff from precipitation on the top and side slopes, with a calculated median rock size of 3.4 inches. The proposed modification to Section 7.2.5 of the Technical Specifications (Reclamation Plan Attachment A) to reflect the adjustments described above are outlined below.

7.2.5 Rock Mulch

The rock mulch will be placed on the disposal cell side slopes and edge of top surface (as shown on the Drawings) for erosion protection. Rock mulch material shall be free from roots, branches, rubbish, and debris.

The rock portion of the rock mulch will consist of granular materials from approved off-site areas meeting NRC long-term durability requirements (a rock quality designation of 60 or more, as outlined in Appendix D of the 1990 NRC Staff Technical Position, Design of Erosion Protective Covers). If limestone from the Souter Quarry is used for the rock portion of the rock mulch, the median particle size shall be no less than 3.4 inches for material on the south and east slopes, and the median particle size shall be no less than 2.7 inches on the north and west slopes. The rock portion of the rock mulch shall meet the following particle-size specifications:

	<u>South and East Slopes</u>	<u>North and West Slopes</u>
<u>Sieve Size</u>	<u>Percent Passing</u>	<u>Percent Passing</u>
9 inch	100	100
6 inch	50-100	50-100
4 inch	35-65	35-65
1.5 inch	0-30	0-40
¾ inch	0-20	0-30

The gradation for perimeter apron material has been modified to be more closely aligned with the median rock size (6.8 inches for angular rock from a nearby limestone quarry). Because the calculated median size of perimeter apron material does not vary significantly among side of the cell, one gradation is planned for all of the perimeter apron material. The proposed modification to Section 7.2.6 of the Technical Specifications (Reclamation Plan Attachment A) to reflect this gradation adjustment is outlined below.

7.2.6 Perimeter Apron Rock

Material for the perimeter apron and Gully 005 erosion protection will consist of granular materials from approved off-site areas. The perimeter apron rock will be placed along the toe of the disposal cell and in the Gully 005 erosion protection area (as shown on the Drawings). Perimeter apron rock shall meet NRC long-term durability requirements (a rock quality designation of 60 or more, as outlined in Appendix D of the 1990 NRC Staff Technical Position, Design of Erosion Protective Covers).

Perimeter apron rock shall be free from roots, branches, rubbish, and debris. If limestone from the Souter Quarry is used for perimeter apron rock, the median particle size shall be no less than 6.8 inches, and shall meet the following particle-size specifications:

<u>Sieve Size</u>	<u>Percent Passing</u>
16 inch	100
12 inch	50-100
6 inch	30-55
4 inch	20-40
1 ½ inch	0-25

The gradations for the rock portion of the rock mulch and perimeter apron materials are shown in Figure 3.

DSER OI.22

The licensee needs to provide information necessary to show that rock of acceptable durability will be used for flood protection. Because the licensee is planning to use a limestone source for erosion protection material, licensee needs to provide a petrographic analysis of the proposed erosion protection material to include in the rock quality scoring evaluation.

Response:

Two rock sources have been evaluated by SFC: (1) a limestone quarry (Souter Quarry) near the site, and (2) several gravel pits in the site area. Rock from the Souter Quarry has been previously evaluated for durability by SFC, with preliminary results documented in the Disposal Cell Construction Plan (Reclamation Plan Attachment E). The gravel pits in the site area contain rounded particles of chert and other durable materials, but are limited to particles of up to 6 to 8-inch size. No durability testing of the gravel pit materials has been conducted.

The rock size requirements for the rock mulch and perimeter apron are near the upper limit of what can be produced from the gravel pits in the site area. Therefore the limestone quarry is the preferred source for erosion protection materials. From the tests results presented in the Disposal Cell Construction Plan, the rock quality designation for the limestone is 69, indicating acceptable durability with an oversizing factor of 11 percent. As requested by NRC, a petrographic analysis of a representative sample of the limestone is being conducted. This analysis is conducted to supplement the previous durability testing with a parameter that has a high rock quality weighting factor for limestone. The analysis is being conducted according to the appropriate ASTM specification, with special observation of the clay mineralogy of the sample.

DSER OI.24

In the rock durability testing program, the licensee needs to specify at least four tests for confirmation of erosion protection material durability (if one material source is used). The tests should be conducted on samples collected throughout production, such as at the beginning, 1/3 point, 2/3 point, and completion of material production.

Response:

The durability testing requirement will be added to the gradation testing requirement in Sections 7.4.5 and 7.4.6 of the Technical Specifications (Reclamation Plan Attachment A). The proposed modifications to these sections are presented below. Durability testing will be specified at a frequency equivalent to two tests on rock mulch material and two tests on perimeter apron material, since these materials will be from the same source.

7.4.5 Rock Mulch Testing

The gradation specifications for the rock used for rock mulch material (Specification Section 7.2.5) shall be confirmed by gradation testing conducted by approved personnel. Testing shall consist of particle-size distribution testing (ASTM D-422) at a frequency of at least one test per 2,000 cubic yards of rock delivered to the site, or when rock characteristics show a significant variation.

The durability of the rock used for rock mulch material shall be verified by durability tests outlined in Appendix D of the 1990 NRC Staff Technical Position, Design of Erosion Protective Covers. The rock used for rock mulch material shall have a minimum rock quality designation of 60.

If limestone from the Souter Quarry is used for the rock portion of the rock mulch and the perimeter apron rock, durability tests shall be conducted on four (or more) samples from the selected rock source representing initial production, 1/3 of production, 2/3 of production, and completion of production of the rock mulch and perimeter apron materials.

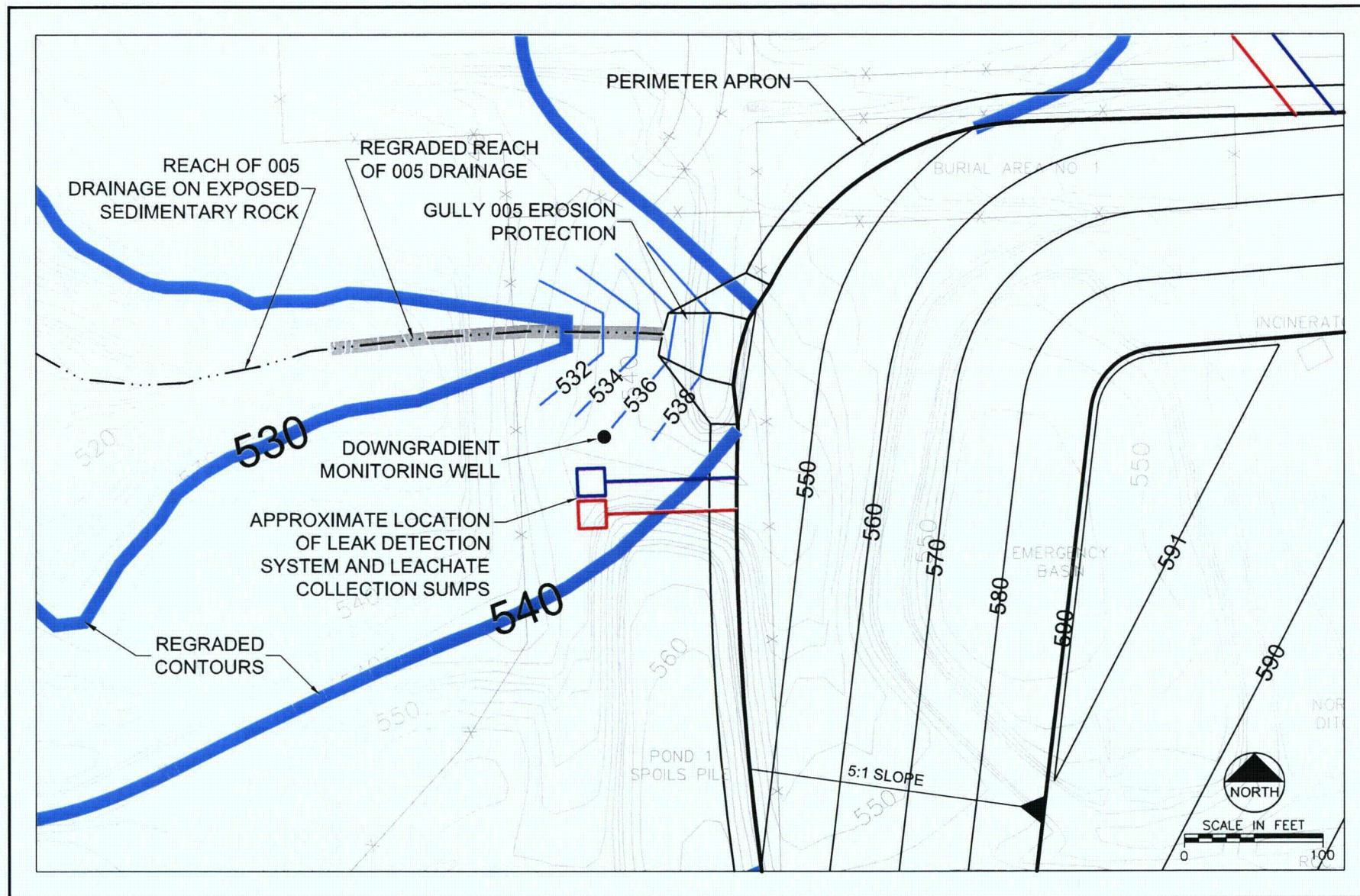
Rock mulch thickness will be established during construction with grade stakes placed on a grid pattern and layer thickness marks on each grade stake. The minimum thickness of the rock mulch layer will be verified by spot checking of layer thickness by excavation in selected locations.

7.4.6 Perimeter Apron Rock Testing

Material specifications for the perimeter apron rock shall be confirmed by gradation testing conducted by approved personnel. Testing shall consist of particle-size distribution testing (ASTM D-422) at a frequency of at least one test per 2,000 cubic yards of rock delivered to the site, or when rock characteristics show a significant variation.

The durability of the rock shall be verified by durability tests outlined in Specification Section 7.4.5.

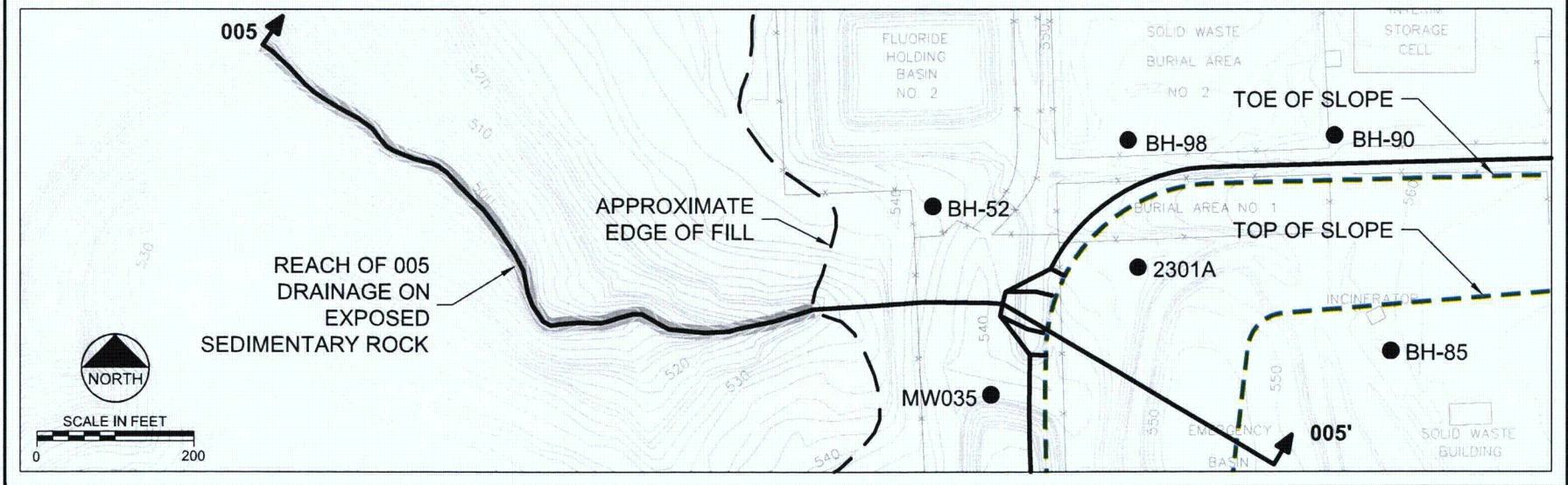
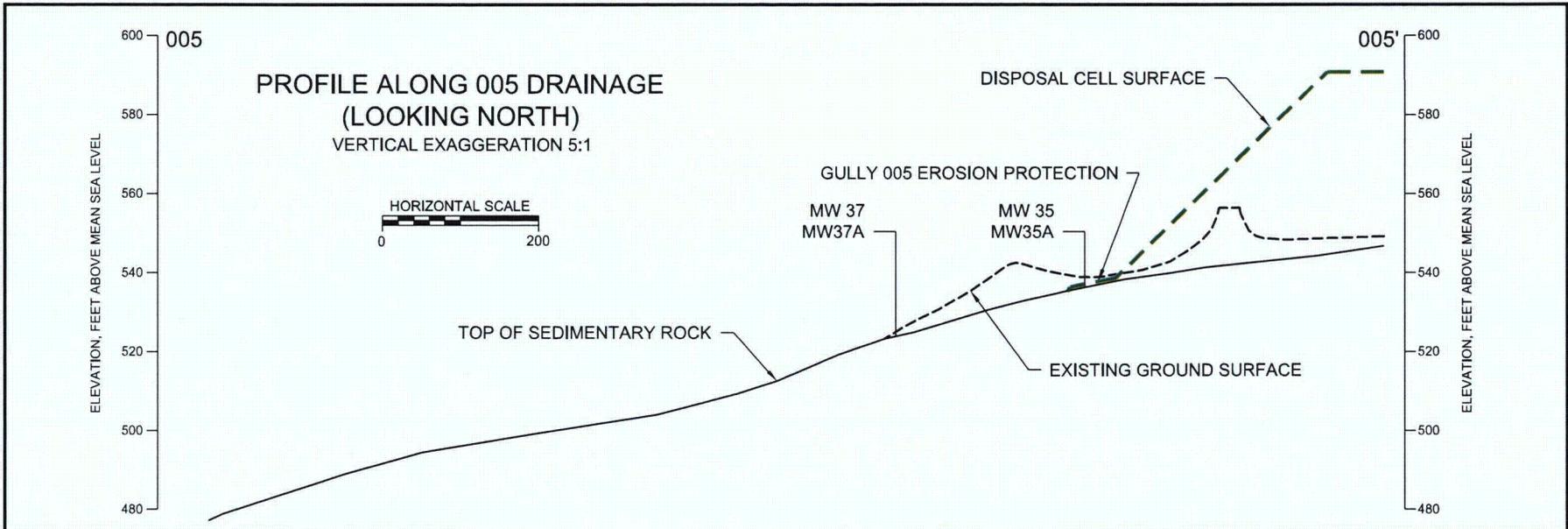
Rock layer thickness will be established during construction with grade stakes placed on a grid or centerline and offset pattern and layer thickness marks on each grade stake. The minimum thickness of the rock mulch layer will be verified by spot checking of layer thickness by excavation in selected locations.



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FIGURE 1
EROSION PROTECTION FACILITIES AT TOP OF STREAM 005 DRAINAGE

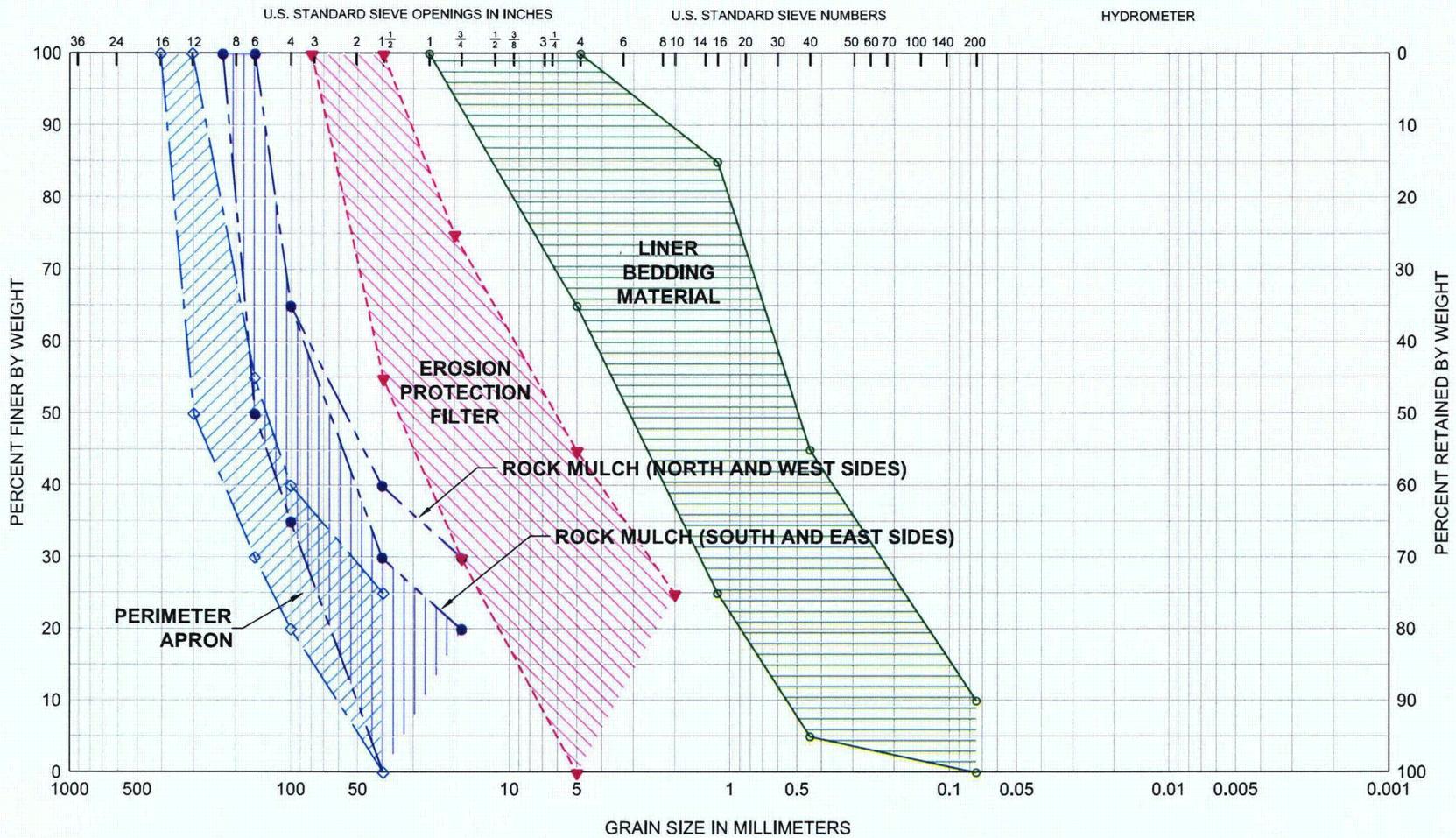
Date:	OCTOBER 2006
Project:	180735
File:	FIG-005-02.DWG



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**FIGURE 2
005 DRAINAGE PROFILE**

Date:	OCTOBER 2006
Project:	180735
File:	PP-005.DWG



BOULDERS	COBBLES	GRAVEL		SAND			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

FIGURE 3
PARTICLE-SIZE DISTRIBUTIONS OF EROSION PROTECTION AND
BEDDING MATERIALS

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