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Robert E. Browning, Director
Division of Waste Management
U.S. Nuclear Regulatory Commission
Mail Stop SS-623
Washington, D.C. 20555

Dear Mr. Browning:

On January 24, 1985, I forwarded to you copies of the Department's "Annotated Outline for Site Characterization Plans", (AO). This AO will be the subject of discussion at the meeting to be held at 8:30 a.m., Wednesday, February 13, in room GE069 of the Forrestal Building. It was developed to allow the department to consistently implement the requirement of Regulatory Guide 4.17 program-wide. The requirements of the Nuclear Waste Policy Act and Regulatory Guide 4.17 provide the basis for development of the AO, and I believe that the documents are entirely consistent.

Enclosed for your information is a copy of a companion document titled, "Correlation of Regulatory Guide 4.17 with the Annotated Outline". This correlation was prepared as an attachment to the AO to demonstrate its consistency with the regulatory guide and to explain any format changes and additions which are proposed.

Should you have any questions regarding the correlation document, please contact Carol Hanlon of my staff at 252-1224.

Sincerely,

Ralph Stein
Ralph Stein, Acting Director
Engineering & Licensing Division
Office of Civilian Radioactive
Waste Management

Attachment

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ATTACHMENT A

CORRELATION OF REGULATORY GUIDE 4.17

WITH THE ANNOTATED OUTLINE

The Annotated Outline for Site Characterization Plans (AO) was prepared by the DOE with the intent of addressing all of the material contained in NRC Regulatory Guide 4.17: "Standard Format and Content of Site Characterization Plans for High-Level-Waste Geologic Repositories" (Proposed Revision 1 dated September 1984). This attachment correlates the information requested in each section of Regulatory Guide 4.17 with corresponding sections of the AO where that information has been addressed.

The format of Regulatory Guide 4.17 and the format of the AO are essentially the same. The AO presents background material referred to as "Introduction to the Annotated Outline" which is similar to the "Introduction" of Regulatory Guide 4.17. This background material provides general information about site characterization and the SCP, and does not represent any specific section that will be written in the SCP. In this background material presented in the AO, the text of Regulatory Guide 4.17 is generally used verbatim; notable exceptions are listed in Table 1.

The AO calls for an introductory chapter in the SCP referred to as "Introduction," which provides a description of the purpose and scope of the SCP, relevant program history, requirements of the Nuclear Waste Policy Act for the program, and the organization of the SCP. This introductory chapter, while not requested by Regulatory Guide 4.17, is considered important material to include in the SCP.

For Chapters 1 through 8, there is a one-to-one correspondence between Regulatory Guide 4.17 and the AO. Tables 2 through 9 provide a correlation of Regulatory Guide 4.17 with the AO for the contents of Chapters 1 through 8, respectively. In the left hand column, a list of the section and subsection titles for each chapter in Regulatory Guide 4.17 is presented. In the middle column, the section or subsection of the AO that addresses the information requested in the Regulatory Guide section or subsection is indicated. In the right hand column, an explanation and rationale for differences between Regulatory Guide 4.17 and the AO is provided. For some sections or subsections of Regulatory Guide 4.17, the requested information is provided in more than one section or subsection of the AO. In such cases, individual topics are listed in the left hand column and the location in the AO where the topics are addressed is indicated in the middle column.

Table 1

Modifications to the "Introduction" to Regulatory Guide 4.17 for the
"Introduction to the Annotated Outline"

<u>Page From</u> <u>Regulatory Guide 4.17</u>	<u>Modification to Text of Regulatory Guide 4.17</u>
vii	A sentence is added to the beginning of the paragraph to state the NWPA requirement for preparation of an SCP.
vii	In the second sentence, words are added to acknowledge submittal of the SCP to the States.
vii	In the third sentence, the phrase "plans for resolving those <u>issues</u> " is changed to "plans to obtain data for resolving those <u>issues</u> ." This reflects that the SCP will present plans to obtain data that will ultimately be used to resolve issues. This same change is also made in item 3 in the list following the first paragraph.
viii	In the second sentence of the first paragraph, it is acknowledged that the information collected during site characterization will be used for site selection as well as for the license application.
viii	In item 3 on this page, a third purpose for the additional work has been added, i.e., to "(3) make site suitability findings relative to DOE Siting Guidelines, 10 CFR 960."
ix	In the first sentence of the first paragraph, the words "shaft sinking" are substituted for "site characterization" to bring this language in conformance with the NWPA.
ix	In the second paragraph, the third, fourth, and fifth sentences are omitted because they do not apply to this Annotated Outline prepared by the DOE.
x	In item e, the words "to support a future construction authorization application" are changed to "to support site selection and a future license application."
xi	In the last sentence of the first paragraph, the words "important to licensing" are modified to read "important to site selection and licensing." A similar change is made to the first sentence of the second paragraph.

- xi In the second sentence of the second paragraph, the word "definitive" is omitted from the sentence. Since the site characterization program will evolve as it progresses, it is not possible to be definitive in the SCP. *
- xii In the second paragraph, a reference to the role of the siting guidelines (10 CFR 960) is added. The SCP will describe plans for obtaining some of the information needed for 10 CFR 960 evaluations.
- xiii In the third paragraph, the sentence "All principal consultants, outside service organizations, and key research groups to be involved with site characterization should be listed" is omitted. The identification of the DOE organization and prime contractors is considered sufficient detail for purposes of the SCP.
- xiiii In the section concerning style and composition, reference is made to a DOE style guide, which will be used in the preparation of the SCP.

Table 2

Correlation of Chapter 1 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
1. GEOLOGIC DESCRIPTION OF CANDIDATE AREA AND SITE	1. GEOLOGY	The chapter title has been changed to make it consistent with other chapter titles that do not specifically mention the candidate area and the site. This chapter will include a description of the candidate area. In addition, tectonic studies discussed in this chapter include information outside the candidate area.
	1.0 <u>Introduction</u>	This section has been added to provide a general discussion of the information contained in the chapter and to explain the role of that information in the site characterization program.
1.1 Geomorphology	1.1 Geomorphology	Same.
1.1.1 Physiography and Topography	1.1.1 <u>Physiography</u>	Because topography is typically included within the subject of physiography, it has not been included in the section title.
1.1.2 Geomorphic Units	1.1.2 Geomorphic Units	Same.
1.1.3 Geomorphic Processes	1.1.3 Geomorphic Processes	Same.
1.2 Stratigraphy	1.2 <u>Stratigraphy and Lithology</u>	Lithology is a major topic in this section and, therefore, it has been included in the section title.
1.2.1 Surface Geology	[1.1 Geomorphology and 1.2 Stratigraphy and Lithology]	Surface geology is discussed in Sections 1.1 (Geomorphology) and 1.2 (Stratigraphy and Lithology) as it relates to those sections. Therefore, a separate section for surface geology has not been included.
1.2.2 Stratigraphic Framework of the Candidate Area	1.2.1 Stratigraphic Framework of the Candidate Area	Same.
1.2.3 Stratigraphic Framework of Site	1.2.2 Stratigraphic Framework of Site	Same.

Editorial conventions used in Section titles of the AO:

- titles that are underlined (e.g., 1.1.1 Physiography) indicate that the title in the AO is changed from that in R.G. 4.17 or that the title is of a Section not specifically requested by R.G. 4.17.
- titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 2 (continued)

Correlation of Chapter 1 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
1.3 Structural Geology and Tectonics of Candidate Area and Site	1.3 Structural Geology and Tectonics of Candidate Area and Site	Same.
1.3.1 Tectonic Framework	1.3.1 Tectonic Framework	Same.
1.3.2 Tectonic History	1.3.2 Tectonic History	Information within this section is reorganized as indicated below.
1.3.2.1 Volcanic History	1.3.2.1 Volcanic History	Same.
1.3.2.2 Faulting History	1.3.2.2 <u>Structural History</u>	The sections on faulting history, folding history, and jointing history have been combined into one section. The structures resulting from faulting, folding and jointing are closely related and need to be discussed together.
1.3.2.3 Folding History	1.3.2.2 <u>Structural History</u>	
1.3.2.4 Jointing History	1.3.2.2 <u>Structural History</u>	
1.3.2.5 Uplift, Tilting, Subsidence	1.3.2.4 <u>Vertical and Lateral Crustal Movement</u>	The section title has been changed to reflect the combination of Sections 1.3.2.5 and 1.3.2.7 from RG 4.17. The sections were combined because the topics are similar and should be addressed more effectively together.
1.3.2.6 Active Stress Field	1.3.2.3 <u>Existing Stress Regime</u>	The term "existing" more clearly reflects the information in this section on the stress regime, which may or may not be active. Regime is a more general term that does not imply that the complete three-dimensional stress field will be presented in this section.
1.3.2.7 Vertical Crustal Movement	[1.3.2.4 Vertical and Lateral Crustal Movement]	See explanation for Section 1.3.2.5.
	1.3.2.5 <u>Geothermal Regime</u>	This section includes information not specifically requested by RG 4.17.
1.4 Seismology of Candidate Area and Site	1.4 Seismology of Candidate Area and Site	Same.
1.4.1 Seismology of Candidate Area	1.4.1 Seismology of Candidate Area	Same.

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 2 (continued)

Correlation of Chapter 1 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
1.4.1.1 Seismicity of Candidate Area	1.4.1.1 Seismicity of Candidate Area	Same.
1.4.1.2 Relationship of Seismicity to Geologic or Tectonic Characteristics of Candidate Area	1.4.1.2 Relationship of Seismicity to Geologic or Tectonic Characteristics of Candidate Area	Same.
1.4.1.3 Determination of Earthquake-Generating Potential of Geologic Structures and Seismotectonic Zones Within Candidate Area	1.4.1.3 Determination of Earthquake-Generating Potential of Geologic structures and Seismotectonic Zones Within Candidate Area	Same.
1.4.1.4 Earthquake-Induced Phenomena Within Candidate Area that May Affect Site	1.4.1.4 Earthquake-Induced Phenomena Within Candidate Area that May Affect Site	Same.
1.4.1.5 Seismic Risk in Candidate Area	1.4.1.5 <u>Seismic Hazard in the Candidate Area</u>	The information requested by R.G. 4.17 in this section is related to seismic hazard rather than seismic risk. Seismic risk will be addressed in Section 8.3.5.2.3.
1.4.2 Seismology of Site	1.4.2 Seismology of Site	Same.
1.4.2.1 Vibratory Ground Motion at Site Resulting from Potential Earthquakes in Area	1.4.2.1 Vibratory Ground Motion at Site Resulting from Potential Earthquakes in Area	Same.

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 2 (continued)

Correlation of Chapter 1 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
1.4.2.2 Characteristics of Seismic Wave Transmission at Site	1.4.2.2 Characteristics of Seismic Wave Transmission at Site	Same.
1.4.2.3 Potential for Induced Seismicity Affecting Site	1.4.2.3 Potential for Induced Seismicity Affecting Site	Same.
1.5 Long-Term Regional Stability with Respect to Tectonic and Geological Processes	1.5 Long-Term Regional Stability with Respect to Tectonic and Geologic Processes	Same.
1.6 Subsurface Drilling and Mining	1.6 <u>Drilling and Mining</u>	Since mining and drilling always take place below the earth's surface, the adjective subsurface is unnecessary.
1.7 Mineral and Hydrocarbon Resources	1.7 Mineral and Hydrocarbon Resources	Same.
1.7.1 Mineral Resources	1.7.1 Mineral Resources	Same.
1.7.2 Hydrocarbon Resources	1.7.2 Hydrocarbon Resources	Same.
	1.8 <u>Summary</u>	This section has been added to provide a link between the data and analyses presented in this chapter and the plans described in Chapter 8.
	1.8.1 <u>Summary of Significant Results</u>	
	1.8.2 <u>Relation to Design</u>	
	1.8.3 <u>Identification of Information Needs</u>	
	1.8.4 <u>Relation to R.G. 4.17</u>	

Editorial conventions used in Section titles of the AO:

- titles that are underlined (e.g., 1.1.1 Physiography) indicate that the title in the AO is changed from that in R.G. 4.17 or that the title is of a Section not specifically requested by R.G. 4.17.
- titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 3

Correlation of Chapter 2 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
2. GEOENGINEERING	2. GEOENGINEERING 2.0 <u>Introduction</u>	This section has been added to provide a general discussion of the information contained in the chapter and to explain the role of that information in the site characterization program.
2.1 Mechanical Properties of Rock Units - Continua	2.1 <u>Mechanical Properties of Rock Units - Intact Rock</u> 2.1.1 <u>Mechanical Properties of Other Rocks</u> 2.1.2 <u>Mechanical Properties of Rocks at the Site</u>	In the section title, the term "Intact Rock" has been substituted for "Continua" since the former term is more widely used.
2.2 Mechanical Properties of Rock Units - Large Scale	2.3 Mechanical Properties of Rock Units - Large Scale 2.3.1 <u>Mechanical Properties of Other Rocks</u> 2.3.2 <u>Mechanical Properties of Rocks at the Site</u> 2.3.3 <u>Relationship Between Intact Rock, Discontinuities, and Large-Scale Rock Properties</u>	This section has been relocated so that it follows the section on discontinuities, since "large-scale" behavior includes both the "intact rock" and "discontinuities."
2.3 Mechanical Properties of Rock Units - Discontinua	2.2 <u>Mechanical Properties of Rock Units - Discontinuities</u> 2.2.1 <u>Mechanical Properties of Discontinuities in Other Rocks</u>	"Discontinua" could be interpreted to include both intact rock and discontinuities that form a discontinuum. This section concerns only the properties of the discontinuities, therefore, the section title has been changed.

Editorial conventions used in Section titles of the AO:

1. titles that are underlined (e.g., 1.1.1 Physiography) indicate that the title in the AO is changed from that in R.G. 4.17 or that the title is of a Section not specifically requested by R.G. 4.17.
2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 3 (continued)

Correlation of Chapter 2 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
	2.2.2 <u>Mechanical Properties of Discontinuities in Rocks at the Site</u>	
2.4 Thermal and Thermomechanical Properties - Laboratory Results	2.4 <u>Thermal and Thermomechanical Properties - Intact Rock</u>	This section has been renamed and a new section added (2.5) so that thermal properties could be addressed in the same manner as mechanical properties (i.e., intact rock and rock mass).
	2.4.1 <u>Thermal and Thermomechanical Properties of Other Rocks</u>	
	2.4.2 <u>Thermal and Thermomechanical Properties of Rock at the Site</u>	
	2.5 <u>Thermal and Thermomechanical Properties - Large Scale</u>	This section includes information not specifically requested by R.G. 4.17, and provides a location for the results of field thermomechanical testing.
	2.5.1 <u>Thermal and Thermomechanical Properties of Other Rocks</u>	
	2.5.2 <u>Thermal and Thermomechanical Properties of Rock at the Site</u>	
	2.5.3 <u>Relationship Between Intact Rock and Large-Scale Properties</u>	
2.5 Stress Field	2.6 <u>Existing Stress Regime</u>	This title has been changed to be consistent with title for Section 1.3.2.3.
	2.6.1 <u>Stress Field in Region of the Site</u>	

Editorial conventions used in Section titles of the AO:

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- titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 3 (continued)

Correlation of Chapter 2 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
	2.6.2 <u>Stress Field at the Site</u>	
2.6 Special Geoen지니어ing Properties	2.7 Special Geoen지니어ing Properties	Same.
2.7 Excavation Characteristics of Rock Mass	2.8 Excavation Characteristics of Rock Mass	Same.
	2.8.1 <u>Excavation Characteristics of Similar Rocks</u>	
	2.8.2 <u>Excavation Characteristics of Rock at the Site</u>	
	2.8.3 <u>Changes in Geoen지니어ing Properties Due to Excavation</u>	
	2.9 <u>Summary</u>	This section has been added to provide a link between the data and analyses in this chapter and the plans described in Chapter 8.
	2.9.1 <u>Summary of Significant Results</u>	
	2.9.2 <u>Relation to Design</u>	
	2.9.3 <u>Identification of Information Needs</u>	
	2.9.4 <u>Relation to R.G. 4.17</u>	

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1. titles that are underlined (e.g., 1.1.1 Physiography) indicate that the title in the AO is changed from that in R.G. 4.17 or that the title is of a Section not specifically requested by R.G. 4.17.
2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 4

Correlation of Chapter 3 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
3. HYDROLOGY	3. HYDROLOGY	
	3.0 <u>Introduction</u>	This section has been added to provide a general discussion of the information contained in the chapter and to explain the role of that information in the site characterization program.
3.1 Description of Surface Hydrology	3.1 Description of Surface Hydrology	Same.
3.2 Floods	3.2 Floods	Same.
3.2.1 Flood History	3.2.1 <u>Flood History and Potential for Future Flooding</u>	The title has been expanded to indicate the two major emphases of the discussions in this section.
3.2.2 Flooding Protection	3.2.2 Flooding Protection	Same. Reference will be made in Section 3.2.2 to Chapter 6 for the information requested in R.G. 4.17.
3.3 Locations and Distances to Points of Surface-Water Use	3.3 Locations and Distances to Points of Surface-Water Use	Same.
3.3.1 Present Quantity and Quality of Surface-Water Extracted	3.3.1 Present Quantity and Quality of Surface-Water Extracted	Same.
3.3.2 Projected Surface-Water Use	3.3.2 Projected Surface-Water Use	Same.
3.4 Chemical Composition of Adjacent Water Courses	3.4 Chemical Composition of Adjacent Water Courses	Same.
3.5 Surface-Water/Ground-Water Disposition of Releases	3.5 <u>Points of Ground-Water Discharge</u>	The title has been changed to more clearly indicate the content of the section (i.e., the identification and discussion of known points of ground-water discharge).

Editorial conventions used in Section titles of the AO:

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 4 (continued)

Correlation of Chapter 3 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
3.6 Regional Hydrologic Reconnaissance of Candidate Area and Site	3.6 Regional Hydrologic Reconnaissance of Candidate Area and Site	Same.
3.6.1 Hydrogeologic Units	3.6.1 Hydrogeologic Units	Same.
3.6.2 Relationships Among Hydrogeologic Units	3.6.2 Relationships Among Hydrogeologic Units	Same.
3.6.3 Potentiometric Level	3.6.3 Potentiometric Level	Same.
3.6.4 Hydraulic Characteristics of Principal Hydrogeologic Units	3.6.4 Hydraulic Characteristics of Principal Hydrogeologic Units	Same.
3.7 Regional Ground-Water Flow System	3.7 Regional Ground-Water Flow System	Same.
3.7.1 Identification of Recharge and Discharge Areas	3.7.1 Identification of Recharge and Discharge Areas	Same.
3.7.2 Principal Ground-Water Flow Paths	3.7.2 Principal Ground-Water Flow Paths	Same.
3.7.3 Isotopic and Regional Hydrochemistry	3.7.3 Isotopic and Regional Hydrochemistry	Same.
3.7.4 Paleohydrology	3.7.4 Paleohydrology	Same.
3.8 Ground-Water Uses	3.8 Ground-Water Uses	Same.
3.8.1 Regional Ground-Water Aquifers Used for Human Activities	3.8.1 Regional Ground-Water Aquifers Used for Human Activities	Same.
3.8.2 Regional Ground-Water Management Plans	3.8.2 Regional Ground-Water Management Plans	Same.
3.9 Site Hydrogeologic Systems	3.9 Site Hydrogeologic Systems	Same.
3.9.1 Baseline Modeling	3.9.1 Baseline Modeling	Same.
3.9.1.1 Monitoring Network	3.9.1.1 Monitoring Network	Same.
3.9.1.2 Potentiometric Levels	3.9.1.2 Potentiometric Levels	Same.
3.9.1.3 Hydrochemistry	3.9.1.3 Hydrochemistry	Same.

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 4 (continued)

Correlation of Chapter 3 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
3.9.2 Hydraulic Characteristics	3.9.2 Hydraulic Characteristics	Same.
3.9.3 Ground-Water Flow System	3.9.3 <u>Ground-Water Flow System Conceptual Model</u>	The title has been changed to emphasize that studies of the ground-water flow system at the site will be conducted in order to develop a conceptual model.
3.9.3.1 Accessible Environment and Credible Pathways	3.9.3.1 Accessible Environment and Credible Pathways	
3.9.3.2 Potentiometric Levels and Head Relationships	3.9.3.2 Potentiometric Levels and Head Relationships	
3.9.3.3 Recharge-Discharge and Leakage	3.9.3.3 Recharge-Discharge and Leakage	
3.9.3.4 Unsaturated Zone Relationships	3.9.3.4 Unsaturated Zone Relationships	
3.9.4 Ground-Water Velocity and Travel Time	3.9.4 Ground-Water Velocity and Travel Time	Within this section, the subsections requested by R.G. 4.17 (3.9.4.1 and 3.9.4.2) have been deleted, because the information requested by those sections is covered partly in Section 3.9.4 of the AO and partly elsewhere in the AO.
3.9.4.1 Radionuclide Transport Factors		
o Temperature, viscosity	3.9.4 Ground-Water Velocity and Travel Time	
o Water chemistry, retardation, oxidation-reduction potential	[4.1.3 Geochemical Retardation Processes]	These are geochemical topics and are discussed in Chapter 4.
3.9.4.2 Geothermal Gradient and Convective Component	3.9.4 Ground-Water Velocity and Travel Time	
3.9.5 Hydrochemistry and Ground-Water Age	3.9.5 <u>Hydrochemical Confirmation of Ground-Water Behavior</u>	The title has been changed to more clearly indicate the purpose of this section which is to discuss the evolution and present day movement of ground water at the site.

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 4 (continued)

Correlation of Chapter 3 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
3.9.6 Monitoring and Verification	3.9.6 Monitoring and Verification	Within this section, the subsections requested by R.G. 4.17 have been deleted. The information requested will be presented in Chapter 8 (Section 8.3); only a summary will be presented in Section 3.9.6 which eliminates the need for subsections.
3.9.6.1 Baseline Condition Changes	3.9.6 Monitoring and Verification	..
3.9.6.2 Well Construction, Development, and Completion	3.9.6 Monitoring and Verification	
3.9.6.3 Monitoring Methods	3.9.6 Monitoring and Verification	
3.9.7 Local Ground-Water Uses	3.9.7 Local Ground-Water Uses	Same.
3.9.8 Paleohydrology	3.9.8 Paleohydrology	Same.
	3.10 <u>Summary</u>	This section has been added to provide a link between the data and analyses presented in this chapter and the plans described in Chapter 8.
	3.10.1 <u>Summary of Significant Results</u>	
	3.10.2 <u>Relation to Design</u>	
	3.10.3 <u>Identification of Information Needs</u>	
	3.10.4 <u>Relation to R.G. 4.17</u>	

Editorial conventions used in Section titles of the AO:

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 5

Correlation of Chapter 4 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
4. GEOCHEMISTRY	4. GEOCHEMISTRY 4.0 <u>Introduction</u>	This section has been added to provide a general discussion of the information contained in the chapter and to explain the role of that information in the site characterization program.
4.1 Host Rock Geochemistry	4.1 <u>Geochemistry of the Host Rock and Surrounding Units</u>	The title has been expanded to include the geochemistry of surrounding units as distinct from only the geochemistry of the emplacement unit.
<ul style="list-style-type: none"> o Discussions of thermal effects associated with the thermal pulse (coupled effects) o Other material called for in Section 4.1 	[4.2 Geochemical Effects of Waste Emplacement] 4.1 <u>Geochemistry of the Host Rock and Surrounding Units</u> 4.1.1 <u>Mineralogy and Petrology</u> 4.1.2 <u>Ground-Water Geochemistry</u> 4.1.3 <u>Geochemical Retardation Processes</u>	Section 4.1 was subdivided to organize the material called for in R.G. 4.17.
4.2 Chemistry of Waste, Barriers, and Environment of a Conceptual Design Repository Appropriate to Site	4.2 <u>Geochemical Effects of Waste Emplacement</u> 4.2.1 <u>Anticipated Thermal Conditions Resulting from Waste Emplacement</u>	This section has been reorganized in order to eliminate unnecessary redundancies between Chapters 4 and 7. Many of the topics requested in Section 4.2 of R.G. 4.17 will be covered in Chapter 7, as indicated below. These topics include the chemistry of the waste package and the chemical interaction between the host rock and the waste package. The section title has been changed accordingly. Section 4.2.1 provides the basic temperature information used in sections that follow.

Editorial conventions used in Section titles of the AO:

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 5 (continued)

Correlation of Chapter 4 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
o Anticipated interactions among waste form, engineered barriers, and environment	[7.1 Emplacement Environment]	The material requested concerning waste package-ground-water interactions has been placed in Chapter 7, so that a more cohesive presentation can be given in support of the waste package design program.
o Chemical composition and form of the waste	[7.3 Design Descriptions]	..
o Solubility of waste form in ground water	[7.4 Waste Package Research and Development Status]	Because solubility and speciation are an integral part of waste package testing programs, they are best discussed in Section 7.4.
o Species released by leaching of the waste form	[7.4 Waste Package Research and Development Status]	
o Anticipated chemical and mineralogical composition of barriers	[7.3 Design Descriptions]	Similarly, chemical composition data have been addressed in the waste package description.
o Changes in speciation imposed on radionuclides released from waste	[7.4 Waste Package Research and Development Status]	
o Anticipated interaction of the waste, water, vapor, gas, and rock, including	[7.1 Emplacement Environment]	Anticipated interactions have been treated as part of the emplacement environment definition.
- Hydrothermal alteration of host rock during thermal pulse	4.2.2 <u>Hydrothermal Alteration Due to Thermal Pulse</u>	These sections (4.2.2-4.2.4) complement the discussions in Section 4.1 on rock-ground water geochemistry under pre-emplacement conditions and geochemical retardation processes.
- Changes in ground-water chemistry during thermal pulse	4.2.3 <u>Changes in Water Chemistry Due to Thermal Pulse</u>	
- Effect of changes of mineralogy and ground-water on radionuclide migration	4.2.4 <u>Effects of the Thermal Pulse on Radionuclide Migration</u>	
4.3 Natural Analogs	4.3 <u>Natural Analogs and Related Field Tests</u>	The title has been expanded to be more descriptive of the section contents. Subheadings have been inserted to better organize the section.

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 5 (continued)

Correlation of Chapter 4 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
	4.3.1 <u>Natural Analogs</u>	
	4.3.2 <u>Related Field Tests</u>	
4.4 Geochemical Stability	4.4 Geochemical Stability	The subheadings have been added to better organize the section content.
	4.4.1 <u>Potential Man-Induced Effects</u>	
	4.4.2 <u>Potential Effects of Natural Changes</u>	
	4.5 <u>Summary</u>	This section has been added to provide a link between the data and analyses in this chapter and the plans described in Chapter 8.
	4.5.1 <u>Summary of Significant Results</u>	
	4.5.2 <u>Relation to Design</u>	
	4.5.3 <u>Identification of Information Needs</u>	
	4.5.4 <u>Relation to Regulatory Guide 4.17</u>	

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Table 6

Correlation of Chapter 5 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
5. CLIMATOLOGY AND METEOROLOGY	5. CLIMATOLOGY AND METEOROLOGY	
	5.0 <u>Introduction</u>	This section has been added to provide a general discussion of the information contained in the chapter and to explain the role of that information in the site characterization program.
5.1 Recent Climate and Meteorology	5.1 Recent Climate and Meteorology	Same.
5.1.1 Climate	5.1.1 Climate	Same.
5.1.2 Local and Regional Meteorology	5.1.2 Local and Regional Meteorology	Same.
5.1.3 Site Meteorological Measurement Program	5.1.3 Site Meteorological Measurement Program	Same.
5.2 Long-Term Climatic Assessment	5.2 Long-Term Climatic Assessment	Same.
5.2.1 Paleoclimatology	5.2.1 Paleoclimatology	Same.
5.2.2 Future Climatic Variation	5.2.2 Future Climatic Variation	Same.
5.2.3 Site Paleoclimatic Investigation	5.2.3 Site Paleoclimatic Investigation	Same.
	5.3 <u>Summary</u>	This section has been added to provide a link between the data and analyses presented in this chapter and the plans described in Chapter 8.
	5.3.1 <u>Summary of Significant Results</u>	
	5.3.2 <u>Relation to Design</u>	
	5.3.3 <u>Identification of Information Needs</u>	
	5.3.4 <u>Relation to R.G. 4.17</u>	

Editorial conventions used in Section titles of the AO:

1. titles that are underlined (e.g., 1.1.1 Physiography) indicate that the title in the AO is changed from that in R.G. 4.17 or that the title is of a Section not specifically requested by R.G. 4.17.
2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 7

Correlation of Chapter 6 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
6. CONCEPTUAL DESIGN OF A REPOSITORY	6. CONCEPTUAL DESIGN OF A REPOSITORY	Same.
	6.0 <u>Introduction</u>	This section has been added to provide a general discussion of the information contained in the chapter and to explain the role of that information in the site characterization program.
	6.1 <u>Design Basis</u>	The organization of R.G. 4.17 did not easily allow for presentation of all the relevant design information, nor did it allow easiest presentation of a logical design description. An approach has been used in the AO which provides all of the information requested by R.G. 4.17 in a single section of Chapter 6 and the additional information necessary to present design information. To accomplish this two sections, 6.1 Design Basis, and 6.2 Current Repository Design Description have been added to provide the assumptions and rationale for the design basis and to describe the current design status. The requirements of Sections 6.1 through 6.7 of R.G. 4.17 are included as subsections of Section 6.3 in the Annotated Outline, as indicated below. The information presented in Sections 6.1 and 6.2 will be referenced as appropriate in Section 6.3
	6.1.1 <u>Repository Design Requirements</u>	
	6.1.2 <u>Reference Design Data Base</u>	
	6.1.3 <u>Analytical Tools for Geotechnical Design</u>	
	6.1.4 <u>Structures, Systems, and Components Important to Safety</u>	
	6.1.5 <u>Barriers Important to Waste Isolation</u>	
	6.2 <u>Current Repository Design Description</u>	
	6.2.1 <u>Background</u>	
	6.2.2 <u>Overall Facility Design</u>	
	6.2.3 <u>Repository Operations</u>	
	6.2.4 <u>Design of Surface Facilities</u>	
	6.2.5 <u>Shaft and Ramp Design</u>	
	6.2.6 <u>Subsurface Design</u>	
	6.2.7 <u>Backfill of Underground Opening</u>	
	6.2.8 <u>Shaft and Borehole Seals</u>	

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 7 (continued)

Correlation of Chapter 6 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
	6.3 Assessment of Design Information Needs	
	6.3.1 <u>Introduction</u>	This section has been added in order to provide a general discussion of the contents of the section.
6.1 Design of Underground Openings	6.3.2 Design of Underground Openings	Same.
6.2 Backfill	6.3.3 Backfill	Same.
6.3 Strength of Rock Mass	6.3.4 Strength of Rock Mass	Same.
6.4 Sealing of Shafts, Boreholes, and Underground Openings	6.3.5 Sealing of Shafts, Boreholes, and Underground Openings	Same.
6.5 Construction	6.3.6 Construction	Same.
6.6 Design of Surface Facilities	6.3.7 Design of Surface Facilities	Same.
6.7 Repository System Component Performance Requirements	6.3.8 Repository System Component Performance Requirements	Same.
	6.4 <u>Summary of Design Issues and Data Needs</u>	This section has been added to summarize design issues and data needs, and to provide a link between Chapter 6 and the plans presented in Chapter 8.

Editorial conventions used in Section titles of the AO:

1. titles that are underlined (e.g., 1.1.1 Physiography) indicate that the title in the AO is changed from that in R.G. 4.17 or that the title is of a Section not specifically requested by R.G. 4.17.
2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 8

Correlation of Chapter 7 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
7. WASTE FORM AND PACKAGE	7. WASTE PACKAGE	The waste package includes the waste form, and therefore, specific mention of waste form in the title is unnecessary. The contents of this chapter have been rearranged from the order requested in R.G. 4.17, as indicated below.
	7.0 <u>Introduction</u>	This section has been added to provide a general discussion of the information contained in the chapter and to explain the role of that information in the site characterization program.
	7.2 <u>Design Basis</u>	This section has been added so that the design basis could be discussed separately and before the design description. It provides information not specifically requested by R.G. 4.17.
7.1 Description	7.3 <u>Design Descriptions</u>	This section includes reference designs and alternative designs, with corresponding subsections.
	7.3.1 <u>Reference Design</u>	
	7.3.2 <u>Alternative Designs</u>	
7.2 Design Concepts	[7.3 Design Descriptions]	A discussion of design concepts has been combined with the design description for ease and clarity of presentation.
7.3 Research and Development	7.4 <u>Waste Package Research and Development Status</u>	The title has been changed to more completely reflect the content of the section.
7.4 Emplacement Environment	7.1 Emplacement Environment	Since the emplacement environment is part of the information used to develop the design, this section has been relocated to the beginning of the chapter.

Editorial conventions used in Section titles of the AO:

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 8 (continued)

Correlation of Chapter 7 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
7.5 Alternative Waste Forms and Waste Packages	[7.3.2 Alternative Designs]	Alternatives will be discussed together with the reference design for ease and clarity of presentation.
	7.5 <u>Summary</u>	This section has been added to summarize design issues and related data needs, and to provide a link between Chapter 6 and the plans presented in Chapter 8.

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 9

Correlation of Chapter 8 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
8. SITE CHARACTERIZATION PROGRAM	8. SITE CHARACTERIZATION PROGRAM	The general format suggested in R.G. 4.17 has been followed in this chapter. Some sections have been combined and/or reorganized in order to facilitate the presentation of information. R.G. 4.17 sections 8.3 and 8.4 have been combined in a single section 8.3, and R.G. 4.17 sections 8.6 and 8.7 are combined in a single section 8.5. Details are provided below.
	8.0 <u>Introduction</u>	This section has been added to provide an overview to the chapter. The purpose, significance, content, and organization of the chapter need to be discussed here because of the size and complexity of the chapter.
8.1 Rationale for Planned Site Characterization Program	8.1 Rationale for Planned Site Characterization Program	To facilitate clear presentation of information, this section has been organized into four subsections: 8.1.1 Identification of Information Needs; 8.1.2 Prioritization of Information Needs; 8.1.3 Approach to Obtain Information; and Utilization of Information.
o Types of information to be obtained during site characterization	8.1.1 <u>Identification of Information Needs</u>	
o Why the information is needed	8.1.1 <u>Identification of Information Needs</u>	
	8.1.2 <u>Prioritization of Information needs</u>	
o Whether the information will be confirmatory/supplementary data or new data	8.1.3 <u>Approach to Obtain Information</u>	
o Objectives of site characterization	[8.0 <u>Introduction</u>]	The introductory section that has been added (see above) provides a more appropriate location to discuss objectives.

Editorial conventions used in Section titles of the AO:

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- titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 9 (continued)

Correlation of Chapter 8 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
<ul style="list-style-type: none"> o Relationship between site characterization program and system component performance requirements o Criteria developed pursuant to Section 112(a) of NWPA and how information will be used to determine if criteria are met 	<p>8.3.5.2 <u>Strategy for Post-Closure Performance Assessment)</u></p> <p>8.1.4.1 <u>Determination of Whether Criteria Developed Pursuant to Section 112(a) of NWPA are met</u></p> <p>8.1.4 <u>Utilization of Information</u></p>	<p>A separate Performance Assessment Program Plan presented at 8.3.5 was developed as part of 8.3: Planned Tests, Analyses, and Studies. The relationship between plan and system component performance requirements is discussed in that section.</p>
<p>8.2 Issues to Be Resolved and Information Required During Site Characterization</p>	<p>8.2 Issues to Be Resolved and Information Required During Site Characterization</p>	<p>Section 8.2 has been reorganized and its content is somewhat different from that requested in R.G. 4.17. R.G. 4.17 divided issue discussion (Section 8.2) into 4 subcategories: 1) issues related to design of geologic operations areas; 2) issues related to waste form and package; 3) performance assessment issues; and 4) issues for NRC review. A number of topics requested by R.G. 4.17 were related to plans for obtaining information. For clearest presentation of information in the AO, and to avoid redundancy, Section 8.2 has been reorganized to address issues relating to both the design of geologic operations area and the waste package. The section now identifies the issues and describes the general approach to the resolution of these issues. Planned tests, studies, and analyses to obtain the information will be presented in Section 8.3. A separate Performance Assessment Program Plan has been developed and is part of Section 8.3</p>

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Table 9 (continued)

Correlation of Chapter 8 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
<ul style="list-style-type: none"> o Identification of all known issues o Discussion of the types of information needed to resolve the issues in listed areas of study 	<p>8.2.1 <u>Issues to be Resolved</u> 8.2.1.2 <u>Site Specific Issues, and in 8.3 Planned Tests, Analyses, Studies</u></p>	
<ul style="list-style-type: none"> o Whether necessary data will be gathered from surface or subsurface activities 	[8.3 <u>Planned Tests, Analyses, and Studies]</u>	Details of data gathering will be presented in Section 8.3
<ul style="list-style-type: none"> o Identification of information related to design development or modeling efforts 	[8.3 <u>Planned Tests, Analyses, and Studies]</u>	The relationship between site characterization information and its use in design and modeling will be presented in Section 8.3.
<ul style="list-style-type: none"> o Plans for resolving unresolved issues, including specifications for the investigations and the applicability and limitations of the investigations 	<p>8.2.2 <u>Approach to Issue Resolution, and</u> [8.3 <u>Planned Tests, Analyses, and Studies]</u></p>	
<ul style="list-style-type: none"> o For each test or data collection activity, a description of activities and supporting rationale to indicate that <ul style="list-style-type: none"> - Data are representative - Data are known to sufficient precision and accuracy - Data are collected under appropriate quality assurance procedures 	<p>[8.3 <u>Planned Tests, Analyses, and Studies]</u> [8.6 <u>Quality Assurance Program]</u></p>	These details will be presented in Section 8.3

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 9 (continued)

Correlation of Chapter 8 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
8.2.1 Unresolved Issues Related to Design of Geologic Repository Operations Area		
8.2.1.1 Verification or Measurement of Site Conditions	8.2.1 <u>Issues to be Resolved</u> [8.3.1, <u>Site Program</u> , and 8.3.2.2, <u>Verification or Measurement of Environment</u>]	
8.2.1.2 Coupled Interaction Tests	[8.3.2.3 Coupled Interaction Tests]	
8.2.2 Unresolved Issues Related to Waste Form and Package		
o Identification of unresolved issues	8.2.1 <u>Issues to be Resolved</u>	
o Plans to resolve issues	[8.3.4 <u>Waste Package Program</u>]	
8.2.3 Performance Assessment Issues		
8.2.3.1 Substantially Completed Analytical Techniques	8.3.5.4 Substantially Completed Analytical Techniques	The information requested in this section is closely related to the plans in Section 8.3 and is presented there.
8.2.3.2 Analytical Techniques Requiring Significant Development	8.3.5.5 Analytical Techniques Requiring Significant Development	
8.2.4 Issues for NRC Review	8.2.1 <u>Issues to be Resolved</u>	

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Editorial conventions used in Section titles of the AO:

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 9 (continued)

Correlation of Chapter 8 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
8.3 Planned Tests and Experiments	8.3 <u>Planned Tests, Analyses, and Studies</u>	The title of this section has been changed to clearly indicate that analysis of data and conduct of other studies would be an important part of any test plan. This section will include information requested in R.G. 4.17 Sections 8.3 Planned Tests and Experiments, and 8.4 Planned Testing, Instrumentations, and Monitoring. To facilitate presentation of test plans, this section has been organized into the following five subsections: 8.3.1 Site Program; 8.3.2 Repository Program; 8.3.3 Seal System Program; 8.3.4 Waste Package Program; and 8.3.5 Performance Assessment Program Plan.
8.3.1 Planned Tests with Radioactive Materials	8.3.1 <u>Site Program</u> 8.3.2 <u>Repository Program</u> 8.3.3 <u>Seal System Program</u> 8.3.4 <u>Waste Package Program</u>	
8.3.2 Planned Tests That May Affect Capability of Site to Isolate High Level Radioactive Wastes	8.3.1 <u>Site Program</u> 8.3.2 <u>Repository Program</u> 8.3.3 <u>Seal System Program</u> 8.3.4 <u>Waste Package Program</u> 8.3.5 <u>Performance Assessment Program Plan</u>	
8.4 Planned Testing, Instrumentation and Monitoring	8.3 <u>Planned Tests, Analyses, and Studies</u> (in particular, 8.3.1 Site Program through 8.3.4 Waste Package Program)	As discussed above, the requirements of this section have been incorporated into Section 8.3 (Planned Tests, Analyses, and Studies).
8.5 Planned Site Preparation Activities	8.4 Planned Site Preparation Activities	
8.5.1 Surface Site Preparation Activities	8.4.1 Surface Site Preparation Activities	Section 8.4 of the DOE's AO corresponds with Section 8.5 of R.G. 4.17. The discrepancy in numbering occurs because, as noted above, DOE's Section 8.3 Planned Tests, Analyses and Studies includes R.G. 4.17 Sections 8.3 and 8.4.

Editorial conventions used in Section titles of the AO:

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- titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 9 (continued)

Correlation of Chapter 8 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
8.5.2 Underground Test Facility		
o Description of underground test facility	8.4.2 Underground Test Facility	
o Detailed rationale for proposed underground testing	[8.3 <u>Planned Tests, Analyses and Studies</u>]	
o Detailed layout excavations, borings, test locations	8.4.2 Underground Test Facility	
o Details of construction	8.4.2 Underground Test Facility	
o Location of test facility with respect to repository, including shafts and borings	8.4.2 Underground Test Facility	
o Analysis of potential impacts of testing on site integrity	8.4.2 Underground Test Facility	
8.6 Milestones, Analyses, Decision Points	8.5 <u>Milestones, Decision Points, and Schedule</u>	Section 8.5 includes information required in R.G. 4.17 Sections 8.6 Milestones, Analyses, and Decision Points and 8.7 Schedules. These sections were combined because the contents were closely interrelated and could be discussed more effectively together.
o Key milestones used to mark progress	8.5.1 <u>Site Characterization Activities and Milestones</u> 8.5.2 <u>Performance Assessment Activities and Milestones</u> 8.5.3 <u>Repository Design Activities and Milestones</u> 8.5.4 <u>Waste Package Design Activities and Milestones</u>	

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2. titles in brackets (e.g., [1.1 Geomorphology]) indicate that the information requested by R.G. 4.17 is relocated to the bracketed Section in the AO.

Table 9 (continued)

Correlation of Chapter 8 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
o Data analyses to be performed	[8.3 <u>Planned Tests, Analyses, and Studies</u>]	
o Use of acquired data	[8.1.4 <u>Utilization of Information</u>]	
o Stages in site characterization program where options would be assessed and decisions made	8.5.5 <u>Project Major Decision Points</u> 8.5.6 Schedules	
8.7 Schedule		
o Graphic presentation of activities, analyses, milestones, decision points, reports and submittals for NRC, State, Indian Tribal, and public review	[8.5.6 Schedules]	
o Logic leading to decisions points and selection among alternatives	[8.5.5 <u>Project Major Decision Points</u>]	
8.8 Quality Assurance	8.6 <u>Quality Assurance Program</u> 8.6.1 <u>Quality Assurance Plan Summary</u> 8.6.2 <u>Regulatory Requirements for Quality Assurance</u> 8.6.3 <u>Organization of the Project with Respect to Quality Assurance</u> 8.6.4 <u>Application of Quality Assurance</u>	Section 8.6 of the DOE AO corresponds with Section 8.8 of R.G. 4.17. The discrepancy in numbering occurs because in two instances above, two sections were combined into a single section. Please see notes for 8.4 and 8.5 above.

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Table 9 (continued)

Correlation of Chapter 8 of Regulatory Guide 4.17 with the Annotated Outline

<u>Section of Regulatory Guide 4.17</u>	<u>Analogous Section of Annotated Outline for SCP</u>	<u>Explanation and Rationale for Differences Between Regulatory Guide 4.17 and the Annotated Outline</u>
	8.6.5 <u>Administrative QA Procedures</u>	
	8.6.6 <u>Quality Assurance Plans and Procedures for Specific Program Areas</u>	
8.9 Decontamination and Decommissioning	8.7 Decontamination and Decommissioning	Section 8.7 of the DOE AO corresponds with Section 8.8 of R.G. 4.17. See note above regarding discrepancy in numbering.
8.9.1 Decontamination	8.7.1 Decontamination	Decontamination of the <u>site characterization facilities</u> rather than the <u>repository</u> will be discussed in this section.
8.9.2 Decommissioning	8.7.2 Decommissioning	Same.
8.9.3 Plans for Mitigation of Any Significant Adverse Environmental Impacts Caused by Site Characterization Activities	8.7.3 Plans for Mitigation of Any Significant Adverse Environmental Impacts Caused by Site Characterization Activities	Same.

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