

Exelon Generation
Victoria County Station
ESP Application

ESP Table of Contents

Part 01 — Administrative Information

Part 02 — Site Safety Analysis Report (SSAR)

Part 03 — Environmental Report (ER)

Part 04 — Emergency Plan (E-Plan)

Part 05 — Enclosures

Part 06 — Proprietary Information

Victoria County Station

ESP Application

Part 3

Environmental Report (ER)

Revision 0

ESP ER Overall Table of Contents

<u>Section</u>	<u>Title</u>	<u>Page</u>
Chapter 1	Introduction	1.1-1
1.0	Introduction	1.1-1
1.1	The Proposed Project	1.1-1
1.1.1	The Applicant and Owner	1.1-1
1.1.2	Site Location	1.1-1
1.1.3	Reactor Information	1.1-2
1.1.4	Cooling System Information	1.1-2
1.1.5	Transmission System Information	1.1-3
1.1.6	Pre-application Public Involvement	1.1-3
1.1.7	Proposed Dates for Major Activities	1.1-4
1.1.8	References	1.1-4
1.2	Status of Reviews, Approvals, and Consultations	1.2-1
Chapter 2	Environmental Description	2.1-1
2.1	Site Location	2.1-1
2.1.1	References	2.1-3
2.2	Land Use and Transmission	2.2-1
2.2.1	The Site and Vicinity	2.2-1
2.2.1.1	The Site	2.2-1
2.2.1.2	The Vicinity	2.2-2
2.2.2	Transmission Corridors and Offsite Areas	2.2-3
2.2.2.1	Proposed Transmission Corridors	2.2-3
2.2.2.2	Cooling Basin Blowdown Line and VCND Transportation Corridor	2.2-5
2.2.2.3	Rail Spur Connection	2.2-6
2.2.2.4	Raw Water Makeup System and Intake Structure	2.2-6
2.2.2.5	Emergency Operations Facility	2.2-7
2.2.3	The Region	2.2-7
2.2.3.1	Victoria County	2.2-8
2.2.3.2	Calhoun County	2.2-9
2.2.3.3	DeWitt County	2.2-9
2.2.3.4	Goliad County	2.2-10
2.2.3.5	Jackson County	2.2-11
2.2.3.6	Refugio County	2.2-12
2.2.4	References	2.2-13
2.3	Water	2.3-1
2.3.1	Hydrology	2.3-1
2.3.1.1	Surface Water	2.3-2
2.3.1.2	Groundwater	2.3-40
2.3.2	Water Use	2.3-121
2.3.2.1	Water Resources Planning and Appropriation	2.3-121
2.3.2.2	Groundwater Use	2.3-123
2.3.2.3	Surface Water Use	2.3-127
2.3.2.4	References	2.3-135
2.3.3	Water Quality	2.3-160

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
2.3.3.1	Groundwater	2.3-160
2.3.3.2	Surface Water	2.3-162
2.3.3.3	References	2.3-167
2.4	Ecology	2.4-1
2.4.1	Terrestrial EcologyR	2.4-1
2.4.1.1	Regional Landscape	2.4-1
2.4.1.2	General Site Description	2.4-2
2.4.1.3	Offsite Areas	2.4-4
2.4.1.4	Terrestrial Wildlife	2.4-5
2.4.1.5	Threatened and Endangered Species	2.4-8
2.4.1.6	Other Important Species and Habitats	2.4-13
2.4.1.7	Transmission Line Corridor Habitats and Communities	2.4-15
2.4.2	Aquatic Ecology	2.4-16
2.4.2.1	Aquatic Communities	2.4-16
2.4.2.2	Important Aquatic Resources	2.4-31
2.4.2.3	Nuisance Species	2.4-36
2.4.2.4	Preexisting Environmental Stresses	2.4-37
2.4.2.5	References	2.4-38
2.5	Socioeconomics	2.5-1
2.5.1	Demography	2.5-1
2.5.1.1	Population Data by Sector	2.5-1
2.5.1.2	Population Data by Political Jurisdiction	2.5-3
2.5.1.3	Transient Populations	2.5-5
2.5.1.4	References	2.5-6
2.5.2	Community Characteristics	2.5-23
2.5.2.1	Economy	2.5-23
2.5.2.2	Transportation	2.5-26
2.5.2.3	Taxes	2.5-29
2.5.2.4	Land Use	2.5-37
2.5.2.5	Aesthetics and Recreation	2.5-42
2.5.2.6	Housing	2.5-47
2.5.2.7	Public Services and Community Infrastructure	2.5-49
2.5.2.8	Schools	2.5-54
2.5.2.9	References	2.5-62
2.5.3	Historic Properties	2.5-147
2.5.3.1	Applicable Federal and State Historic Preservation Regulations	2.5-147
2.5.3.2	Consultation with the Texas Historical Commission	2.5-147
2.5.3.3	Cultural Resource Investigations	2.5-148
2.5.3.4	Cultural Resources in the Two VCS Site APEs	2.5-151
2.5.3.5	Cultural Resources in the Offsite Areas	2.5-152
2.5.3.6	Native American Consultation	2.5-152
2.5.3.7	Significant Cultural Resources within 10 Miles of the VCS Site	2.5-152
2.5.3.8	Significant Cultural Resources within 1.2 Miles of the Offsite Areas	2.5-153
2.5.3.9	Cultural Resources in the Transmission Line Study Area	2.5-153
2.5.3.10	References	2.5-156

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
2.5.4	Environmental Justice	2.5-162
2.5.4.1	Methodology	2.5-162
2.5.4.2	Minority Populations	2.5-163
2.5.4.3	Low-Income Populations	2.5-164
2.5.4.4	Potential for Disproportionate Impacts	2.5-164
2.5.4.5	References	2.5-165
2.6	Geology	2.6-1
2.6.1	Geological Conditions	2.6-1
2.6.1.1	Physiography	2.6-1
2.6.1.2	Stratigraphy	2.6-2
2.6.2	Geological Impacts	2.6-2
2.6.3	References	2.6-4
2.7	Meteorology, Air Quality, and Noise	2.7-1
2.7.1	Regional Climatology	2.7-1
2.7.1.1	Data Sources	2.7-1
2.7.1.2	General Climate	2.7-3
2.7.1.3	Normal, Mean, and Extreme Climatological Conditions	2.7-5
2.7.2	Air Quality	2.7-8
2.7.2.1	Regional Air Quality Conditions	2.7-8
2.7.2.2	Projected Air Quality Conditions	2.7-9
2.7.2.3	Restrictive Dispersion Conditions	2.7-9
2.7.3	Severe Weather	2.7-11
2.7.3.1	Thunderstorms and Lightning	2.7-12
2.7.3.2	Extreme Winds	2.7-12
2.7.3.3	Tornadoes	2.7-13
2.7.3.4	Hail, Snowstorms, and Ice Storms	2.7-15
2.7.3.5	Tropical Cyclones	2.7-17
2.7.3.6	Droughts and Dust (Sand) Storms	2.7-19
2.7.4	Local Meteorology	2.7-19
2.7.4.1	Normal, Mean, and Extreme Values	2.7-20
2.7.4.2	Average Wind Direction and Wind Speed Conditions	2.7-23
2.7.4.3	Wind Direction Persistence	2.7-25
2.7.4.4	Atmospheric Stability	2.7-26
2.7.4.5	Topographic Description and Potential Modifications to Meteorological Conditions	2.7-27
2.7.5	Short-Term Diffusion Estimates	2.7-28
2.7.5.1	Regulatory Basis and Technical Approach	2.7-28
2.7.5.2	PAVAN Modeling Results	2.7-30
2.7.6	Long-Term (Routine) Diffusion Estimates	2.7-31
2.7.6.1	Regulatory Basis and Technical Approach	2.7-31
2.7.6.2	XOQDOQ Modeling Results	2.7-33
2.7.7	Noise	2.7-34
2.7.8	References	2.7-36
2.8	Related Federal Project Activities	2.8-1
2.8.1	Overview	2.8-1

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
2.8.2	Acquisition of Land and Use of Transmission Corridors	2.8-2
2.8.2.1	Federal Actions Associated With Land Acquisition and/or Use	2.8-2
2.8.2.2	Federal Actions Associated With Land Acquisition for Transmission Corridors	2.8-2
2.8.3	Cooling Water Source and Supply	2.8-3
2.8.4	Other Federal Actions Affecting Construction or Operation	2.8-3
2.8.5	Planned Federal Projects Contingent on Plant Construction or Operation	2.8-4
2.8.6	Cooperating Agencies	2.8-4
2.8.7	References	2.8-4
Chapter 3	Plant Description	3.1-1
3.1	External Appearance and Plant Layout	3.1-1
3.1.1	Site Description	3.1-1
3.1.2	Power Plant Design	3.1-1
3.1.3	ER Design Parameters	3.1-3
3.1.4	Plant Appearance	3.1-3
3.1.5	Site Development and Improvements	3.1-4
3.2	Reactor Power Conversion System	3.2-1
3.2.1	Reactor Description	3.2-1
3.2.2	Engineered Safety Features	3.2-2
3.2.3	Power Conversion Systems	3.2-2
3.3	Plant Water Use	3.3-1
3.3.1	Water Consumption	3.3-1
3.3.1.1	Plant Water Use	3.3-1
3.3.1.2	Plant Water Releases	3.3-2
3.3.2	Water Treatment	3.3-2
3.3.2.1	Surface Water	3.3-2
3.3.2.2	Groundwater	3.3-3
3.4	Cooling System	3.4-1
3.4.1	Description and Operational Modes	3.4-1
3.4.1.1	Normal Plant Condenser Cooling	3.4-1
3.4.1.2	Safety-Related and NonSafety-Related Service Water Systems	3.4-2
3.4.1.3	Other Operational Modes	3.4-3
3.4.2	Component Descriptions	3.4-4
3.4.2.1	RWMU System Intake Structure	3.4-4
3.4.2.2	Plant Discharge	3.4-5
3.4.2.3	Cooling Basin CWS Intake Structure and Discharge Outfall	3.4-7
3.4.2.4	Heat Dissipation System	3.4-7
3.4.3	References	3.4-13
3.5	Radioactive Waste Management System	3.5-1
3.5.1	Source Terms	3.5-1
3.5.2	Liquid Radioactive Waste Management System	3.5-1
3.5.3	Gaseous Radioactive Waste Management System	3.5-2
3.5.4	Solid Radioactive Waste Management System	3.5-2
3.6	Nonradioactive Waste Systems	3.6-1

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
3.6.1	Effluents Containing Chemicals or Biocides	3.6-1
3.6.2	Sanitary System Effluents	3.6-2
3.6.3	Other Effluents	3.6-2
3.6.3.1	Gaseous Effluents	3.6-3
3.6.3.2	Liquid Effluents	3.6-3
3.6.3.3	Solid Effluents	3.6-3
3.6.3.4	Hazardous Wastes	3.6-4
3.7	Power Transmission System	3.7-1
3.7.1	Switchyard and Substation Interfaces	3.7-1
3.7.2	Transmission System	3.7-2
3.7.3	Transmission Line Rights-of-Way (Corridors)	3.7-7
3.7.3.1	Transmission Line Rights-of-Way Ecological and Cultural Surveys	3.7-8
3.7.3.2	Transmission Corridor Maintenance	3.7-8
3.7.3.3	Transmission System Operation	3.7-8
3.7.3.4	Noise	3.7-9
3.7.3.5	Transmission Line Design and Methods of Construction	3.7-9
3.7.4	References	3.7-11
3.8	Transportation of Radioactive Materials	3.8-1
3.8.1	Transportation of Unirradiated Fuel	3.8-1
3.8.2	Transportation of Irradiated Fuel	3.8-1
3.8.3	Transportation of Radioactive Waste	3.8-2
3.8.4	References	3.8-2
3.9	Construction Activities	3.9-1
3.9.1	Preconstruction and Site Preparation Activities	3.9-1
3.9.1.1	Installation and Establishment of Environmental Controls	3.9-2
3.9.1.2	Clearing, Grubbing, and Grading	3.9-2
3.9.1.3	Road, Rail, and Barge Facility Construction	3.9-3
3.9.1.4	Construction Security Program Implementation	3.9-4
3.9.1.5	Temporary Utilities Construction	3.9-4
3.9.1.6	Temporary Construction Facilities Construction	3.9-5
3.9.1.7	Laydown, Fabrication, and Shop Area Preparation	3.9-5
3.9.1.8	Cooling Basin Construction	3.9-5
3.9.1.9	Cooling Basin Intake and Discharge Structure Installation	3.9-6
3.9.1.10	Blowdown Discharge Line Installation	3.9-6
3.9.1.11	Raw Water Makeup System Pump Station and Pipeline Installation	3.9-7
3.9.1.12	Power Block Area Excavation	3.9-8
3.9.1.13	Module Assembly	3.9-8
3.9.2	Construction Activities	3.9-9
3.9.2.1	Power Block Area Backfill	3.9-9
3.9.2.2	Reactor Building Basemat Foundation	3.9-9
3.9.2.3	Power Block Area Construction	3.9-10
3.9.2.4	Construction of Other Facilities	3.9-10
3.9.3	Other Activities Associated with Construction	3.9-11
3.9.4	Construction Procedures and Processes	3.9-11
3.9.5	Environmental Procedures	3.9-12

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
3.9.5.1	Noise and Vibration	3.9-12
3.9.5.2	Air Quality (Fugitive and Vehicular Emissions)	3.9-12
3.9.5.3	Erosion and Sediment Control	3.9-13
3.9.5.4	Construction Water Management	3.9-13
3.9.5.5	Protection of Sensitive Resources	3.9-14
3.9.5.6	Unanticipated Discoveries	3.9-16
3.9.5.7	Hazardous Materials and Petroleum Management	3.9-16
3.9.5.8	Solid Waste Management (Hazardous/Nonhazardous Wastes)	3.9-17
3.9.5.9	Asbestos and Lead-Based Paint	3.9-17
3.9.5.10	Spill Prevention and Response	3.9-17
3.9.5.11	Cleanup and Restoration	3.9-17
3.9.6	References	3.9-18
3.10	Workforce Characterization	3.10-1
3.10.1	Construction Workforce	3.10-1
3.10.2	Workers Relocation and Commuting	3.10-2
3.10.3	Operations Workforce	3.10-2
3.10.4	Total Construction and Operations Workforce	3.10-2
3.10.5	Outage Workforce	3.10-2
Chapter 4	Impacts of Construction.....	4.1-1
4.1	Land-Use Impacts	4.1-1
4.1.1	The Site and Vicinity	4.1-1
4.1.1.1	The Site	4.1-1
4.1.1.2	The Vicinity	4.1-3
4.1.2	Transmission Corridors and Offsite Areas	4.1-3
4.1.2.1	Proposed Transmission Corridors	4.1-3
4.1.2.2	Blowdown Piping	4.1-4
4.1.2.3	Rail Spur Connection	4.1-5
4.1.2.4	Raw Water Makeup System and Intake Structure	4.1-5
4.1.2.5	Emergency Operations Facilities	4.1-5
4.1.3	Historic Properties	4.1-6
4.1.4	References	4.1-8
4.2	Water-Related Impacts	4.2-1
4.2.1	Hydrologic Alterations	4.2-1
4.2.1.1	Surface Water	4.2-2
4.2.1.2	Groundwater	4.2-6
4.2.2	Water Use Impacts	4.2-8
4.2.2.1	Surface Water	4.2-8
4.2.2.2	Groundwater	4.2-9
4.2.3	Water Quality Impacts	4.2-10
4.2.3.1	Surface Water	4.2-10
4.2.3.2	Groundwater	4.2-11
4.2.4	References	4.2-12
4.3	Ecological Impacts	4.3-1
4.3.1	Terrestrial Ecosystems	4.3-1

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
	4.3.1.1 The Site and Vicinity	4.3-1
	4.3.1.2 RWMU System Pipeline	4.3-6
	4.3.1.3 Transmission Corridors	4.3-7
4.3.2	Aquatic Ecosystems	4.3-9
	4.3.2.1 Construction of Cooling Basin	4.3-11
	4.3.2.2 Construction of Heavy Haul Road and Blowdown Line	4.3-12
	4.3.2.3 Construction of RWMU Pump Station, Intake Canal, and RWMU Pipeline	4.3-13
	4.3.2.4 Transmission Corridors	4.3-17
4.3.3	References	4.3-18
4.4	Socioeconomic Impacts	4.4-1
	4.4.1 Physical Impacts of Station Construction	4.4-1
	4.4.1.1 Groups or Physical Features Vulnerable to Physical Impacts	4.4-1
	4.4.1.2 Predicted Noise Levels	4.4-4
	4.4.1.3 Air Quality	4.4-5
	4.4.1.4 Aesthetics	4.4-7
	4.4.1.5 Occupational Health	4.4-8
	4.4.1.6 Conclusion	4.4-9
	4.4.2 Social and Economic Impacts	4.4-9
	4.4.2.1 Demography	4.4-10
	4.4.2.2 Impacts to the Community	4.4-14
	4.4.3 Environmental Justice	4.4-63
	4.4.3.1 Health and Environmental Impacts	4.4-64
	4.4.3.2 Socioeconomic Impacts	4.4-65
	4.4.4 References	4.4-68
4.5	Radiation Exposure to Construction Workers	4.5-1
	4.5.1 Site Layout	4.5-1
	4.5.2 Radiation Sources	4.5-1
	4.5.3 Construction Worker Doses	4.5-2
	4.5.3.1 Gaseous Effluent Doses	4.5-2
	4.5.3.2 Direct Radiation Doses	4.5-2
	4.5.3.3 Total Doses	4.5-3
	4.5.4 References	4.5-3
4.6	Measures and Controls to Limit Adverse Impacts during Construction	4.6-1
4.7	Cumulative Impacts	4.7-1
	4.7.1 Land Use	4.7-5
	4.7.2 Hydrology and Water Use	4.7-7
	4.7.2.1 Surface Water	4.7-7
	4.7.2.2 Groundwater	4.7-9
	4.7.2.3 Water Quality	4.7-9
	4.7.3 Ecology (Terrestrial and Aquatic)	4.7-10
	4.7.3.1 Terrestrial	4.7-10
	4.7.3.2 Aquatic	4.7-10
	4.7.4 Socioeconomic Resources	4.7-11
	4.7.5 Summary	4.7-14

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
4.7.6	References	4.7-14
Chapter 5	Environmental Impacts of Station Operation	5.0-1
5.1	Land Use Impacts	5.1-1
5.1.1	The Site and Vicinity	5.1-1
5.1.1.1	The Site	5.1-1
5.1.1.2	The Vicinity	5.1-2
5.1.2	Transmission Corridors and Offsite Areas	5.1-2
5.1.2.1	Transmission Corridors	5.1-2
5.1.2.2	Cooling Basin Blowdown Line and Transportation Corridor	5.1-3
5.1.2.3	Rail Spur Connection	5.1-3
5.1.2.4	RWMU System and Intake Structure	5.1-4
5.1.2.5	Emergency Operations Facilities	5.1-4
5.1.2.6	Waste Disposal	5.1-4
5.1.3	Historic Properties and Cultural Resources	5.1-5
5.2	Water-Related Impacts	5.2-1
5.2.1	Hydrologic Alterations and Plant Water Supply	5.2-1
5.2.1.1	Surface Water	5.2-1
5.2.1.2	Groundwater	5.2-2
5.2.1.3	Summary of Hydrologic Alterations	5.2-9
5.2.2	Water-Use Impacts	5.2-10
5.2.2.1	Surface Water	5.2-10
5.2.2.2	Groundwater	5.2-14
5.2.3	Water Quality Impacts	5.2-16
5.2.3.1	Surface Water	5.2-16
5.2.3.2	Groundwater	5.2-18
5.2.4	References	5.2-19
5.3	Cooling System Impacts	5.3-1
5.3.1	Intake System	5.3-1
5.3.1.1	Hydrological Descriptions and Physical Impacts	5.3-1
5.3.1.2	Aquatic Ecosystems	5.3-2
5.3.1.3	References	5.3-12
5.3.2	Discharge Systems	5.3-19
5.3.2.1	Thermal Discharges and Other Physical Impacts	5.3-20
5.3.2.2	Aquatic Ecosystems	5.3-22
5.3.2.3	References	5.3-25
5.3.3	Heat Dissipation Systems	5.3-30
5.3.3.1	Heat Dissipation to the Atmosphere	5.3-30
5.3.3.2	Terrestrial Ecosystems	5.3-36
5.3.3.3	References	5.3-38
5.3.4	Impacts to Members of the Public	5.3-40
5.3.4.1	Etiological Agent Impacts	5.3-40
5.3.4.2	Noise Impacts	5.3-42
5.3.4.3	References	5.3-43
5.4	Radiological Impacts of Normal Operation	5.4-1

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
5.4.1	Exposure Pathways	5.4-1
5.4.1.1	Liquid Pathways	5.4-1
5.4.1.2	Gaseous Pathways	5.4-2
5.4.1.3	Direct Radiation	5.4-3
5.4.2	Radiation Doses to Members of the Public	5.4-3
5.4.2.1	Liquid Pathway Doses	5.4-3
5.4.2.2	Gaseous Pathway Doses	5.4-3
5.4.3	Impacts to Members of the Public	5.4-4
5.4.4	Impacts to Biota Other than Members of the Public	5.4-4
5.4.4.1	Liquid Pathway	5.4-4
5.4.4.2	Gaseous Pathway	5.4-5
5.4.4.3	Biota Doses	5.4-5
5.4.5	Occupational Doses	5.4-6
5.4.6	References	5.4-6
5.5	Environmental Impacts of Waste	5.5-1
5.5.1	Nonradioactive Waste System Impacts	5.5-1
5.5.1.1	Impacts of Discharges to Water	5.5-2
5.5.1.2	Impacts of Discharges to Land	5.5-2
5.5.1.3	Impacts of Discharges to Air	5.5-4
5.5.1.4	Sanitary Waste Impacts	5.5-4
5.5.1.5	Impacts of Dredging and Disposal	5.5-4
5.5.2	Mixed Waste Impacts	5.5-5
5.5.2.1	Plant Systems Producing Mixed Waste	5.5-5
5.5.2.2	Mixed Waste Storage and Disposal Plans	5.5-6
5.5.2.3	Waste Minimization Plan	5.5-6
5.5.2.4	Environmental Impacts of Mixed Waste	5.5-7
5.5.3	Conclusions	5.5-8
5.5.4	References	5.5-8
5.6	Environmental Impacts of Transmission Systems	5.6-1
5.6.1	Terrestrial Ecosystems	5.6-1
5.6.2	Aquatic Ecosystems	5.6-3
5.6.2.1	Important Habitats	5.6-3
5.6.2.2	Important Species	5.6-4
5.6.3	Impacts to Members of the Public	5.6-5
5.6.3.1	Visual Impacts	5.6-6
5.6.3.2	Electric Shock	5.6-6
5.6.3.3	Electromagnetic Field Exposure	5.6-7
5.6.3.4	Noise	5.6-8
5.6.3.5	Radio and Television Interference	5.6-9
5.6.4	References	5.6-9
5.7	Uranium Fuel Cycle and Transportation Impacts	5.7-1
5.7.1	Uranium Fuel Cycle Impacts	5.7-1
5.7.1.1	Land Use	5.7-3
5.7.1.2	Water Use	5.7-3
5.7.1.3	Fossil Fuel Impacts	5.7-4

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
	5.7.1.4 Chemical Effluents	5.7-4
	5.7.1.5 Radioactive Effluents	5.7-5
	5.7.1.6 Radioactive Waste	5.7-7
	5.7.1.7 Occupational Dose	5.7-7
	5.7.1.8 Transportation	5.7-7
	5.7.1.9 Summary	5.7-8
5.7.2	Transportation of Radioactive Materials	5.7-8
	5.7.2.1 Transportation Assessment	5.7-8
	5.7.2.2 Incident-Free Transportation Impacts Analysis	5.7-14
	5.7.2.3 Conclusion	5.7-19
	5.7.2.4 References	5.7-20
5.8	Socioeconomic Impacts	5.8-1
5.8.1	Physical Impacts of Station Operation	5.8-1
	5.8.1.1 Noise	5.8-1
	5.8.1.2 Air Quality	5.8-2
	5.8.1.3 Aesthetics	5.8-4
	5.8.1.4 Traffic	5.8-4
	5.8.1.5 Occupational Health	5.8-5
	5.8.1.6 Other Impacts	5.8-6
	5.8.1.7 Conclusion	5.8-6
5.8.2	Social and Economic Impacts	5.8-6
	5.8.2.1 Demography	5.8-7
	5.8.2.2 Impacts to the Community	5.8-10
5.8.3	Environmental Justice	5.8-41
	5.8.3.1 Health and Environmental Impacts	5.8-42
	5.8.3.2 Socioeconomic Impacts	5.8-44
	5.8.3.3 References	5.8-46
5.9	Decommissioning	5.9-1
	5.9.1 NRC GEIS Regarding Decommissioning	5.9-1
	5.9.2 DOE-Funded Study on Decommissioning Costs	5.9-3
	5.9.3 Plant Design Features for Decommissioning	5.9-5
	5.9.4 Conclusions	5.9-5
	5.9.5 References	5.9-6
5.10	Measures and Controls to Limit Adverse Impacts During Operations	5.10-1
5.11	Cumulative Impacts	5.11-1
	5.11.1 Land Use	5.11-3
	5.11.2 Hydrology and Water Use	5.11-3
	5.11.2.1 Groundwater	5.11-5
	5.11.3 Ecology (Terrestrial and Aquatic)	5.11-5
	5.11.3.1 Terrestrial	5.11-5
	5.11.3.2 Aquatic	5.11-8
	5.11.4 Socioeconomic Resources	5.11-11
	5.11.5 Atmospheric and Meteorological	5.11-12
	5.11.6 Radiological	5.11-12
	5.11.7 Summary	5.11-13

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
5.11.8	References	5.11-13
Chapter 6	Environmental Measurements and Monitoring Programs	6.0-1
6.1	Thermal Monitoring	6.1-1
6.1.1	Pre-Application Monitoring	6.1-1
6.1.2	Construction Monitoring	6.1-1
6.1.3	Preoperational and Operational Monitoring	6.1-2
6.2	Radiological Monitoring	6.2-1
6.2.1	Radiological Environmental Monitoring Program Basis	6.2-1
6.2.2	Radiological Environmental Monitoring Program Contents	6.2-1
6.2.2.1	Pathways Monitored	6.2-2
6.2.2.2	Land Use Census	6.2-3
6.2.2.3	Quality Assurance Program	6.2-4
6.2.3	References	6.2-4
6.3	Hydrological Monitoring	6.3-1
6.3.1	Pre-Application Monitoring	6.3-1
6.3.1.1	Surface Water	6.3-2
6.3.1.2	Groundwater	6.3-2
6.3.2	Construction and Preoperational Monitoring	6.3-3
6.3.2.1	Surface Water	6.3-3
6.3.2.2	Groundwater	6.3-3
6.3.3	Operational Monitoring	6.3-4
6.3.3.1	Surface Water Hydrologic Monitoring	6.3-4
6.3.3.2	Groundwater Hydrologic Monitoring	6.3-4
6.3.4	References	6.3-4
6.4	Meteorological Monitoring	6.4-1
6.4.1	General Monitoring Program Description	6.4-2
6.4.2	Meteorological Tower and Instrument Siting	6.4-3
6.4.2.1	Site Description and Topographic Features of the Site Area	6.4-3
6.4.2.2	Meteorological Tower Exposure	6.4-4
6.4.2.3	Potential Airflow Alteration	6.4-4
6.4.2.4	Heat and Moisture Sources Influence	6.4-5
6.4.2.5	Potential Changes on Site Diffusion Climate	6.4-6
6.4.2.6	Instrument Siting	6.4-7
6.4.3	Pre-Application Monitoring Phase	6.4-7
6.4.3.1	Meteorological Parameters Measured	6.4-8
6.4.3.2	Meteorological Sensors Used	6.4-9
6.4.3.3	Data Recording and Storage	6.4-9
6.4.3.4	Data Reduction and Reporting	6.4-10
6.4.3.5	Instrumentation Surveillance	6.4-13
6.4.3.6	System Accuracy	6.4-14
6.4.4	Preoperational Monitoring Phase	6.4-15
6.4.4.1	Meteorological Parameters Measured	6.4-15
6.4.4.2	Data Collection System	6.4-15
6.4.5	Operational Monitoring Phase	6.4-15

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
	6.4.5.1 Description of Monitoring Program	6.4-16
	6.4.5.2 Emergency Preparedness Support	6.4-17
6.4.6	Meteorological Data	6.4-17
	6.4.6.1 Representativeness and Adequacy of Meteorological Data	6.4-17
	6.4.6.2 Long-Term and Climatological Conditions	6.4-18
	6.4.6.3 Need for Additional Data Sources for Airflow Trajectories	6.4-22
	6.4.6.4 Supplemental Data for Environmental Impact Evaluation	6.4-23
	6.4.6.5 Period of Data and Data Used to Support the Application	6.4-23
6.4.7	References	6.4-24
6.5	Ecological Monitoring	6.5-1
	6.5.1 Terrestrial Ecology and Land Use	6.5-1
	6.5.1.1 Pre-Application Terrestrial Ecological Monitoring	6.5-1
	6.5.1.2 Construction, Preoperational, and Operational Monitoring	6.5-2
	6.5.2 Aquatic Ecology	6.5-4
	6.5.2.1 Pre-Application Monitoring	6.5-4
	6.5.2.2 Construction Monitoring	6.5-7
	6.5.2.3 Preoperational and Operational Monitoring	6.5-8
6.5.3	References	6.5-8
6.6	Chemical Monitoring	6.6-1
	6.6.1 Pre-Application Monitoring	6.6-1
	6.6.1.1 Surface Water Monitoring	6.6-2
	6.6.1.2 Groundwater Monitoring	6.6-3
	6.6.2 Construction and Preoperational Monitoring	6.6-3
	6.6.2.1 Surface Water Monitoring	6.6-3
	6.6.2.2 Groundwater Monitoring	6.6-4
	6.6.3 Operational Monitoring	6.6-4
	6.6.3.1 Surface Water Monitoring	6.6-5
	6.6.3.2 Groundwater Monitoring	6.6-5
6.6.4	References	6.6-6
6.7	Summary of Monitoring Programs	6.7-1
	6.7.1 Pre-Application Monitoring	6.7-1
	6.7.2 Preconstruction/Construction Monitoring	6.7-1
	6.7.3 Preoperational Monitoring	6.7-2
	6.7.4 Operational Monitoring	6.7-2
Chapter 7	Environmental Impacts of Postulated Accidents Involving	
	Radioactive Materials	7.1-1
7.1	Design Basis Accidents	7.1-1
	7.1.1 Selection of Accidents	7.1-1
	7.1.2 Evaluation Methodology	7.1-2
	7.1.3 Source Terms	7.1-3
	7.1.4 Radiological Consequences	7.1-3
	7.1.5 References	7.1-4
7.2	Severe Accidents	7.2-1
	7.2.1 ESBWR and ABWR Reactor Vendor Methodology	7.2-2

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
7.2.2	Exelon Methodology	7.2-5
7.2.3	Consequences to Population Groups	7.2-7
7.2.3.1	Air Pathways	7.2-7
7.2.3.2	Surface Water Pathways	7.2-8
7.2.3.3	Groundwater Pathways	7.2-8
7.2.4	Comparison to NRC Safety Goals	7.2-9
7.2.4.1	Individual Risk Goal	7.2-9
7.2.4.2	Societal Risk Goal	7.2-9
7.2.5	Conclusions	7.2-10
7.2.6	References	7.2-11
7.3	Severe Accident Mitigation Alternatives	7.3-1
7.4	Transportation Accidents	7.4-1
7.4.1	Radiological Impacts of Transportation Accidents	7.4-1
7.4.1.1	Transportation of Unirradiated Fuel	7.4-1
7.4.1.2	Transportation of Spent Fuel	7.4-1
7.4.2	Nonradiological Impacts of Transportation Accidents	7.4-4
7.4.2.1	Transportation of Unirradiated Fuel	7.4-4
7.4.2.2	Transportation of Spent Fuel	7.4-4
7.4.2.3	Transportation of Radioactive Waste	7.4-5
7.4.3	Conclusion	7.4-5
7.4.4	References	7.4-5
Chapter 8	Need for Power	8.0-1
Chapter 9	Alternatives to the Proposed Action	9.0-1
9.0.1	References	9.0-1
9.1	No-Action Alternative	9.1-1
9.2	Energy Alternatives	9.2-1
9.3	Site Selection Process	9.3-1
9.3.1	Introduction	9.3-1
9.3.2	Overview of Site Selection Process	9.3-1
9.3.2.1	Region of Interest	9.3-2
9.3.2.2	Process for Identifying Candidate Areas	9.3-2
9.3.2.3	Identification and Screening of Potential Sites	9.3-3
9.3.2.4	Screening Process to Identify Candidate Sites	9.3-5
9.3.2.5	Candidate Site Evaluation and Conclusion	9.3-10
9.3.3	Alternative Site Review	9.3-12
9.3.3.1	Evaluation of the Matagorda County Site	9.3-13
9.3.3.2	Evaluation of the Buckeye Site	9.3-34
9.3.3.3	Evaluation of the Alpha Site	9.3-53
9.3.3.4	Evaluation of the Bravo Site	9.3-70
9.3.4	Summary and Conclusions	9.3-86
9.3.5	References	9.3-87
9.4	Alternative Plant and Transmission Systems	9.4-1
9.4.1	Heat Dissipation Systems	9.4-1

ESP ER Overall Table of Contents (Cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
9.4.1.1	Screening of Alternative Heat Dissipation Systems	9.4-1
9.4.1.2	Analysis of Recommended Cooling Tower Alternative	9.4-4
9.4.1.3	Summary	9.4-7
9.4.2	Circulating Water Systems	9.4-7
9.4.2.1	Intake Systems	9.4-8
9.4.2.2	Discharge Systems	9.4-12
9.4.2.3	Water Supply	9.4-14
9.4.2.4	Water Treatment	9.4-21
9.4.3	Transmission Systems	9.4-22
9.4.3.1	Alternative Corridor Routes	9.4-22
9.4.3.2	Alternatives to the Proposed Transmission System Design	9.4-23
9.4.4	References	9.4-24
Chapter 10	Proposed Action Consequences.....	10.0-1
10.0	Environmental Consequences of the Proposed Action	10.0-1
10.1	Unavoidable Adverse Environmental Impacts	10.1-1
10.1.1	Unavoidable Adverse Environmental Impacts of VCS Construction	10.1-1
10.1.2	Unavoidable Adverse Environmental Impacts of VCS Operation	10.1-3
10.2	Irreversible and Irretrievable Commitments of Resources	10.2-1
10.2.1	Irreversible Commitments of Environmental Resources	10.2-1
10.2.1.1	Land Use Commitments	10.2-1
10.2.1.2	Hydrology and Water Use Commitments	10.2-2
10.2.1.3	Ecological Commitments (Terrestrial and Aquatic)	10.2-2
10.2.1.4	Socioeconomics	10.2-3
10.2.1.5	Radiological Releases	10.2-3
10.2.1.6	Air Emissions and Meteorological Changes	10.2-3
10.2.2	Irretrievable Commitments of Material Resources	10.2-4
10.2.3	References	10.2-5
10.3	Relationship Between Short-Term Uses and Long-Term Productivity of the Human Environment	10.3-1
10.3.1	Construction of VCS and Short-Term Uses	10.3-1
10.3.2	Operation of VCS and Long-Term Productivity	10.3-2
10.3.3	Summary of Relationship Between Short-Term Uses and Long-Term Productivity	10.3-3
10.4	Benefit-Cost Balance	10.4-1
Appendix A	Consultation Letters.....	1