

## 5.10 MEASURES AND CONTROLS TO LIMIT ADVERSE IMPACTS DURING OPERATION

This section summarizes the principal adverse environmental impacts of operations and controls to limit these impacts. The cause-and-effect relationships between operational environmental disturbances and the corresponding affected environmental receptors/resources are presented in Table 5.10-1. The horizontal axis on the matrix represents the principal environmental disturbances and the vertical axis depicts the environmental receptors or resources that could be affected by those disturbances. Table 5.10-1 also summarizes feasible measures and controls that have been identified for mitigating operational impacts.

The significance indicators provided in Table 5.10-1 are designated using the following descriptors: SMALL (S), MODERATE (M), or LARGE (L). The significance indicators are defined in Section 5.0. The assignment of significance levels (S, M, and L) is based on the assumption that for each impact, corresponding feasible and adequate measures and controls (or equivalents) are implemented. If a SMALL (S) significance determination is made without the implementation of measures and controls, then no additional measures and controls are identified in Table 5.10-1. A blank cell in the elements column, "Potential Environmental Disturbances and Impact Levels," denotes "no impact" of that type on the environmental resource. Each "Impact Description or Activity" attribute is assigned a number and each "Feasible and Adequate Measures and Controls" attribute is assigned a number in parenthesis that corresponds to the respective "Impact Description or Activity."

The feasible and adequate measures and controls described in Table 5.10-1 are considered reasonable from a practical, engineering, and economic view; many are based on statutes and regulatory requirements or are generally accepted practices within the utility industry. Therefore, these measures and controls are not expected to present an undue hardship on the applicant. Based on a review of the operational impacts described in this chapter, some general feasible and adequate measures and controls for reducing adverse impacts at the Clinch River Nuclear (CRN) Site include:

- An environmental safety and health plan has been prepared and is followed.
- Operational employees receive appropriate training on environmental compliance and safety procedures.
- Safety data sheets are required for applicable hazardous materials at the CRN Site. Operational employees are trained on the appropriate use of hazardous materials.
- Hazardous materials are used in accordance with applicable federal, state, and local laws and regulations and Tennessee Valley Authority (TVA) procedures.
- Hazardous wastes are treated, stored, and disposed of in accordance with the Resource Conservation and Recovery Act (RCRA), and other applicable federal, state, and local laws and regulations and TVA procedures. Operational employees are trained on the appropriate handling and disposal of hazardous wastes.

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- As appropriate, a safety/environmental officer oversees and inspects operational activities.
- Operational activities are performed in accordance with applicable local, state, and federal ordinances, laws, and regulations and TVA procedures intended to prevent or minimize adverse environmental effects of operational activities on air, water, and land, and on plants, animals, workers and the public.
- Operational activities comply with applicable environmental laws, regulations, permits, and licenses, which place controls on how activities are performed.
- Operational activities are performed in compliance with applicable corporate environmental, safety, and operational procedures, which place controls on how activities are performed.
- Operational activities are performed in accordance with the Best Management Practices (BMPs), permits, and reporting and records retention procedures described in TVA's Environmental Protection (EPP) (Appendix B).

More specific mitigation measures are detailed in Table 5.10-1.

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**Table 5.10-1 (Sheet 1 of 14)  
Summary of Measures and Controls to Limit Adverse Operational Impacts**

Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
<b>5.1 Land Use Impacts</b>															
5.1.1 The Site and Vicinity						S		S						1. Restriction of use of the land for most purposes other than those involving siting of utility projects. 2. Offsite disposal of waste.	(1) Land already designated for plant operations. (1) Limit disturbance of vegetation to the area within the site designated for CRN Site construction. (1-2) Minimize potential impacts through best management practices (BMPs) and TVA procedures. (2) Disposal of waste in accordance with applicable regulations and TVA procedures.
5.1.2 Transmission Corridors and Offsite Areas						S		S						1. Project implementation restricts use of land for most purposes other than those involving utility right-of-way (ROW) activities. 2. Continued impact to land from maintenance of the existing transmission line ROWs.	(1) To the extent feasible, avoid any additional disturbances of land in ROWs. (1-2) Inspect vegetation within and adjacent to ROW on a regular basis to assist in planning corrective and routine maintenance in accordance with TVA's "A Guide for Environmental Protection and Best Management Practices for TVA Transmission Construction and Maintenance Activities." (2) Limit continued vegetation removal to the minimal amount needed to support the transmission line ROW.
5.1.3 Historic Properties						S								1. Potential to adversely affect historic and archaeological properties in areas of ground disturbance and maintenance.	(1) Conduct operations in compliance with the Programmatic Agreement.

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Summary of Measures and Controls to Limit Adverse Operational Impacts**

Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
<b>5.2 Water Related Impacts</b>															
5.2.1 Hydrological Alterations and Plant Water Supply		S				S								1. Minor localized influence from cooling water system. 2. Small adverse impact on hydrological characteristics of CRN Site. 3. Stormwater discharge into nearby water bodies.	(1) Design diffuser to meet the objectives of maximizing thermal and chemical mixing while minimizing scour and hydrologic modifications. (2) Incorporate the hydrologic function of Stream S01 (displaced by cooling system intake) in conveying stormwater from the CRN Site into the stormwater management system for the CRN Site. (3) Manage stormwater in accordance with a site-specific Integrated Pollution Prevention Plan.
5.2.2 Water Use Impacts						S	S	S	S	S				1. Water loss primarily as a result of evaporative losses and drift from cooling towers 2. Effects to water users, including biota, from discharge of blowdown with small quantities of water treatment chemicals and other liquid effluents into reservoir.	(1) Design cooling towers to limit drift and evaporative water loss. (1) Control water availability through TVA's reservoir operating policy and construction of the Melton Hill dam by-pass. (2) Limit wastewater discharges and comply with Tennessee Department of Environment and Conservation (TDEC) National Pollutant Discharge Elimination System (NPDES) permit. (2) Minimize potential of hazardous materials/waste spills or releases through training and rigorous compliance with RCRA and applicable regulations and TVA procedures.

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Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
<b>5.3 Cooling System Impacts</b>															
5.3.1 Intake System		S				S		S		S				<ol style="list-style-type: none"> <li>1. Hydrodynamic force induced by intake system near the intake structure.</li> <li>2. Some fish killed by impingement and entrainment.</li> <li>3. Minor aquatic impact resulting from consumption of water from the Clinch River arm of the Watts Bar Reservoir.</li> </ol>	<ol style="list-style-type: none"> <li>(1) To the extent practical, design pumps, machinery, and screens to reduce hydrodynamic impacts.</li> <li>(2) Minimize withdrawals with closed-loop cooling cycle and reduce impingement and entrainment with low through-screen velocity at intake.</li> <li>(2) Minimize impingement and entrainment of organisms through compliance with Section 316(b) of the Clean Water Act (CWA) (implemented by the NPDES permit), per EPP Section 2.1 (Appendix B).</li> <li>(3) Design cooling water system to minimize water losses and reduce intake flows.</li> </ol>
5.3.2 Discharge System		S			S	S				S		S		<ol style="list-style-type: none"> <li>1. Small localized increase in surface water temperature from thermal plume resulting from water discharged to the reservoir.</li> <li>2. Small impact on aquatic organisms from potential minor erosion or sedimentation near the discharge point.</li> <li>3. Minor impact on aquatic organisms from thermal plume.</li> <li>4. Small impact on aquatic organisms from small turbidity effect near the discharge structure.</li> </ol>	<ol style="list-style-type: none"> <li>(1) Compliance with state water quality standards and TVA procedures associated with thermal discharges.</li> <li>(1,3) Minimize the thermal discharge to the Clinch River arm of the Watts Bar Reservoir with closed loop cooling system.</li> <li>(2) To the extent practical, employ and position discharge structure so as to reduce erosion/sedimentation effects on aquatic organisms.</li> <li>(4) To the extent practical, design and position discharge structure so as to reduce turbidity effects on aquatic organisms.</li> </ol>

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Summary of Measures and Controls to Limit Adverse Operational Impacts**

Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
5.3.2 Discharge System (continued)														5. Small impact on benthic organisms from small amount of bottom scouring near the discharge structure. 6. Discharges of chemicals in blowdown water.	(5) To the extent practical, design and position discharge structure so as to reduce scouring effects on benthic organisms. (6) Monitor chemical concentrations to comply with the Biocide/Corrosion Treatment Plan submitted as part of the application for a TDEC NPDES permit, per EPP Section 2.1 (Appendix B).
5.3.3 Heat-Discharge System	S		S	S			S	S					S	1. Water vapor plume in the atmosphere from cooling towers release. 2. Contamination of soil from small amounts of waste salts and other chemicals from cooling towers in the atmosphere (drift deposition). 3. Minor increase in humidity in the CRN Site vicinity from cooling towers. 4. Minor impact on humans and terrestrial organisms from cloud shadowing. 5. Consumption of water from the reservoir due to cooling towers drift and evaporative losses. 6. Obscuring of view by water vapor plume. 7. Minor effect on wildlife near the cooling towers from operating noise.	(1) To the extent practical, design cooling towers using Best Available Technology to reduce evaporative losses and noise.

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Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
5.3.4 Impacts to Members of the Public	S		S	S							S		S	<ol style="list-style-type: none"> <li>1. Small increase in the background noise level from heat dissipation system.</li> <li>2. Small impact to humans from increased humidity, vapor, and mineral emissions from the cooling towers.</li> <li>3. Small cumulative socioeconomic impact on the surrounding region from evaporative and drift water loss.</li> <li>4. Obscuring of view by water vapor plume.</li> <li>5. Growth of etiologic agents (including organisms formerly referred to as thermophilic microorganisms) in the water cooling system.</li> </ol>	<ol style="list-style-type: none"> <li>(1) To the extent practical, use pumps and machinery that reduce noise levels.</li> <li>(2) Treat cooling water to reduce salt and mineral impurities.</li> <li>(3 and 4) Design cooling towers to reduce evaporative and drift water loses.</li> <li>(3) If necessary, initiate a water conservation program.</li> <li>(5) Periodically monitor and test water for etiologic agents (thermophilic microorganisms) according to programs such as the Centers for Disease Control's Surveillance for Waterborne-Disease Outbreaks—United States.</li> </ol>
<b>5.4 Radiological Impacts of Normal Operations</b>															
5.4.1 Exposure Pathways			S		S	S						S		<ol style="list-style-type: none"> <li>1. Releases of radionuclides in gaseous effluents.</li> <li>2. Releases of radionuclides in liquid effluents.</li> <li>3. Exposure of humans to direct radiation and radioactive effluents.</li> </ol>	<ol style="list-style-type: none"> <li>(1-5) Doses from planned releases of radiation less than the limits prescribed under Title 10 of the Code of Federal Regulations (10 CFR) 20.1301 and Title 40 of the Code of Federal Regulations (40 CFR) 190.</li> <li>(1-5) Implement a Radiological Environmental Monitoring Program to monitor specified exposure pathways.</li> <li>(1-5) Minimize effluent discharges in accordance with applicable regulations.</li> </ol>

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Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
<b>5.4 Radiological Impacts of Normal Operations</b>															
5.4.1 Exposure Pathways (continued)														4. Exposure of terrestrial species and habitats to direct radiation and radioactive effluents. 5. Exposure of aquatic species and habitats to direct radiation and radioactive effluents.	
5.4.2 Radiation Dose Modeling														NA	NA
5.4.3 Impacts to Members of the Public			S		S	S	S						S	1. Small incremental radiation dose to members of the public from the small modular reactors. 2. Radiation doses to members of the public from breathing, swimming, eating, drinking water, and contact with contaminated soil.	(1-2) Measure radiation doses to the public from liquid effluent releases to the reservoir and gaseous releases to the atmosphere. Calculated doses to the public are within the design objectives of 10 CFR 50 Appendix I and within regulatory limits of 40 CFR 190. (1-2) Implement a Radiological Environmental Monitoring Program to monitor specified exposure pathways. (1-2) Releases of radiation within regulatory limits. Calculated doses to the public are within the design objectives of 10 CFR 50 Appendix I and within regulatory limits of 40 CFR 190.



**Table 5.10-1 (Sheet 7 of 14)  
Summary of Measures and Controls to Limit Adverse Operational Impacts**

Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
5.4.4 Impacts to Biota other than Members of the Public			S		S	S			S	S		S		1. Radiation doses to biota via breathing, direct contact with contaminated water or soil, and ingestion.	(1) Although there are no acceptance criteria specifically for biota, there is no scientific evidence that chronic doses below 100 mrad/day are harmful to plants or animals. Calculated biota doses are less than 0.1 mrad/day. (1) As appropriate, erect barriers to restrict access to contaminated soil or water. (1) Monitor organisms to determine exposure to radiation.
<b>5.5 Environmental Impacts of Waste</b>															
5.5.1 Nonradioactive-Waste-System Impacts			S		S	S	S		S	S				1. Discharge of relatively low concentrations of hazardous nonradioactive emissions and effluents to the air, reservoir, and soil column as part of routine operations. 2. Generation and disposal of hazardous nonradioactive waste (e.g., waste paints, solvents, etc.) in licensed hazardous waste landfills. 3. Generation and disposal of nonhazardous waste (e.g., concrete, scrap metal, etc.) in licensed landfills.	(1) Release hazardous air emissions according to limits imposed by the Clean Air Act (CAA) Amendments of 1977, as amended, 41 USC 7401 et seq, the CAA regulations (40 CFR 50-99), and TVA procedures. (1) Release hazardous water effluents according to limits imposed by the CWA/Federal Water Pollution Control Act (FWPCA) and NPDES program and permit requirements, and TVA procedures. (2) Manage, treat, and dispose of hazardous waste according to RCRA regulations and TVA procedures. (1 and 2) Carefully monitor hazardous waste.

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Summary of Measures and Controls to Limit Adverse Operational Impacts**

Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels										Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances			Socioeconomic Changes	Rad Exposure
5.5.1 Nonradioactive- Waste-System Impacts (continued)													4. Effluent and stormwater discharge. 5. Air emissions from equipment.	(3) Generate and dispose of nonhazardous nonradioactive waste according to applicable local, state, and federal regulations, including the Solid Waste Disposal Act, as amended, 42 U.S. Code (USC) 6901 et seq., and 40 CFR 261, <i>Identification and Listing of Hazardous Waste</i> , and TVA procedures.  (1-3) Perform inspections for compliance with applicable waste management laws and regulations and TVA procedures.  (1-3) As appropriate, train employees to follow applicable procedures and waste regulations.
5.5.2 Mixed Waste Impacts			S		S	S	S					S	1. Discharge of mixed waste emissions and effluents to the air, reservoir, or soil column as part of routine operations. 2. Disposal of mixed waste in licensed mixed waste landfills. 3. Potential chemical hazard and occupational exposure to radiological materials during handling and storage.	(1) Manage and release hazardous air constituents in accordance with the CAA regulations (40 CFR 50-99) and TVA procedures.  (1) Manage and release hazardous water constituents in accordance with the CWA and TVA procedures.  (1-3) Manage, treat, and dispose of hazardous waste constituents according to RCRA regulations, and TVA procedures.  (1-3) Manage and dispose of radioactive constituents according to applicable regulations and TVA procedures.  (1-3) As appropriate, train employees to follow applicable waste management procedures and regulations and TVA procedures.

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Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
5.5.2 Mixed Waste Impacts (continued)															(1-3) Carefully monitor mixed waste. (1-3) Perform inspections for compliance with applicable waste management laws and regulations and TVA procedures. (1-3) Limit mixed waste generation through source reduction, recycling, and treatment options. (1-3) Develop and follow a waste management plan. (1-3) Develop and follow a waste minimization plan to reduces the amount of waste that is generated. (1-3) Adopt as low as reasonably achievable program and train employees on implementation of this program, as appropriate.
<b>5.6 Transmission System Impacts</b>															
5.6.1 Terrestrial Ecosystems								S						1. Impact on terrestrial ecology from continued maintenance involving clearing of vegetation along the existing ROWs. 2. Potential for some erosion following vegetative clearing and/or excavation operations. 3. Application of herbicides. 4. Operation of noisy equipment that produce air emissions.	(1-4) Minimize potential impacts through compliance with permitting requirements, BMPs, and TVA procedures, per EPP Section 2.2 (Appendix B). (1-4) Follow reporting and record keeping requirements of EPP Sections 2.3, 4.1, and 4.3 (Appendix B). (1-2) As appropriate, train employees on how to perform work in a manner that reduces adverse environmental impacts; to the extent feasible, avoid any additional disturbances to sensitive terrestrial or wetland habitats/species. (1, 3) Identify sensitive areas requiring restrictions on types of vegetation maintenance.

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Summary of Measures and Controls to Limit Adverse Operational Impacts**

Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls			
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor	
5.6.1 Terrestrial Ecosystems (continued)																<ul style="list-style-type: none"> <li>(2) As practical, reseed cleared areas to limit erosion using non-invasive species/native plants, per TVA procedures.</li> <li>(3) Use licensed operators to apply herbicides.</li> <li>(3) Comply with the TDEC General Permit for Pesticide Discharges (includes herbicides)</li> <li>(4) As practical, use noise suppression/mufflers on vehicles/machinery and maintain vehicles to reduce emissions.</li> </ul>
5.6.2 Aquatic Ecosystems		S			S	S	S			S						<ul style="list-style-type: none"> <li>1. Impact on aquatic biota from continued maintenance involving clearing of vegetation along ROWs near water bodies.</li> <li>2. Potential for some erosion and subsequent runoff of sediment into water bodies.</li> <li>3. Migration of herbicides into water bodies.</li> <li>4. Potential discharge or spills of herbicides that pollute the aquatic ecosystem.</li> </ul> <ul style="list-style-type: none"> <li>(1-4) Minimize potential impacts through compliance with permitting requirements, BMPs, and TVA procedures, per EPP Section 2.1 (Appendix B).</li> <li>(1-4) Follow reporting and record keeping requirements of EPP Sections 2.3, 4.1, and 4.3 (Appendix B).</li> <li>(1-4) Identify Streamside Management Zones requiring restrictions on the type of vegetation management activities performed.</li> <li>(1) To the extent feasible, avoid any additional disturbances to sensitive aquatic habitats/species.</li> <li>(2) As practical, reseed cleared areas to limit erosion using non-invasive species/native plants, per TVA procedures.</li> <li>(3) Use licensed operators to apply herbicides.</li> <li>(3) Comply with the TDEC General Permit for Pesticide Discharges (includes herbicides).</li> <li>(4) As appropriate, train employees on herbicides procedures to minimize the risk of spills or discharges.</li> </ul>

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Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
5.6.3 Impacts to Members of the Public	S			S			S			S			S	<ol style="list-style-type: none"> <li>1. Effects on humans from noise from vehicles and equipment operated near inhabited or residential areas.</li> <li>2. Potential electromagnetic fields effects of underground transmission line.</li> <li>3. Potential for electric shock.</li> <li>4. Continued aesthetics effects from maintenance of the transmission line ROW.</li> </ol>	<p>(1-4) Minimize potential impacts through compliance with permitting requirements, BMPs, and TVA procedures.</p> <ol style="list-style-type: none"> <li>(1) Minimize night and weekend maintenance operations to reduce noise impacts.</li> <li>(2) Use mitigation measures to decrease the electromagnetic fields related to the underground transmission line.</li> <li>(3) Maintain vertical clearance from the ground for overhead transmission lines and safety procedures to prevent direct contact with underground transmission line.</li> </ol>
<b>5.7 Uranium Fuel Cycle Impacts</b>															
5.7.1 Uranium Fuel Cycle Impacts			S	S	S	S	S	S					S	<ol style="list-style-type: none"> <li>1. Commitment of land for uranium processing facilities.</li> <li>2. Consumption of cooling water during uranium oxide (UO<sub>2</sub>) fuel fabrication.</li> <li>3. Electrical energy used to power uranium processing facilities.</li> <li>4. Management of hazardous and radioactive air emissions and effluents from the gaseous diffusion plant.</li> <li>5. Management of hazardous, mixed, and radioactive waste.</li> </ol>	<ol style="list-style-type: none"> <li>(1) Construct plant according the BMPs.</li> <li>(3) As feasible, use energy efficient equipment/processes and introduce energy conservation program.</li> <li>(4) Discharge air emissions per CAA regulations (40 CFR 50-99).</li> <li>(4) Discharge water effluents per CWA/FWPCA and NPDES permit specifications.</li> <li>(4) Incorporate best available pollution control technology.</li> <li>(4) Treat and monitor emissions and effluents.</li> <li>(5) Manage hazardous constituents according to RCRA regulations.</li> </ol>

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Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels										Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances			Socioeconomic Changes	Rad Exposure
5.7.1 Uranium Fuel Cycle Impacts (continued)													6. Occupational radioactive dose to workers. 7. Transportation dose to workers and public. 8. Management of waste from operations, decontamination and decommissioning.  Note: The Activities in this column and the Measures and Controls in the next column apply to operations and facilities that are not under the control of TVA.	(5) Manage radioactive constituents according to applicable regulations. (5) Implement waste minimization plan. (2, 5) Consider use of a more efficient enrichment technology. (3, 4, and 5) Consider centrifuge process over gaseous diffusion process that could significantly reduce energy requirements and environmental impacts. (3, 4, and 5) Consider use of new technologies with less fuel loading to reduce emissions, energy, and water usage. (6-7) As appropriate, monitor and train employees in radiation procedures/regulations pursuant to 10 CFR 20, 40 CFR 190, and 10 CFR 20.1301. (8) Prepare a detailed decontamination and decommissioning plan.
5.7.2 Transportation of Radioactive Materials											S		1. Occupational and public exposures to radioactive materials from incident-free transportation.	(1) Minimize shipments of unirradiated fuel, irradiated fuel, and radioactive waste (maximize packaging/shipping efficiency). (1) Maximize plant efficiency (reduce fuel needs). (1) Implement waste minimization procedures.

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Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels											Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes	Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
<b>5.8 Socioeconomic Impacts</b>															
5.8.1 Physical Impacts of Station Operation	S		S				S						S	1. Potential episodic and limited noise impacts to workers and nearby residents. 2. Effects on humans from air pollutant and thermal emissions.	(1) As appropriate, train and appropriately protect workers to reduce the risk of potential exposure to noise. (1) Tests of emergency warning sirens with advance notification to the public. (2) Operate air emissions sources, and monitor release of air emissions, in accordance with state and federal regulations, air permit requirements and TVA procedures. (2) Include efficient drift eliminators to minimize drift emissions from cooling towers. (2) Manage thermal discharge from cooling water system in accordance with requirements of TDEC NPDES permit and TVA procedures.
5.8.2 Social and Economic Impacts of Station Operation				S									S	1. Traffic congestion impacts in the vicinity of the CRN Site due to operations traffic. 2. Potential ability of infrastructure and schools to accommodate influx of residents and students without additional facilities, services, or teachers. 3. Beneficial impact on economy and tax revenue.	(1) Offset operational and refueling event impacts to level of service for these roads by constructing the roadway improvements designed to accommodate the larger traffic volumes associated with construction traffic. (2) Offset demand associated with increased population with increased revenue from property taxes and sales taxes on workforce expenditures. (3) Maintain public access to boat ramps. (3) Maintain water quality so as not to impact fishing.

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**Table 5.10-1 (Sheet 14 of 14)  
Summary of Measures and Controls to Limit Adverse Operational Impacts**

Environmental Resources (Section Reference)	Potential Environmental Disturbances and Impact Levels										Impact Description or Activity	Feasible and Adequate Measures and Controls		
	Noise	Erosion/Sedimentation	Air Disturbance/ Emissions	Traffic	Hazardous Materials/ Wastes Surface and Ground Water	Land-Use/Disturbances	Water Use Consumption	Terrestrial Disturbances	Aquatic Disturbances	Socioeconomic Changes			Rad Exposure	Aesthetics/Dust/Odor
5.8.2 Social and Economic Impacts of Station Operation (continued)													4. Limitation of recreational activities (i.e., fishing, boating, hunting, etc.) along the CRN Site shoreline.	
5.8.3 Environmental Justice Impacts	S		S	S		S	S			S			1. No disproportionately high adverse impacts to minority populations.	NA

Note:  
NA = Not Applicable