

CHAPTER 4 – CUMULATIVE IMPACTS

4.1. Introduction

Cumulative impacts are defined as the effects of the proposed permanent dam safety modifications when considered together with other past, present, and reasonably foreseeable future actions. Chapter 3, Affected Environment and Environmental Consequences, presents information about past and present environmental conditions, as well as future trends where appropriate. This chapter addresses the cumulative impacts of the proposed permanent dam safety modifications and other reasonably foreseeable actions in the vicinity.

One ongoing project has been identified in the project area that would have the potential of causing cumulative impacts in conjunction with the construction of Alternative B (Proposed Action; combination floodwalls and embankments/berms) or Alternative C (all concrete floodwalls) – this project is the U.S. Highway 321 rerouting and widening project.

Approximately 1.2 miles of U.S. Highway 321 between Lenoir City (beginning approximately 0.2 miles west of the U.S. Highway 11 intersection) and the Tellico Canal is scheduled to be widened and diverted beginning in July 2012. The highway will be widened from two lanes to four lanes to relieve traffic congestion and improve safety. As part of the highway project, the J. Carmichael Greer Bridge over Fort Loudoun Dam is scheduled to be replaced by a new, 1,400-foot-long, four-lane bridge over the Tennessee River located about 2,000 feet downstream (west) of Fort Loudoun Dam (Figure 4-1). The current bridge over the dam will be removed once the replacement bridge is completed. In association with the U.S. Highway 321 construction, the roadway between the J. Carmichael Greer Bridge and the bridge over the Tellico Canal to the southeast will be reconfigured. Water, sewer, gas, electric, phone, and cable lines will also be relocated within the construction area. A new two-lane bridge is scheduled to be constructed over the Tellico Canal adjacent to the current bridge. The existing two-lane bridge over the Tellico Canal will service traffic flow in one direction along U.S. Highway 321 while the new bridge over the canal will service traffic flow in the opposite direction. Significant long-term lane closures are not anticipated with this project as most construction will occur in areas where no roadways are currently present and would ultimately connect with existing roadways. Short-term disruptions, including short-term lane closures, may occur when the new and existing roadways are joined. As a result of the rerouting process, increased traffic congestion is possible at the time of connection. The widening and diversions of U.S. Highway 321 are scheduled to be completed in May 2015 (TVA 2001; Jacobs 2012).



Legend

- Gate Location
- Temporary Measures Alignment
- US Hwy 321 Reroute (In Progress)
- Recreation Area
- TVA Owned Land

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↑
0 500 1,000 2,000 Feet

Source: Aerial is provided by ArcMap World Imagery 2012



Figure 4-1
U.S. Highway 321 Reroute
Tennessee Valley Authority

There would be no or only very minor or indirect cumulative impacts as a result of the construction of the U.S. Highway 321 rerouting and widening project and the proposed permanent dam safety modifications (either Alternative B or Alternative C) for the following resource areas at Fort Loudoun and Tellico Dams: geology and soils, water resources, flooding and floodplains, wetlands, aquatic ecology, terrestrial ecology, threatened and endangered species, land use, environmental justice, cultural resources, and air quality and greenhouse gas emissions. Because of the absence or insignificance of potential cumulative impacts, those resource areas are not addressed further under the cumulative impacts analysis discussion. However, cumulative impacts are possible for the following resource areas, which are discussed below: socioeconomics, noise, transportation, visual resources, recreation, solid and hazardous waste, and public safety.

Because of the location of the U.S. Highway 321 project (Figure 1-1), there would be no potential cumulative impacts in association with that project and the construction of the proposed permanent dam safety modifications at either Cherokee or Watts Bar Dams, and there are no other actions in the vicinity of these two dams that potentially would result in cumulative impacts.

4.2. Socioeconomics

Cumulative impacts on socioeconomics from construction of the proposed permanent dam safety modifications in conjunction with the U.S. Highway 321 project would be beneficial rather than adverse. Short-term, beneficial, direct, economic impacts from construction activities associated with the proposed permanent dam safety modifications and the U.S. Highway 321 project include the purchase of materials, equipment, and services and a temporary increase in employment and income. In addition, there would be beneficial indirect employment and income effects. Thus, the cumulative direct and indirect impacts to socioeconomic resources in the five-county impact area would be beneficial.

4.3. Noise

Short-term, cumulative impacts to the sound environment could occur in the vicinity of the combined U.S. Highway 321 project and the proposed permanent dam safety modifications at Fort Loudoun and Tellico Dams. These impacts would occur along the existing U.S. Highway 321 corridor and along the Tellico Parkway. Noise levels in the vicinity of these roadways would be elevated for the duration of these two projects as a result of the construction activities and the increased amounts of construction traffic in the area during the course of the projects. The elevated noise levels would be greatest during the period when the new U.S. Highway 321 construction is merged with the existing roadway; these impacts could be adverse but would be short-term in nature. These impacts could potentially be mitigated if the construction on the two projects is staggered. Because of the need for lane closures during the TVA dam segment repairs, it is possible TVA would delay work on at least the FTL-3 segment until completion of the U.S. Highway 321 project. Staggering the construction projects would extend the time duration of potential noise related impacts in the immediate vicinity of the project area. Following the completion of construction, noise levels along the current U.S. Highway 321 corridor from Fort Loudoun Dam to the junction with Tellico Parkway would be reduced from existing levels due to the relocation of U.S. Highway 321. Noise levels in the vicinity of the Tellico Canal and the nearby recreation areas would return to existing levels and likely increase in the future due to the anticipated increase in traffic on U.S. Highway 321.

4.4. Transportation

Short-term cumulative impacts to transportation along U.S. Highway 321, Tellico Parkway, the TVA Service Road, and the unnamed recreation area roads could occur during the U.S. Highway 321 rerouting and widening project if the construction of the proposed permanent dam safety modifications at Fort Loudoun and Tellico Dams are implemented at the same time as the U.S. Highway 321 construction activities. The majority of the U.S. Highway 321 project construction will occur in areas where there are currently no roads. As the construction nears completion, the new road will be connected with the existing highway and minor roads. At the time of connection, increased traffic congestion is possible as a result of the rerouting process, including possible lane closures. Portions of the FTL-3 and T-1 dam segments and the gate connecting these two segments fall within the construction area for the U.S. Highway 321 rerouting project (Figure 4-1). This could result in potential cumulative impacts if construction of permanent modifications to Fort Loudoun and Tellico Dams were underway at the same time. Such impacts could include short-term lane closures and resulting increases in traffic congestion. These impacts would be temporary, but potentially significant, given the current high traffic volume along U.S. Highway 321 (18,000 to 22,000 vehicles per day).

To avoid the potential for significant cumulative impacts to transportation, TVA could coordinate with TDOT during this rerouting process and schedule work to minimize or avoid cumulative impacts. It is possible that potential dam segment repairs could proceed with fewer impediments following the conclusion of the U.S. Highway 321 rerouting project. The dam segments FTL-2 and the northern portions of FTL-3 are located north of the reroute and, therefore, no lane closures would be required along the highway if the construction of the proposed permanent dam safety modifications were implemented after completion of the U.S. Highway 321 rerouting process. However, delays in the dam segment construction may not be possible given the need for implementation of the floodwall/berm construction. Even without delays in the dam segment construction, cumulative impacts to transportation in association with the U.S. Highway 321 project, would be short-term, localized, and unlikely to reach significant levels. Over the longer term following the completion of construction, the U.S. Highway 321 project should improve traffic conditions in the project area, resulting in beneficial long-term impacts.

4.5. Visual Resources

Under Alternative B (Proposed Action), the construction of floodwalls and/or embankments at Fort Loudoun and Tellico Dams potentially would create cumulative visual impacts in association with the rerouting and widening of U.S. Highway 321. Similar visual impacts would be associated with the construction of floodwalls only associated with the implementation of Alternative C at these dams. Visual impacts would include short-term disruptions as a result of the construction activities and the construction equipment and long-term changes in the visual environment at each dam segment. Construction activities and equipment would result in only short-term disruptions to the viewshed. The physical relocation of U.S. Highway 321 and the removal of the J. Carmichael Greer Bridge will result in permanent changes to the viewshed. During construction of the proposed permanent dam safety modifications and U.S. Highway 321 project, the short-term construction-related visual impacts would be noticeable around both Fort Loudoun and Tellico Dams. These adverse impacts would include the highly visible construction equipment, construction barriers, staging areas, and increased traffic congestion disrupting views in recreation areas where visitors are accustomed to peaceful and natural

settings. The construction-related visual impacts would be adverse, though temporary and minor.

Following the completion of the construction projects, the viewshed would be altered from the current conditions, though the new configuration would contain similar features in altered positions and sizes. These visual impacts would be permanent and could be considered adverse to some visitors in the area who are accustomed to the current appearance. The reduction in the profile of the dam due to the removal of the current bridge could contribute to beneficial impacts to visual resources at Fort Loudoun Dam. Overall, the cumulative impacts to visual resources from the proposed permanent dam safety modifications in conjunction with the U.S. Highway 321 project would be minimal.

4.6. Recreation

Construction of the proposed permanent dam safety modifications and the construction of the U.S. Highway 321 project could result in potential adverse cumulative impacts to recreation. As part of the construction activities for the rerouting and widening of U.S. Highway 321, there will be changes in the configuration of some of the TVA and recreation area access roads. During construction in these areas, there could be adverse impacts to recreation as a result of reduced access from increased traffic congestion associated with lane closures. Additionally, there could be adverse impacts to recreation associated with the increased noise levels in the construction areas, as well as disruptions in the visual environment associated with the appearance of the project areas during construction activities. These combined effects on transportation, noise, and visual resources could reduce the enjoyment level for visitors to the recreation areas. If construction of the U.S. Highway 321 project occurs at night, it is possible the impacts to recreation would be minimized, at least in terms of the associated traffic congestion (i.e., access) and noise impacts, though the visual impacts would still be expected to occur due to the presence of the construction equipment and construction zones. The potential cumulative impacts to recreation would be minimally adverse, but limited to the construction period (i.e., short-term).

4.7. Solid and Hazardous Waste

Moderate, temporary increases in solid waste are anticipated due to the cumulative effects of construction of the proposed permanent dam safety modifications and the U.S. Highway 321 project. Materials that are not recyclable would need to be disposed of at a municipal landfill; resulting in reduced landfill capacity as a result of the disposal of materials such as construction debris, bridge and road demolition debris, and general trash produced by construction activities and workers. After construction of the projects is completed, solid waste generation in the area should return to current levels.

A minor, temporary increase in hazardous waste generation also may occur as a result of the cumulative effects of these projects. Both projects would require significant heavy equipment and machinery and associated fuels and maintenance materials. BMPs would be used in both projects to ensure that any hazardous substances would not be released to the environment, and regulations would be followed to clean up any spills immediately if they occur. After construction is completed, hazardous waste generation in the area should return to current levels. Overall, cumulative impacts from the generation of solid and hazardous wastes from the proposed permanent dam safety modifications, in conjunction with the U.S. Highway 321 project, would be minor and would not significantly impact human health or the environment.

4.8. Public Safety

Potential adverse impacts to public safety are possible as a result of construction of the proposed permanent dam safety modifications and the U.S. Highway 321 project. These impacts would be associated primarily with the increased risk of traffic accidents as a result of greater congestion and altered road conditions in the construction zones. Lane closures, detours, and traffic hazards associated with proximity to construction equipment could contribute to driver distractions, increased stress, and corresponding increases in traffic accidents. Safety risks, including potentially significant impacts such as serious injury or loss of life, could also occur if access to construction areas and equipment is not properly restricted. However, BMPs would be utilized by construction crews to minimize potential risks to public safety, and construction-related risks to public safety would be temporary. Overall, the potential for cumulative impacts to public safety from the proposed permanent dam safety modifications, in conjunction with the U.S. Highway 321 project, would be limited by established safety procedures and planning, and impacts on public safety during the construction period are not expected to be significant.

Following completion of both the proposed permanent dam safety modifications and the U.S. Highway 321 project, there would be a cumulative beneficial impact to public safety. Completion of the permanent dam modifications would result in increased safety for individuals living in the vicinity and downstream of the dams as a result of the reduction in flood risk and corresponding reduction in risk to the nuclear facilities, and in conjunction with this beneficial impact on the safety of the public in the vicinity, the completion of the U.S. Highway 321 project would result in increased traffic safety as a result of the widened road. These beneficial impacts would be both significant and long-term.