

FINDING OF NO SIGNIFICANT IMPACT TENNESSEE VALLEY AUTHORITY

PICKWICK LANDING DAM SOUTH EMBANKMENT SEISMIC UPGRADE

In September 2016, Tennessee Valley Authority (TVA) completed a final Environmental Assessment (EA) to document the potential effects of TVA's upgrades to the south embankment of Pickwick Landing Dam in Hardin County to improve performance of the dam during and following a large earthquake. Since the EA was completed, there have been changes to the design to reduce overall risks to the integrity of the dam during construction, improve worker safety, reduce construction traffic on local roads, and address construction challenges. TVA is proposing to implement the necessary design changes to complete its upgrades at Pickwick Landing Dam. TVA evaluated the anticipated environmental impacts of the proposed design changes, which are necessary to upgrade the south embankment of Pickwick Landing Dam in a Supplemental EA (SEA). The SEA incorporated by reference the 2016 EA and previously identified impacts as appropriate.

Alternatives

TVA identified two alternatives in the SEA: the Proposed Action as summarized below and the No Action Alternative, under which TVA would not strengthen the dam's earthen embankment. Because of the continuing risk and potential impact to the public of taking no action, the No Action alternative is not considered reasonable. The anticipated potential effects of implementing the No Action Alternative were analyzed in the 2016 EA and were not discussed further in the SEA.

As described in detail in the SEA, TVA would proceed with the seismic upgrades to the dam as discussed in the 2016 EA with the additional proposed design changes. As proposed in the 2016 EA, TVA would construct berms along the toe of the upstream and downstream sides of the embankment to address potential shallow failures of the embankment and place extended fill in select locations on each side of the embankment to address deeper failure modes. TVA also plans to utilize the 7.5 acre laydown area located on the west side of North Carolina Landing Road that will be used for parking, equipment and material storage and staging, placement of a temporary office trailer(s), and other project management activities detailed in the 2016 EA. Proposed changes to the design evaluated in the SEA are discussed below:

Changes to the Design Resulting in Additional Area of Impact Compared to 2016 EA

1. Downstream Site Access Improvements: The 2016 EA work area did not include a construction access road to the downstream work area from North Carolina Landing Road. The original plan was to send construction traffic along an existing driveway to a maintenance building east of North Carolina Landing Road. This path included several sharp turns, which may be difficult for construction vehicles to negotiate. Therefore, TVA is now proposing to route construction vehicles to the work area via a newly constructed gravel access road that ties into North Carolina Landing Road at the driveway entrance. TVA is also proposing to close North Carolina Landing Road to public traffic at the intersection with State Highway 128.

2. Additional Downstream Footprint near Station (Sta.) 40+00: The large drainage area in the low-lying area downstream of the dam from about Sta. 40+00 to 48+00 requires the use of a stormwater sediment basin. The only feasible location for this stormwater sediment basin is in an area in the southwest corner of the low-lying area that is outside the 2016 EA Study Area. Therefore, TVA is proposing to utilize this additional 0.89-acre area for stormwater management.

3. Downstream Staging Area: At the time of the 2016 EA, the design included a limited staging area on the downstream side of the dam. TVA is now proposing to utilize a grassed, gently sloping embankment area north of the downstream fill area as a staging area for fill stockpiles, construction materials, and construction equipment. This area also includes the area under the State Highway 128 bridge, which would connect the upstream and downstream work areas, reducing the need to use local roads to transfer materials and equipment between the two work areas. Routing equipment through this area would result in a safer work environment for the contractor and cause less disturbance to public traffic on State Highway 128.

4. Barge Activities: At the time of the 2016 EA, it was anticipated that all fill materials would be delivered to the site by truck on local roads. TVA is now proposing an option for the contractor to build a temporary barge unloading site at the north end of the upstream dam work area, where fill materials can be shipped to the site via barge, unloaded at the barge unloading site on the dam, and transported under the State Highway 128 bridge structure to the downstream work zone. The proposed unloading site is in an area where upstream fill was already planned to be placed.

To support the use of the barge unloading site and the filling operation upstream of the dam, TVA is proposing to use two 35-acre upstream staging/fleeting areas (Exhibit 2 and Appendix A, Figure 2). The areas would be used to temporarily store 8 to 12 fully loaded barges until they are needed at the fill placement work zone. Tug boats would be utilized for short term durations (a work shift) and a spud barge or temporary mooring would be utilized for longer term duration (several days).

If requested, the contractor could utilize the Hardin County Port Authority's facility about one mile upstream of the dam, on the south (left descending) bank, at the end of Hardin Dock Road, to support its barge use (Exhibit 2). The facility is leased to the PCA. The facility includes a sheet pile bulkhead, a flat storage/operation area, and access to the end of Hardin Dock Road. The facility is currently being used by PCA and the facility would not require any upgrades.

5. Upstream Fill Area: After the 2016 EA, TVA performed additional bathymetric surveying and sediment thickness probing in the reservoir, which indicated that the riverbed was deeper than originally thought in some locations. Between Sta. 40+00 and 43+00, the deeper riverbed and thick sediment (14 feet thick) resulted in a wider footprint of extended fill, as the outer slope was continued outward to meet the deeper riverbed at the planned slope inclination, rather than steepening it to meet the 2016 EA Study Area footprint. Therefore, TVA is proposing to increase the limits of the upstream fill approximately 0.47 acres to provide a safe design of the Upstream Fill Area. TVA does not intend to require the contractor to re-grade the displaced sediment.

6. Upstream Site Access: Access to the upstream work area would require the use of the crest of the dam south of Sta. 13+00, where the State Highway 128 road embankment and the dam crest diverge. Construction vehicles would access the dam crest via the access road from State Park Road. TVA is proposing to close the access road to public traffic at the intersection with State Park Road. The dam crest would be fenced off and closed to the public during

construction. The fencing would prevent access to this area of the dam, which is regularly used by the public for fishing.

7. Downstream Fill South of Station 15+00: The latest stability analyses indicate that fill would need to be placed to Sta. 12+00 and the downstream footprint would be slightly larger. Therefore, TVA is proposing to extend the downstream fill south of Sta. 15+00 to about Sta. 12+00 from 25.32 acres to approximately 28.06 acres to provide a safe design of the Downstream Fill South of Station 15+00.

Other Proposed Changes to the Design

The finalization of the design process included other changes that would take place within the 2016 EA Study Area and work area. The proposed activities discussed below were not addressed in the 2016 EA.

Construction Dewatering: Construction dewatering is necessary to install some of the planned improvements, and was not specifically addressed in the 2016 EA. Excavations for these structures are likely to extend below the groundwater surface or to potentially encounter perched groundwater, so dewatering would be needed to maintain stability of the excavation sidewalls, and to prevent upward water seepage from softening the foundation soils before placement of compacted fill. All of these locations are within the 2016 EA Study Area.

Control of Water in Stream Channels 7 and 8: The project includes modifications (partial or total encapsulation/culvert placement and backfilling on top of the encapsulation) at Stream Channels 7 and 8. While the stream channel modifications were addressed in the 2016 EA, the control of water during the modifications was not specifically addressed. The stream channel modifications would require the draining of Stream Channels 7 and 8. To accomplish this, the contractor would temporarily block the flow to the stream channel and install a bypass pumping system to convey the flow around the work area.

Blocking Tailwater in Stream Channels 7 and 8: The work in Stream Channels 7 and 8 may also require the contractor to block tailwater from backing up into the work area. At Stream Channel 8, this backwatering occurs at the culvert under North Carolina Landing Road. To prevent backflow, the contractor may use measures such as installation of a backflow preventer on the downstream side of the existing culvert or the installation of a temporary cofferdam (earth berms, sandbags, sheet piles, port-a-dam-type structure, or similar).

Temporary Excavation Support: Some of the excavations in the downstream work area identified in the 2016 EA would be deeper than 4 feet and would encounter wet soils. Therefore, TVA is proposing to install temporary sheet piling or trench box shoring to maintain stability and allow safe entry by workers. Excavation support methods may include steel plates, steel or timber sheet piles, and purpose-built trench shields. The sheeting or shoring would be installed before or during excavation, and removed as the excavation is backfilled.

Hardin County's water intake structure is located within the 2016 EA Study Area. During final design review, TVA noted that its proposed work would be in close proximity to the water intake structure. To avoid impacting this structure, TVA is proposing to implement appropriate measures such as clearly delineating the location of the intake, installing additional turbidity curtains, and using more precise rock placement methods within 100 feet of the intake. In the future, TVA may evaluate if the water intake should be relocated. If it needs to be relocated, TVA will work with Hardin County and evaluate this action in a separate environmental review.

Environmental Assessment

In the SEA, TVA analyzed potential impacts to the following resource areas:

- Floodplains
- Groundwater
- Surface Water
- Wetlands
- Threatened and endangered species
- Natural areas, parks and recreation
- Transportation
- Navigation
- Cultural resources

Generally, TVA's analysis found that most environmental resources would be minimally affected by the proposed design changes. Many actions associated with the proposed upgrades would occur on the dam's earthen embankment, which is a previously disturbed area; therefore, impacts to most resources are anticipated to be minimal. The clearing and fill of areas on the downstream side of the embankment would impact an additional 0.78 acre of suitable summer habitat for the Indiana and northern long-eared bats, approximately 0.07 acre of additional wetland impacts for a total of 2.57 acres (2.5 acres of permanent and 0.07 acre of temporary impacts), and approximately 242 linear feet of stream impacts (project total of 612 linear feet). Minimal impacts to groundwater are anticipated with use of best management practices to avoid hazardous materials reaching groundwater. Minor and temporary impacts to recreation are anticipated as the fishing access to the southernmost crest of the dam would be temporarily closed to the public for the duration of the project. Minor and temporary impacts from construction traffic, including importing new fill material via road or barge, and noise from construction activities are also anticipated. Project activities would not affect the navigation of the Tennessee River or use of the navigation locks at the dam, and normal operations of Pickwick Dam would continue during construction, in accordance with the 2004 Reservoir Operations Study Environmental Impact Statement.

The proposed berm and extended fill would occur within the 100-year floodplain and floodway of the Tennessee River. Approximately 641 acre-feet of fill would be placed in the 100-year floodplain. The final, detailed design of the project was evaluated in a hydraulic model and confirmed no rise in 100-year flood or floodway elevations as a result of implementing the Proposed Action Alternative. Fill on the upstream face of Pickwick Landing Dam would be placed using barge-mounted mechanical equipment. To minimize adverse impacts and prevent construction barge(s) from flowing free during a flood, TVA would relocate the barges outside the floodway and securely anchor them. All proposed activities would comply with the National Flood Insurance Program and be consistent with Executive Order 11988.

Public Involvement and Intergovernmental Review

On October 11, 2018, TVA issued a draft of the SEA for a 30-day review and comment period. During the public review period, TVA received a total of 3 comment letters; 2 from the State of Tennessee Department of Environment and Conservation (TDEC) and 1 from the National Park Service-Shiloh National Military Park. TVA responded to these comments in the final SEA.

As required under Section 106 of the National Historic Preservation Act, TVA consulted appropriate recognized Native American tribes and the State of Tennessee Historic Preservation Office (SHPO) concerning the changes in design associated with the project. The Tennessee SHPO concurred with TVA's determination that the project would have no effect on historic or archaeological properties. TVA received comments from the Absentee Shawnee Tribe of Oklahoma with no objections.

In September 2018, TVA began consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA) regarding the potential impacts to bat species within the updated project area. Information documented in the 2016 EA for terrestrial Endangered and Threatened species remains valid with the exception of the proposed impacts to bat habitat and finalization of TVA's programmatic consultation with the USFWS on routine actions and federally listed bats in accordance with ESA Section 7(a)(2) and completed in April 2018. In addition to the removal of 22.87 acres previously consulted on for the 2016 EA and 0.58 acre addressed in the 2018 white paper, the proposed action includes the removal of 0.78 acres of forest associated with the proposed increase in fill placement. The project area does not occur in any known habitat for either Indiana bat or northern long-eared bat. Accordingly, TVA will track and document removal of potentially suitable summer roost trees and include that data in annual reporting in accordance with Section 7(a)(2) consultation. Additionally, if suitable bat roost tree habitat needs to be removed when bats may be present on the landscape, TVA would set aside funding to be applied towards future bat-specific conservation projects. TVA currently plans to conduct the tree removal between October 15 and March 31, when Indiana and northern long-eared bats are not on the landscape.

Prior to implementing the proposal, TVA must also coordinate and update/amend existing permits from TDEC and the U.S. Department of Army, Corps of Engineers to address potential impacts to water resources, including streams, floodplains and wetlands, under the Clean Water Act from the newly proposed actions.

Mitigation

Mitigation measures were discussed in the 2016 EA Section 2.5, by resource in Chapter 4, and in the September 2016 finding of no significant impact. In addition to the requirements of any necessary permits, TVA would implement the mitigation measures previously detailed in the 2016 EA to avoid, minimize, or mitigate adverse impacts on the environment. In addition, the below mitigation measure were added during the SEA evaluation. All applicable permits would be acquired; therefore, associated permit-related mitigation measures and BMPs would be implemented to further minimize impacts.

- To avoid impacts to Hardin County's water supply intake structure, TVA will implement appropriate measures such as such as clearly delineating the location of the intake, installing additional turbidity curtains, and using precise rock placement methods within 100 feet of the intake.
- At project completion, TVA will restore public access to the two recreation areas located on the left bank below the Dam and at the southern end of the crest of the Dam. If needed, TVA will repair/refurbish North Carolina Landing Road to ensure no long-term impacts to public recreational access occur.
- In order to prevent the construction barge(s) from floating free during a flood, the barge(s) would be relocated outside the floodway and securely anchored.
- The evacuation plan listed as a mitigation measure in the 2016 EA would also apply to construction access roads in the floodplain, the sediment basin, the barge unloading site, the downstream staging area, manholes, dewatering wells, pumping equipment, and dewatering equipment.

Conclusion and Findings

Based on the findings of the SEA, TVA concludes that the proposed seismic upgrades to the south embankment of Pickwick Landing Dam would not be a major federal action significantly affecting the environment. Accordingly, an environmental impact statement is not required.



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Date Signed