US Army Corps of Engineers ®
Nashville District

ENVIRONMENTAL ASSESSMENT

Roaring River Fish Dam Removal Project, Cordell Hull Dam Lake and Dam Project
Jackson County, Tennessee

October 5, 2016

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FINDING OF NO SIGNIFICANT IMPACT

And

FINDING OF COMPLIANCE

Removal of Roaring River Fish Barrier Dam
Roaring River Mile 4.9
Jackson County - Gainesboro, Tennessee

1. A scoping letter describing this project was circulated on July 11, 2016 to solicit comments from the public, government agencies, officials, industry, Indian Tribes, and other interested parties. In accordance with the National Environmental Policy Act of 1969 (NEPA), Council for Environmental Quality (CEQ) regulations implementing NEPA (40 CFR, 1500-1508), and Corps of Engineers Regulations ER 200-2-2 Policy and Procedures for Implementing NEPA (33 CFR 230) an Environmental Assessment (EA) was prepared. The EA described existing conditions; evaluated potential impacts associated with alternatives; and selected a proposed alternative. Three alternatives were considered, including: Alternative 1 – No Action; Alternative 2 – Removal of the Fish Barrier Dam and Alternative 3- Barrier Stabilization. "No Action" means that the dam removal - a federal action - would not occur.

2. The EA revealed that Alternative 1 – No Action; would allow the existing fish barrier dam to remain in place until the existing headcut grew large enough to result in complete failure of the dam. River flows would wash the downstream left portion of the dam out and the pool impounded by the fish barrier dam would eventually return to normal riverine levels. Until complete failure of the dam occurred, the structure would continue to impede less mobile species of aquatic life and a safety hazard to members of the recreating public would continue to exist in the form of a hydraulic undertow created by the headcut.

3. The EA revealed that Alternative 2 – (Proposed Alternative) would result in the removal of the Roaring River Fish Barrier in phased sequence. Starting at the far right bank (facing upstream), the dam headwall would be removed by mechanized equipment, e.g. trackhoe, hoe-ram, pneumatic hammer, etc. Activities will be performed in the dry, to the greatest extent practicable, by diverting water from the work site through operating equipment atop temporary gravel pads constructed from native stone riverine deposits that will be obtained in the immediate vicinity of the work site. Material removed would be taken to an approved upland disposal site, although a portion of rock removed from the dam structure would be used to prevent lateral erosion at the project site. The demolition scenario previously described will be repeated at each section of the dam as activities proceed across the 220 ft. span. It is estimated that approximately 3,000 cubic yards of rock and 700 cubic yards of concrete would be removed during this project and disposed of in a suitable upland site. The dam removal would allow aquatic species to migrate freely throughout Roaring River and the safety hazard created by the headcut in the dam would be eliminated. For these reasons, Alternative 2 was selected as the proposed alternative.

5. Alternative 3 – Barrier Stabilization. TWRA considered repairing the head cut on the downstream, left portion of the fish barrier dam. However, repair of the dam would require reconstruction of portions of the barrier and was estimated to cost over 2.1 million dollars. After considering costs, this alternative was determined to be economically infeasible. Repair and reconstruction of the dam would have similar short-term environmental effects as the proposed alternative near the barrier site but would not restore the connectivity of the river system and therefore, would not fully achieve the project purpose. Due to costs and lack of aquatic connectivity, it was eliminated from detailed evaluation in the EA.

4. The Farmland Protection Policy Act of 1981 requires federal agencies to minimize impacts to prime and unique farmland. Under the proposed alternative, no impacts would occur to prime and unique farmland.

5. Executive Order 11990, Protection of Wetlands, requires federal agencies to evaluate and minimize impacts to wetlands. Under the proposed alternative, no wetlands would be directly impacted.

6. The U.S. Fish and Wildlife Service (USFWS) consulted directly with TWRA (applicant) for potential effects to endangered species. The applicant performed a survey at the project site for potential habitat for the Indiana bat (*Myotis sodalis*) and Gray bat (*Myotis griscens*). The survey revealed no potential habitat trees in the project staging area and acknowledged that 2-4 sycamore trees (*Platanus occidentalis*) would be removed as part of the dam removal on the left descending bank of Roaring River, in the only upland area that would be impacted (project staging). The survey concluded that the trees to be removed did not meet the necessary criteria as suitable habitat for the aforementioned bat species and determined the project would have “no effect” on the Indiana bat or Northern long-eared bat. The applicant sent the results of the survey to USFWS on May 3, 2016. USFWS concurred with the “no effect” determinations on May 6, 2016. Based on a review of the project and the correspondence from USFWS, the project would have “no effect” to federally listed threatened and endangered species.

7. The USFWS and the Tennessee Wildlife Resources Agency (TWRA) were consulted under the Fish and Wildlife Coordination Act in a Scoping Letter, sent on July 11, 2016. USFWS did not provide comment and TWRA is not required to provide comment as the project applicant. Requirements under this Act have been fulfilled.

8. Water Quality impacts under Alternative 2 would be temporary and highly localized at the construction sites. Compliance with the conditions of an Individual Water Quality Certification (WQC), currently under review by the Tennessee Department of Environment and Conservation (TDEC), would minimize any potential impacts to water quality associated with the project. Overall, the project would have a beneficial effect on water quality by restoring normal fluvial process to an impounded reach of Roaring River. An Individual WQC would have to be issued before the proposed work could take place.

9. The project is in an attainment area as described under the provisions of the Clean Air Act.

10. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, was signed on February 11, 1994. The order requires Federal agencies to promote "nondiscrimination in Federal programs substantially affecting human health and the environment." No disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations would result from the proposed removal of Roaring River Fish Barrier Dam. The proposed action is in compliance with Executive Order 12898 for Environmental Justice.

11. Section 106 of the National Historic Preservation Act of 1966 requires Federal agencies to take into account the effects of their undertakings on properties included in or eligible for the National Register of Historic Places. The proposed alternative would result in approximately 3,700 cubic yards of concrete and gravel material being removed from Roaring River and disposed of in suitable upland locations. Approval of the project would result in minor earth disturbances related to creation of an equipment staging area and movement/placement of rock currently comprising the interior of Roaring River Fish Barrier Dam onto the riverbanks for erosion control. A review of the project area by a Corps archeologist revealed no cultural or historic resources in the area of potential effect. The project is expected to have a negligible effect on the viewshed of the river given that views of the structure are restricted from adjacent roads and residences by the surrounding forest. Therefore, the Corps has determined the project would have "no historic properties affected." The Tennessee State Historic Preservation Officer (SHPO) concurred with the Corps determination in a letter dated September 20. In addition to SHPO, the Eastern Shawnee Tribe of Oklahoma and the United Keetoowah Band of Cherokee Indians (UKBCI) concurred with the Corps determination. UKBCI requested immediate work stoppage and notification in the event of inadvertent discovery of human remains or post review discoveries.

12. The Corps Regulatory Division (RD) is reviewing the proposed dam removal for compliance with terms and conditions of Nationwide Permit # 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities) under authority of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.

13. I have reviewed the EA for the proposed action. I have reviewed scoping and EA review comments, and all supporting documentation. There are no significant adverse impacts or unresolved issues. Alternative 2 – Proposed Alternative – Removal of the Roaring River Fish Barrier Dam is considered a practicable alternative that would sustain the economic and human environment and would not have an adverse impact on the aquatic ecosystem.

14. I have reviewed the final EA and the public and agency comments, in light of the general public interest. Technical and economic criteria used in the formulation of

alternative plans were those specified in the Water Resource Council's 1983 Economic and Environmental Principles for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in the evaluation of the alternatives. It is my determination that the recommended plan does not constitute a major federal action that would significantly affect the human environment; therefore, preparation of an Environmental Impact Statement is not required. Finally, having weighed the potential benefits that may be accrued as a result of implementing the proposed plan against the reasonably foreseeable detrimental effects, I conclude that Alternative 2 – Proposed Alternative – Removal of the Roaring River Fish Barrier Dam, as described in the EA, would be in the public interest.

Date: _____ _____

STEPHEN F. MURPHY
LTC, EN
District Commander

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1.0 PURPOSE AND NEED FOR ACTION

The U.S. Army Corps of Engineers, Nashville District (Corps) is evaluating the impacts of the proposed removal of an existing fish barrier dam on Roaring River, Mile 4.9 located on Corps fee property associated with the Cordell Hull Reservoir, Jackson County, Tennessee. The fish barrier was originally constructed between November 1972 and October 1973 by the Corps, to address concerns of the Tennessee Game Commission (now called Tennessee Wildlife Resources Association (TWRA)) to prevent "rough" fish from migrating from the recently constructed Cordell Hull Reservoir into the Roaring River watershed. The existing fish barrier has been damaged by recent flood events and has developed a head cut that could result in failure in the future without substantial repairs. The project is located in the Roaring River 12-digit Hydrologic Unit Code (HUC) 051301060207. The evaluation would be conducted through preparation of an Environmental Assessment (EA).

1.1 Authorization

This EA is being conducted under Operation and Maintenance authority for Cordell Hull Reservoir. Cordell Hull Reservoir was authorized by the River and Harbor Act of July 24, 1946 (Public Law 396, 82nd Congress, 2nd Session). The proposed project would result in the removal of an existing fish barrier dam on Roaring River, mile 4.9. This EA is being prepared pursuant to the National Environmental Policy Act (NEPA), Council for Environmental Quality (CEQ) regulations (40 CFR 1500-1508), and the USACE Regulation ER 200-2-2, titled Policies and Procedures for Implementing NEPA.

1.2 Purpose and Need

The proposal from State of Tennessee biologists to construct a fish barrier dam on Roaring River is referenced in the "Design Memorandum Number 7a, Preliminary Master Plan, Cordell Hull Project" dated April 10, 1964. The dam is not referenced as part of an authorized project purpose, but rather, as a mitigating measure to prevent "rough fish", such as carp *(Cyprinus sp.)*, shiners *(Notropis sp.)* and chubs *(Semotilus sp.)* from migrating into the free-flowing portions of the Roaring River watershed from Cordell Hull Reservoir. Construction of the dam didn't begin until September of 1972. Since 1973, TWRA has held a license for the fish barrier (DACW62-3-02-0346) through the Corps Real Estate Division. Construction on the fish barrier was completed in October 1973. The original structure was a porous rock dike constructed to a crest of elevation 509' mean sea level (msl) and a steel frame screen structure anchored in the downstream edge of the crest, which extended upward to an elevation of 512' msl. The riverbed in this location was estimated at approximately 499' above msl. Shortly after completion, on November 26-28, 1973, the barrier dam experienced significant damage due to heavy floods in the watershed. A reinforced barrier dam was constructed in July

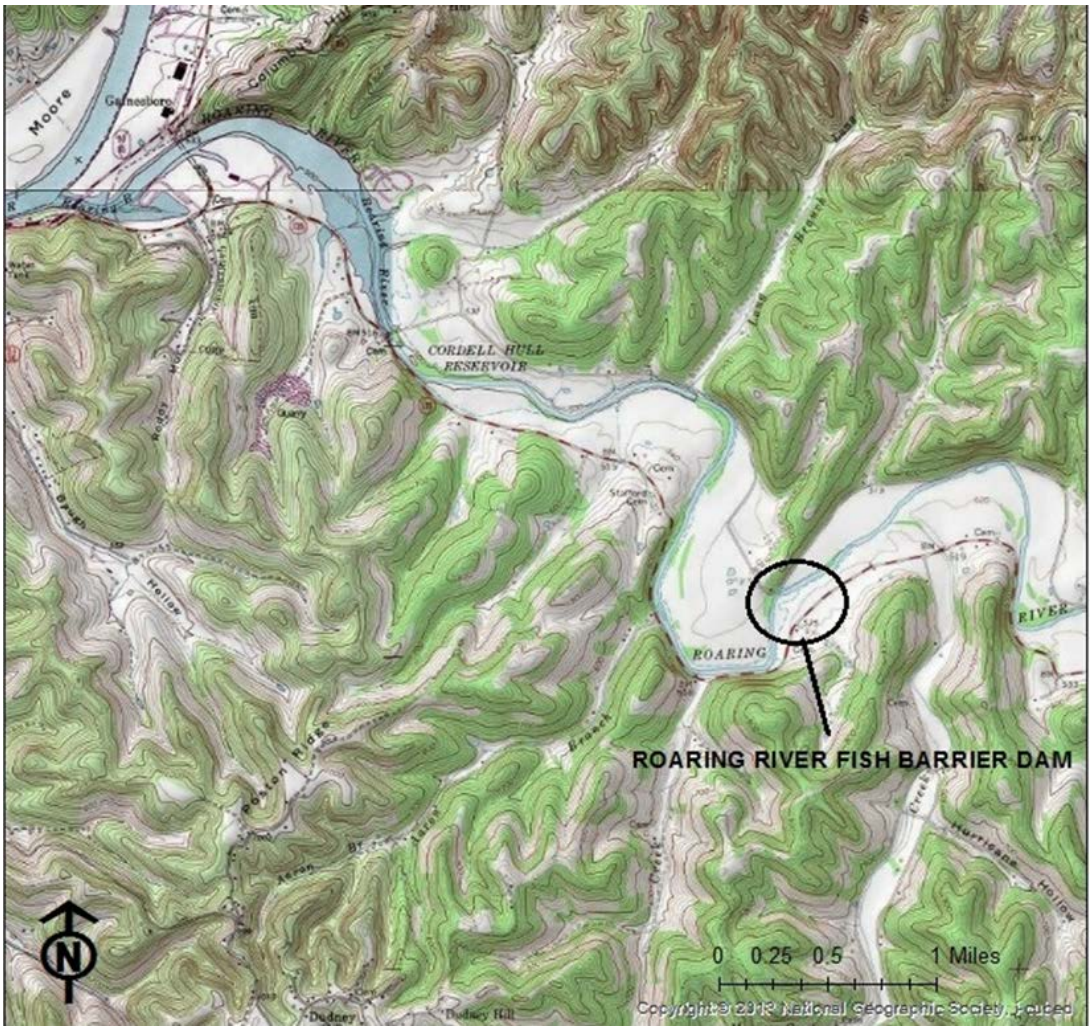
1976 and is currently still in place in Roaring River. The barrier consists of a concrete veneer placed atop an interior of large rock and gabion stone that spans approximately 220 feet from river bank to bank. The impoundment pool created by the dam extends approximately one mile upstream.. TWRA no longer considers many of these species as detrimental to the Roaring River watershed, but rather, a key part of river ecosystems. Although non-native species, such as carp are not a desirable component of river ecosystems, previous surveys indicate that there is already a substantial carp population above the fish barrier dam. Also, periodic inspection of the outgrant by the Corps Real Estate Division noted the presence of a head cut on the downstream, left side of the structure and a need to repair the barrier. TWRA performed an initial alternative analysis and reassessed the need for a barrier on January 23, 2014. This initial analysis evolved into the current request to remove the barrier as discussed below. The dam is also suffering structural failure in the form of a headcut. The purpose of dam removal would be to restore connectivity to aquatic species within the Roaring River watershed and to eliminate safety hazards to the public created by the headcut.

1.3 Issues and Opportunities

The removal of the dam would increase genetic diversity for less mobile species of aquatic life, benefiting species like the hellbender *(Cryptobranchus alleganiensis),* which has been listed by TWRA as “in need of management” and has disjunct populations above and below the fish barrier dam according to surveys conducted by TWRA in 2014. In addition to direct benefits associated with increased mobility of aquatic species, the dam removal project would also allow normal movement of bedload material and restore natural fluvial processes to this reach, which was officially designated as a Class II Pastoral River Area by the Tennessee Scenic Rivers Act of 1968 and as an Exceptional Tennessee Water by the Tennessee Department of Environment and Conservation (TDEC).

Within the watershed, an upstream reach of Roaring River (from the Tennessee Highway 136 Bridge, extending 2.0 miles downstream) is listed as a Class I Natural River Area. Blackburn Fork, an upstream tributary is listed as a Class I Natural River Area from Cummins Road, downstream for 1.5 miles and as a Class II Pastoral Area for the remaining 12.5 miles downstream to the confluence with Roaring River. Another upstream tributary, Spring Creek is listed as a Class I Natural River area from Waterloo Mills, downstream approximately 4.4 miles to the Overton-Jackson County Line and as a Class II Pastoral Area for the remaining 4.6 miles downstream to the confluence with Roaring River.

Figure 1. USGS Topographic Vicinity Map



Also, the fish barrier dam removal would eliminate a public safety hazard created by a large headcut in the downstream left portion of the dam. The hydraulic currents created by the headcut could result in fisherman or recreational boaters becoming trapped in a “keeper hydraulic”, meaning at high flows, the force of water flowing over the headcut would pull boaters underwater, against the dam and not allow them to resurface. Incremental removal of the dam would also eliminate the safety risk to downstream boaters, associated with a large amount of water being released at once in the event of sudden failure during a flood event.

Impacts associated with the project would consist of temporary gravel pads constructed on the upstream portion of the dam from approximately 978 cubic yards of No. 2 clean limestone obtained from a local quarry. The temporary work pad measuring

approximately 6,600 square feet (220 ft. long x 30 ft. wide x 4 ft. deep) would be constructed from the left bank (facing downstream) extending across the width of the stream. Approximately 3,000 cubic yards of concrete and 700 cubic yards of concrete would be removed from Roaring River. Some rock that is currently part of the dam structure may be used as parking lot improvements and erosion control at the work site. The remainder of excavated materials would be disposed of at a commercial recycling site or an approved solid waste landfill. A vicinity map is included for project orientation (Figure 1).

Figure 2. Aerial Photography of Affected Area

2.0 ALTERNATIVES CONSIDERED

2.1 Alternative 1- No Action Alternative

Under Alternative 1, the fish barrier dam would not be removed. The current structure would remain in place until the existing headcut grew large enough to result in complete failure of the dam. River flows would likely cut through the downstream left portion of the dam resulting in an uncontrolled loss of the pool impounded by the fish barrier dam and the river would eventually return to normal riverine levels. Until complete failure of the dam occurred, the structure would continue to impede less mobile species of

aquatic life and a safety hazard to members of the recreating public would continue to exist in the form of a potential keeper hydraulic created by the headcut (See Figure 3).

2.2 Alternative 2 - Approval of the Proposed Barrier Dam Removal?

Under Alternative 2 (Preferred Alternative) the Roaring River Fish Barrier would be removed in phased sequence. Starting at the left-descending bank (LDB), the dam headwall would be removed by mechanized equipment, e.g. trackhoe, hoe-ram, pneumatic hammer, etc. The demolition scenario previously described will be repeated at each section of the dam as activities proceed across the 220 ft. span. It is estimated that approximately 3,000 cubic yards of rock and 700 cubic yards of concrete would be removed during this project. Activities would be performed in the dry, to the greatest extent practicable, by operating equipment atop temporary gravel pads constructed from No. 2 clean limestone obtained from a local quarry. The pads would be constructed in sequence from LDB to right-descending bank (RDB). Water would flow around the pads and over the crest of the dam at the RDB, where the pad has not yet been constructed. Before spanning the entire reach of river with the temporary pad, the dam would be breached, allowing water to slowly leave the upstream impoundment and return to natural riverine elevations. Water would then flow over the RDB area of the temporary pad. The dam and temporary pad would be removed from RDB to LDB, in opposite sequence from pad construction.

Material removed would be taken to an approved upland disposal site, although a portion of rock removed from the dam structure would be used to prevent lateral bank erosion at the project site. The aggraded material that has deposited upstream of the dam consisting primarily of gravel, would not be removed or altered in any fashion but would dissipate and redistribute by natural geomorphic processes. Work plans for the project are included as Appendix A.

The dam removal would allow aquatic species to migrate freely throughout the Roaring River and the safety hazard created by the headcut in the dam would be eliminated.

Alternative 3 – Barrier Stabilization. TWRA considered repairing the head cut on the downstream, left portion of the fish barrier dam. However, repair of the dam would require reconstruction of portions of the barrier and was estimated to cost over 2.1 million dollars. After considering costs, this alternative was determined to be economically infeasible. Repair and reconstruction of the dam would have similar short-term environmental effects as the proposed alternative near the barrier site but would not restore the connectivity of the river system and therefore, would not fully achieve the project purpose. Due to costs and lack of aquatic connectivity, it was eliminated from detailed evaluation in this EA.

Figure 3. Headcut- exposed rock and mesh material

Figure 4. Side Profile of the Fish Barrier Dam

3.0 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

In order to improve migration of aquatic species within the Roaring River watershed and improve safety on Roaring River, TWRA has proposed to remove an existing fish barrier dam. Impacts associated with the project would consist of temporary gravel pads constructed on the upstream portion of the dam from native stone riverine deposits obtained in the immediate vicinity of the work site. Approximately 3,000 cubic yards of concrete and 700 cubic yards of concrete would be removed from Roaring River. Some rock that is currently part of the dam structure may be used as parking lot improvements and erosion control at the work site. The remainder of excavated materials would be disposed of at a commercial recycling site or an approved solid waste landfill.

3.2 Physiography and Topography

The proposed project is located within the Outer Nashville Basin Level IV Ecoregion (71h) as defined by the Environmental Protection Agency (EPA). Ecoregion 71h is a heterogeneous region containing rolling and hilly topography and slightly higher elevations. The region encompasses most all of the outer areas of the generally non-cherty Ordovician limestone bedrock. The higher hills and knobs are capped by the more cherty Mississippian age formations, and some Devonian-age Chattanooga shale, remnants of the Highland Rim. The region's limestone rocks and soils are high in phosphorus. Deciduous forest with pasture and cropland are the dominant land covers. Streams are low to moderate gradient, with productive, nutrient-rich waters, resulting in algae, rooted vegetation, and occasionally high densities of fish. (EPA, 1997).

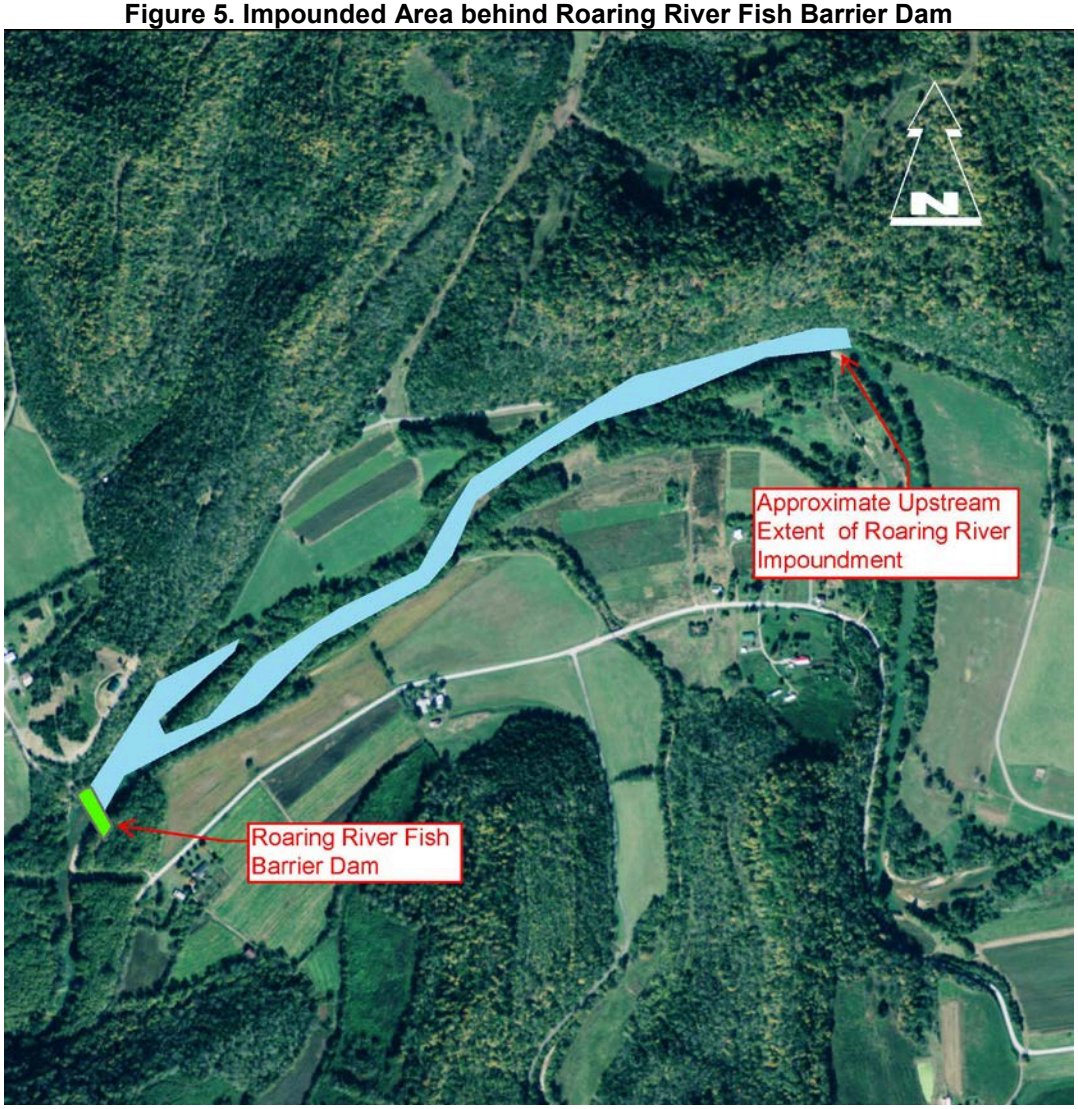
3.3 Aquatic Resources

Alternative 1 – No Action Alternative: The No Action alternative would have no direct effect on aquatic resources within the proposed project area. However, with no action, the dam would eventually fail- most likely during a flood event- since stability of the structure is compromised by a large headcut. Indirect effects associated with failure of the dam would result in the reach returning to lotic conditions that existed before dam construction, as described in the paragraph below. The sudden failure of the dam could result in heavier downstream flows and increased movement of sediment loads when compared with deliberate dam removal and gradual lowering of the impoundment pool.

Alternative 2 (Removal of the Fish Barrier Dam): Approximately 6,600 square feet of temporary fill material would be placed below the ordinary high water mark of Roaring River under the proposed alternative to facilitate removal of the fish barrier dam. Approximately 3,000 cubic yards of rock and 700 cubic yards of concrete comprising the

fish barrier dam structure would be removed from Roaring River. A small portion of rock removed from the dam structure would be used at the site to create a uniform gradient

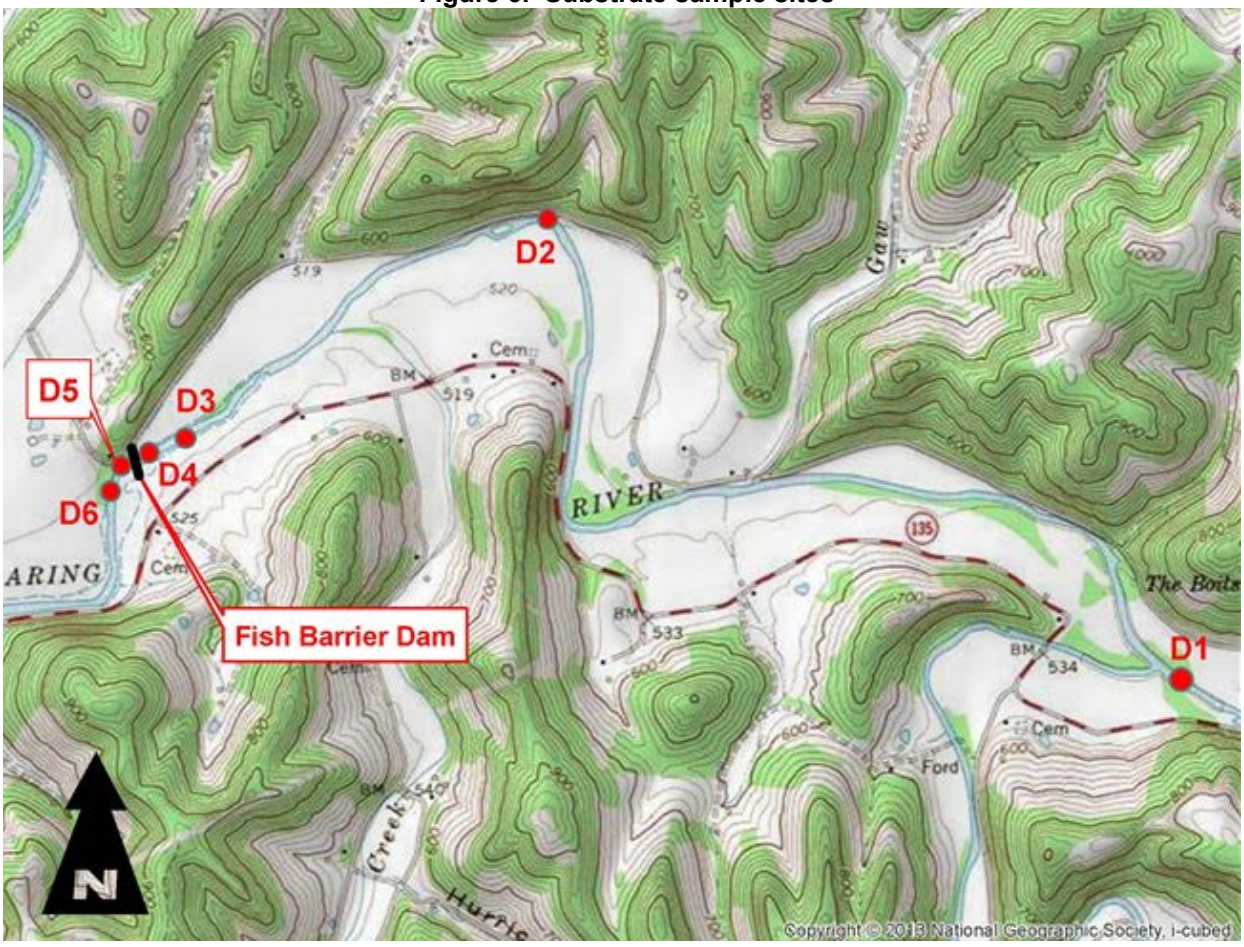
Figure 5. Impounded Area behind Roaring River Fish Barrier Dam



on the riverbed at the dam removal and along the riverbank to ensure vertical and lateral stability of the river. Rock material would also be used on Corps property to block existing all-terrain vehicle (ATV) trails adjacent to Roaring River. The remainder of the materials removed from the dam would be transported to a commercial recycling site or an approved solid waste landfill and would not impact aquatic resources. Although a small amount of temporary, localized turbidity might occur at the project site (the applicant estimated 78 cubic yards of material had accumulated on the LDB of the dam), it is expected to be minimal and would not likely occur immediately as dam removal would be gradual and most of the accumulated material is located outside the historic river channel. A site visit was conducted by Corps Biologist, Travis Wiley on

September 8, 2016. During the visit, Mr. Wiley collected six substrate samples from Roaring River. Two samples (D1 and D2) were collected above the fish barrier dam impoundment. Sample D3 was collected within the impoundment approximately 1,000 feet upstream of the fish barrier dam. Sample D4 was collected approximately 75' upstream of the dam and sample D5 was collected approximately 65' downstream of the dam. Sample D6 was collected approximately 275' downstream of the dam, in a calm pool that did not experience strong turbulence from flow coming over the dam. Substrates were fairly similar in character throughout the surveyed reaches, mainly comprised of coarse gravel and cobble with a thin layer of fine silt particles in interstitial spaces. The substrate in the riverbed within the fish barrier dam impoundment did not exhibit a significant difference from those reaches above or below the impoundment.

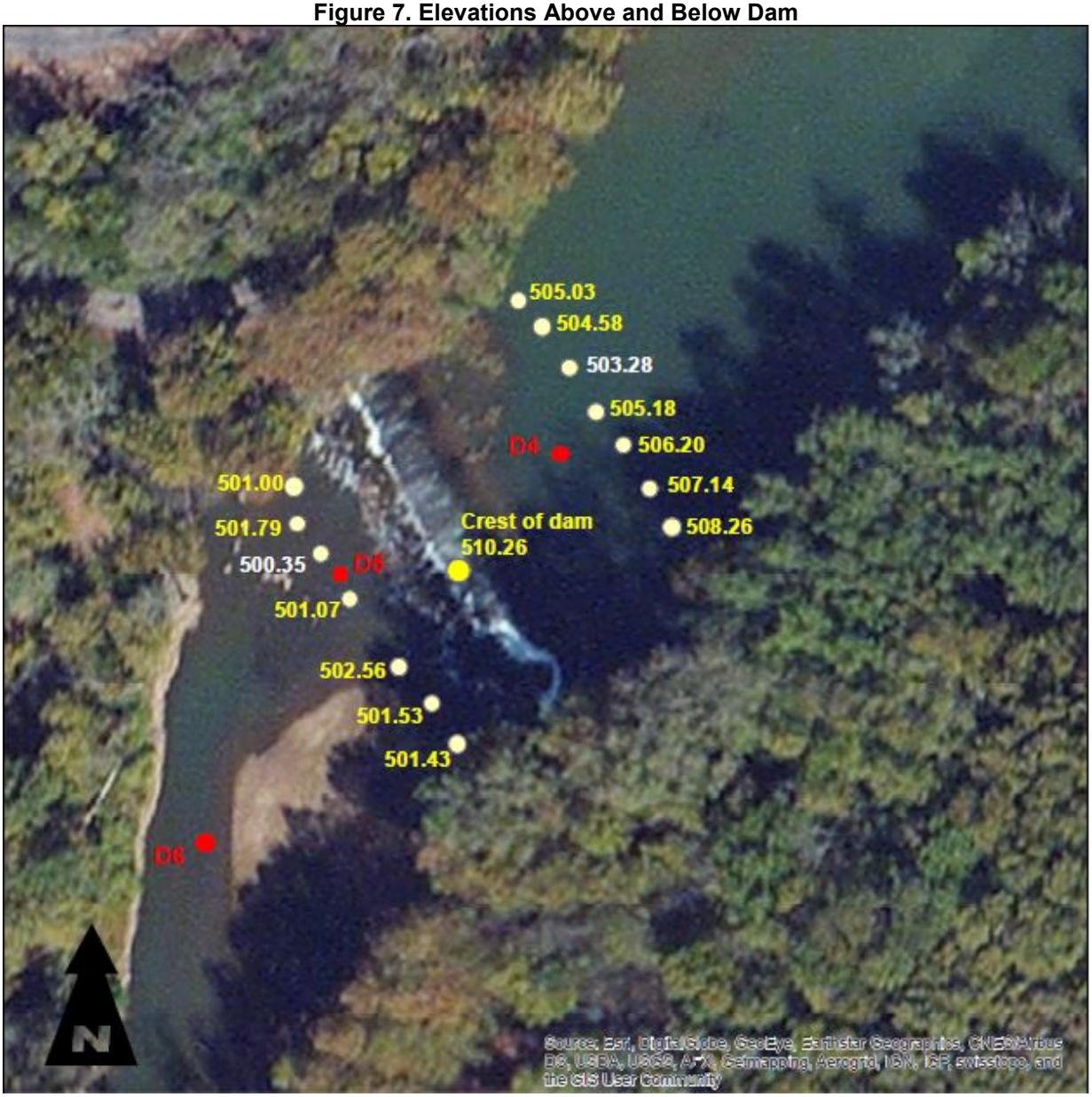
Figure 6. Substrate sample sites



Also, the Cordell Hull Reservoir extends up Roaring River to the base of the fish barrier dam in both summer and winter pools (summer pool elevation 504' mean sea level (msl); winter pool elevation 500' msl). Elevation profiles taken near the dam by Mr. Wiley during the September 8, 2016 site visit shows that the Cordell Hull summer pool would extend upstream, beyond the fish barrier dam after removal. The historic river

channel appears to be approximately three feet in elevation higher directly above the dam than below (Figure 6), although previous depth surveys submitted by TWRA indicate that the river channel becomes slightly deeper beginning approximately 120' upstream of the fish barrier dam. Presumably, this is because 1-2 feet of coarse substrate (estimated by the applicant at 78 cubic yards) has deposited against the dam.

Figure 7. Elevations Above and Below Dam



An upstream elevation between 502' and 503' msl extends at least 400' above the barrier, which indicates a drop in elevation of approximately 2 feet over the entire reach of the historic river channel and a slope of no more than 0.5%. By comparison, a riffle approximately 1.6 miles upstream of the project site was measured by Corps Biologist

Travis Wiley on September 16, 2016 and found to drop approximately 1.73 feet in elevation over a channel distance of approximately 640', a slope of approximately 0.27%. The removal of the dam and temporary fill pad, when combined with normal bedload movement and the seasonal rise of the Cordell Hull Reservoir storage pool would result in the creation of a stable riffle, similar to those in nearby reaches. Movement of bedload material associated with normal fluvial processes would occur above the current fish barrier dam location but would slow below the dam as lower reaches are already lentic in nature. Given the similarities of substrate in Roaring River both above and below the fish barrier dam, the coarse nature of the substrate and the lentic nature of Roaring River below the existing dam, the project would only result in de minimis movement of bedload material downstream.

3.4 Water Quality

Within the Roaring River Watershed 10-digit Hydrologic Unit Code (HUC) 0513010602, five streams (approximately 70.9 miles) were identified as being impaired under the TDEC 303 (d) list (2014).The impairments are primarily E. coli pathogens associated with pasture grazing (See Section 4.0 – Cumulative Effects). It should be noted that the four impaired reaches in Overton County, TN are small streams in the headwaters of the Roaring River drainage area, approximately 15-25 river miles upstream of the project area. Roaring River, in the reach proposed for dam removal is described on the TDEC Watershed Viewer Website as "fully supporting". Sedimentation is not a significant stressor and there are no known sources of chemical contamination within the watershed. The Corps Water Management Section conducted tests for an extensive list of volatile and semi-volatile organic compounds, metals, polychlorinated biphenyls (PCBs), and pesticides in Roaring River, mile 0.8 (part of Cordell Hull Reservoir) on 31 August 2015. The sampling was conducted as part of a routine protocol requiring contaminant sampling within Corps reservoirs every five years. The sampling identified no chemical concerns.

The Corps Water Management Section has also collected benthic macroinvertebrate data from the same site within Roaring River embayment (mile 0.8) since the late 1970's. This work has been performed in an attempt to characterize water quality conditions within this large embayment of Cordell Hull Reservoir. Sampling methodology employed at the location has been fairly consistent over the period of record. Typically two locations are sampled using biological grabs (standard or petite Ponar) appropriate for the soft substrate present. For comparison, sampling is also conducted on the left overbank (LOB) area to the left of the main channel near the MC site (mile 0.8).

Both locations are slack water, however due to the greater depth in the MC site, seasonal temperature stratification occurs during the growing season leading to

occasional dissolved oxygen depletion in the water column near the bottom. Dissolved oxygen depletion seasonally can introduce additional stresses upon the resident benthic macroinvertebrate biological community. MC substrates usually consist of fine grained materials, a depositional environment. The LOB site also consists of find grained materials, however depending upon the time of sampling, it may also have significant quantities of decaying leaf material.

The most recent benthic macroinvertebrate sampling event, which occurred on 31 August 2015. At both the MC and LOB sites the benthic macroinvertebrate fauna consisted of organisms generally tolerant of organic enrichment, siltation, and seasonal dissolved oxygen depletion. Individuals from the *Oligochaete* worm family, *Tubificidae* (sludge worms) and the insect family *Chironomidae* (midges) dominated the samples. The soft, fine grained substrate and abundant leaf detritus provide excellent conditions for these groups of environmentally tolerant organisms. Biotic indices of 9 or above indicate high organic enrichment based upon the benthic fauna present. In general, environmentally sensitive organisms are lacking at these sites. This is mainly due to the predominant, soft substrates available and seasonal dissolved oxygen depletion. No representatives of the insect orders *Ephemeroptera* (mayflies), *Plecoptera* (stoneflies), or *Trichoptera* (caddisflies) are present. The presence or absence of these three taxa (referred to as EPT taxa) is often used as a standard in assessing overall biological water quality.

A third sampling site is located on the free-flowing portion of Roaring River at Mile 6.2, upstream of both the Cordell Hull impoundment and the impoundment created by Roaring River Fish Barrier Dam. The site is a typical gravel dominated bar location and has been sampled biologically for benthic macroinvertebrates over the past 20 years. The most recent sampling occurred on 8 October 2015. Data collections here are aimed at characterizing the quality of waters flowing into Cordell Hull Reservoir from Roaring River. The site is wadeable and is sampled using a Hess sampler.

In general, the site has good water quality, as evidenced by the presence of several (11) genera of EPT taxa, a high overall occurrence of EPT taxa (74.9%) of total individuals present and overall high taxa richness (35). The biotic index of 4.35 indicates some moderate stress, presumably due to local bank instability and intermittent presence of woody, riparian vegetation.

Alternative 1 – No Action Alternative: This alternative would have no direct effect on short-term water quality within the proposed project area. However, eventual failure of the dam would likely result in a short-term increase in localized turbidity and long-term water quality benefits described in the next paragraph.

Alternative 2 (Removal of the Fish Barrier Dam): The project would have temporary minor adverse impacts to water quality within the proposed project area due to increased localized turbidity associated with disturbance below the ordinary high water mark. However, the project would be expected to have a beneficial effect to water quality over the long-term by eliminating approximately one mile of impounded waters on Roaring River that would otherwise flow freely. Eliminating the impoundment should result in reduced photoperiods, lower temperatures and higher content of dissolved oxygen in the reach above the fish barrier dam. Over time, as substrates stabilize, it is likely that upstream aquatic communities would migrate downstream and colonize available habitats and represent a major improvement in biological quality.

As evidenced by the generally poor quality of the benthic community downstream from the Fish Barrier Dam, movement of fine grained materials from the pooled area of the Fish Barrier Dam pool into the impounded section of the Roaring River embayment would probably not greatly impact the quality of habitat for benthic species that currently exists.

3.5 Wetlands

Alternative 1 – No Action Alternative: The No Action Alternative would have no direct effect on wetlands. However, eventual failure of the dam would drain the existing upstream impoundment and eliminate the source of hydrology for some small fringe wetlands abutting Roaring River.

Alternative 2 (Removal of the Fish Barrier Dam): Approval of the project would result in temporary fills below the ordinary high water mark of Roaring River and adjacent upland parking areas. No wetlands would be filled under this alternative. However, some small fringe wetlands in impoundment sloughs would be affected by draining of the fish barrier dam impoundment.

3.6 Terrestrial Resources

3.6.1 Vegetation

The proposed upland staging area adjacent to Roaring River Fish Barrier Dam is currently an access road and parking area surrounded by a mixed mesophytic deciduous forest vegetation type. The dominant tree species in uplands adjacent to the barrier dam are sycamore (*Platanus occidentalis*) and box elder (*Acer negundo*). The understory in the project area is dominated by common privet (*Ligustrum vulgare*).

Alternative 1 – No Action Alternative: The No Action Alternative would have no impact on the existing vegetation within the proposed project area since no project would be implemented.

Alternative 2 (Removal of the Fish Barrier Dam): Approval of the proposed action would have minor, temporary adverse impacts due to temporary use of a staging area to remove rock and concrete. However, long-term effects would be beneficial as excavated rock material would be used to block existing all-terrain vehicle (ATV) trails adjacent to the project site. Reduction of ATV traffic would benefit flora at the site and increase the stability of soils on the banks of Roaring River

3.6.2 Wildlife

The upland staging area adjacent to the dam is surrounded by a mixed mesophytic forest. Some common species such as opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginiana*), eastern wild turkey (*Meleagris gallopavo*), and an array of songbirds, as well as waterfowl, can be found utilizing the project location.

Alternative 1 – No Action Alternative: This alternative would have no effect on wildlife within the adjacent upland areas.

Alternative 2 (Removal of the Fish Barrier Dam): Approval of the proposed action would have no effect on wildlife species found within the proposed barrier dam removal area.

3.7 Archeological and Historic Resources

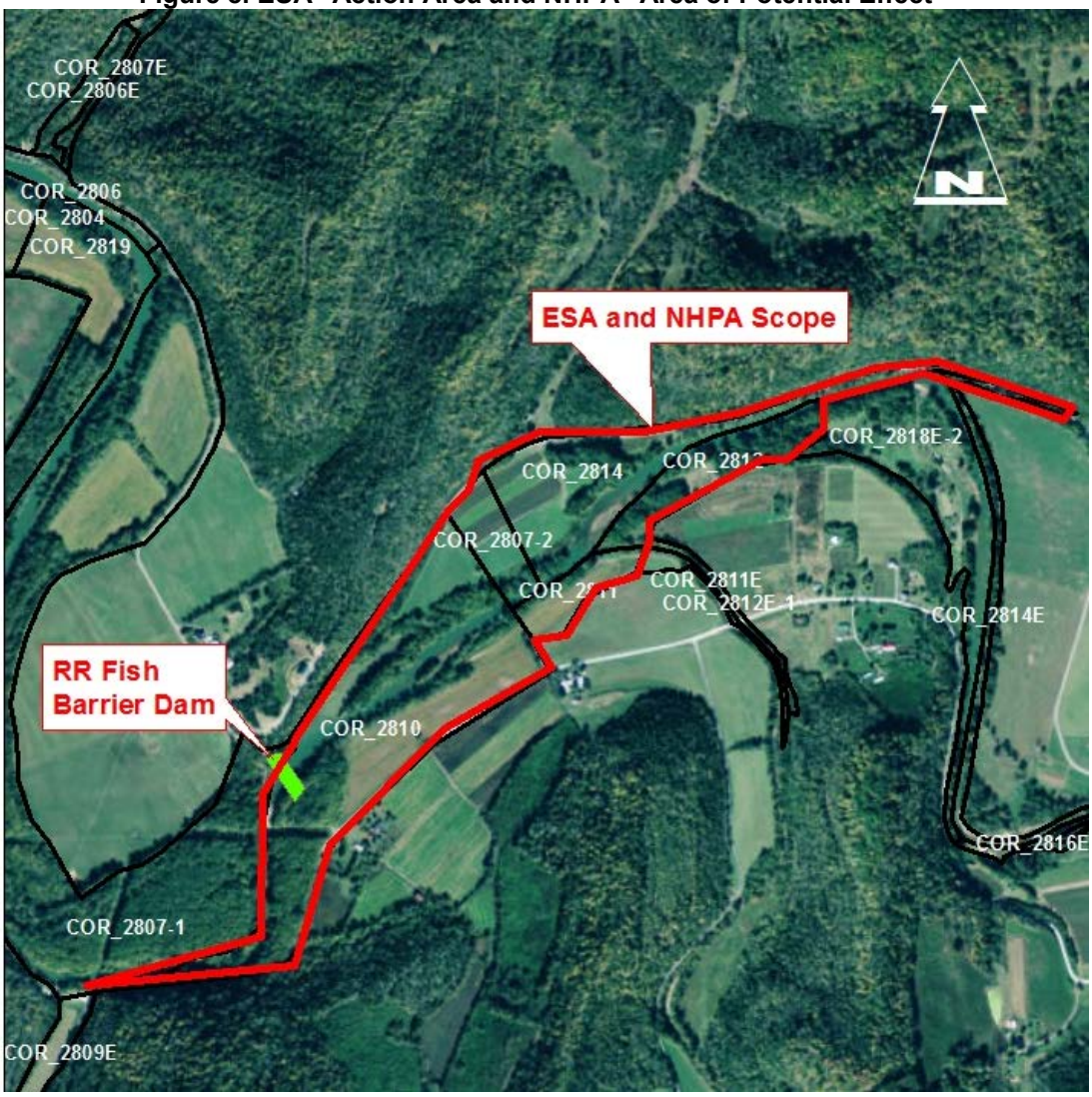
Section 106 of the National Historic Preservation Act of 1966, as amended, is implemented by regulations at 36 CFR 800 and requires the Corps to consider the effects of its undertakings on historic properties. The area of potential effect (APE) for this project is identified as the Corps property tracts surrounding the reach of Roaring River impounded by the fish barrier dam (See Figure 4).

Alternative 1 (No Action Alternative): This alternative would allow the dam to remain in place. No work would occur. Based on a review of the project file (see paragraph below) the Corps has determined “no historic properties would be affected” by failure of the dam.

Alternative 2 (Removal of the Fish Barrier Dam): Approval of the project would result in minor earth disturbances related to creation of an equipment staging area and movement/placement of rock currently comprising the interior of Roaring River Fish Barrier Dam onto the riverbanks for erosion control. A review of the project area by a Corps archeologist revealed no cultural or historic resources in the area of potential effect. The project is expected to have a negligible effect on the viewshed of the river given that views of the structure are restricted from adjacent roads and residences by the surrounding forest. Therefore, the Corps has determined the project would have “no historic properties affected.” The Tennessee State Historic Preservation Officer (SHPO)

concurred with the Corps determination in a letter dated September 20. In addition to SHPO, the Eastern Shawnee Tribe of Oklahoma and the United Keetoowah Band of Cherokee Indians (UKBCI) concurred with the Corps determination. UKBCI requested immediate work stoppage and notification in the event of inadvertent discovery of human remains or post review discoveries. Correspondence letters from the SHPO and the aforementioned tribes are attached to this document as Appendix B.

Figure 8. ESA "Action Area and NHPA "Area of Potential Effect"



3.8 Threatened and Endangered Species

Alternative 1 (No Action Alternative): On June 21, 2016, a search of the U.S. Fish and Wildlife Service (USFWS) iPac website revealed the potential presence of four federally listed species in the vicinity of the project action area (described in the paragraph below). All of the species listed as potentially present in the project area are terrestrial

species. Since the No Action Alternative would not result in any disturbance to uplands, the Corps has determined this alternative would have "no effect" to federally listed threatened or endangered species.

Alternative 2 (Removal of the Fish Barrier Dam): The "action area" for this project, as described in the Endangered Species Act, is defined as the area below the ordinary high water mark of Roaring River disturbed by removal of the fish barrier dam, the upstream reach of Roaring River currently impounded by the dam and a small portion of uplands, approximately 0.1 acre in size, used as a staging area for equipment and machinery necessary to perform the proposed work. A map of the "action area" is shown in Figure 7. On June 21, 2016, a search of the U.S. Fish and Wildlife Service (USFWS) iPac website https://ecos.fws.gov/ipac/project/3W35O7H5SVCZVAPD6KLCPQ6QHE/resources revealed the potential presence of four federally listed species in the vicinity of the project action area. The species are listed in Table 1 below.

Table 1. Federally Listed Species Potentially Present in Project Action Area

Species	Status	Habitat	Habitat Present at project site?	Effect Determination
Short's bladderpod (*Physaria globosa*)	*E	Occurs in Kentucky and Tennessee on soils and outcrops of calcareous geologic formations along the mainstem or tributaries of the Kentucky and Cumberland Rivers, respectively. The calcareous bedrock formations on which Short's bladderpod primarily is found are limestones of Mississippian, Silurian, or Ordivician age, with siltstone or shale interbedded at some occurrences	No- work would be confined to the channel of Roaring River with the exception of the project staging area, which is a disturbed gravel parking lot. No calcareous geologic formations are located in the project action area, therefore, the species would not be present.	No effect
Gray bat (*Myotis grisescens)*	*E	Winter: deep, vertical caves; Summer: caves which are scattered along rivers	No. No caves within the action area.	No effect.
Northern long-eared bat (*Myotis septentrionalis*)	*T	Winter: caves and abandoned mines; Summer underneath bark or in cavities or crevices of both live trees and snags.	Potential summer habitat trees in the upland staging area at the project site would be avoided.	No effect.
Indiana bat (*Myotis sodalis)*	*E	Winter: caves or abandoned mines; summer: Forests in loose tree bark on dead or dying trees	Potential summer habitat trees in the upland staging area at the project site would be avoided.	No effect.

***Effects determination based on comparison of project site habitat vs. species preferred habitat descriptions and/or known species distribution obtained from USFWS iPAC report for the action area of this project (E= Endangered, T = Threatened).**

All four listed potential occurrences identified in the search were terrestrial species, no aquatic species were identified in the search. Therefore, the only portion of the action area with the potential presence of federally listed species is the upland staging area, which is a gravel parking lot that has been previously disturbed. Critical habitat for Short's bladderpod *(Physaria globosa)* was designated on Cordell Hull Reservoir, however, it is located in Smith County, TN, approximately 1.25 miles upstream of Cordell Hull Dam (approximately 18.6 miles away from the project action area). As discussed in Table 1, the upland staging area adjacent to Roaring River Fish Barrier Dam does not contain suitable habitat for Short's bladderpod. The applicant performed a survey at the project site for potential habitat for the Indiana bat *(Myotis sodalis)* and Gray bat *(Myotis griscens)*. The survey revealed no potential habitat trees in the project staging area and acknowledged that 2-4 sycamore trees (*Platanus occidentalis*) would be removed as part of the dam removal on the left descending bank of Roaring River, in the only upland area that would be impacted (project staging). The survey concluded that the trees to be removed did not meet the necessary criteria as suitable habitat for the aforementioned bat species and determined the project would have "no effect" on the Indiana bat or Northern long-eared bat. The applicant sent the results of the survey to USFWS on May 3, 2016. USFWS concurred with the "no effect" determinations on May 6, 2016. On August 18, 2016, USFWS also commented on the project in response to a scoping letter from the Corps. USFWS stated in that letter that they "would not anticipate adverse impacts occurring to federally listed species from the removal of the dam as proposed" and that they "support the project". Correspondence from USFWS is included with this document as Appendix C. Additionally, the Tennessee Natural Heritage Program (TNH) commented on the project by letter dated July 26, 2016. TNH stated their database shows no rare plant species have been observed within one mile of the project site and the habitat for state and federally listed plants appears scarce in the project area, as seen from aerial imagery. As such, they anticipated little if any impact to rare plant species. Based on a review of the project file and the correspondence from USFWS, PM-P determined the project would have "no effect" on federally listed threatened or endangered species. It should be noted that the project would be expected to have a beneficial effect to the Eastern hellbender, which has been deemed "in need of management" by TWRA.

3.9 Hazardous, Toxic, and Radioactive Waste

A site reconnaissance resulted in no visible Hazardous, Toxic, and Radioactive Waste (HTRW) sources within the project area.

Neither alternative would result in HTRW impacts to Roaring River.

3.10 Health and Safety

The proposed project area is accessible by the public by land and boat. No health concerns exist with respect to construction activities associated with the construction of the parking lot expansion and borrow site.

Alternative 1 – No Action Alternative: The No Action Alternative would have a long-term, negative effect on health and safety by allowing a hazardous boating condition, in the form of a potentially dangerous keeper hydraulic created by a headcut in the dam, to remain in place. Also, the dam structure is currently compromised and poses the risk of failure during a flood event, which would result in the release of a large volume of water during a time when flows are already high.

Alternative 2 (Removal of the Fish Barrier Dam): Approval of the proposed action would have a long-term, beneficial effect on health and safety by eliminating a keeper hydraulic created by a headcut in the dam, which is hazardous to boaters (See Figures 3 and 4).

3.11 Recreation and Scenic Resources

The Corps land surrounding the Roaring River Fish Barrier Dam is designated as a recreation area in the Cordell Hull Operations Management Plan. Recreation at the project site consists primarily of fishing below the dam structure during the spring season, as it concentrates species such as white bass (*Morone chrysops*) during upstream spawning runs. The visitation for the area is not estimated by traffic counters by the Cordell Hull Resource manager's office so a precise number of visitors cannot be documented. Approximately four miles of Roaring River, upstream from CRM 357.8, are impounded by the Cordell Hull Dam. There is no free-flowing portion of Roaring River downstream of the fish barrier dam as the portion of Roaring River impounded by Cordell Hull dam (504' msl elevation, normal summer pool) comes to the base of the fish barrier.

The fish barrier dam impounds a reach approximately one river mile in length. Roaring River experiences recreational motor boat use within the Cordell Hull Reservoir flood storage pool and canoe/kayak use both above and below the fish barrier dam

Alternative 1 – No Action Alternative: The No Action Alternative would add no additional recreational uses within the project area. Members of the public fish below the fish barrier dam, particularly in the spring season, when game fish species swim upstream near the base of the dam to spawn. However, those benefits will only be realized for a short time as the dam will eventually fail, given its current condition. Conversely, kayak and/or canoe operators on Roaring River are forced to take out above the barrier or portage around the fish barrier dam due to the safety hazard posed by floating over the

crest. The no action alternative would allow the dam to remain in place; it would have a beneficial effect to local fishermen and a detrimental effect to kayak/canoe operators.

Alternative 2 (Removal of the Fish Barrier Dam): Short-term and minor adverse impacts are expected due to construction activities associated with dam removal. However, this would be temporary and only during construction. The project would remove a fish barrier, which might hinder local fishing patterns, but it would be expected to be beneficial to overall fisheries in the watershed and would not prevent members of the public from fishing in Roaring River. The project would have a beneficial effect to kayak/canoe operators by removing a public safety hazard. Also, the project would remove a deteriorating, artificial structure from the river, allowing natural fluvial processes to occur and enhancing aesthetics in the impounded reach. Overall, the proposed dam removal project would have a long-term, beneficial impact to recreation and scenic resources. Roaring River and tributaries are listed resources under the Tennessee Scenic Rivers Act of 1968.

3.12 Socioeconomics

According to U.S. Census data for 2014, Jackson County, Tennessee has an estimated population of 11,509. Areas surrounding Roaring River Fish Barrier Dam are sparsely developed with the majority of the surrounding area being forested and/or agricultural. Approximately 97.6% of the population is Caucasian, larger than the average 78.9% Caucasian population in Tennessee.

About 23.4% of the residents in Jackson County, and 18.3% of the residents in Tennessee, lived below poverty level. Median household income was $33,500 and $44,621 for Jackson County and the state respectively.

Table 2. Socioeconomic data for Jackson, County Tennessee

Parameter	Jackson County	Tennessee
Population Estimate	**11,509**	**6,660,299**
Median Household Income	**$ 33,500**	**$ 44,621**
Percent Minorities	**2.4 %**	**21.1 %**
Percent Below Poverty	**23.4%**	**18.3%**

Alternative 1 – (No Action Alternative): Socioeconomic impacts associated with fishing below the existing dam would continue to be realized in the immediate future, until the dam eventually fails. The presence of the fish barrier dam and associated safety risks have a detrimental effect on kayaking/canoeing recreation on Roaring River in a reach that would otherwise be completely navigable to kayak/canoe traffic. The socioeconomic effects for fishing and/or kayaking to the community are relatively minor.

Alternative 2 (Removal of the Fish Barrier Dam): Approval of the proposed action would have a minor beneficial effect to local socioeconomics. The existing fish barrier dam is at the upstream edge of the flood impoundment pool of Cordell Hull and recreation associated with fishing and boating in this reach of river are minor. The additions of the The Boils Access Ramp on Roaring River is expected to increase canoe/kayak traffic in the affected reach. Any detrimental effects to fishing recreation associated with the proposed action would be more than offset by the beneficial effects to canoe/kayak traffic on Roaring River.

3.13 Air Quality

Currently the proposed project area is in an attainment area with regard to the National Ambient Air Quality Standard (NAAQS).

Alternative 1 – (No Action Alternative): No work would be performed under this alternative and the dam would eventually fail. There would be no effect to air quality.

Alternative 2 (Removal of the Fish Barrier Dam): Under Alternative 2, there would be temporary, minor air quality impacts (dust, vehicle exhaust) from vehicle, equipment, and construction activities. However, these temporary impacts would be minimal, and would have no long-term effects on air quality levels. Therefore, the proposed project meets the Conformity Rule under the Clean Air Act and poses no risk to NAAQS.

3.14 Navigation

Roaring River was listed as a navigable water in Nashville District Public Notice #86-23, dated May 8, 1986 from its confluence with the Cumberland River (CRM 357.8) upstream to mile 22.3 (Site of Johnson Falls). The listing was based on a study in 1986 by the Corps Navigation Branch. Although Roaring River is not used for commercial navigation, it does experience recreational motor boat use within the Cordell Hull Reservoir flood storage pool and canoe/kayak use both above and below the fish barrier dam. Portions of the reach listed as a navigable water exhibit subsurface flow under normal conditions and only exhibit surface flow during heavy rain events.

Alternative 1 – (No Action Alternative): The No Action Alternative would allow the dam to remain in place; it would continue to have a detrimental effect to recreational navigation, specifically for kayak/canoe operators.

Alternative 2 (Removal of the Fish Barrier Dam): Approval of the proposed action would remove a barrier to recreational navigation by removing an artificial barrier and a public safety hazard. Overall, the proposed dam removal project would have a long-term, beneficial impact to recreational navigation.

4.0 CUMULATIVE IMPACTS

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the (proposed) action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions (40 CFR 1508.7)." CEQ guidance identifies an 11-step process for evaluating cumulative effects.

Step 1: Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.

The applicant prepared an assessment for the Roaring River Watershed 10-digit Hydrologic Unit Code (HUC) 0513010602. Within the watershed, five streams (approximately 70.9 miles) were identified as being impaired under the TDEC 303 (d) list (2014). The impaired streams, listed impairments and source of impairments are described below in Table 3.

Table 3. Impairments within Roaring River Watershed

Stream Name	River Miles	Impairment	Source of Impairment
Flat Creek (Overton Co.)	23.6	Escherichia coli (E coli)	Pasture Grazing
Town Creek (Overton Co.)	6.2	Escherichia coli (E coli) Total Phosphorus Nitrate+Nitrite Low dissolved oxygen	Urbanized High Density Area (Livingston, TN) Failed Collection System
Carr Creek (Overton Co.)	4.5	Low dissolved oxygen	Upstream impoundment
Spring Creek (Overton Co.)	20.7	Escherichia coli (E coli)	Pasture Grazing
Blackburn Fork (Jackson Co.)	15.9	Escherichia coli (E coli)	Undetermined source

The watershed assessment shows impairments are primarily E. coli pathogens associated with pasture grazing. It should be noted that the four impaired reaches in Overton County, TN are small streams in the headwaters of the Roaring River drainage area, approximately 15-25 river miles upstream of the project area. Roaring River, in the reach proposed for dam removal is described on the TDEC Watershed Viewer Website as "fully supporting" - Based on the TDEC 303 (d) list (2014), sedimentation is not a significant stressor and there are no known sources of chemical contamination within the watershed.

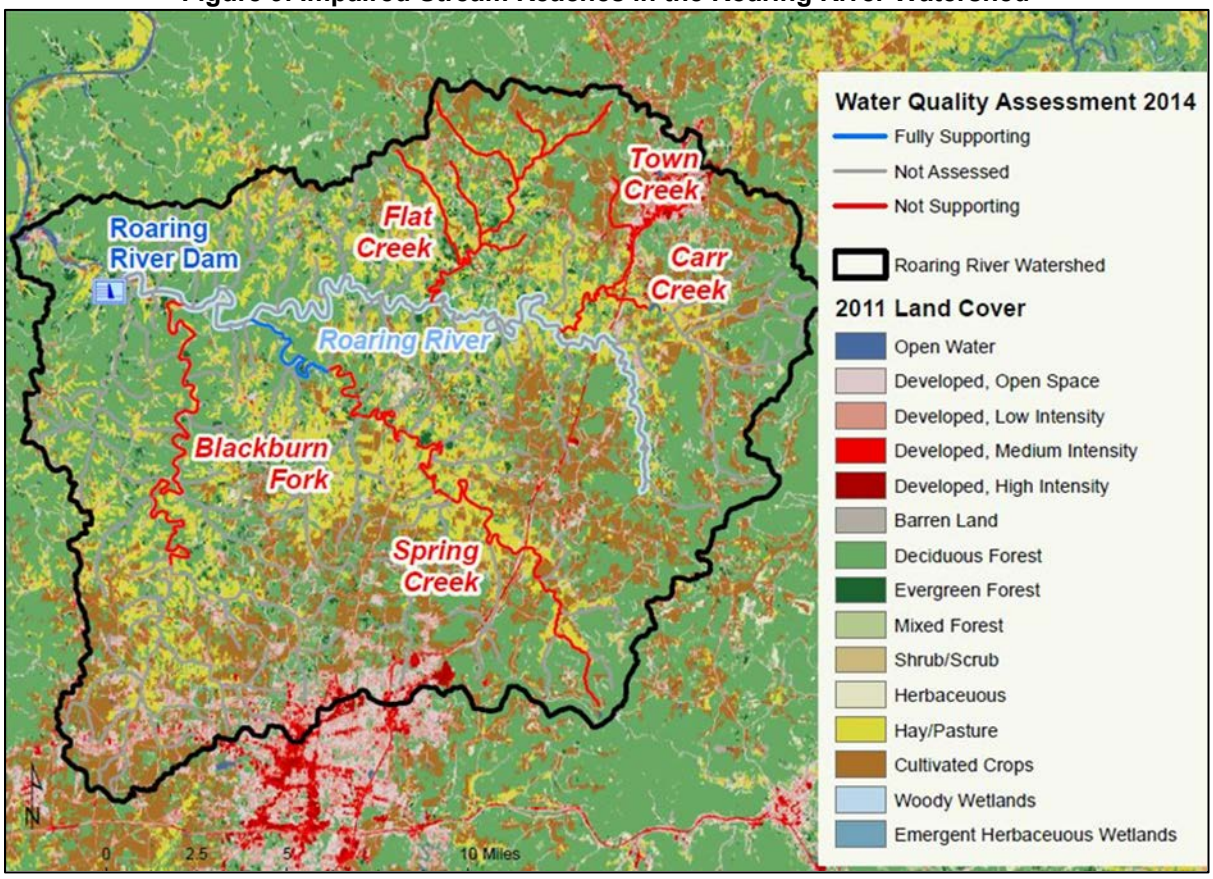
Step 2: Establish the geographic scope for the analysis (project impact zone).

The geographic scope of the analysis is the Roaring River Watershed 10-digit Hydrologic Unit Code (HUC) 0513010602.

Step 3: Establish the time frame for the analysis.

The work is proposed to take place in September 2016 and take approximately two months to complete. The first step in dam removal would be to breach the dam at the right descending bank to allow the impounded water to slowly drain downstream, thus preventing a large release of sediment. At the end of construction, the river is expected to resume normal fluvial processes. The time frame for the analysis is a period beginning in October, 1973 and continuing thirty years into the future until October, 2046. This would cover past, present and reasonably foreseeable future actions within the Roaring River watershed.

Figure 9. Impaired Stream Reaches in the Roaring River Watershed



Step 4: Identify other actions

A search of the U.S. Army Corps of Engineers Operations Maintenance Business Information Link- Regulatory Module (ORMS) database revealed the following recently approved actions in waters of the U.S. within the Roaring River watershed between September 2011 and present time (July 2016). There were a total of 14 approved Department of the Army Permit actions to aquatic resources from September 1, 2011 to June 22, 2016. Of the 14 actions, 13 were Nationwide Permit verifications for minor

road crossings or bank stabilization projects. One action was a modification to an existing individual permit for a road crossing. The actions resulted in total impacts to 3,457 linear feet of stream and 0.334 acre of wetland. Approximately 2,570 linear feet of impacts associated with bank stabilization would not have resulted in a loss of waters of the U.S. No compensatory mitigation was performed in the watershed during that timeframe. The ORMS database also showed no actions currently pending in the Roaring River watershed, other than the fish barrier dam removal.

The ORMS database only revealed one pending permit action within the watershed; a proposed 10-unit residential development in Putnam County, TN, in the Blackburn Fork watershed (ORMS Permit No. 2015-0433). The proposed impacts associated with the project would be 368 linear feet of stream and 0.49 acre of wetland.

A search of the TDOT website (http://www.tn.gov/tdot/section/projects-region-2) for pending road construction projects revealed one project that could be constructed in the foreseeable future. The road project would widen Highway 52 from Hwy. 136 to Hwy. 111 in Overton County, TN. It is unclear what the impacts to aquatic resources associated with this project would be if it were approved.

Given the rural nature of the watershed, contours and poor road access to major interstate highways in most of the watershed (Roaring River Fish Barrier Dam is approximately 20 miles from Interstate 40), it is unlikely that large scale residential, commercial or industrial development would occur within the scope of analysis in the near future.

The Corps owns approximately 1,037 acres on Roaring River, the majority of which has been outgranted to TWRA for the purposes of wildlife management. In 2006, TWRA purchased 119 acres of property on Roaring River, upstream of the project area to establish the “The Boils Wildlife Management Area” (WMA). The purpose of WMA establishment was to give local citizens access to Roaring River and provide hunting opportunities. In 2011, the State of Tennessee purchased 211 acres for conservation purposes and later opened Cummins Mill State Park, in the Blackburn Fork watershed.

Step 5: Characterize the resources, ecosystems and human communities in terms of the responses to change and capacity to withstand stresses.

The aquatic resource in consideration is Roaring River, a high quality aquatic resource which is listed as a Scenic River (Class II Pastoral River Area) from 2.0 miles downstream of the SR-136 bridge, approximately 19 miles, to the confluence of the Cumberland River at Cordell Hull Lake. Two tributaries (Blackburn Fork and Spring Creek) are also listed with the same designation under the Tennessee Scenic Rivers Act of 1968. The segment is also designated as Exceptional Tennessee Waters by

TDEC. Given the relatively undeveloped nature of the drainage basin and quality of aquatic resources within the watershed, it is expected that Roaring River has the capacity to withstand the relatively minor stresses projected to occur within the watershed for the foreseeable future.

Step 6: Characterize stresses affecting these resources, ecosystems and human communities.

As described earlier in this section, the largest stressors within the watershed appear to be caused by agriculture, particularly grazing of cattle. However, data from the Cordell Hull TMDL (2007) indicate the watershed is 60% forested, meaning that most streams are buffered from potential future development. The reach of Roaring River investigated in this scope of analysis is not listed as impaired and is currently considered an Exceptional Tennessee Waters by TDEC. However, agricultural activities in the watershed, including cattle grazing, are expected to contribute to bank erosion in the future. There are no indications that agricultural activities will significantly increase or decrease in future years.

The water in Roaring River currently flows over the entire crest of the fish barrier dam. Although the reach of Roaring River where the fish barrier dam would be removed is not impaired, any potential waterborne pathogens in the river like E. coli are not held by the dam and would not be expected to increase downstream after the dam is breached.

Step 7: Define a baseline condition for the resources, ecosystems and communities.

Roaring River is currently listed as a Scenic River and an Exceptional Tennessee Water by TDEC. Impairments within the watershed described earlier in this section consist primarily of E. coli bacteria, low dissolved oxygen and excessive nutrients (nitrates/nitrites and phosphorus) in headwaters tributaries of Roaring River, resulting from cattle grazing and failed containment systems. No chemical impairments were identified within the drainage area. A study was done by Tennessee Tech University, which compared fish sampling data from 1972 (pre-barrier dam) and 1986 (post-barrier dam) at five sites in Roaring River, upstream of the barrier dam impoundment (Crumby, 1990). Thirty-nine species were collected in 1972 and 40 species were collected in 1986, however several intolerant species collected in 1972 were not present in 1986 surveys (Bigeye chub- *Hybopsis amblops*, Streamline chub- *Hybopsis dissimilis*, Brindled madtom- *Noturus miurus*, White crappie-*Pomoxis annularis*, Spotted darter- *Etheostoma maculatum*, Banded darter- *Etheostoma zonale*). The following tolerant species were collected in 1986 but were not present in 1972: Black bullhead- *Ictalurus melas*, Yellow bullhead- *Ictalurus natalis*, Mosquitofish- *Gambusia affinis*, Warmouth- *Lepomis gulosus*, Redear sunfish- *Lepomis microlophus*. Overall fish index of biological

integrity scores also decreased at all five sample sites between 1972 and 1986 although the authors of the report attributed the changes in fish population to sedimentation within the watershed and gravel dredging rather than construction of the fish barrier dam.

In 2011, TWRA conducted fish sampling at three stations below the fish barrier dam and five stations above. There were not as many samples conducted below the dam, presumably because the Cordell Hull Reservoir normal summer pool comes to the base of the fish barrier dam. The surveys revealed 31 fish species above the dam and 16 below. All of the species encountered below the dam were present above the dam as well with the exception of the black buffalo (*Ictiobus niger*), channel catfish (*Ictalurus punctatus*) and quillback (*Carpiodes cyprinus*). Substrate at the five sample sites upstream of the barrier dam impoundment was mostly gravel and cobble with silt comprising between 10-25% of the riverbed, depending on the survey site (Crumby, 1990). As discussed in Section 2, the Corps conducted a site visit on September 8, 2016. Substrates were fairly similar in character throughout the surveyed reaches and were mainly comprised of coarse gravel and cobble with a thin layer of fine silt particles in interstitial spaces (approximately 10-20% of material of substrate). The substrate in the riverbed within the dish barrier dam impoundment were consistent with the findings of the 1988 Tennessee Tech survey and did not exhibit a significant difference from those reaches above or below the impoundment. Therefore, removal of the dam in a phased approach would not result in a substantial release of sediment downstream. Movement of bedload material associated with normal fluvial processes would occur but would be de minimis and would not result in siltation of downstream reaches, which are below the Cordell Hull Reservoir summer and winter pool elevations.

Step 8: Identify the important cause and effect relationships between human activities and resources, ecosystems, and human communities.

As described in Step 4, the Roaring River drainage basin is rural and largely undeveloped. A review the Cordell Hull TMDL indicates the watershed is approximately 60% forested. Other land uses resulting from human activities are as follows: Pasture/Hay Cover – 28%, Row Crops - 5.7%, Commercial/Industrial/Residential Development - 2.8%. The TMDL assessed the land use characteristics of all subwatersheds (HUC-12) with impairments, which excluded the lower Roaring River subwatershed from the land cover assessment. The predominant land uses within the watershed is projected to continue as pasture/hay cover and row crop agriculture.

Step 9: Determine the magnitude and significance of cumulative effects.

Given the rural nature of the watershed, the lack of currently pending applications for impacts to aquatic resources in the ORMS Regulatory database, rural setting of the

watershed, and the exceptional quality of the existing resource (Roaring River), the magnitude and significance of cumulative effects are considered minimal within the Roaring River watershed.

Step 10: Modify and add alternatives to avoid, minimize, or mitigate significant cumulative effects.

TWRA considered an alternative (Alternative 3), under which they would repair the head cut on the downstream, left portion of the fish barrier dam. However, repair of the dam would require reconstruction of portions of the barrier and was determined to be economically infeasible. Repair and reconstruction of the dam would have similar short-term environmental effects as the proposed alternative near the barrier site but would not restore the connectivity of the river system and therefore, would not fully achieve the project purpose. Due to costs and lack of aquatic connectivity, it was eliminated from detailed evaluation in this EA.

Since the location of the fish barrier dam is in Roaring River, there are no alternatives to accomplish the project purpose outside of the river. The only other alternative is to take no action, which would continue to impede migration of aquatic species and suspend normal fluvial bedload movement in the impounded reach of river.

Step 11: Monitor the cumulative effects of the selected alternative and adapt management.

TWRA has conducted biological monitoring for fish species in the affected reach to document baseline conditions. They has proposed to monitor fish species above and below the dam in Roaring River for the next five years. If the dam is removed, there would not be a way to perform adaptive management for any unforeseen adverse circumstances, however, TWRA is proposing a phased approach to dam removal to prevent sedimentation downstream. Any cumulative effects to Roaring River would likely be caused from other activities in the watershed, which would be subject to regulations and preventative measures of other programs such as Clean Water Act, Food Securities Act (agriculture), etc.

5.0 ENVIRONMENTAL COMMITMENTS, PERMITS, AND APPROVALS

The following commitments, permits, and approvals are made regarding implementation of the action alternatives:

1) Individual Water Quality Certification (application number No. 16.074) is under review by TDEC for the proposed excavation of Roaring River Fish Barrier Dam below the ordinary high water mark of Roaring River and minor fills associated with erosion control on the project.

2) A Nationwide Permit (NWP 27) verification letter from the Corps Regulatory Division is required for the proposed work under authority of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. The Corps is currently reviewing a pre-construction notification for NWP 27, submitted by TDEC on March 4, 2016.
3) Examples of general construction BMP's are listed below.
    - Minimize Disturbance – minimize disturbed areas within the project area to those being actively worked.
    - Sediment Control Devices – sediment control devices such as silt fences, fiber rolls, geotextile filter fabric, and rock filters would be used as temporary erosion control barriers to capture stormwater runoff from project area.
    - Inspection and Maintenance - inspect and verify activity-based BMPs are in place prior to commencement of associated activities and regular inspect erosion control devices to assure they are functioning properly.

4) Terrestrial resources impacted would be minimized to an equipment staging area adjacent to the dam removal site. Disturbance or removal of vegetation within the proposed project area would be minimal.

The Corps has determined "no historic properties would be affected" by the project. The SHPO concurred with the Corps determination in a letter dated September 20., The Eastern Shawnee Tribe of Oklahoma and the UKBCI also concurred with the Corps determination.

6.0 ENVIRONMENTAL COMPLIANCE

6.1 Executive Order 11990-Wetlands

The dam removal work would occur below the ordinary high water mark of Roaring River and a small portion of uplands, approximately 0.1 acre in size, which would be used as a staging area for equipment and machinery. Based on field data collected on November 3, 2015, there are no wetlands present in the staging area. However, some small fringe wetlands in impoundment sloughs would be affected by draining of the fish barrier dam impoundment by the preferred alternative or eventual failure associated with the no action alternative.

6.2 Farmland Policy Protection Act

No private agricultural lands or prime and unique farmlands are located in the proposed project area.

6.3 Executive Order 11988-Floodplain Management

Executive Order 11988, Floodplain Management, requires federal agencies to evaluate and minimize impact to the floodplain. The proposed project is located within the 100-year floodplain of Roaring River and falls under the purview of executive Order 11988, Floodplain Management. The removal of a low-head dam would inherently occur within the floodplain; therefore, there is no alternative to working in the floodplain. Water flows over the entire crest of the existing dam, therefore it does not hold any flood storage waters. There is no “net increase of fill material” associated with this project. None of the alternatives considered in detail would increase the risk of a ”base flood”.

6.4 Clean Water Act

Waters of the U.S. are present within the proposed project footprint. Therefore, coordination with State and Federal Agencies regarding Clean Water Act compliance is required. Permits from both TDEC (Section 401) and the Corps Regulatory Division (Section 404) would be required for the proposed project.

TDEC is reviewing an application for Individual Water Quality Certification associated with this project. The project is being evaluated under NWP 27 (Aquatic Habitat Restoration, Establishment, and Enhancement Activities) by the Corps of Engineers Regulatory Division.

6.6 Endangered Species Act

The Corps is required to coordinate with USFWS for potential effects to federally listed threatened and endangered species under Section 7 of the Endangered Species Act. Based on information obtained from the USFWS iPac website, the Corps determined the proposed project would have “no effect” on any federally listed species (See Section 3.8).

6.7 Fish and Wildlife Coordination Act

The Corps is required to coordinate with the USFWS and State Agency under the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). Coordination with USFWS and TWRA was initiated with advertisement of a scoping letter on July 11, 2016. On August 18, 2016, USFWS commented in response to the scoping letter. USFWS stated in that letter that they “would not anticipate adverse impacts occurring to federally listed species from the removal of the dam as proposed” and that they “support the project”. Also, they concurred that the project would have “no effect” to federally listed threatened and endangered species on May 6, 2016 (See Section 3.8). Since TWRA is the project applicant, they did not provide comments for this project but did respond to public comments with additional biological

data on September 1, 2016. A copy of the scoping letter and comments are included with this document as Appendix D.

6.8 National Historic Preservation Act

The Corps sent a letter to the SHPO on July 26, 2016, which stated that the fish barrier dam structure "is not eligible for inclusion into the National Register of Historic Places" and also that "no historic properties would be affected" by the dam removal project. The SHPO concurred with the Corps determination in a letter dated September 20. In addition to SHPO, the Eastern Shawnee Tribe of Oklahoma and the UKBCI concurred with the Corps determination.

6.9 Executive Order 13514 – Environmental Justice

The 1994 Executive Order 12898: "Federal Actions to address Environmental Justice in Minority Populations and Low Income Populations" was signed by President Clinton on February 11, 1994, to focus Federal attention on the environmental and human health conditions of minority and low-income populations, with the goal of achieving environmental protection for all communities. As defined by the "Draft Guidance for Addressing Environmental Justice under NEPA" (CEQ, 1996), a minority population exists where the percentage of minorities in an affected area either exceeds 50% or is significantly greater than in the general population.

Neither of the alternatives described in this environmental assessment would disproportionately place any adverse environmental, economic, social, or health impacts on minority and low-income populations.

6.10 Clean Air Act

Neither of the alternatives described in this document would impact long-term ambient air quality standards.

6.11 Comprehensive Environmental Response, Compensation, and Liability Act

No Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites were identified within the proposed project boundaries.

6.12 Resource Conservation and Recovery Act

All alternatives would be in compliance with the Resource Conservation and Recovery Act (RCRA).

7.0 PUBLIC AND AGENCY COORDINATION

7.1 Public and Agency Involvement

NEPA is a Federal law that requires federal agencies to consider the potential environmental impacts of their proposed project and to ask for comments from interested groups about the work plan before any action is taken. Through the NEPA process, a Scoping Letter describing the proposed project was sent to other governmental agencies and officials, Indian Tribes, the public, private individuals, and other interested parties on July 11, 2016. The letter states the need for action and provides general information on the scope of work and the area of land and/or water that would potentially be affected by the agency project. The scoping letter attempts to identify environmental concerns by requesting comments on alternatives and a list of environmental resources to consider. Scoping comments were received from two members of the public via e-mail. The comments (listed below) were evaluated and considered during the preparation of this Draft EA.

Comment: On July 22, 2016, Larry Lee stated that removal of the dam would make the river more enjoyable for paddlers and suggested that rocks in the dam be used to create rapids for recreational kayakers. Mr. Lee further stated that removal of the dam would create recreational opportunities for the local community.

Corps Response: The Corps concurs that removal of the existing dam would enhance the recreational value of Roaring River to paddlers. However, the reach lacks necessary gradients to create complex riffle structures for more experience paddlers. A natural riffle would develop at the dam site shortly after removal, and the project would benefit both ecological and recreational values of Roaring River.

Comment: On July 26, 2016 John Maberry stated that removal of the dam would be detrimental to fisheries in upper reaches of Roaring River by allowing introduction of invasive carp species. Mr. Maberry further stated the dam is a “community landmark and a scenic locale” popular with local residents for several activities.

Corps response: The Corps recognizes that the structure was originally constructed to keep “rough fish” out of the upper reaches of Roaring River, including invasive fish species. However, the most recent fish survey data (TWRA, 2011) indicates that there is already a viable, reproducing population of common carp (*Cyprinus carpio*) above the fish barrier dam. In fact, the common carp was collected at four of the five stations above the dam and only in one of three stations below the dam in 2011 surveys. Common carp specimen were

also collected above the fish barrier dam in the 1986 survey conducted by Tennessee Tech University (Crumbey, 1990).

A Notice of Availability (NOA) will be sent to interested groups informing them that a Draft EA and unsigned FONSI is available for review and public comment for 15 days. The unsigned Finding of No Significant Impact (FONSI) explains the agency's decision, recommended alternative, and any commitments for mitigating potential environmental impacts. The final EA must consider and respond to all timely public comments received on the Draft EA. At the close of the 15 day comment period, if there is no significant new information, then the proposed Alternative 2 –Proposed Action (Removal of Roaring River Fish Barrier Dam), as described in this EA would be selected and a FONSI would be signed.

In addition, the Proposed Alternative is under review by TDEC for an Individual ARAP permit and was circulated for 30 day public review on May 6, 2016 as part of the permitting process.

Since the proposed work is being evaluated under NWP 27, no public notice is required for the proposed action by the Corps Regulatory Division.

8.0 CONCLUSION

Two alternatives were evaluated in detail throughout this EA; Alternative 1- No Action Alternative and Alternative 2- Approval of the Proposed Dam Removal.

Alternative 1 would not allow the proposed dam removal to occur. The Roaring River Fish Barrier Dam would continue to impound a reach approximately one mile long, restrict migration of aquatic species and pose a safety hazard to members of the public in the form of a headcut in the downstream, left portion of the structure. If the dam is not removed, it will eventually fail due to the aforementioned headcut. Dam failure would allow the impounded reach of Roaring River to return to a lotic condition resulting in natural movement of bedload material and enhanced migration of aquatic species. However, the sudden failure of the dam would likely occur during a flood event and would release a large amount of water at one time during already high flows. Also, the sudden release of water would result in higher local turbidity than a gradual, controlled dam removal. A portion of the dam structure would remain in place and would be an obstacle for local recreational canoe/kayak operators.

Alternative 2 would allow the proposed dam removal to occur. The dam removal would likely have very minor, localized, temporary impacts to water quality in the form of increased turbidity during construction, which would be minimized through the sequential approach to dam removal and implementation of BMPs. However, the

proposed project would provide long-term benefits to the following aspects of Roaring River including: aquatic resources, wildlife (aquatic), water quality, health/safety, recreation and scenic resources. Temporary direct, indirect and cumulative impacts to the Roaring River watershed associated with Alternative 2 would be negligible. All work would be performed in accordance with federal, state and local regulations.

REFERENCES

Council for Environmental Quality. Draft Guidance for Addressing Environmental Justice under NEPA. 1996.

Crumby, W. Dennis, Webb, Mark A., Bulow, Frank J. and Cathey, Harold Joe (1990). "Changes in Biotic Integrity of a River in North-Central Tennessee". *Transactions of the American Fisheries Society*, 119:5, Pages 885-893

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National Ambient Air Quality Standards (NAAQS). Clean Air Act. Accessed 8/9/2016. http://epa.gov/air.criteria.html

Tennessee QuickFacts, U.S. Census Bureau. 2014. http://quickfacts.census.gov/qfd/states/47000.html

Tennessee Department of Environment and Conservation. Total Maximum Daily Load (TMDL) for E. Coli in the Cordell Hull Lake Watershed (HUC 05130106) Clay, Jackson, Macon, Overton, Putnam, and Smith Counties, Tennessee. 2007

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Tennessee Wildlife Resources Agency. Results of Fish Surveys on Roaring River submitted via e-mail on August 31, 2016.

US Fish and Wildlife Service. iPac Threatened and Endangered Species and Critical Habitats Listing in Project Review Area, Jackson County, Tennessee. https://ecos.fws.gov/ipac/project/3W35O7H5SVCZVAPD6KLCPQ6QHE/resources

LIST OF PREPARERS

Travis A. Wiley, Biologist, Environmental Section, Project Planning Branch, Primary EA Preparation

Valerie McCormack, Archaeologist, Environmental Section, Project Planning Branch, Nashville District, EA Preparation – Cultural and Historic Resources

Timothy Higgs, Chief, Environmental Section, Project Planning Branch, EA Review

APPENDIX A

Project Plans

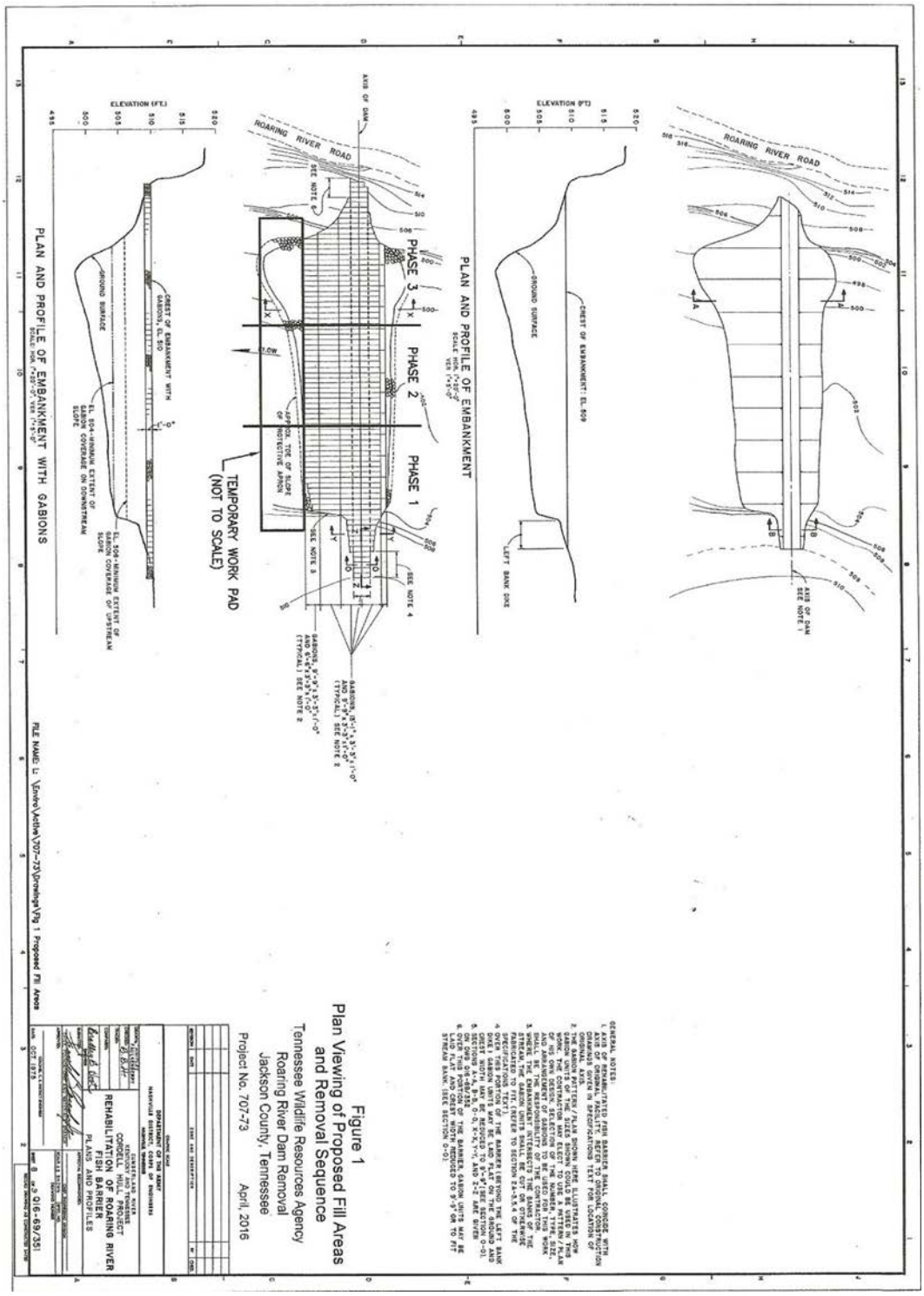

Figure 1
Plan Viewing of Proposed Fill Areas
and Removal Sequence
Tennessee Wildlife Resources Agency
Roaring River Dam Removal
Jackson County, Tennessee
Project No. 707-73 April, 2016

APPENDIX B

Correspondence from SHPO, Eastern Shawnee Tribe of Oklahoma and the UKBCI

TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

September 20, 2016

Mr. Russ Rote
Department of the Army
United States Army Corps of Engineers
Project Planning Branch
110 9th Avenue South, Room A-405
Nashville, Tennessee 37202-1070

RE: COE-N, TWRA/ROARING R BARRIER DAM REMOVAL, UNINCORPORATED, JACKSON COUNTY, TN

Dear Mr. Rote:

In response to your request, we have reviewed the documents you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicant for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

After considering the documentation submitted, we concur that there are no National Register of Historic Places listed or eligible properties affected by this undertaking. We have made this determination because either: no National Register listed or eligible Historic Properties exist within the undertaking's area of potential effects, the specific location, size, scope and/or nature of the undertaking and its area of potential effects precluded affects to Historic Properties, the undertaking will not alter any characteristics of an identified eligible or listed Historic Property that qualify the property for listing in the National Register, or it will not alter an eligible Historic Property's location, setting or use. We have no objections to your proceeding with your undertaking.

If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. You may direct questions or comments to Jennifer M. Barnett (615) 741-1588, ext. 105. This office appreciates your cooperation.

Sincerely,

E. Patrick McIntyre, Jr.

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

APPENDIX C

Correspondence from USFWS under the Endangered Species Act

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Tennessee ES Office
446 Neal Street
Cookeville, Tennessee 38501
August 18, 2016

Mr. Travis Wiley
Project Planning Branch
Nashville District, Corps of Engineers
110 9th Avenue South, Room A-405
Nashville, Tennessee 37203

Subject: FWS #2016-CPA-0596. Preparation of an Environmental Assessment for the removal of a dam on the Roaring River, Jackson County, Tennessee.

Dear Mr. Wiley:

Thank you for your correspondence dated July 11, 2016, concerning the preparation of an Environmental Assessment (EA) for the removal of a fish barrier dam located on the Roaring River approximately 4.9 miles upstream from the confluence with the Cumberland River in Jackson County, Tennessee. The Tennessee Wildlife Resources Agency proposes to remove the dam in order to restore connectivity to aquatic species within the Roaring River watershed and eliminate safety hazards to the public. The following constitute the comments of the U.S. Department of the Interior in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the impact area of the project and we would not anticipate adverse impacts occurring to federally listed species from the removal of the dam as proposed. We note, however, that collection records available to the Service may not be all-inclusive. Our data base is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitat and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality.

The Service believes that the proposed action would result in no significant adverse impacts to federally listed fish and wildlife species, and we support the project. Please contact Robbie Sykes of my staff at 931/525-4979 or *robbie_sykes@fws.gov* if you have questions regarding the information provided in this letter.

Sincerely,

for Mary E. Jennings
Field Supervisor

APPENDIX D

Scoping Letter (Sent July 11, 2016)

Mailing List and Responses

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
110 9TH AVENUE SOUTH, ROOM A-405
NASHVILLE, TENNESSEE 37203-3863

IN REPLY REFER TO

JUL 11 2016

Project Planning Branch

TO ALL INTERESTED PARTIES:

The U.S. Army Corps of Engineers, Nashville District (Corps), in accordance with the National Environmental Policy Act (NEPA), is preparing an Environmental Assessment (EA) to assess the impacts of the proposed removal of a fish barrier dam from Roaring River, approximately 4.9 miles upstream of the confluence with the Cumberland River (Mile 357.8). The proposed work would occur near the City of Gainesboro, Jackson County, Tennessee (Figure 1, Dodson Branch, TN USGS Quadrangle). Property surrounding the fish barrier dam is part of Cordell Hull Reservoir owned by the Corps; project coordinates are N. 36.3531, W. 85.5992.

The fish barrier dam is currently part of a Real Estate License, granted to Tennessee Wildlife Resources Agency (TWRA) by the Corps for fish and wildlife management activities. The fish barrier dam was initially constructed in 1973 by the Corps, at the request of the TWRA, to prevent "rough fish", such as carp (*Cyprinus sp.*), shiners (*Notropis sp.)* and chubs (*Semotilus sp.*) from migrating into the free-flowing portions of the Roaring River watershed from Cordell Hull Reservoir. TWRA no longer considers these species as detrimental to the Roaring River watershed, but rather, a key part of river ecosystems. Therefore, TWRA has proposed to remove the fish barrier dam. The dam consists of a concrete veneer placed atop boulders and gabion stone that spans approximately 220 feet from river bank to bank. Photographs of the barrier dam are shown in Figures 2-4. The impoundment pool created by the dam extends approximately 0.55 mile upstream (approximate location of the confluence of Morrison Creek with Roaring River). The dam is also suffering structural failure in the form of a headcut on the downstream left side. The purpose of dam removal, proposed by TWRA, would be to restore connectivity to aquatic species within the Roaring River watershed and also to eliminate safety hazards to the public created by the headcut. The EA would provide the basis for a decision whether to proceed with preparation of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). By way of this letter we are soliciting public and agency comments concerning environmental issues that should be addressed in the course of the NEPA process.

Based on information submitted in the project application, the Roaring River Fish Barrier would be removed in phased sequence. Starting at the far right bank (facing upstream), the dam headwall would be removed by mechanized equipment, e.g. trackhoe, hoe-ram, pneumatic hammer, etc. Activities would be performed in the dry, to the greatest extent practicable, by diverting water from the work site with construction of temporary gravel pads constructed from native stone riverine deposits that would be

collected in the immediate vicinity of the work site. Equipment would be operated on top of the gravel pads, on the upstream side of the dam.

The demolition scenario previously described would be repeated at each section of the dam as activities proceed across the 220 ft. span. It is estimated that approximately 3,000 cubic yards of rock and 700 cubic yards of concrete would be removed during this project. The majority of material removed would be taken to an approved upland disposal site; some material may be recycled or disposed of at an approved landfill as required. However some clean rock material may be used at the project site for erosion control, upgrade parking facilities and access roads on the project site. The aggraded material that has deposited upstream of the dam, consisting primarily of gravel, would not be removed or altered in any fashion and would become part of the river bedload.

In accordance with the NEPA and applicable implementing regulations, an EA would be prepared to evaluate viable alternatives for this project as an integral part of this planning study. This letter serves to solicit scoping comments from the public; federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received during the comment period would be considered in the planning process. Comments are used to assess impacts on fish, wildlife, endangered species, water quality, historic properties, water supply, conservation, economics, aesthetics, wetlands, flood hazards, floodplain values, land use, navigation, shore erosion, sedimentation, recreation, energy needs, safety, climate change, considerations of property ownership, general environmental effects, cumulative effects, and in general, the needs and welfare of the people.

This letter also serves to initiate the public involvement requirements of Section 106 of the National Historic Preservation Act of 1966, as amended. Section 106, implemented by regulations at 36 CFR 800, requires the Corps to consider the effects of its undertakings on historic properties. If required, appropriate architectural and archeological investigations would be conducted within those areas affected by the proposed activities and resulting findings would be coordinated with the Tennessee State Historic Preservation Officer and other consulting parties.

The public is invited to submit written comments to this scoping letter no later than thirty (30) days from the date of this letter. You may mail to the address above ATTN: Project Planning Branch (Travis Wiley), or by email to travis.a.wiley@usace.army.mil.

Sincerely,

RUSS L. ROTE, P.E., PMP, CFM
Chief, Project Planning

Enclosures

Figure 1. Roaring River Fish Barrier Dam; Vicinity Map, Dodson Branch,TN USGS Quadrangle

Figure 2. Roaring River Fish Barrier Dam Location Map; Overhead Aerial Photograph

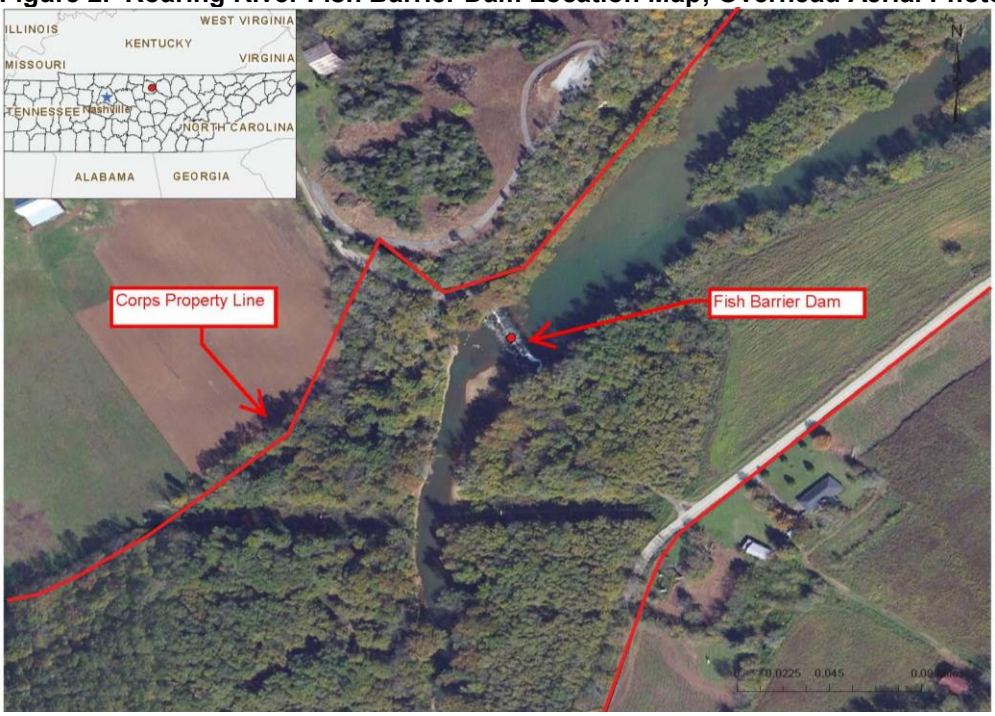

Figure 3. Roaring River Fish Barrier Dam; Facing Upstream

Figure 4. Roaring River Fish Barrier Dam; Side Profile

From: larry lee
To: Wiley, Travis A LRN
Subject: [EXTERNAL] roaring river fish barrier dam removal
Date: Friday, July 22, 2016 4:58:25 AM

I began canoeing Roaring River in 1979 and have continued during all these years. Roaring is a wonderful free-flowing stream until one reaches the dam's pool and the river seems less alive. The removal would make the river more enjoyable to most who use it. There is plenty of slack water between the dam site and Gainesboro for fishing. Cities around the USA are creating whitewater play parks to go along with the surge of kayaking and canoeing (see list below). If the dam is removed, this would be an excellent use for the site. The site already has parking, and the existence of the Boils upstream provides ample water, even in the driest of years. The rocks now in the dam could, under the direction of a hydrologist, be placed to create rapids. Those rocks would not have to be carted away. A channel for the non-technical paddlers like myself could also be created with those materials. This could create a tourist draw for Jackson County motels, restaurants, boat rentals, shuttle services and campgrounds. Serious paddlers will travel great distances to play in free-flowing water and spend money. If the dam is removed, there will be an opportunity to create something that could be an asset for the community. Larry Lee

Columbus, Georgia
Salida, California
San Marcos, Texas
Charlotte, North Carolina
Bend, Oregon
Oklahoma City
source: Canoe & Kayak Magazine, Summer 2016

From: Long, Larry
To: Wiley, Travis A LRN
Cc: Militscher, Chris
Subject: [EXTERNAL] Roaring River Fish Barrier Dam Removal
Date: Monday, July 25, 2016 6:40:31 AM

Travis:

Thanks for following up with this project. The R4 NEPA office have no comments on this project at this time.

Thanks

Larry Long

NEPA
Resource Conservation & Restoration Division
EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
404-562-9460

404-562-9598(FAX)

long.larry@epa.gov <mailto:long.larry@epa.gov>

STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Natural Areas
Natural Heritage Program
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 2nd Floor
Nashville, Tennessee 37243
Phone 615/532-0431 Fax 615/532-0046

July 26, 2016

Travis Wiley
Department of the Army
Nashville District, Corps of Engineers
110 9th Avenue South, Room A-405
Nashville, TN 37203

Subject: Proposed Roaring River Fish Barrier Dam Removal
(36.3531, -85.5992)
Jackson County, Tennessee
Rare Species Database Review

Dear Mr. Wiley:

Thank you for your correspondence requesting a rare species database review for the removal of a fish barrier dam from Roaring River, approximately 4.9 miles upstream of the confluence with the Cumberland River. The property surrounding the fish barrier dam is part of Cordell Hull Reservoir owned by the Corps. The purpose of the project will be to remove the dam, only disturbing the area immediately around the existing dam.

We have reviewed the state's natural heritage database with regard to the project boundaries, and we find that no rare species have been observed previously within one mile of the fish barrier dam.

The Division of Natural Areas - Natural Heritage Program has reviewed the location of the proposed project with respect to rare plant species. The habitat for state and federally listed plants appears scarce in the project area, as seen from aerial imagery. As such, we currently anticipate little if any impact to rare plant species.

Dam removal can be a highly effective river restoration tool to reverse negative impacts and restore rivers and streams. The removal of this dam ultimately would benefit the aquatic species by improving flow, water quality, sediment release and transport, and connectivity of Roaring River watershed. Should suitable habitat exist on or immediately downstream of the site, we ask that project plans provide for the protection of these species. We ask that you coordinate this project with the TWRA (Rob Todd, rob.todd@tn.gov, 615-781-6577) to ensure that legal requirements for protection of state listed rare animals are addressed.

For stabilization of disturbed areas, the Tennessee Natural Heritage Program advocates the use of native trees, shrubs, and warm season grasses, where practicable. Care should be taken to prevent re-vegetation of disturbed areas with plants listed by the Tennessee Exotic Pest Plant Council as harmful exotic plants: http://www.tneppc.org/.

Please keep in mind that not all of Tennessee has been surveyed and that a lack of records for any particular area should not imply that rare species necessarily are absent. For information regarding species protection status and ranks, please visit http://www.tn.gov/environment/na/pdf/Status&Ranks.pdf.

Thank you for considering Tennessee's rare species throughout the planning of this project. Should you have any questions, please do not hesitate to contact Stephanie at (615) 532-4799 or stephanie.ann.williams@tn.gov.
Sincerely,

Stephanie Williams

Stephanie A. Williams
Natural Heritage Data Manager

From: John Maberry
To: Wiley, Travis A LRN
Subject: [EXTERNAL] Attn:Project Planning Branch Roaring River Dam
Date: Tuesday, July 26, 2016 2:08:54 PM

Dear Mr Wiley,
I'm contacting you in regard to the proposed demolition of the fish dam on Roaring River in Gainesboro, Jackson county,Tn.
It is my understanding when the dam was originally built, its purpose was to keep invasive species from being able to travel upstream freely. As you know these invasive species make it hard for prized fish to flourish or even survive. Upstream of the "Rock Dam", as it's known locally, was supposed to be a safe habitat for native fish to grow and prosper. The TWRA now says that these invasive fish are needed in the ecosystem but other information sheds a different light on the matter.

As an avid fisherman I can tell you my experience with these "key part of river ecosystems".
My family and friends fish all around the area on Roaring River,Blackburn Fork, and Cordell Hull Reservoir.
On Cordell, if you pull up in a cove or slough and see Carp, you're wasting time. No Bass,Crappie,Walleye,Sauger,Trout,
Catfish, nothing can live around those things. They multiply so fast and use resources, no other species stands a chance.
Take a trip to Defeated Creek Marina and walk out on the dock and look down, they're all that's there.

A few months ago I saw this article about what I was already very much aware of
<Blockedhttp://www.fieldandstream.com/articles/fishing/2015/07/bowfishing-the-apocalypse>
Blockedhttp://www.fieldandstream.com/articles/fishing/2015/07/bowfishing-the-apocalypse
Three(3) types of carp are even listed as Invasive from our very own TWRA
<Blockedhttp://www.tnfish.org/InvasivesExoticSpeciesTennessee_TWRA/InvasiveExoticFishSpecies_TWRA.htm>
Blockedhttp://www.tnfish.org/InvasivesExoticSpeciesTennessee_TWRA/InvasiveExoticFishSpecies_TWRA.htm
And again by the USDA
<Blockedhttps://www.invasivespeciesinfo.gov/aquatics/main.shtml#aqan>
Blockedhttps://www.invasivespeciesinfo.gov/aquatics/main.shtml#aqan
Also there has been a terrible legislative fight going on about keeping fish like these out of the Great Lakes area. But the TWRA, after a unelected commission votes for licensing increases across the board, now tells us we need invasive fish like these. It leaves me baffled at their reasoning.

Historical Landmark;
Of other note, me being born in 1987, the Rock Dam has been there all my life. It's a community landmark and a scenic locale popular with fisherman, photographers,kayak/rafting, camping/bonfires, a nice place to go have lunch.

In closing, I fully expect the Corp to weigh the pros and cons of this project.
Please don't just listen to the TWRA because I'm unsure they have the people's best interest at heart.
Stepping over carp as I wade Blackburn Fork is not my idea of a good time.

Thank you for your time,
John Maberry
16863 Dodson Branch Hwy
Cookeville,TN 38501