

U.S. ARMY CORPS OF ENGINEERS
NASHVILLE DISTRICT

FINDING OF NO SIGNIFICANT IMPACT
AND
SECTION 404(b)(1) FINDING OF COMPLIANCE

Proposed Bank Stabilization
Tennessee River
River Mile 466.2 – 466.5
Hamilton County, Tennessee

1. The U.S. Army Corps of Engineers has proposed a project to protect important infrastructure, alleviate streambank erosion, and safeguard important cultural resources along Tennessee River Mile 466, within the City of Chattanooga. The proposed project is authorized under Section 14 of the Flood Control Act (FCA) of 1946 (Public Law 79-526) as amended. Work performed under Section 14 of the FCA, corrects bank and shore erosion that endangers public or non-profit facilities.

2. Alternatives considered in the environmental assessment (EA) for the proposed Section 14 Emergency Streambank Protection are: No Action, bank stabilization by sloping of bank with riprap, full bank build-out (no sloping of bank) with riprap, combination of bioengineering and riprap, gabion baskets, and relocation of the existing utilities. Due to various issues and concerns, only alternatives 1 and 3 (No Action and Full Bank Build-Out) were carried through and discussed in detail in the EA. Full bank build-out using riprap is considered the most cost-efficient and effective means to address current bank stabilization issues, and is considered the preferred alternative. The No Action alternative would not be in the public's best interest and would eventually impact city infrastructure and historical resources, thus requiring more costly means to address the issue.

3. In accordance with ER 200-2-2, *Policy and Procedures for Implementing the National Environmental Policy Act* (NEPA), an EA has been prepared and circulated to other agencies and groups for review. Coordination with the Tennessee State Historic Preservation Officer (SHPO) and federally recognized tribes were conducted. The proposed work would create a beneficial socioeconomic impact by providing protection to public lands and facilities. Benefits are realized with water quality and aquatic habitat with the halting of erosion and sedimentation. Additional benefits include long-term protection of cultural resources, protection of existing utilities, and employment opportunities to local construction contractors and/or workers spending money in the community. There would be no change in land use as a result of authorization granted for this proposal.

4. Streambank protection would cause a minimal loss of wildlife habitat. Vegetation removal is necessary for placement of underlying geotextile fabric; however, given grassed banks and species such as exotic kudzu, impacts to wildlife cover and food are minimal. Placement of riprap would temporarily increase turbidity levels and temporarily dislocate and disrupt movement of some organisms. There would be however, additional aquatic habitat created by

the placement of riprap for fish and macroinvertebrate species. The EA revealed that the proposed project would cause minimal and temporary adverse impacts during construction to water quality, aquatic resources, terrestrial resources, socioeconomics, noise, navigation, and recreation and scenic resources. There would be no direct or indirect impacts for the proposed project on wetlands. No issues were noted regarding hazardous, toxic, or radioactive materials. Results from construction of this project would be beneficial after construction is complete. The preferred alternative is in compliance with the Clean Air Act and Executive Order 12898 for Environmental Justice. None 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; however, protection of the existing utilities would benefit all of the public.

5. The placement of fill material into waters of the U.S. for the purpose of shoreline erosion prevention is subject to Sections 401 and 404 of the Clean Water Act (CWA). A 404 (b) (1) evaluation has been conducted and is included in Appendix C. The General Aquatic Resources Alteration Permit for Bank Stabilization issued by the TDEC is included in Appendix D. The permit also serves as Section 401 water quality certification.

6. A Scoping Notice describing the proposed bank stabilization project and input on environmental issues to be addressed through the NEPA process was issued on May 8, 2012. Written responses to the scoping letter were received from two federal agencies, four state agencies, one archaeological consultant, and two tribes. An effort was made to address all environmentally related comments, as appropriate, in the EA. The EA along with the unsigned Finding of No Significant Impact was circulated for a 30 day public and agency review.

7. Coordination with U.S. Fish and Wildlife Service (USFWS) and Tennessee Wildlife Resources Agency (TWRA), per the Fish and Wildlife Coordination Act (FWCA 48 Stat, 401, as amended; 16 U.S.C. 661 et seq.) and Endangered Species Act, was initiated by scoping letter. The USFWS indicated that the federally endangered pink mucket (*Lampsilis abrupta*) and the federally endangered snail darter (*Percina tanasi*) may be present within the vicinity. The USFWS encouraged development of an alternative that would include working from the shoreline and not using barges or boats to accomplish the proposed project and further encouraged the preferred alternative to include bioengineering methods to improve native riparian plant community density and diversity. The TWRA requested that potential impacts to these species be addressed in the EA and request coordination with them on measures to minimize potential impacts. Efforts would be made to minimize impacts during construction and would include visual turbidity monitoring and prop wash restrictions as needed to reduce turbidity, limiting spud placement, avoiding incidental fallback, and avoiding barge contact with the river substrate. Stabilizing the bank outside of March 1 through July 15 would also help to avoid and/or minimize impacts to the snail darter. With efforts made to reduce impacts and with similarities between the proposed project and Moccasin Bend, the Corps made a determination of "may affect, not likely to adversely affect" for the pink mucket and the snail darter and also a "no affect" determination for critical habitat. In a letter dated September 28, 2012, the USFWS concurred with the Corps determination for the pink mucket and snail darter. All concerns/issues have been addressed in the EA.

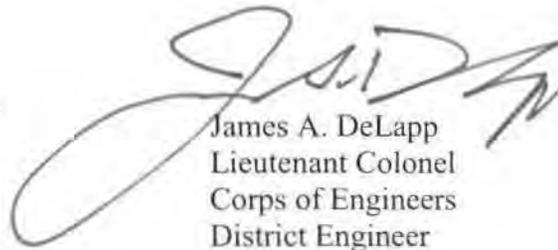
8. Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, and its implementing regulations at 36 CFR 800 require consideration of cultural resources prior to a federal undertaking and requires consultation with the SHPO, federally recognized tribes with a connection to the project location, and other consulting parties defined at Section 800.3. The NHPA only affords protection to sites, buildings structures, objects, or landscapes listed in or determined eligible for listing in the National Register of Historic Places (NRHP). Archival research for this project involved consulting the NRHP and the Tennessee Division of Archaeology site and survey files. The Section 106 coordination is currently ongoing. A historic property inventory survey would occur during Pre-Construction Engineering and Design under phased compliance of Section 106. In a letter dated August 7, 2012 the SHPO concurred with the Corps that phased compliance is an appropriate strategy to meet obligations under the NHPA.

9. I have evaluated this project in accordance with the guidelines promulgated by the Administrator of the Environmental Protection Act pursuant to Section 404 (b)(1) of the CWA. Based on that evaluation, I have determined that the proposed bank stabilization project is specified as complying with the guidelines with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.

10. I have reviewed the bank stabilization proposal, the public and agency comments, and the EA in light of the general public interest. I have determined that issuing the respective approvals and allowing the bank stabilization project to be constructed would not constitute a major federal action significantly affecting the quality of the human environment within the meaning of the NEPA of 1969, as amended. Accordingly, I have concluded that preparation of an Environmental Impact Statement would not be required.

2 MAY 2013

DATE



James A. DeLapp
Lieutenant Colonel
Corps of Engineers
District Engineer



**US Army Corps
of Engineers**®
Nashville District

Environmental Assessment

April 2013

**City of Chattanooga, Tennessee
Section 14
Emergency Stream Bank Protection Project**



**For Further Information Contact:
Mary Tipton, Biologist
U.S. Army Corps of Engineers
Nashville District
Project Planning Branch
Telephone: (615) 736-7845**

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Acronyms and Abbreviations

BMP	best management practices
CEQ	Council on Environmental Quality
CWA	Clean Water Act
Corps	U.S. Army Corps of Engineers
DoR	Division of Remediation
EA	Environmental Assessment
ESA	Endangered Species Act
FWCA	Fish and Wildlife Coordination Act
HTRW	Hazardous, Toxic, and Radioactive Waste
msl	mean sea level
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
TDOT	Tennessee Department of Environment and Conservation
THC	Tennessee Historical Commission
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
USFWS	U.S. Fish and Wildlife Service
UIC	Underground Injection Control
UST	Underground Storage Tanks
WQC	Water Quality Certification

1.0 Purpose and Need for Action

1.1 Authorization

Section 14 of the Flood Control Act of 1946 (Public Law 79-526), as amended authorizes the U.S. Army Corps of Engineers (Corps) to study, adopt, and construct emergency streambank and shoreline protection projects. This authority is intended for the protection of public infrastructure such as roads, bridges, utilities, and other important community public work assets. This Environmental Assessment (EA) is being prepared pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508), and the Corps implementing regulation, Policy and Procedures for Implementing NEPA, Environmental Regulation 200-2-2, 1988.

1.2 Purpose and Need

Bank stabilization is needed along a portion of the right descending bank of the Tennessee River between approximate river miles 466.2 - 466.5, within Nickajack Reservoir, Hamilton County, Tennessee (Figure 1). This section of the riverbank borders the Chattanooga Golf and Country Club. The country club is privately owned, but the City of Chattanooga has a sewer easement for the existing utilities. Any additional land easements or purchases would be made prior to construction. Bank erosion is endangering approximately 1,100 feet of a 42-inch concrete gravity sanitary main, two manholes, and a 30-inch iron sanitary sewer force main. The proposal involves stabilization of the approximate 1,100 feet of riverbank to protect city infrastructure and to prevent further deterioration at this location. The project is also located between two previous Corps' bank stabilization projects. Upstream of the eroding section is the Chattanooga Interceptor Sewer Line project constructed in 1998 and downstream is the Chattanooga Sewer Line project constructed in 1994.

1.3 Issues and Opportunities

The proposed riverbank stabilization project would serve to protect important public infrastructure while preventing further erosion and possibly more costly repairs or replacement of existing infrastructure. Bank protection would provide some environmental benefit by reducing further sediment loss into the river while providing additional habitat for aquatic species within and along the river. Additional habitat provided would be from the interstitial spacing (spacing between rocks). Aquatic species that would benefit from additional habitat include macroinvertebrates (i.e., snails, mussels, and crayfish) and young of the year fish while spacing above water would provide habitat for turtles, snakes, frog, and salamanders. Bank protection would also alleviate potential water quality concerns from ruptured sewer lines.

2.0 Alternatives

Six alternatives were identified and include: stabilizing the bank by sloping of bank and placing riprap, stabilizing the bank by full build-out (no sloping of bank) with riprap (to include toe), a combination of bioengineering methods and riprap, gabion baskets, and relocation of the existing utilities. The other alternative is no action. The no action alternative is evaluated throughout the

document as a baseline for evaluation of other alternatives. Due to various issues described in the following sections, only the No Action and the Full Bank Build-Out (no sloping of bank) with Riprap are discussed throughout the EA.

2.1 Alternative 1 - No Action

This alternative assumes that no action would be taken by the Corps or sponsor and would allow conditions to worsen along the affected reach of the Tennessee River. Erosion would continue to degrade the riverbank and result in the loss of 1,100 feet of the sewer main, manholes, and eventually the iron force main. This would likely result in additional and more costly remedies to the city to address riverbank erosion as well as possible damages to the infrastructure adjacent to the bank and the dumping of sewer into the river.

2.2 Alternative 2 – Bank Stabilization by Sloping of Bank and Placing Riprap

This alternative involves bank stabilization by excavating back the bank (sloping the bank) and placing riprap on 1,100 linear feet of riverbank. Geotextile fabric would be laid and limestone riprap would be placed at a 2:1 (horizontal: vertical) slope. A riprap toe would be placed between elevations 612 and 625 feet above mean sea level (msl), depending on the elevation of the existing substrate, and would extend to the top of the bank (estimated to be between elevations 646 and 667 feet above msl) to protect against pool fluctuations and flood events. This alternative was eliminated from detailed evaluation due to cultural resource concerns with excavation and sloping the bank.

2.3 Alternative 3 – Preferred Alternative - Full Bank Build-Out (No Sloping of Bank) with Riprap.

This alternative would provide protection for the entire bank face without excavation (sloping the bank); however, removal of loose and/or unstable soils would be necessary to prepare the bank face for stabilization. Full bank build-out would consist of geotextile fabric and limestone riprap that would be placed on a 2:1 slope against the existing bank up to the top of the eroded bank (estimated to be between elevations 646 and 667 feet above msl) (Figure 2). A riprap toe would be placed between approximate elevations 612 and 625 feet above msl. This alternative would stabilize the entire bank, prevent future soil erosion, create a physical barrier to the bank face, and protect any unknown cultural resources. This would require a greater amount of fill below ordinary high water. Complete plans can be found in Appendix A.

2.4 Alternative 4 – Combination of Bioengineering and Riprap

This alternative involves bank stabilization by a combination of bioengineering and riprap. Similar riprap construction methods as discussed in Alternatives 2 and 3 would be used for the lower portion of the riverbank to provide protection along areas more frequently inundated during high water events; however, bioengineering methods would be placed on the higher portion of the riverbank. This alternative was eliminated from further detailed evaluation due to concerns with high water velocities, the highly erodible nature of silty soils in this location, excavating the bank to establish plantings raising cultural resource concerns, interactions with

previously placed riprap sections immediately upstream and downstream of the proposed project location, and close proximity to existing utilities.

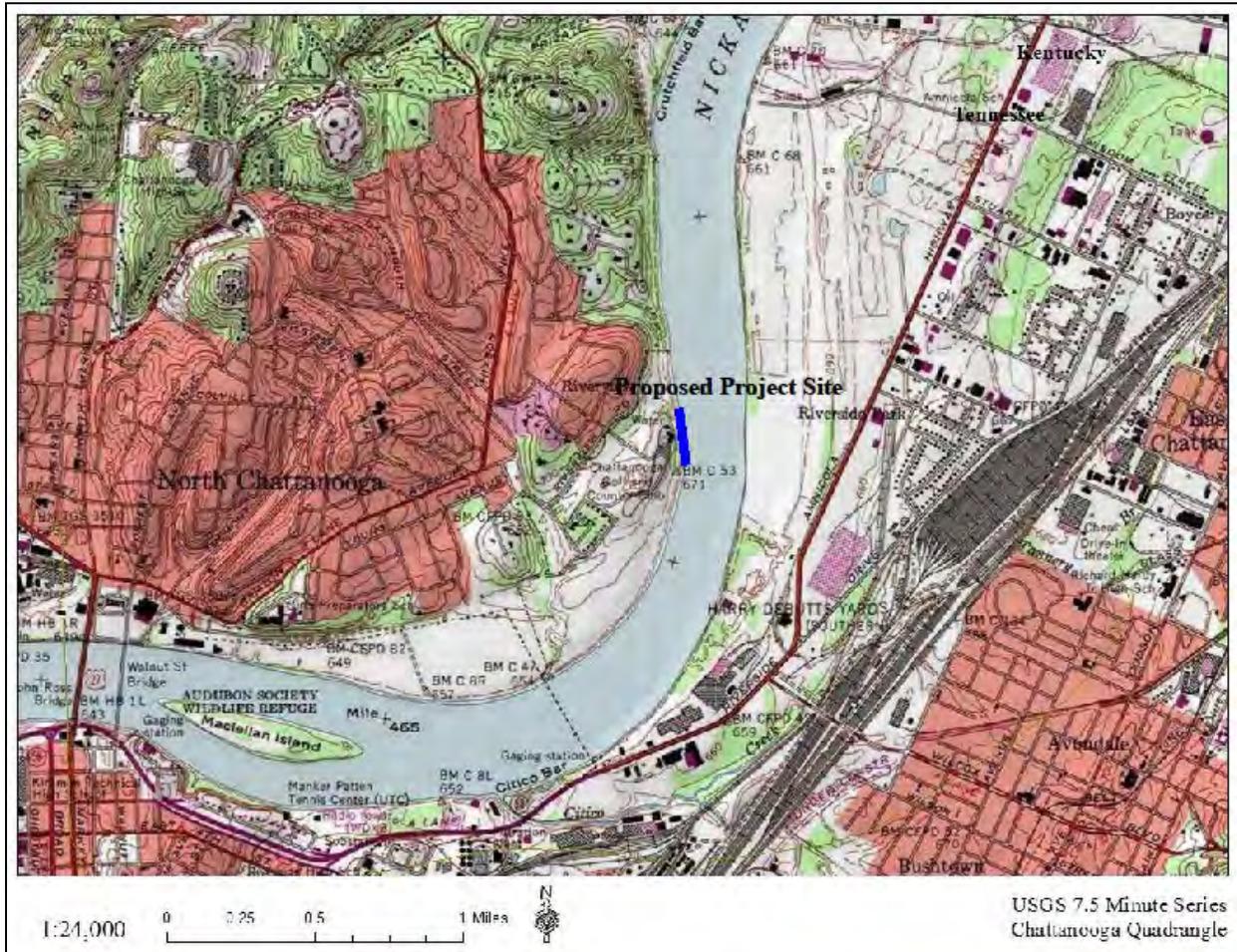


Figure 1 – Vicinity Map, Nickajack Lake, Tennessee River 466.2-466.5.

2.5 Other Alternatives Dismissed From Further Consideration

Other alternatives dismissed from further consideration include stabilization by use of gabion baskets and relocation. Gabion baskets are wire mesh cages filled with rock used to stabilize the underlying soil. This alternative could be used in some locations due to the steep slope of the bank, but would extend approximately ten feet below normal pool. These baskets could not be constructed under water and would require a diversion or other method to allow for construction. Gabion baskets also generally cost approximately three to five times more than riprap.

Relocation was dismissed due to the topography and proximity to the river, space is limited for moving the sewer line away from the bank. It could be moved approximately 15-20 feet inland from its current location. If the 42-inch line is relocated then the 30-inch line would have to be moved as well due to the difference in depth and layout of the lines. Overtime, erosion would continue due to the bulging shape of the bank and would eventually threaten the relocated lines and could potentially endanger downstream bank stabilization.

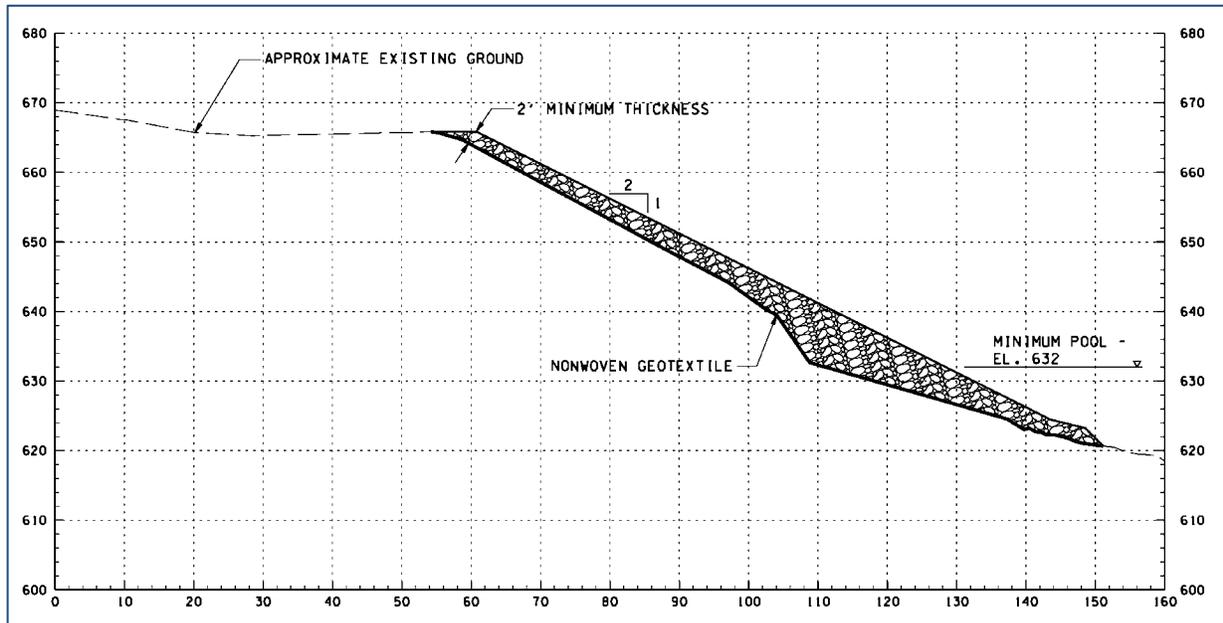


Figure 2 – Typical Cross Sectional Illustration of Alternative 3

3.0 Baseline Setting and Environmental Consequences

3.1 Physiography and Topography

The City of Chattanooga is located within the Ridge and Valley physiographic province within the Southern Limestone/Dolomite Valleys and Low Rolling Hills sub-ecoregion. The Southern Limestone/Dolomite Valleys and Low Rolling Hills are “composed predominately of limestone and cherty dolomite. Landforms are mostly low rolling ridges and valleys, and the soils vary in their productivity” (Griffith, Omernik, and McGinley 2009). A commercial navigation channel is maintained along the Tennessee River, which serves to provide passage for commercial vessels. The project area is located within the Lower Tennessee River Watershed (HUC 06020001) (TDEC, 2007). Land uses adjacent to the project location are primarily developed areas that vary between low and high density development. Figure 3 illustrates land uses within and adjacent to the project location.

With alternatives 1 and 3, there would be localized changes to the bank face; however, neither the No Action Alternative nor the preferred alternative would have impacts to physiography or topography.

3.2 Water Quality

The project site is located within a riverine portion of Nickajack Reservoir and just downstream of Chickamauga Lock and Dam. The Tennessee Valley Authority (TVA) monitors ecological conditions at 69 sites on 31 reservoirs. Overall ratings are based on five ecological indicators: dissolved oxygen, chlorophyll, fish, bottom life, and sediment. Water quality within the Lower Tennessee River (Nickajack Reservoir) is considered good (Figure 4). Figure 5 also illustrates the water quality within Chickamauga Reservoir. Retention time is short with flows taking three

to four days to pass through the reservoir. This facilitates waters staying mixed, preventing stratification and allows oxygen to be replenished and limits algal growth (TVA 2012). According to TDEC's (2010) 303(d) LIST of Impaired Waters, Nickajack Reservoir is listed with polychlorinated biphenyls and dioxins from contaminated sediment.

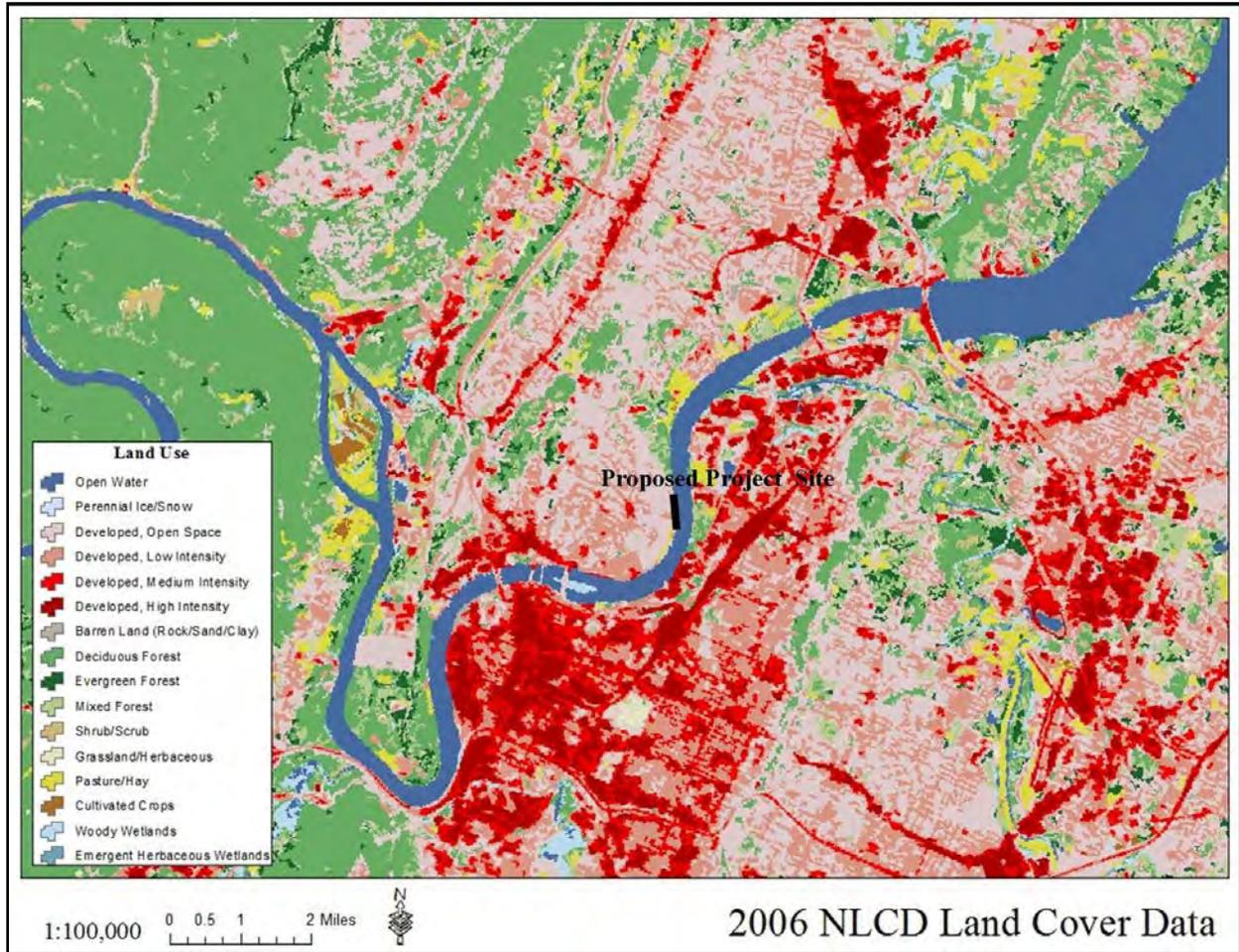


Figure 3 – 2006 National Land Cover Data

The No Action Alternative would result in negative impacts to water quality due to the absence of riverbank protection to prevent further erosion. Further erosion would endanger the existing sewer lines, potentially causing failure and exposing the public, aquatic resources, and wildlife to raw, untreated sewage. The preferred alternative would have short-term adverse water quality impacts from increased turbidity from removal of the existing vegetation along with the placement of riprap. Construction best management practices (BMP's) would be implemented to reduce the potential for water quality issues. The preferred alternative would also provide long-term benefits to water quality from reduced erosion and sedimentation. The preferred alternative would also be completed in accordance with the TVA's 26a permit, TDEC's general Aquatic Resources Alteration Permit (ARAP), and any other federal, state, and local laws and regulations.

3.3 Wetlands

The project area was evaluated for wetlands through a combination of in-house research and site visits. In-house research included a review of published information sources such as the U.S Geological Survey 7.5 minute quadrangle topographic maps, Natural Resources Conservation Service soils mapping, and the U. S. Fish and Wildlife Service (USFWS) National Wetlands Inventory information. Site visits confirmed the lack of wetlands within the project site and therefore no wetland impacts are expected from any alternatives considered.

Ecological Health Indicators at Nickajack Reservoir, 2009					
Monitoring locations	Dissolved oxygen	Chlorophyll	Fish	Bottom life	Sediment
Forebay	<u>Good</u>	<u>Good</u>	<u>Fair</u>	<u>Good</u>	<u>Good</u>
Inflow			<u>Good</u>	<u>Good</u>	

Figure 4 – Ratings for Individual Ecological Health Indicators at Nickajack Reservoir in 2009 (TVA, 2012)

Ecological Health Indicators at Chickamauga Reservoir, 2011					
Monitoring locations	Dissolved oxygen	Chlorophyll	Fish	Bottom life	Sediment
Forebay	<u>Good</u>	<u>Poor</u>	<u>Fair</u>	<u>Fair</u>	<u>Fair</u>
Mid-reservoir	<u>Good</u>	<u>Poor</u>	<u>Fair</u>	<u>Fair</u>	<u>Fair</u>
Hiwassee River embayment	<u>Good</u>	<u>Good</u>	<u>Fair</u>	<u>Fair</u>	<u>Fair</u>
Inflow			<u>Good</u>	<u>Good</u>	

Figure 5 – Rating for Individual Ecological Health Indicators at Chickamauga Reservoir in 2011 (TVA, 2012)

3.4 Aquatic Resources

The Tennessee River (Nickajack Reservoir) near the proposed project area supports a diverse aquatic community including numerous fish and freshwater mussel species. The Tennessee Wildlife Resources Agency (TWRA) has designated a section of the Tennessee River between RM 465.9 and RM 471.0 (Marine Way Upper Light and Chickamauga Dam) as a mussel sanctuary, which includes the project site. These are waters that are closed to the commercial harvesting of mussels. This means that the taking of aquatic mussels by any means is prohibited at all times.

A mussel survey conducted by TVA, downstream from Chickamauga Dam (TRM 466-470) in early 1990 found 18 species of mussels totaling over 2,400 individuals (TRM 466.9-471). A transect (TRM 466.9) surveyed closest to the project location revealed 4 different species totaling 16 individuals. One federally listed mussel species, pink mucket (*Lampsilis abrupta*), was found upstream of the project location. Mussel surveys conducted by TVA in the early 1990's, found mussel species only in areas where the original gravel or rubble substrate was not extensively disturbed. In these undisturbed areas, the most abundant species, accounting for 80% of the population, were elephant-ear (*Elliptio crassidens*) and pink heelsplitter (*Potamilus alatus*). Recent (2004-5) mussel surveys for the Corps of Engineers immediately below Chickamauga Dam confirmed the presence of three federally listed mussels species. Out of the nearly 55,000 mussels that were relocated within the mussel sanctuary for the new lock construction, seven were pink mucket and one each of orange-footed pimpleback (*Plethobasus cooperianus*) and rough pigtoe (*Plueobema plenum*). None of the 55,000 mussels were relocated within the proposed project area. A mussel survey conducted at Moccasin Bend in 2009, revealed 16 live mussels from 2 species. There were no concentrations of mussels throughout the area and low species richness, density, and no evidence of recent recruitment. In addition, no federally or state listed threatened or endangered mussel species were found.

Popular sport fish typically found within the vicinity of the proposed project area include: black crappie (*Pomoxis nigromaculatus*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), spotted bass (*Micropterus punctulatus*), white crappie (*Pomoxis annularis*), black crappie (*Pomoxis nigromaculatus*), and channel catfish (*Ictalurus punctatus*) (TVA 2012).

The No Action alternative would result in long-term impacts to aquatic resources due to continued erosion along the riverbank increasing sedimentation and potential failure of the existing sewer lines adjacent to the bank. The preferred alternative could cause impacts from construction. Potential impacts from removal of the existing vegetation and placement of riprap along the bank within the proposed project footprint include: short-term increased erosion and sedimentation, long-term loss of riparian habitat, and short-term increased turbidity levels during construction. The preferred alternative would require some fill below ordinary high water (632 feet above msl) to aid in contouring the bank. Conservation measures would also be incorporated into construction practices and BMP's to further minimize possible impacts. With implementation of the preferred alternative, minor, short-term impacts would be off-set by positive long-term benefits including reduced bank erosion, reduced sedimentation, and additional habitat for aquatic resources.

3.5 Terrestrial Resources

The Chattanooga Golf and Country Club is adjacent to the project site and primary vegetation within the area consists of crowfoot grass (*Dactyloctenium aegyptium*). Vegetation along the bank consists of honey locust (*Gleditsia tricanthos*), sycamore (*Platanus occidentalis*), kudzu (*Pueraria lobata*), pokeweed (*Phytolacca americana*), muscadine grape (*Vitis rotundifolia*), morning glory (*Ipomoea purpurea.*), blackberry (*Rubus spp.*), cottonwood (*Populus deltoids*), ironweed (*Verononia spp.*), boxelder (*Acer negundo*), silver maple (*Acer saccharinum*), docks (*Rumex spp.*), and sedges (*Carex spp.*) (Figure 6). The upper-most portions of the project site contain a variety of riparian trees and shrubs while the middle and lower portions contain mostly herbaceous vegetation. Landuse within the vicinity of the proposed project area is primarily urban development. Common species such as songbirds, raccoon (*Procyon lotor*), and Canada geese (*Branta canadensis*) can be found within the project location and surrounding vicinity.

Comments received during the 30-day public review indicated concerns with effects on kingfisher with stabilizing the bank. Kingfisher nests are excavated burrows with bare soil along stream banks (USACE, 2009). “Banks with a high content of clay, gravel, or rock often are unsuitable for nest construction because birds are unable to excavate burrows in these substrates” (EPA, 2008). Existing banks within the proposed project area are vegetated with some places having exposed soil and are sloped with rock/gravel and do not meet the typical habitat needed (Figures 6 and 7). Due to the lack of vertical banks and unexposed soil, impacts to the kingfisher would not be anticipated as habitat does not appear to occur within the project area.



Figure 6 – Riverbank at Approximate TRM 466



Figure 7 – Riverbank at Approximate TRM 466

The No Action alternative would allow erosion to continue along the riverbank and not provide protection along the project area, ultimately endangering the existing sewer lines. Over time, erosion could accelerate as vegetation is lost from repeated inundation, wave action from boat activity, and high water events. The removal of vegetation would reduce food and cover for wildlife, however given grassed banks and species such as exotic kudzu, benefits for cover and food is minimal. The preferred alternative would have minor impacts on terrestrial resources within the proposed project area. While portions of the site have good vegetation, clearing would be necessary to prepare the riverbank for riprapping. With the preferred alternative’s minimal impacts, the removal of exotic plants would occur during construction. Revegetation could occur, but would be hindered from riprap, slowing the progression of native and exotic plants.

3.6 Threatened and Endangered Species

Correspondence received from the USFWS and the TWRA on June 12 and June 14, 2012, respectively indicates the federally endangered mussel, pink mucket and the federally endangered fish, snail darter (*Percina tanasi*) may be present within the vicinity. The USFWS encouraged development of a preferred alternative that would include working from the riverbank and not using barges or boats to accomplish the proposed project. The USFWS further

encouraged the preferred alternative to include bioengineering methods to improve native riparian plant community density and diversity. This would improve bank stability and benefit fish and wildlife resources by providing insect drop and shading the stream margins. The TWRA requested that potential impacts to these species be addressed requested coordination with them on measures to minimize potential impacts to these species. These concerns were considered; however, given restraints noted in Section 2 neither bioengineering nor working from the land are viable options.

The No Action alternative would have no construction impacts on either the pink mucket or the snail darter. However, over time continued erosion could affect both species and their habitat with increased sedimentation and the risk of failure of the sewer lines. Long-term impacts from the No Action alternative could also affect feeding and reproduction from high levels of suspended sediment and potential sewage. The preferred alternative would have short-term impacts on the snail darter and the pink mucket with riprap placement below elevation 632 feet above msl. Some temporary construction impacts to the river substrate would be unavoidable, but impacts would be minimized by constructing from barge platforms, which are typically staged at a distance from the banks sufficient to minimize contact with and disturbance of the banks and substrate (Figure 9). Construction impacts may include spud placements (hydraulic-controlled posts used to anchor and stabilize the construction platform) impacting substrate, incidental spillage of construction materials, incidental fall back of stone, and prop wash from tow vessel during repositioning of the work barge. Efforts would be made to minimize impacts during construction and would include visual turbidity monitoring with prop wash restrictions as needed to reduce turbidity, limiting spud placement, avoiding incidental fallback, and avoiding barge contact with the river substrate. Stabilizing the bank outside of March 1 through July 15 would also help to avoid and/or minimize impacts to the snail darter.

Moccasin Bend is located downstream of the proposed project site within the City of Chattanooga, TN approximately eight miles downstream from Chickamauga Lock and Dam (Figure 8). Similarities between the proposed project and Moccasin Bend include full bank build out using riprap and information from other surveys that have been conducted below Chickamauga Dam and Moccasin Bend. These similarities have assisted the Corps in making a determination of “may affect, but not likely to adversely affect” for the pink mucket and snail darter. A “no effect” determination has also been made in regards to critical habitat as there is none designated within the vicinity of the proposed project. Discussions between the Corps and the USFWS determined that based on mussel survey results from surveys conducted within the vicinity, the USFWS would not request a mussel survey for the proposed bank stabilization at TRM 466.2 – 466.5.

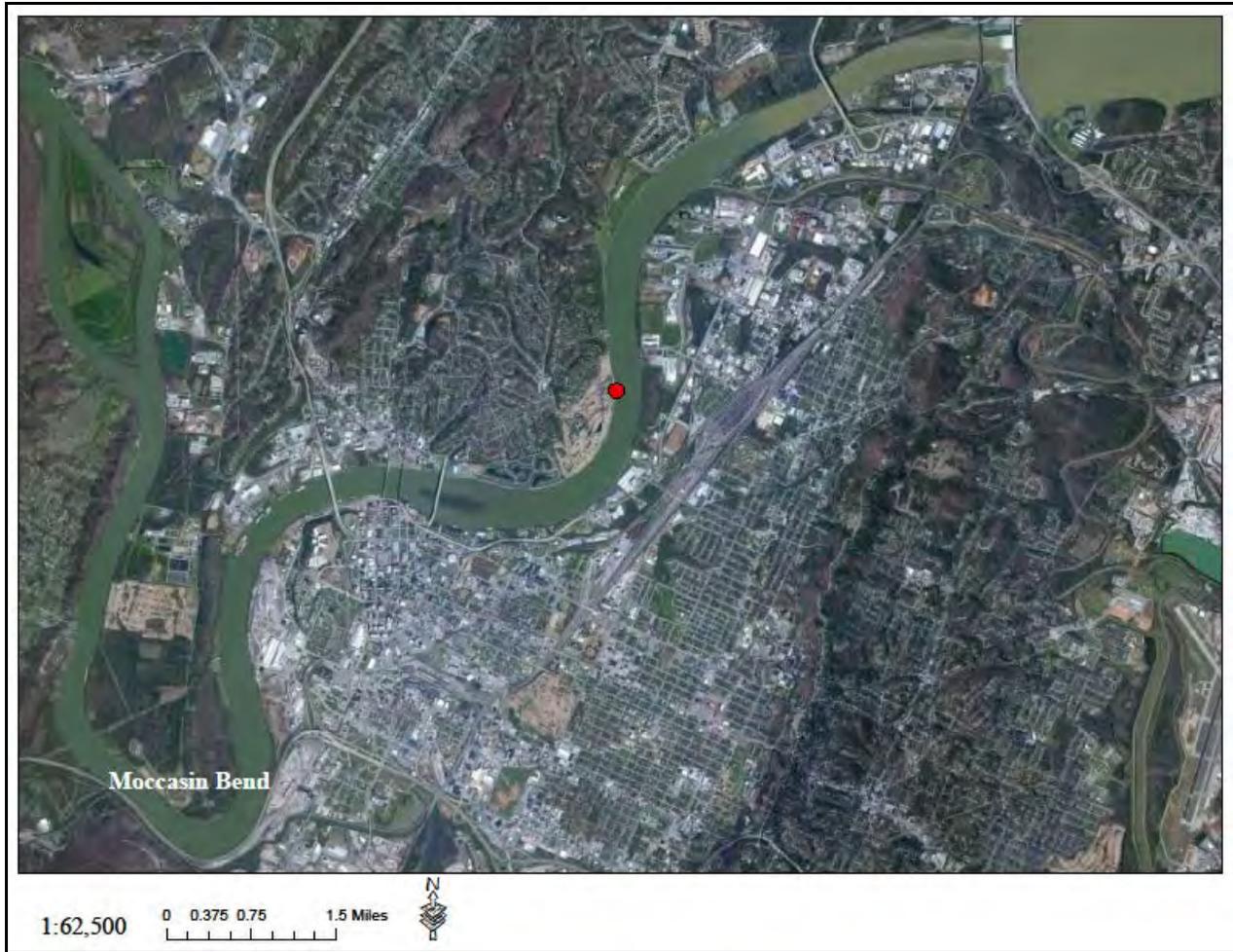


Figure 8 – Location of Proposed Project Site in Relation to Moccasin Bend

In further addressing scoping comments received from the USFWS, access would be limited within the proposed project area due to not having the enough area for equipment to access the riverbank and not having specialized equipment with a long enough reach to place riprap down to the toe without disturbing the bank. The costs associated with accessing the riverbank from the country club would also increase as haul roads would have to be placed on the golf course, possible damages to existing roads and parking areas from ingress and egress of trucks hauling in riprap and other equipment, the necessity of returning the golf course to its original state, and impacts to the golf course and country club during construction.

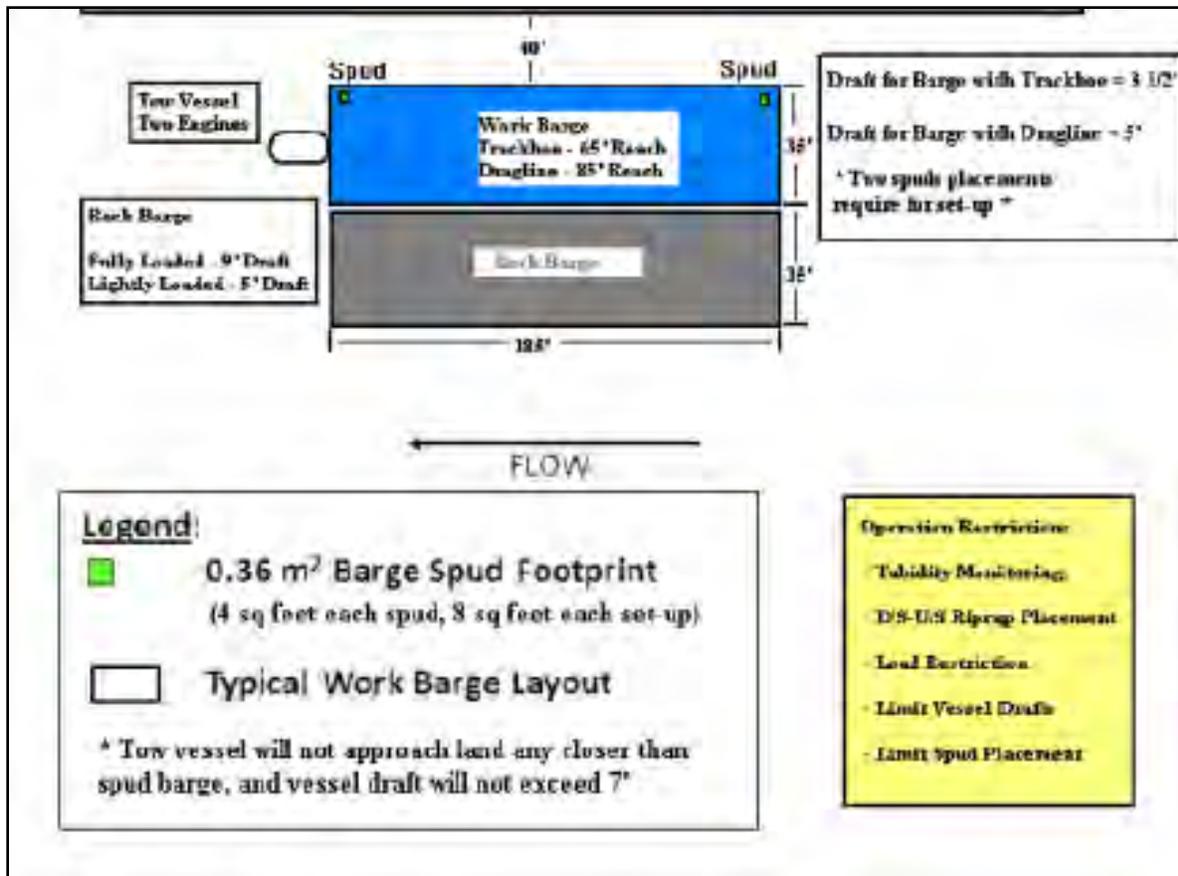


Figure 9 – Typical Barge Set-up and Spud Placement

3.7 Cultural Resources

No known historic properties have been documented for the proposed project site. However, the Tennessee River banks within the Chattanooga area have a very high probability for intact cultural resource deposits. As the likelihood for archaeological resources being present is high, the Corps defines this action as an undertaking with the potential to cause affects on historic properties. National Historic Preservation Act (NHPA) Section 106 coordination is currently ongoing. The Corps proposed a phased compliance for Section 106 of the NHPA to conduct necessary archaeological monitoring during the next phase of design and implementation. The Tennessee State Historic Preservation Officer concurred with this approach by letter dated August 7, 2012 (copy in Appendix B).

The No Action Alternative would allow erosion to continue along the riverbank and potentially expose any cultural resources that may be present. The preferred alternative is to riprap the bank by building out to the height needed to protect the affected utilities. Vegetation and unstable soil would be removed prior to the placement of geotextile fabric and riprap. Trees would be cut to ground level leaving rootwads in place. Well graded stone would be placed over a non-woven geotextile fabric for the construction of the entire length of riprap. Exposed rock and rubble is present at the bottom of the slope in most locations. Where exposed rock is not present at the bottom of the slope, a toe would be built to provide a stable base for the riprap. Placement of all

materials would likely occur from river barges. An archaeologist would be present to monitor vegetation and loose soil removal to ensure that no cultural resources and/or cultural deposits would be disturbed. Discussions with the State Historic Preservation Officer resulted in the proposal to complete an archaeological survey prior to construction or conduct the necessary archaeological monitoring during the next phase of design and implementation. Consultation will continue during the preconstruction engineering and design phase to determine and execute the appropriate historic property identification and assessment efforts for this proposed project. With the proposed design to avoid impacting the natural bank and active monitoring during site preparation, impacts to cultural resources should be minimal and provide long-term protection after completion of the bank stabilization.

3.8 Hazardous, Toxic, and Radioactive Waste

The Tennessee Department of Environment and Conservation Division of Remediation determined that there are no issues within the proposed project area. Site visit to the proposed project location did not indicate any likely hazardous, toxic, and radioactive waste (HTRW) concerns. A Phase 1 HTRW survey would be conducted prior to construction to determine the presence of HTRW concerns within the proposed project area.

No impacts are anticipated from either the No Action or the preferred alternative.

3.9 Socioeconomics

Hamilton County, Tennessee is a typical eastern Tennessee county, having several population concentrations at Chattanooga, Hixson, Soddy-Daisy, Signal Mountain, Harrison, and Lookout Mountain. The proposed project is located within the City of Chattanooga. In 2010, the populations within Hamilton County and the city of Chattanooga were 336,463 and 167,674 respectively. Median household income between 2006 and 2010 in Chattanooga was \$36,675. Persons below poverty level in the city of Chattanooga were 21.3% between 2006 and 2010. Low income populations are identified using the Census Bureau's statistical poverty threshold. The Census Bureau defines a "poverty area" as a census tract with 20% or more of its residents below the poverty threshold. Based on these statistics, the city would be defined as a "poverty area between 2006 and 2010" (U.S Census Bureau 2012).

The No Action alternative would result in continued erosion along the Tennessee River along the proposed project area. This would result in moderate short-term adverse impacts to the city. Approximately 4,200 feet downstream of the project site there is a 42-inch water intake for the Tennessee American Water Utility Company that would be adversely affected by having to suspend services or incur extra costs to treat polluted water. A third of the city (estimated to be around 60,000 residents) would be impacted by sewer line failure. The City of Chattanooga would experience immense financial burden associated not only with the loss of the undermined utilities, but also with emergency response and cleanup of the site. The preferred alternative would provide positive socioeconomic benefits to the local economy by providing employment opportunities to local construction contractors and/or workers spending money in the community.

3.10 Noise

As previously mentioned above in section 3.1, primary land use surrounding the proposed project is classified as developed with the Chattanooga Golf and Country Club being directly adjacent. Noise levels experienced within and around the proposed project area are from neighboring residential, industrial, and commercial areas, and recreational vessel traffic on the Tennessee River.

The No Action alternative would have no effect on current or future noise levels. Under the preferred alternative there would be some minor noise from vehicle, equipment, and vessel operations during construction activities. These impacts would be temporary and would have no lasting effect. Citizens located near the project site, as well as those recreating within the vicinity of the project area, would likely experience the highest noise levels. Noise levels from construction activities would be limited to daylight hours and on weekdays. Noise level changes would be minor when compared to existing noise levels.

3.11 Navigation

Navigation along the Tennessee River within Chattanooga is active with both commercial and recreational traffic. Chickamauga Lock is located upstream at river mile 471 and is operated on scheduled hours (7am-3am) year-round, unless otherwise stated. Recreational traffic utilizes a number of launch locations within the city of Chattanooga.

There could be impacts to navigation under the No Action alternative from additional erosion and sedimentation. As erosion continues, snags would slough off into the river causing navigational hazards and accumulated sedimentation would require dredging of the channel. The preferred alternative would have temporary minor impacts during construction. However, the preferred alternative requires more riprap for a full bank build-out and work barges would be stationed at the project site for a longer period of time. Notices to navigational interests would be issued prior to the start of construction to notify interested parties of construction activities. Additional caution for moving through the construction area would be required as work barges would be stationed off of the riverbank. Upon completion of the project, work barges would be removed.

3.12 Recreation and Scenic Resources

Recreation and scenic resources located within the vicinity of the proposed project area include: the Nickajack Reservoir, Chickamauga and Chattanooga National Military Park (Moccasin Bend District), Amnicola Marsh State Wildlife Observation Area, and the Tennessee Aquarium/Ross' Landing. Adjacent to the project location is the Chattanooga Golf and Country Club. Outdoor and river recreation include boating, hiking, kayaking, tourist cruises, and fishing.

The No Action alternative would result in continued erosion and potential failure of the existing utilities located adjacent to the bank. This would result in adverse impacts to aquatic habitat as well as water quality. In the event of a sewer break, river recreation would also be affected as extensive response and clean-up of the site would need to be conducted. The preferred

alternative would have temporary adverse impacts, but only during the bank preparation phase of construction. The removal of vegetation would be necessary for the placement of riprap and may be viewed as aesthetically displeasing. Restoration of the area above the riprap could provide favorable conditions for growth of riparian vegetation along the edge of the golf course, thus improving long-term scenic resources and bank stabilization within the project area.

4.0 Cumulative Impacts

Cumulative impacts would result from the incremental impact of the proposed bank stabilization project when added to those of other past, present, or reasonably foreseeable future actions in the project area. Geographical boundaries considered for this discussion of cumulative impacts are the Tennessee River – Nickajack Lake Watershed.

Past and Present Actions

Past development in Tennessee often centered on major rivers and streams, and often created centers of commerce such as the City of Chattanooga. Major port cities developed over time where commodities were bought and sold and helped to develop the economies of such areas. Development has typically concentrated along rivers and streams to provide community resources, water supply, and other important community needs, but has negatively impacted water quality and aquatic resources. Increasing use of the Tennessee River as a regional resource has increased river traffic through the area by barge traffic travelling between Chickamauga and Nickajack Locks. As time progressed and the Tennessee River was impounded, navigation became a major factor. Navigation allowed for goods to be transported by use of the Tennessee River creating additional jobs which in turn gave rise to both commercial and residential development. Numerous bank reaches have been riprapped along the Tennessee River within the city including immediately upstream and downstream of the proposed project site, the downtown area of the City of Chattanooga, and Moccasin Bend.

Reasonably Foreseeable Future Actions

Since completion of the locks and dams on the Tennessee River, specifically Chickamauga and Nickajack, river flows and water elevations ceased operating as a “natural” system and have been manipulated for flood control, navigation, and hydropower generation. With the continual water level fluctuations, riverbanks would continue to erode negatively affecting water quality, aquatic and wildlife habitat, and potentially impacting cultural resources. Additional bank stabilization projects are foreseeable in the future and are needed to reduce erosion and the amount of sedimentation entering the Tennessee River. The Tennessee River would continue to provide importance for both commercial and recreational navigation.

Effects on Resources

Aquatics Resources/Water Quality

Aquatic resources are impacted by a number of watershed activities, including urban development, pollution sources, wastewater discharges and river management. The Tennessee

River generally has good water quality and is a diverse aquatic resource. From a watershed perspective, the stabilized 1,100 feet of riverbank would not be highly visible in the overall reduction of aquatic resource/water quality impairments due to sedimentation; however, it would provide some minor progress in reducing riverbank erosion. The cumulative impacts of all bank stabilization alternatives on aquatic resources would be minor. Many existing stream banks have already been stabilized and those that are not are experiencing erosion from stresses put on the bank from managed river operations. Bank stabilization would provide long-term improvements in aquatic resources and water quality.

Terrestrial Resources

Terrestrial resources in the project area are impacted by a variety of factors, most importantly urban development which displaces local wildlife or alters their habitat quality. Other bank reaches along the Tennessee River, located outside of the project area, would exhibit a gradual long-term decline due to managed river levels, as would implementation of the No Action alternative. As erosion and the loss of riparian habitat continue along other portions of the Tennessee River, stabilization of those sites becomes very important. Similarly, protected public lands under management by the TVA and other state/federal/local agencies gain importance for providing natural landscape and wildlife habitat as private lands continue to be developed. Restoration of riparian zones along rivers and streams is also important as the waterways continue to provide nesting, roosting, and travel corridors for many bird and mammal species.

Cultural Resources

Cultural resources are impacted by both natural forces and urban development. The Tennessee River has a high probability for cultural resources to be present. Managed river operations and the fluctuating river levels are continuously eroding river banks causing exposure and subsequent loss of cultural resources. The cumulative impacts of the No Action Alternative could potentially lead to loss of cultural resources within the proposed project. The cumulative impacts of the Preferred Alternative of bank stabilization would provide long-term protection for any cultural resources that may be present.

5.0 Environmental Commitments, Permits, and Approvals

The following commitments, permits, and approvals are made regarding implementation of the preferred alternative:

1. Water Quality Certification (WQC) from the TDEC Division of Water Pollution Control (DWPC) was received. The proposed action meets the general permit for bank stabilization and can be found in Appendix D. Construction BMP's and implementation plans would be used during construction and development phases to minimize environmental impacts.
2. It would be necessary to obtain an individual National Pollutant Discharge Elimination System (NPDES) stormwater permit prior to commencement of

construction activities since the project would disturb more than one acre of land. Construction BMP's would be followed to minimize environmental impacts.

3. Obtain a TVA 26a permit for construction activities on the Tennessee River prior to construction. Complete coordination with TVA in obtaining the required permits.
4. Ongoing NHPA Section 106 coordination and compliance with the phased compliance of archaeological monitoring during vegetation and loose soil removal.
5. Construction would be timed to avoid stone placement during periods when snail darters could occupy the action area (March 1 – July 15).
6. Conduct visual turbidity monitoring with prop wash restrictions as needed to reduce turbidity.
7. Contact should be made with the Tennessee American Water's Source Protection Area before any work is done.
8. Water distribution lines may need to be located. Any relocation of water distribution lines would require approval from TDEC's Division of Water Supply before relocation.
9. Spud placement would be limited to active work areas, avoid incidental fallback, and avoid barge contact with the river substrate.

6.0 Environmental Compliance

6.1 Floodplain Management

Executive Order (EO) 11988, Floodplain Management. This executive order requires federal agencies to evaluate and minimize to the extent possible, impacts and modifications to the floodplain. Riverbank stabilization would inherently occur within the floodplain; therefore, there is no alternative to working in the floodplain. The Corps performed a No-Rise analysis and determined that the proposed project would not have any impacts to the 100-year floodplain. Results have been submitted to the City of Chattanooga for concurrence. If the City concurs, then No-rise certification would be received.

6.2 Clean Water Act (CWA)

Compliance with Section 404 of the CWA is required for discharges of dredged or fill material in to waters of the United States, including adjacent wetlands. A 404 (b)(1) evaluation has been prepared and is included in Appendix C. WQC coordination has been initiated with the appropriate elements of TDEC's DWPC. Certification was received and is included in Appendix D.

6.3 Endangered Species Act (ESA)

The ESA requires the determination of possible harm or degradation to federally listed threatened or endangered species and critical habitat. The USFWS responded during scoping that the pink mucket and snail darter may be present within the vicinity and that the EA should analyze potential impacts to these species. Based on information compiled from mussel surveys conducted within the nearby vicinity, similarities at Moccasin Bend with installation of riprap, and timing of construction activities to offset snail darter movements, the Corps made a determination of “may affect, but not likely to adversely affect” for the pink mucket and snail darter. In a letter dated September 28, 2012, during agency and public review, the USFWS concurred with the Corp’s determination of “may affect, but not likely to adversely affect.”

6.4 Fish and Wildlife Coordination Act (FWCA)

The Corps is required to coordinate with the USFWS and the TWRA under the FWCA (48 Stat. 401, as amended; 16 USC 661 et. seq.). This was initiated by scoping letter issued on May 8, 2012. The USFWS encouraged development of a preferred alternative that would include working from the riverbank and not using barges or boats to accomplish the proposed project. The USFWS further encouraged the preferred alternative to include bioengineering methods to improve native riparian plant community density and diversity. This would improve bank stability and benefit fish and wildlife resources by providing insect drop and shading the stream margins. The TWRA requested that potential impacts to these species be addressed in the EA and requested coordination with them on measures to minimize potential impacts to these species. As previously discussed in previous sections, with the location of the proposed project site, access would be limited due to lack of area for equipment, specialized equipment with a long enough reach, and associated costs. Bioengineering methods were eliminated from further review due to high water velocities, highly erodible silty soils, excavation due to cultural resource concerns, interactions with previously placed riprap upstream and downstream of the site, and close proximity to existing utilities.

6.5 National Historic Preservation Act

Section 106 of the NHPA, as amended, requires federal agencies to consider the effects of their undertakings on historic properties. The implementing regulations at 36 CFR 800 detail the process that requires consultation with the SHPO, tribes, local governments, the public, and others. Suitable efforts to identify historic properties must be taken and consulting parties afforded an opportunity to comment on the area of potential effect and an undertaking’s affect determination. Only sites, building structures, objects, or landscapes listed in or determined eligible for listing in the National Register of Historic Places (NRHP) are afforded the safeguards of the NHPA. Section 106 coordination is ongoing. A historic property inventory survey would occur during the preconstruction engineering and design under phased compliance of Section 106. In a letter dated August 7, 2012 the SHPO concurred with the Corps that phased compliance is an appropriate strategy to meet obligations under the NHPA.

6.6 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, was signed February 11, 1994. The order requires federal agencies to promote “nondiscrimination in federal programs substantially affecting human health and environment.” In response to this directive, federal agencies must identify and address disproportionately high and adverse human health and environmental effects of their programs, policies, and activities on minority and low-income populations. 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. While none of the alternatives described in this EA would disproportionately place any adverse environmental, economic, social, or health impacts on minority and low income populations, protection of the existing utilities would benefit all of the public.

6.7 Clean Air Act (CAA)

In compliance with the CAA (42 USC § 7401 et seq.) and the 1977 and 1990 amendments, the Environmental Protection Agency has promulgated ambient air quality standards and regulations to protect health and the environment. Areas that are below the standards are in “attainment,” while those that are equal or exceed the standards are said to be in “non-attainment.” The proposed project site is within an attainment area and none of the alternatives described would impact long-term ambient air quality standards (EPA, 2012).

6.8 National Pollutant Discharge Elimination System Storm Water Permit

A NPDES permit for stormwater discharges is required for activities that disturb more than one acre of land. As part of the permitting process, the contractor would be required to develop a Storm Water Pollution Prevention Plan for approval and also file a Notice of Intent with the state for coverage under the NPDES general permit for stormwater runoff. For this proposed project, clearing and grubbing of approximately 2.1 acres along the riverbank would be necessary to prepare the site for stabilization.

6.9 TVA 26a Permit

Where activities occur along the riverbank and in waters of the Tennessee River system, TVA requires review of the project proposal and issuance of a Section 26a permit. This would ensure that the project would not have a negative effect on the agency’s management of the system. Actions likely to require 26a approval include bank stabilization proposals. The necessary approval would be obtained prior to construction.

7.0 Public and Agency Coordination

Environmental scoping for this project was conducted and made available to the public, state, federal agencies, and tribes through a combination of mailings, media outlets, postings at local U.S. Post Offices, and other public sources.

7.1 Scoping Responses

A scoping letter regarding the proposed riverbank protection project was issued to interested parties and agencies on May 8, 2012. Comments received are summarized below and included in their entirety along with the scoping letter in Appendix E. All issues raised during the scoping process have been addressed within the EA.

The Tennessee Department of Transportation (TDOT)

The TDOT has no comments and are unaware of any conflicts with proposed road projects.

USFWS

The USFWS stated concerns regarding historical species collection records within the locality of the proposed project. The federally endangered pink mucket and the federally threatened snail darter may be present in the vicinity of the proposed project. The USFWS encourage developing a preferred alternative that would include working from the riverbank and not using barges or boats to accomplish the proposed project and measures should be taken to minimize sediment inputs and turbidity levels. The USFWS also encourage the preferred alternative to include bioengineering methods to improve bank stability and benefit fish and wildlife resources.

Response: Comments were considered and evaluated in Section 3.6. Based on information discussed, the Corps has made a determination of “may affect, but not likely to adversely affect” and the USFWS concurred.

Tennessee Historical Commission (THC)

In a letter dated May 21, 2012, the THC concurred that in order to complete their review a detailed archaeological survey report on the area of potential effect will be needed. Until the THC has submitted final comments, Section 106 obligations have not been met. *Response: The Corps proposed a phased compliance for Section 106 of the NHPA during the next phase of design and implementation. The Tennessee State Historic Preservation Officer concurred with this approach by letter dated August 7, 2012.*

Tennessee Department of Environment and Conservation Division of Water Supply

Drinking Water

There may be water distribution lines in the area that may need to be located. If there are lines to be relocated, plans must first be approved by the Division’s engineering section. *Approval from TDEC’s Division of Water Supply would be required before relocation of any water distribution lines. This has been incorporated into Section 5.0.*

Safe Dam Programs

After review of files of all registered sites in the Safe dam program, there are no registered dams in the proposed project area.

Source Water Protection Program

The proposed project will be in the Tennessee American Water's Source Protection Area. This system should be notified before any work in the area. *Notification would be a condition and is included in Section 5.0.*

Water Well Program

Contact should be made with names of topographic quads. There are private water supplies in the proposed area. All water wells that are encountered should be plugged and abandoned by a licensed well contractor. *Response: There are no water wells in the area that would be encountered for construction of the project.*

Underground Injection Control (UIC)

No registered UIC sites are within the proposed area. All UIC wells that are encountered should be plugged and abandoned according to the approval from the UIC program. *Response: A site visit was conducted and there are no UIC sites in the area that would be encountered during construction of this project.*

Alexander Archaeological Consultants, Inc.

Alexander Archaeological Consultants, Inc is extremely familiar with the potential for cultural resources within the proposed project area. There is a very high potential for significant archaeological resources (both prehistoric and historic) that could be eligible in the NRHP. Citico village, a well known Mississippian mound and village, lies across the river from the proposed project area.

Tennessee Department of Environment and Conservation Chattanooga Environmental Field Office

The Division of Underground Storage Tanks (UST) is not presently aware of any circumstances relative to the UST program which might adversely affect the riverbank stabilization project.

National Park Service Chickamauga and Chattanooga National Military Park

Sites (cultural resource) are known both upstream and downstream. It is likely that evidence of early American Indians could be encountered. Site files at the Tennessee Division of Archaeology should be consulted. The Union Army maintained a chain of picket posts along the right bank upstream of Chattanooga (September 22, 1863-November 25, 1863). Some evidence could be encountered in the project area. *Response: Coordination occurred and the state was agreeable with the Corps' proposed phased monitoring.*

Tennessee Wildlife Resources Agency

Information available under our authority indicates the state and federally threatened snail darter and the state and federally endangered pink mucket may be present in the vicinity of the proposed project. TWRA requests that potential impacts to these species be addressed in the EA

and that coordination occur on measures to minimize impacts to these species. *Response: Concerns have been addressed in Section 3.6 Threatened and Endangered Species.*

United Keetoowah Band of Cherokee Indians in Oklahoma

At this time have no comments or objections. If human remains are inadvertently discovered, please cease work and contact immediately. *Response: During construction an archaeologist will be monitoring and if discovery occurs, appropriate protocols will be followed.*

Tennessee Department of Environment and Conservation Division of Remediation (DoR)

There are no DoR issues within the proposed project area.

The Chickasaw Nation Headquarters

At this time we have no comments concerning issues to be addressed in the EA.

7.2 Public and Agency Comment Review

The EA and unsigned Finding of No Significant Impact were circulated for a 30-day comment period on August 29, 2012. Comments were received and are summarized below. All comments received were considered in finalizing these documents and reaching a decision on whether an Environmental Impact Statement is required for Corps action concerning this proposed action. All comments are included in Appendix F.

Chickasaw Nation Headquarters

The Chickasaw Nation stated that after reviewing the Cultural Resource section of the EA, they are in favor of implementing the preferred alternative and also concur with the finding of no adverse effect to historic properties and accept the special conditions set forth in this report.

Tennessee Department of Environment and Conservation Division of Remediation

There are no known DoR related issues.

Tennessee Department of Environment and Conservation Natural Heritage Program

The Tennessee Natural Heritage Program comments concluded that although their office shows numerous rare species observed previously within one mile of the project, no impacts are anticipated.

Tennessee Wildlife Resources Agency

The TWRA has no concerns or objections to the proposed project and concurs with the USFWS position regarding this project.

U.S. Fish and Wildlife Service

The USFWS concurs with the Corps determination of “may affect, but is not likely to adversely affect” determination for the federally listed pink mucket and snail darter. The draft EA does not indicate whether federally designated critical habitat exists in the proposed project’s action area. The Corps should include an effects determination for critical habitat in the final EA. The USFWS agrees with the Corps determination of no wetlands occurring within the project vicinity and agrees with the selection of Alternative 3 as the preferred alternative for the proposed action. Considering the logistics involving property access, characteristics of the proposed work site, and the proposed minimization measures, this alternative would result in a may affect, but is not likely to adversely affect threatened or endangered species, no adverse modification to critical habitats and no adverse affects to wetlands. *Response: A “no effect determination” was made for critical habitat and is included in Section 3.6.*

Tennessee Valley Authority

The TVA commented that the SHPO concurrence letter on the phased compliance was missing from Appendix B. TVA also commented on a wildlife-related concern that TVA has previously addressed for large bank stabilization projects in this general area is the permanent loss of vertical or near-vertical dirt bank nest habitat used by species such as the belted kingfisher. The EA does not address the effects on this habitat. *Response: Belted kingfisher nests are excavated burrows within bare soil along stream banks. Kingfisher habitat does not appear to be present at the proposed project location and is discussed in Section 3.5 above.*

8.0 Conclusions

Two alternatives were discussed and evaluated in some detail and included a No Action Alternative and a Preferred Alternative - Full Bank Build-Out (No Sloping of Bank) Placing Riprap. The No Action Alternative would allow existing conditions to continue along the affected reach of the Tennessee River. Erosion would continue to degrade the riverbank and likely result in failure of the existing sewer lines causing serious health and safety concerns to the public and fish and wildlife and aquatic resources.

The preferred alternative would cause minimal and temporary adverse impacts during construction to water quality, aquatic and terrestrial resources, socioeconomics, navigation, and noise, but would be beneficial post construction. Implementation of the preferred alternative would provide the greatest benefit from funding available for this project. This alternative would also provide the protection to the adjacent infrastructure and also benefit the environment by reducing the amount of silt entering the river, thus aiding in improving water quality. All work would be required to follow all federal, state, and local laws and regulations. Therefore, the recommended/preferred alternative for this action is the full bank build-out with riprap.

9.0 List of Preparers

The following individuals contributed to the preparation of this EA.

Mary Tipton, Biologist
Project Planning Branch
EA Preparation

Mitzy Schaney, Archaeologist
Project Planning Branch
Cultural Resources Preparation

Ramune Morales, Project Manager
Project Planning Branch

Tim Higgs, Chief Environmental Section
Project Planning Branch
EA Review

Mark Vaughan, Biologist
Project Planning Branch
EA Review

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- Glenn E. Griffith, James M. Omernik (Lead Author); Mark McGinley (Topic Editor) "Ecoregions of Tennessee (EPA)". In: Encyclopedia of Earth. Eds. Cutler J. Cleveland (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment). [First published in the Encyclopedia of Earth April 22, 2009; Last revised Date April 22, 2009; Retrieved May 16, 2012 [http://www.eoearth.org/article/Ecoregions_of_Tennessee_\(EPA\)](http://www.eoearth.org/article/Ecoregions_of_Tennessee_(EPA))).
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- U.S. Army Corps of Engineers. 2010. Environmental Assessment City of Clifton, Tennessee Section 14 Emergency Streambank Protection Project.

Appendix A

Site Plans



**US Army Corps
of Engineers**
Nashville District

Plans For Riverbank Protection Chattanooga Sewer Line Mile 466

**Tennessee River
Hamilton County
Chattanooga, Tennessee**

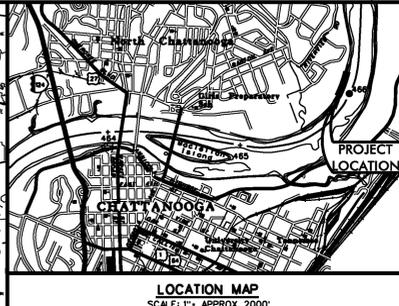
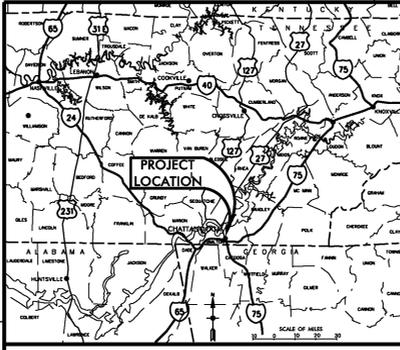
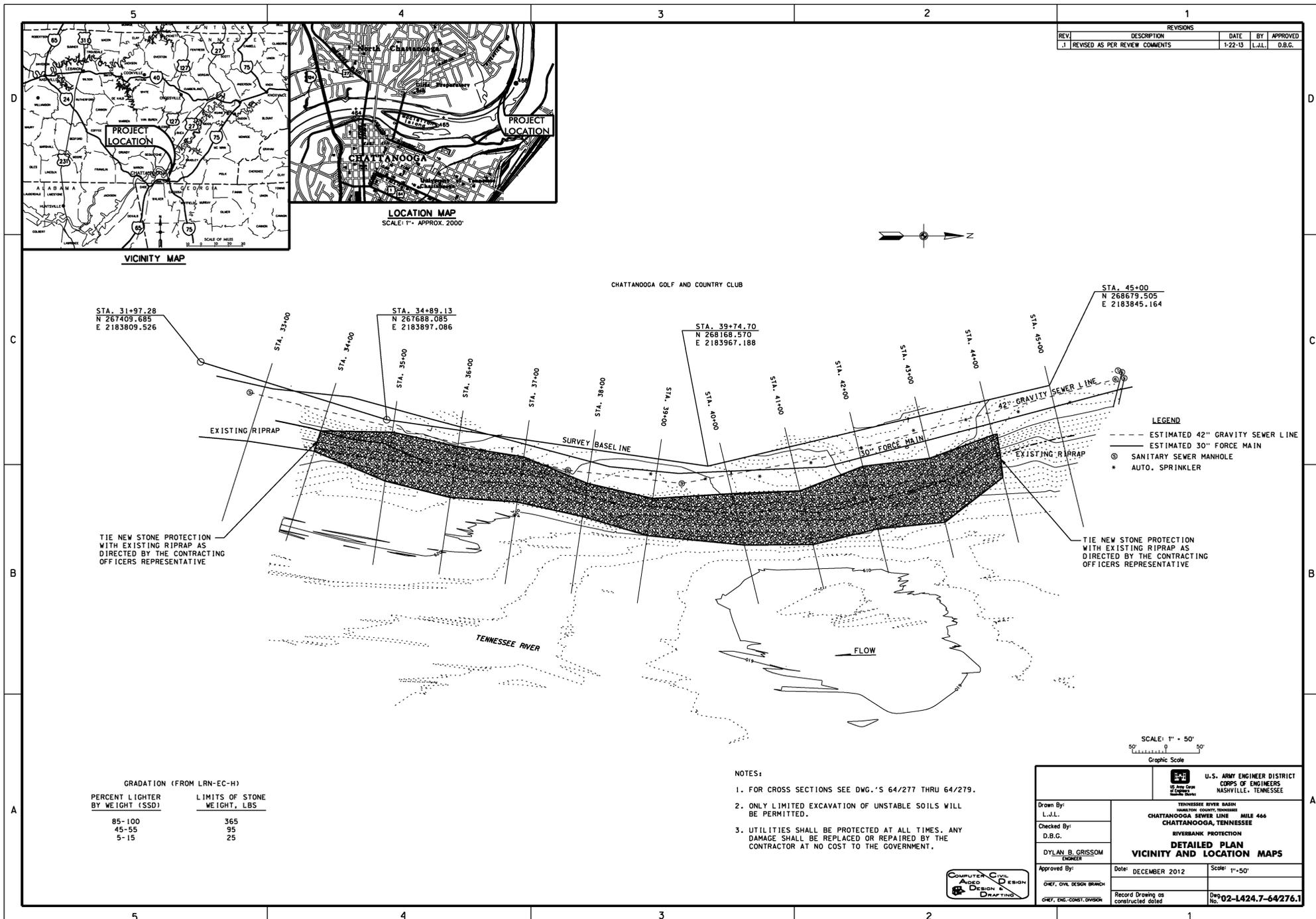
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02-L424.7-64/276	DETAILED PLAN - VICINITY AND LOCATION MAPS
02-L424.7-64/277	CROSS SECTIONS - STA. 35+00 TO STA. 38+00
02-L424.7-64/278	CROSS SECTIONS - STA. 39+00 TO STA. 42+00
02-L424.7-64/279	CROSS SECTIONS - STA. 43+00 TO STA. 44+00

REVISED FROM REVIEW COMMENTS



Note:
The approval signatures appearing in the title block on this
sheet constitute approval of all drawings listed in the index.

Submitted: Chief, Civil Design Branch	Approval Recommended: Chief, Eng.-Const. Division
Approved: Lt Colonel, C.E. District Engineer	



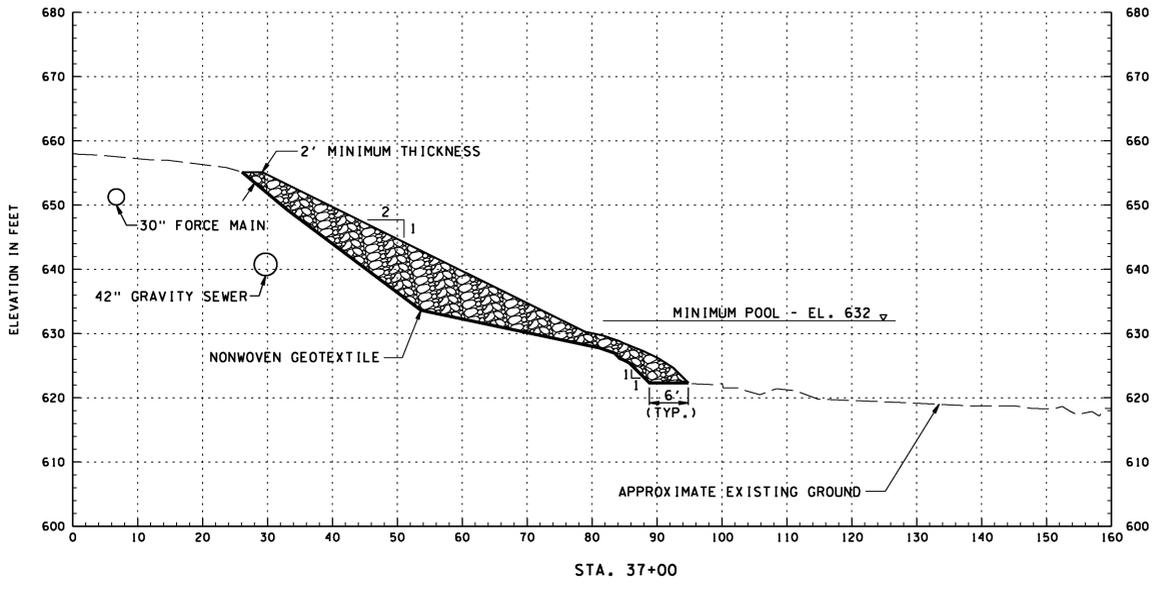
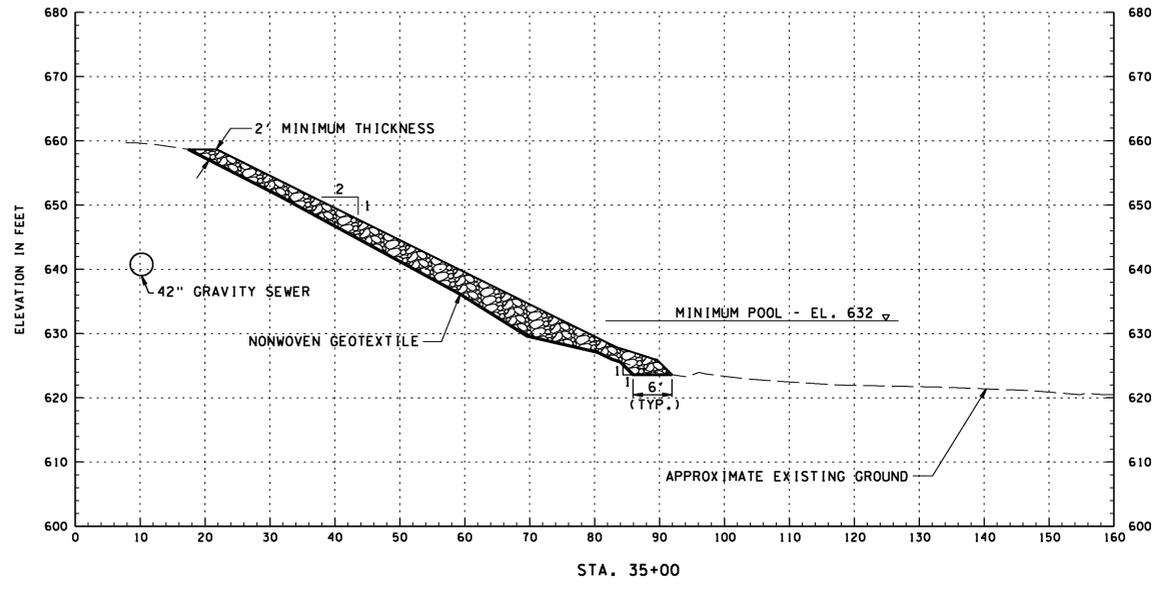
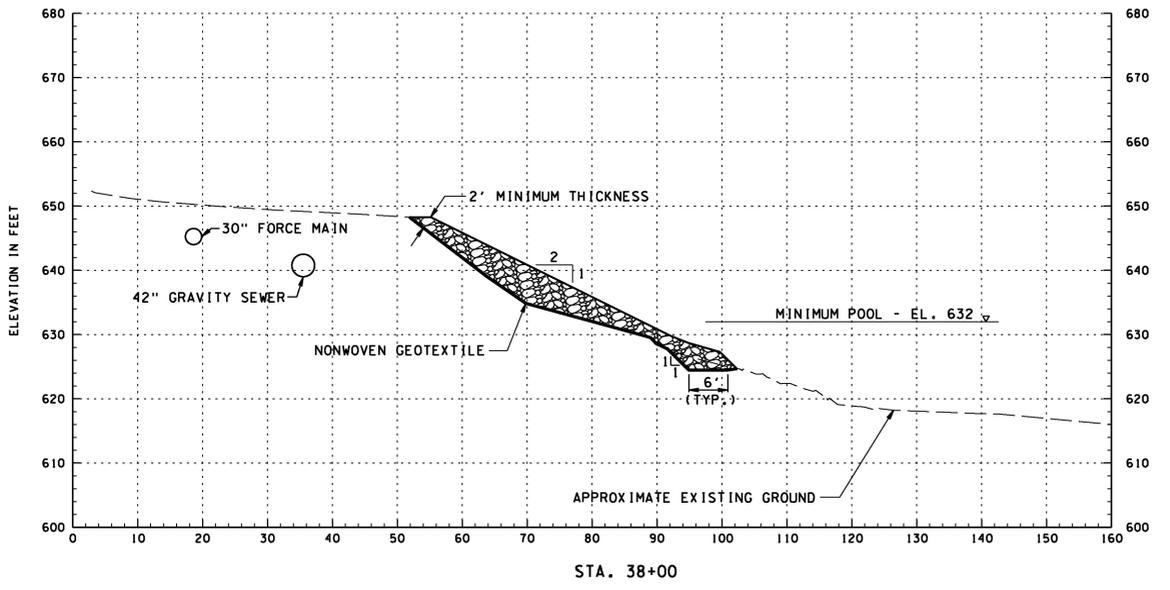
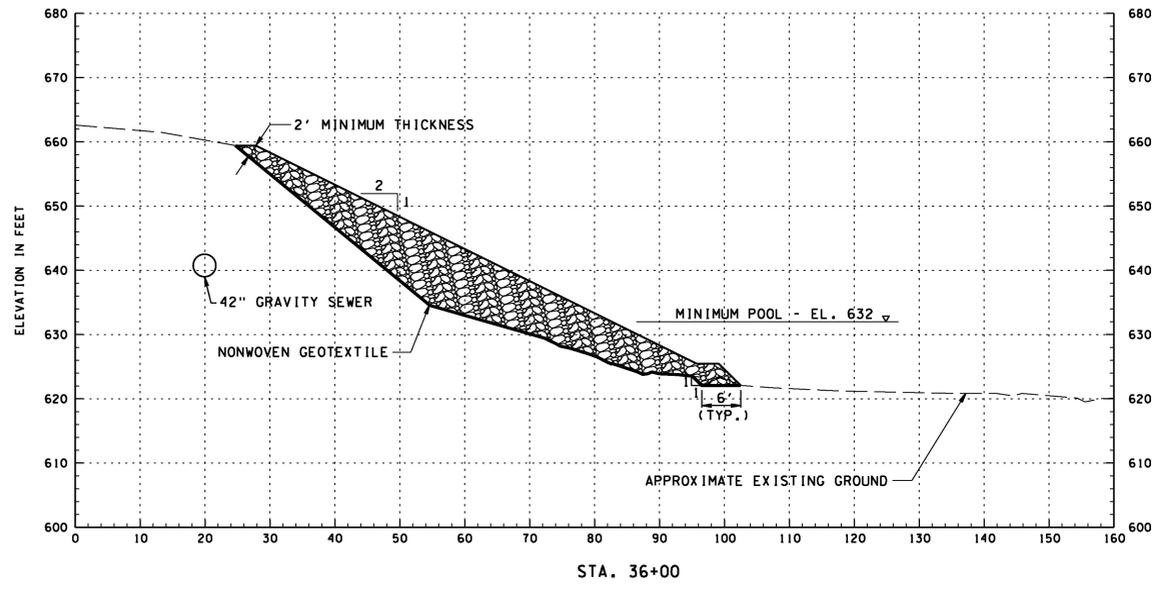
REV.	DESCRIPTION	DATE	BY	APPROVED
1	REVISED AS PER REVIEW COMMENTS	1-22-13	L.J.L.	D.B.G.

GRADATION (FROM LRN-EC-H)		LIMITS OF STONE WEIGHT, LBS
PERCENT LIGHTER BY WEIGHT (SSD)		
85-100		365
45-55		95
5-15		25

- NOTES:
- FOR CROSS SECTIONS SEE DWG.'S 64/277 THRU 64/279.
 - ONLY LIMITED EXCAVATION OF UNSTABLE SOILS WILL BE PERMITTED.
 - UTILITIES SHALL BE PROTECTED AT ALL TIMES. ANY DAMAGE SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT NO COST TO THE GOVERNMENT.

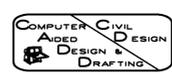
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS NASHVILLE, TENNESSEE	
TENNESSEE RIVER BASIN HAMILTON COUNTY, TENNESSEE CHATTAHOOCHEE SEWER LINE MILE 466 CHATTAHOOCHEE, TENNESSEE RIVERBANK PROTECTION DETAILED PLAN VICINITY AND LOCATION MAPS	
Drawn By: L.J.L. Checked By: D.B.G. Approved By: DYLAN B. GRISSOM ENGINEER	Date: DECEMBER 2012 Record Drawing as constructed dated
	Scale: 1"=50' No. 02-L424.7-64276.1

REVISIONS				
REV.	DESCRIPTION	DATE	BY	APPROVED
.1	REVISED AS PER REVIEW COMMENTS	1-22-13	L.J.L.	D.B.G.



GRADATION (FROM LRN-EC-H)	
PERCENT LIGHTER BY WEIGHT (SSD)	LIMITS OF STONE WEIGHT, LBS
85-100	365
45-55	95
5-15	25

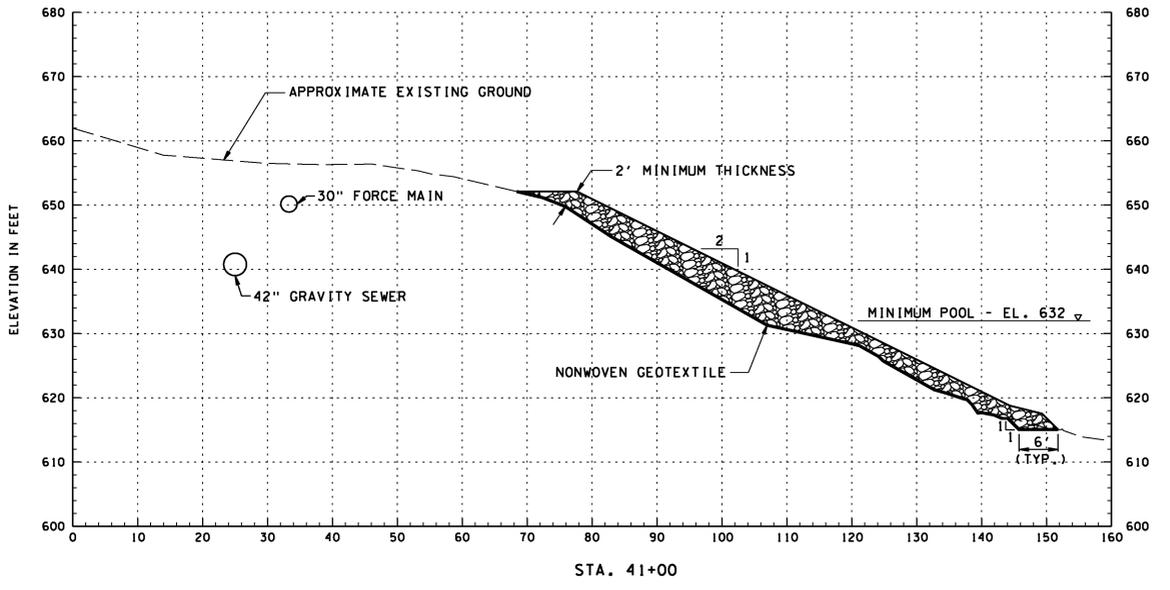
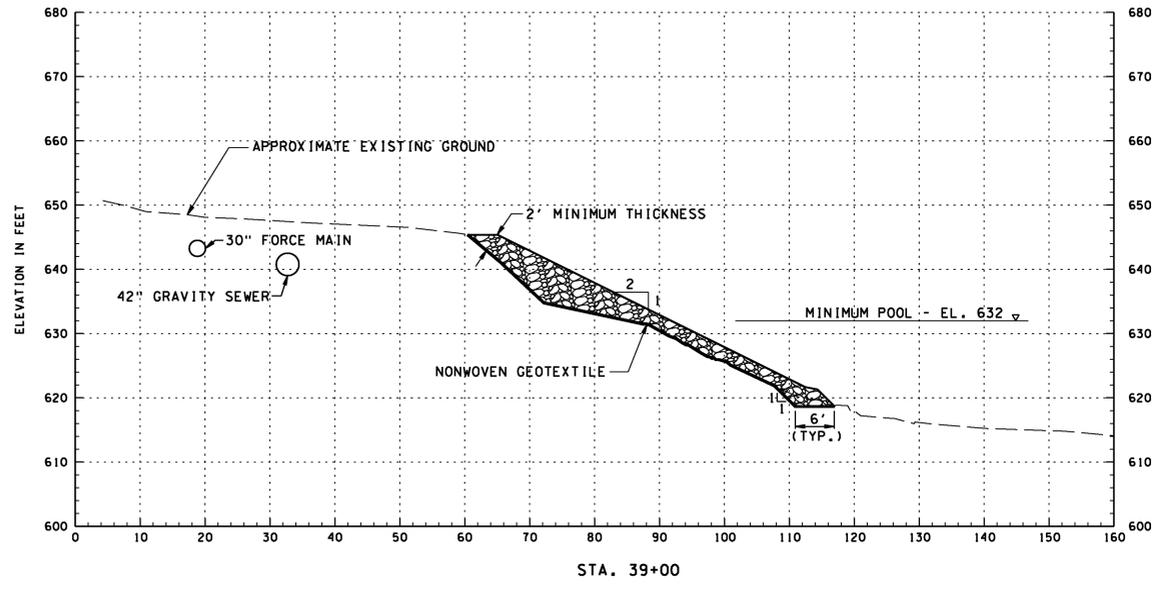
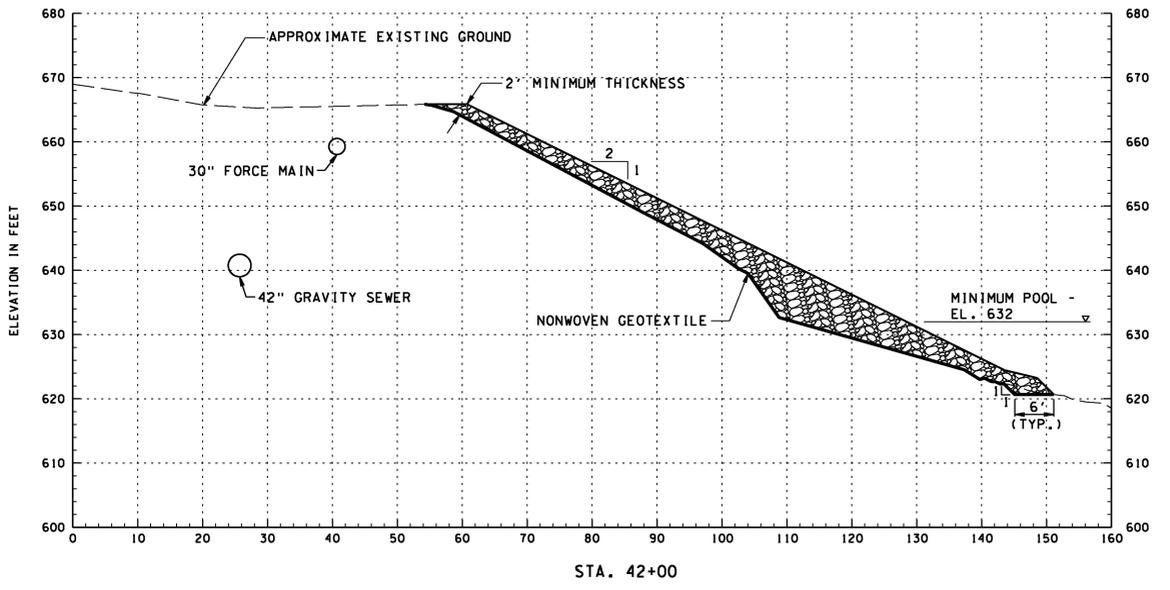
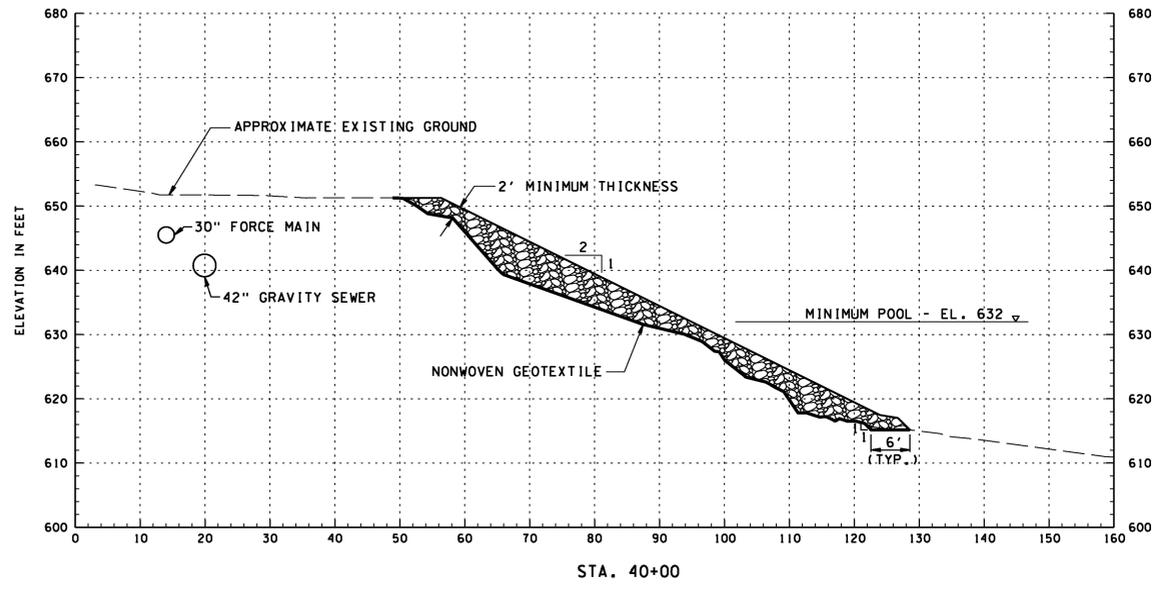
- NOTES:
- SEE DWG. 02-L424.7-64/276 FOR LOCATION OF CROSS SECTIONS.
 - LIMITED EXCAVATION OF UNSTABLE SOILS WILL BE PERMITTED AT THE DIRECTION OF THE COR.
 - UTILITIES SHALL BE PROTECTED AT ALL TIMES. DAMAGE SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT NO COST TO THE GOVERNMENT.
 - GEOTEXTILE SHALL BE A NON-WOVEN PERVIOUS SHEET OF PLASTIC YARN AS DEFINED BY ASTM D 123.
 - UTILITY LOCATIONS AND DEPTHS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION.



Graphic Scale

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS NASHVILLE, TENNESSEE	
TENNESSEE RIVER BASIN HAMILTON COUNTY, TENNESSEE CHATTANOOGA SEWER LINE MILE 466 CHATTANOOGA, TENNESSEE RIVERBANK PROTECTION CROSS SECTIONS STA. 35+00 TO STA. 38+00	
Drawn By: L.J.L.	Checked By: D.B.G.
Approved By: DYLAN B. GRISSOM ENGINEER	Date: DECEMBER 2012 Scale: 1"=10'
CHEF, GEOTECHNICAL BRANCH	Record Drawing as constructed dated
CHEF, ENGINEERING DIVISION	DWG. No. 02-L424.7-64/277.1

REVISIONS				
REV.	DESCRIPTION	DATE	BY	APPROVED
.1	REVISED AS PER REVIEW COMMENTS	1-22-13	L.J.L.	D.B.G.



- NOTES:
- SEE DWG. 02-L424.7-64/276 FOR LOCATION OF CROSS SECTIONS.
 - LIMITED EXCAVATION OF UNSTABLE SOILS WILL BE PERMITTED AT THE DIRECTION OF THE COR.
 - UTILITIES SHALL BE PROTECTED AT ALL TIMES. DAMAGE SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT NO COST TO THE GOVERNMENT.
 - GEOTEXTILE SHALL BE A NON-WOVEN PERVIOUS SHEET OF PLASTIC YARN AS DEFINED BY ASTM D 123.
 - UTILITY LOCATIONS AND DEPTHS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

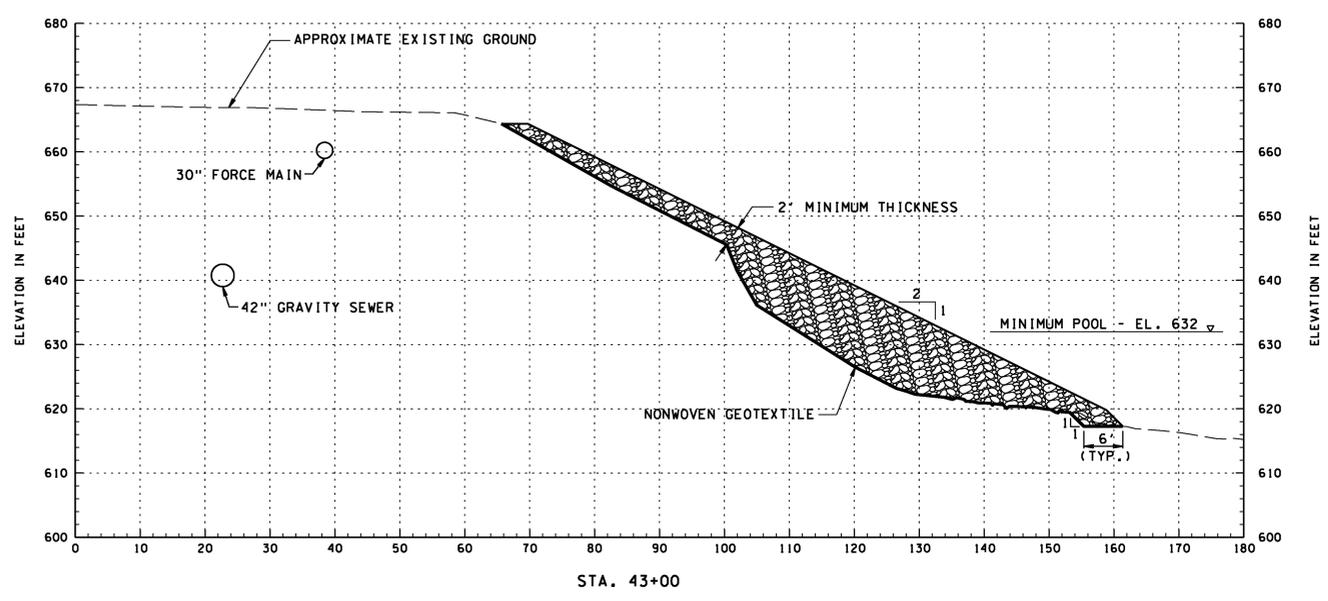
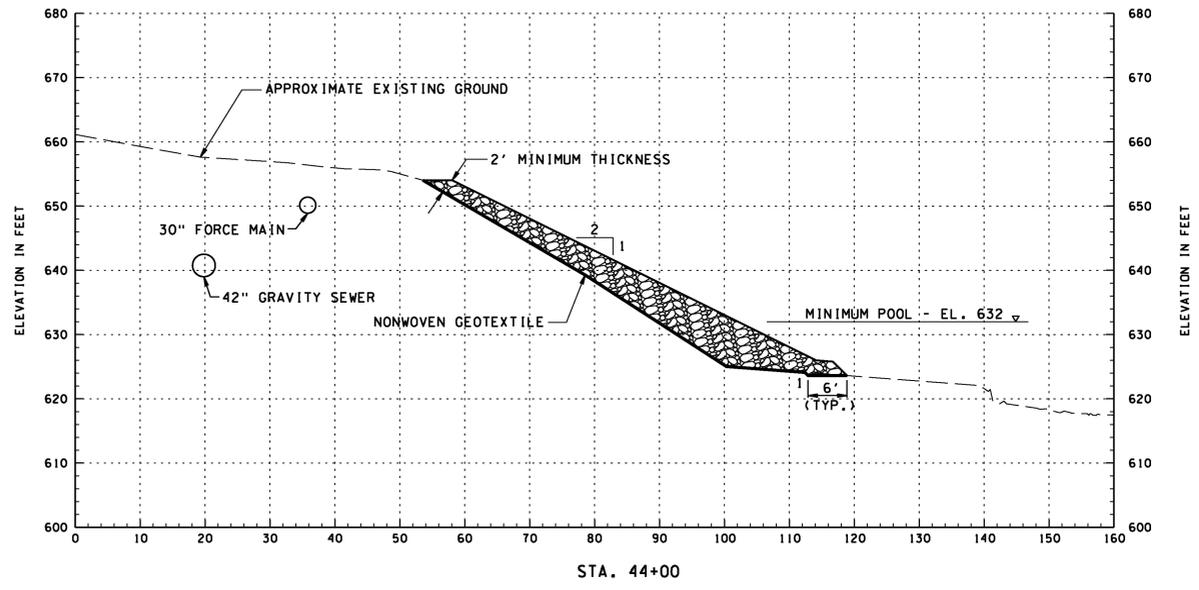
GRADATION (FROM LRN-EC-H)	
PERCENT LIGHTER BY WEIGHT (SSD)	LIMITS OF STONE WEIGHT, LBS
85-100	365
45-55	95
5-15	25

Graphic Scale

		U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS NASHVILLE, TENNESSEE	
Drawn By: L.J.L.		TENNESSEE RIVER BASIN HAMILTON COUNTY, TENNESSEE CHATTANOOGA SEWER LINE MILE 466 CHATTANOOGA, TENNESSEE RIVERBANK PROTECTION	
Checked By: D.B.G.		CROSS SECTIONS STA. 39+00 TO STA. 42+00	
Approved By: DYLAN B. GRISSOM ENGINEER		Date: DECEMBER 2012	Scale: 1"=10'
CHIEF, GEOTECHNICAL BRANCH		Record Drawing as constructed dated	
CHIEF, ENGINEERING DIVISION		Dwg. No. 02-L424.7-64/278.1	



REVISIONS				
REV.	DESCRIPTION	DATE	BY	APPROVED
.1	REVISED AS PER REVIEW COMMENTS	1-22-13	L.J.L.	D.B.G.



GRADATION (FROM LRN-EC-H)	
PERCENT LIGHTER BY WEIGHT (SSD)	LIMITS OF STONE WEIGHT, LBS
85-100	365
45-55	95
5-15	25

- NOTES:
- SEE DWG. 02-L424.7-64/276 FOR LOCATION OF CROSS SECTIONS.
 - LIMITED EXCAVATION OF UNSTABLE SOILS WILL BE PERMITTED AT THE DIRECTION OF THE COR.
 - UTILITIES SHALL BE PROTECTED AT ALL TIMES. DAMAGE SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT NO COST TO THE GOVERNMENT.
 - GEOTEXTILE SHALL BE A NON-WOVEN PERVIOUS SHEET OF PLASTIC YARN AS DEFINED BY ASTM D 123.
 - UTILITY LOCATIONS AND DEPTHS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION.



Graphic Scale

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS NASHVILLE, TENNESSEE	
TENNESSEE RIVER BASIN HAMILTON COUNTY, TENNESSEE CHATTANOOGA SEWER LINE MILE 466 CHATTANOOGA, TENNESSEE RIVERBANK PROTECTION CROSS SECTIONS STA. 43+00 TO STA. 44+00	
Drawn By: L.J.L.	Date: DECEMBER 2012 Scale: 1"=10'
Checked By: D.B.G.	
Approved By: DYLAN B. GRISSOM ENGINEER	Record Drawing as constructed dated Dwg. No. 02-L424.7-64/279.1
CHIEF, GEOTECHNICAL BRANCH CHIEF, ENGINEERING DIVISION	

Appendix B
National Historic
Preservation Act

Appendix B: Summary of National Historic Preservation Act Consultation

Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), and its implementing regulations at 36 CFR 800 require consideration of cultural resources prior to a federal undertaking and requires consultation with the State Historic Preservation Officer (SHPO), Federally recognized tribes with a connection to the project location and other consulting parties defined at §800.3. The NHPA only affords protection to sites, buildings structures, or objects listed in or determined eligible for listing in the National Register of Historic Places (NRHP). Archival research for this project involved consulting the National Register of Historic Places, the Tennessee Historical Commission National Register and structure files, the Tennessee Division of Archaeology site and survey files, and review of former Corps projects in the vicinity of the proposed project area.

The project area has a high likelihood for the presence of unrecorded archaeological resources. In part due to funding streams, it was not economically feasible to complete an archaeological survey during the Feasibility stage of the project. Therefore, the Corps proposes to meet its obligations under Section 106 through the “Phase identification and evaluation” process defined at § 800.4(b)(2). Discussions with the SHPO resulted in the proposal to complete an archaeological survey prior to construction or conduct the necessary archaeological monitoring during the next phase of design and implementation. Consultation under Section 106 with all the consulting parties listed below will continue during the Preconstruction Engineering and Design phase to determine and execute the appropriate historic property identification and assessment efforts for this proposed project.

Table B.1 summarizes the parties consulted, the mechanisms for consultation, and responses to the consultation.

Table B.1 Summary of Section 106 consultation under the National Historic Preservation Act.

Consulting Party	NEPA Scoping notice with 106 initiation statement provided on May 8, 2012	Response	Letter to request to initiate 106 consultation and to implement “phased compliance” sent on July 25, 2012	Response
Tennessee State Historic Preservation Officer	X	May 21, 2012 request for survey*	X	Concur with phased compliance
Alabama Quassarte Tribal Town	X	No response	X	No response
Cherokee Nation	X	No response	X	No response
Chickasaw Nation	X	July 10, 2012-no comments at this time	X	No response**
Eastern Band of Cherokee Indians	X	No response	X	No response
Eastern Shawnee Tribe of Oklahoma	X	No response	X	No response
Kialegee Tribal Town	X	No response	X	No response
Muscogee (Creek) Nation	X	No response	X	No response
Poarch Band of Creek Indians	X	No response	X	No response
Shawnee Tribe	X	No response	X	No response
Thlopthlocco Tribal Town	X	No response	X	No response
United Keetoowah Band of Cherokee Indians	X	May 15, 2012-no comments or objections. However, if human remains are inadvertently	X	No response

		discovered, please cease work and contact us immediately.		
City of Chattanooga	X	No response	--	--
Hamilton County	X	No response	--	--
Chickamauga Chattanooga National Military Park	X	May 30, 2012-possible prehistoric and historic resources in the project area. Contact information of local experts was provided.	--	--
Alexander Archaeological Consultants	Scoping Notice provided on June 7, 2012	June 8, 2012-comment on high potential for archaeological resources that could be eligible to the NRHP	--	--
Dr. Nicholas Honerkamp	Scoping Notice provided on June 7, 2012	No response	--	--
Public	X	No response	--	--

*The Corps had a technical assistance phone conversation with TDOA on May 31, 2012. Discussion included implementing a “phased identification approach” and conducting an archaeological survey prior to construction, but after the feasibility is complete.

**In response to public and agency review of the EA, the Chickasaw concurred with a phased implementation and do not presently know of any historic properties of significant religious or sacred value.



DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1070
NASHVILLE, TENNESSEE 37202-1070

REPLY TO
ATTENTION OF

Planning Branch

JUL 25 2012

To All Interested Parties

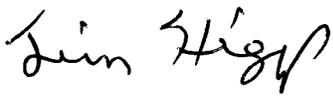
The U.S. Army Corps of Engineers (Corps), Nashville District is conducting a study under the National Environmental Policy Act (NEPA) to evaluate the feasibility of a proposed riverbank stabilization project located between Tennessee River Miles 466.2 and 466.5 right descending bank within the City of Chattanooga, Tennessee. The study is being conducted under the authority of Section 14 of the Flood Control Act of 1946, as amended. As the likelihood of archaeological resources being present is high, the Corps defines this action as an undertaking with the potential to cause effects on historic properties and requests to initiate consultation under section 106 of the National Historic Preservation Act and pursuant to 36 CFR 800.3.

The City of Chattanooga has requested Corps assistance with riverbank stabilization along approximately 1,200 feet of bank. The project is also located between two previously constructed Corps bank stabilization projects built in 1994 and 1998. Both of these projects were constructed to protect adjacent sewer lines from eroding banks. Vicinity and location maps are included for project orientation and location. Bank erosion is endangering a 42-inch concrete gravity sanitary sewer main, two manholes, and a 30-inch iron sanitary sewer force main. Height of the exposed banks ranges from less than 10 feet up to 30 feet (preliminary plans enclosed), with mostly weedy vegetation and few mature trees (photos enclosed). The preferred solution is to riprap the bank, by building out, to the height needed to protect the affected utilities. Only vegetation and unstable soil will be removed prior to the placement of the geotextile and riprap. Trees would be cut at ground level and rootwads would remain in situ. Well graded stone would be placed over a non-woven geotextile for the construction of the entire length of the riprap. Exposed rock and rubble is present at the bottom of the slope in most locations. Where exposed rock is not present at the bottom of the slope, a toe trench would be built to provide a stable base for the riprap. Placement of all materials would likely occur from river barges. Riprap would be in keeping with current surroundings as riprap is present immediately up and downstream of this project and industry across the river.

In accordance with NEPA and applicable implementing regulations, an Environmental Assessment (EA) is being prepared to evaluate all viable alternatives for this proposal as an integral part of this feasibility study. We are proposing a phased compliance for Section 106 of NHPA, to conduct the necessary archaeological monitoring, during the next phase of design and implementation.

The Corps requests that you review the proposed project documentation and provide this office with your concurrence of the phased compliance approach. Also include any concerns you would like addressed in our evaluation. Please contact Mitzy L. Schaney at (615) 736-2268 or mitzy.l.schaney@usace.army.mil if you require additional information. Enclosed for your reference are aerial photographs, a topographic map, preliminary plans, and photographs.

Sincerely,


fol Russ L. Rote, P.E., PMP, CFM
Chief, Project Planning Branch

Enclosures



DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1070
NASHVILLE, TENNESSEE 37202-1070

REPLY TO
ATTENTION OF

JUL 25 2012

Planning Branch

Mr. E. Patrick McIntyre, Director
Tennessee Historical Commission
State Historic Preservation Officer
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

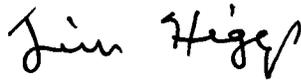
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The City of Chattanooga has requested Corps assistance with riverbank stabilization along approximately 1,200 feet of bank. The project is also located between two previously constructed Corps bank stabilization projects built in 1994 and 1998. Both of these projects were constructed to protect adjacent sewer lines from eroding banks. Vicinity and location maps are included for project orientation and location. Bank erosion is endangering a 42-inch concrete gravity sanitary sewer main, two manholes, and a 30-inch iron sanitary sewer force main. Height of the exposed banks ranges from less than 10 feet up to 30 feet (preliminary plans enclosed), with mostly weedy vegetation and few mature trees (photos enclosed). The preferred solution is to riprap the bank, by building out, to the height needed to protect the affected utilities. Only vegetation and unstable soil will be removed prior to the placement of the geotextile and riprap. Trees would be cut at ground level and rootwads would remain in situ. Well graded stone would be placed over a non-woven geotextile for the construction of the entire length of the riprap. Exposed rock and rubble is present at the bottom of the slope in most locations. Where exposed rock is not present at the bottom of the slope, a toe trench would be built to provide a stable base for the riprap. Placement of all materials would likely occur from river barges. Riprap would be in keeping with current surroundings as riprap is present immediately up and downstream of this project and industry across the river.

In accordance with NEPA and applicable implementing regulations, an Environmental Assessment (EA) is being prepared to evaluate all viable alternatives for this proposal as an integral part of this feasibility study. We are proposing a phased compliance for Section 106 of NHPA, to conduct the necessary archaeological monitoring, during the next phase of design and implementation.

The Corps requests that the Tennessee Historical Commission review the proposed project documentation and provide this office with your concurrence of the phased compliance approach. Also include any concerns you would like addressed in our evaluation. Please contact Mitzy L. Schaney at (615) 736-2268 or mitzy.l.schaney@usace.army.mil if you require additional information. Enclosed for your reference are aerial photographs, a topographic map, preliminary plans, and photographs.

Sincerely,



for Russ L. Rote, P.E., PMP, CFM
Chief, Project Planning Branch

Enclosures



Figure 1 – Vicinity Map

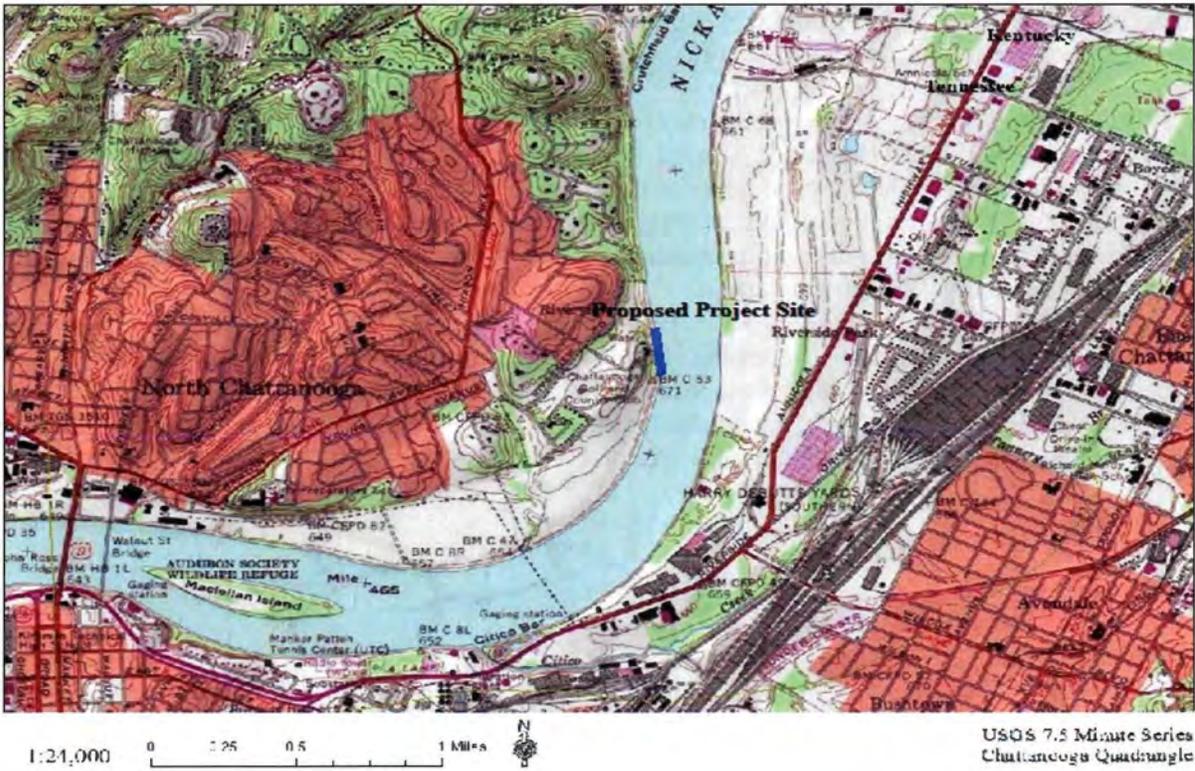


Figure 2 – Location Map











**US Army Corps
of Engineers**
Nashville District

Plans For Riverbank Protection Chattanooga Sewer Line Mile 466

**Tennessee River
Hamilton County
Chattanooga, Tennessee**

DRAWING NUMBER

TITLE

02-L424-T-64/276 DETAILED PLAN - VICINITY AND LOCATION MAPS
02-L424-T-64/277 CROSS SECTIONS - STA. 35+00 TO STA. 38+00
02-L424-T-64/278 CROSS SECTIONS - STA. 39+00 TO STA. 42+00
02-L424-T-64/279 CROSS SECTIONS - STA. 43+00 TO STA. 44+00

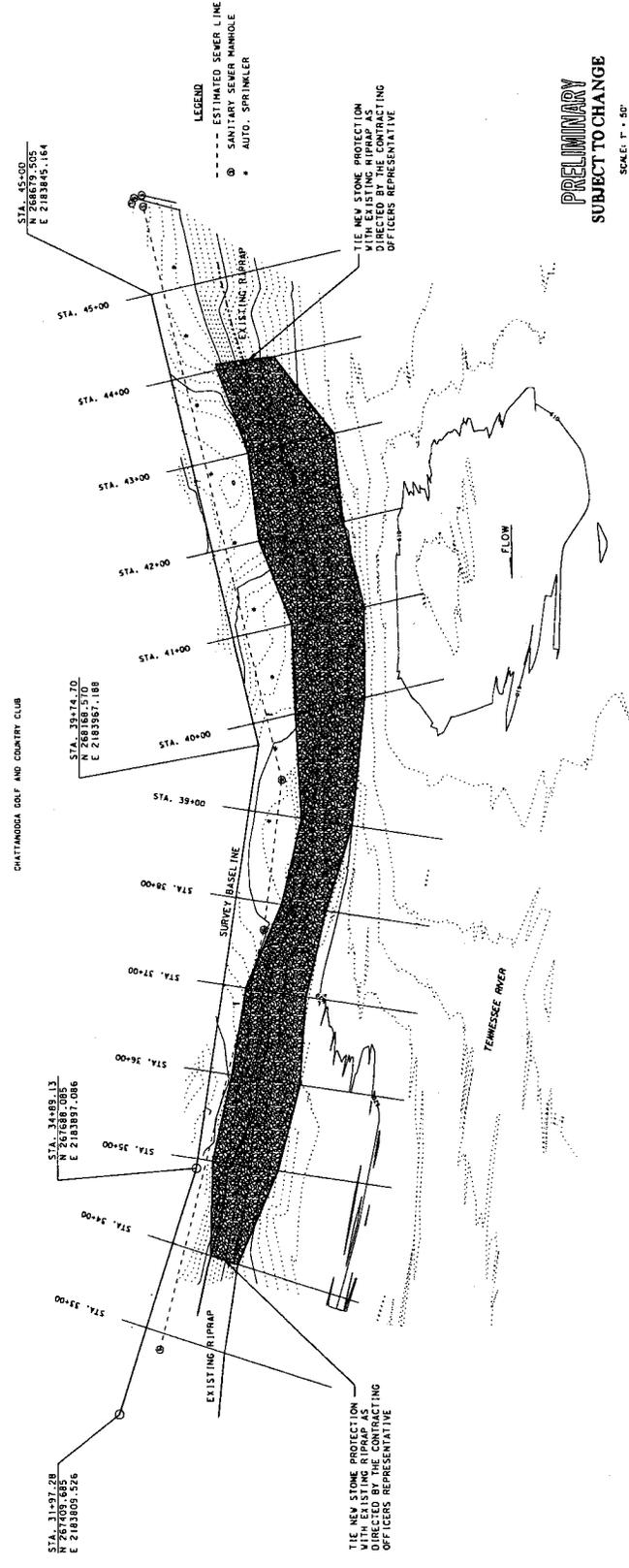
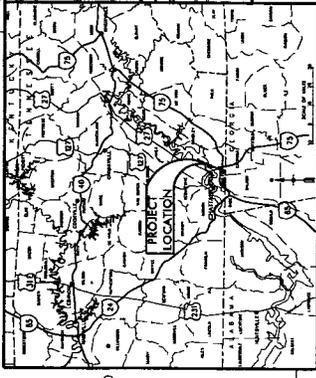
Note:
1. All work shall be in accordance with the City of Chattanooga, Tennessee, Standard Specifications for Road and Bridge Construction, 1997 Edition, as amended.

Submitted	Approved/Recommended
CHATTANOOGA DISTRICT ENGINEER	CHATTANOOGA DISTRICT ENGINEER
Approved	Approved
LT. COLONEL C.E. DUBOIS	LT. COLONEL C.E. DUBOIS



PRELIMINARY - FOR REVIEW

REV.	DESCRIPTION	DATE	BY	APPROVED



**PRELIMINARY
SUBJECT TO CHANGE**

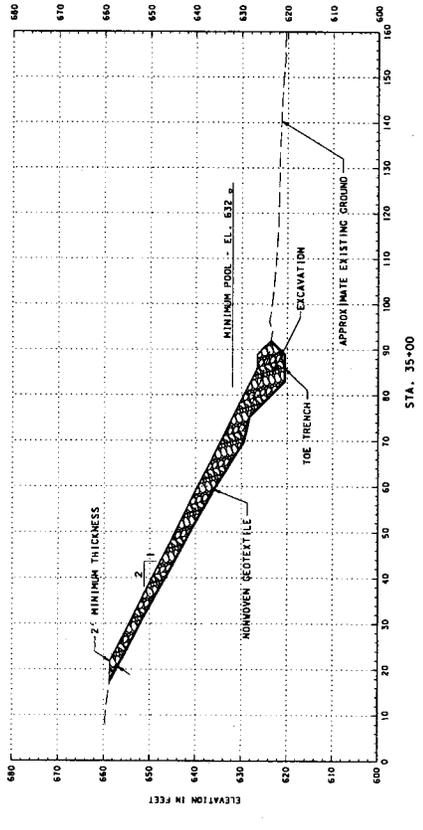
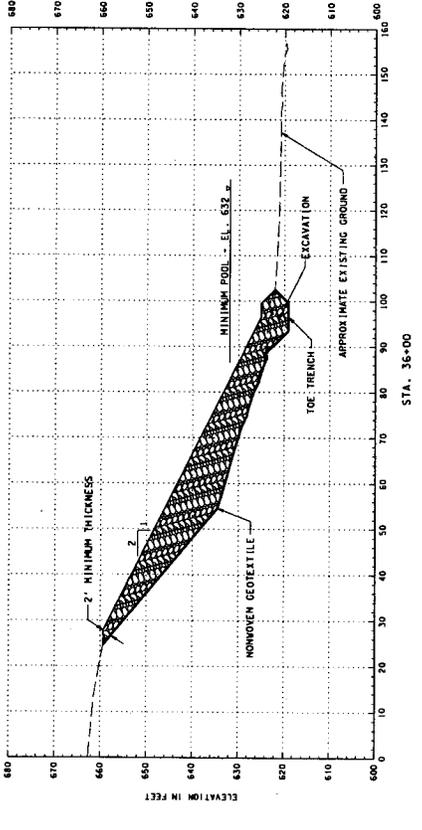
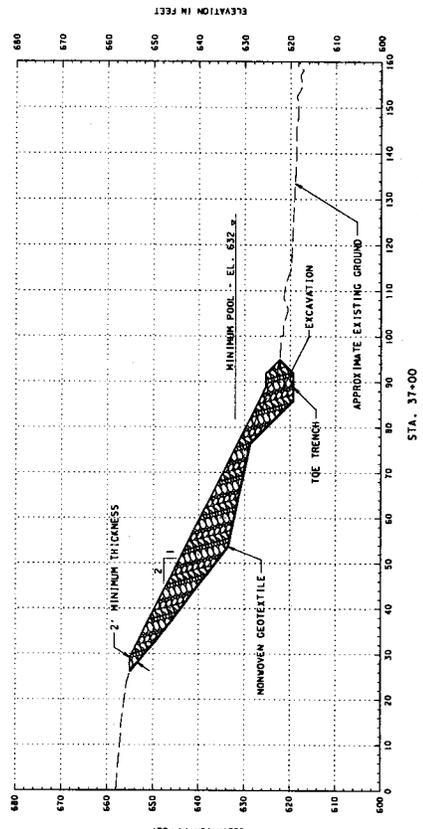
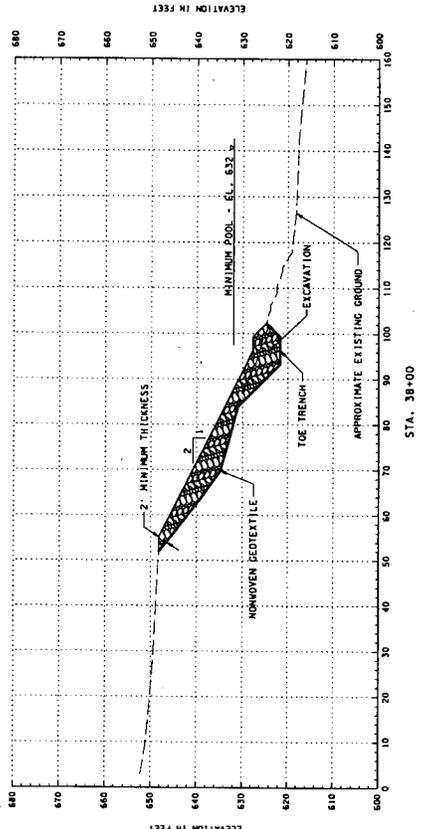
SCALE: 1" = 50'
GRAPHICAL SCALE

U.S. ARMY CORPUS OF ENGINEERS DISTRICT OFFICE CHATTANOOGA, TENNESSEE	
Drawn By: L.S.L.	U.S. ARMY CORPUS OF ENGINEERS DISTRICT OFFICE CHATTANOOGA, TENNESSEE
Checked By: D.B.C.	U.S. ARMY CORPUS OF ENGINEERS DISTRICT OFFICE CHATTANOOGA, TENNESSEE
Design By: DYLAN B. GROSSMAN	U.S. ARMY CORPUS OF ENGINEERS DISTRICT OFFICE CHATTANOOGA, TENNESSEE
Date: JUNE 2012	Scale: 1" = 50'
Project No.: 03-LA24.7-64276	Drawing No.: 64276-100

- NOTES:
- FOR CROSS SECTIONS SEE DWG.'S 64/277 THRU 64/279.
 - THERE SHALL BE NO EXCAVATION AT THE TOP OF BANK PRIOR TO STONE PLACEMENT.
 - UTILITIES SHALL BE PROTECTED AT ALL TIMES. ANY DAMAGE SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT NO COST TO THE GOVERNMENT.



REV.	DESCRIPTION	DATE	BY	APPROVED



PRELIMINARY
SUBJECT TO CHANGE

Graphic Scale

U.S. ARMY ENGINEER DISTRICT
ALBANY, TENNESSEE

Drawn By: L.J.L.
Checked By: D.B.C.
Approved By: D.Y.M. B. GIBSON
DATE: JUNE 2012

CHATTANOOGA AREA DISTRICT
CHATTANOOGA, TENNESSEE
INSTRUMENT NO. 444

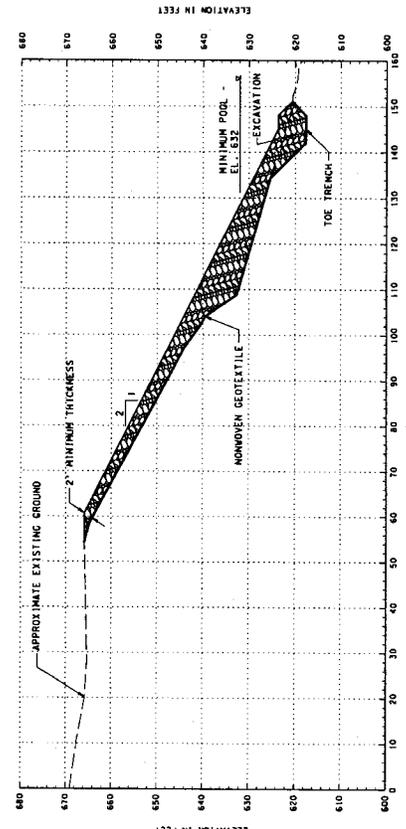
CROSS SECTIONS
STA. 35+00 TO STA. 38+00
Scale: 1"=30'

Revised Drawing as Constructed dated: 02-L-424.7-64277

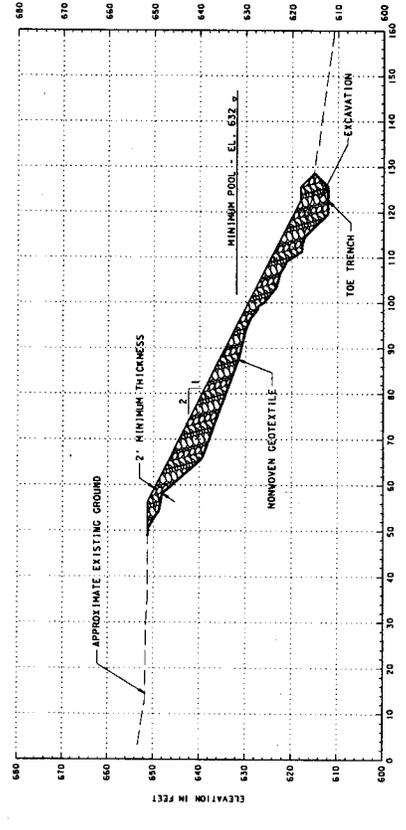
- NOTE:
1. SEE DWG. 02-L-424.7-64276 FOR LOCATION OF CROSS SECTIONS.
 2. THERE WILL BE NO EXCAVATION ALLOWED EXCEPT FOR THE TOE TRENCH.
 3. UTILITIES SHALL BE PROTECTED AT ALL TIMES. DAMAGE SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT NO COST TO THE GOVERNMENT.



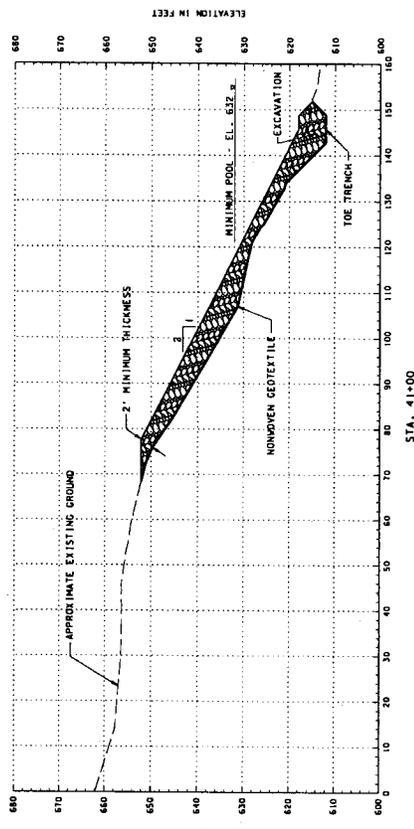
REV	DESCRIPTION	DATE	BY	APPROVED



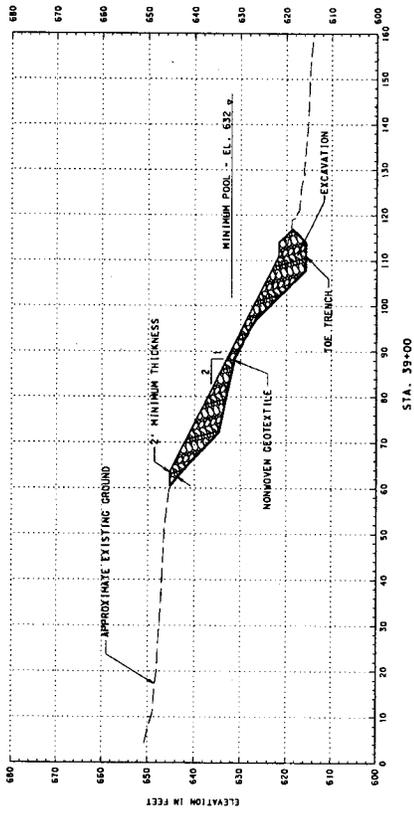
STA. 42+00



STA. 40+00



STA. 41+00



STA. 39+00

PRELIMINARY
SUBJECT TO CHANGE

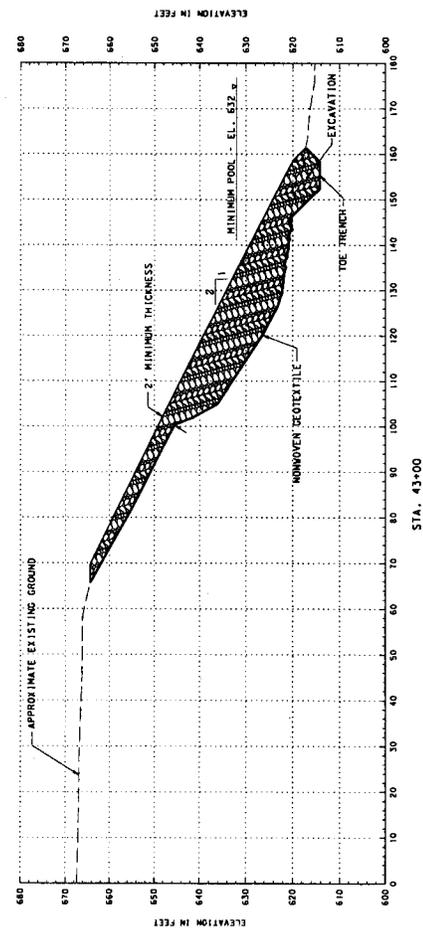
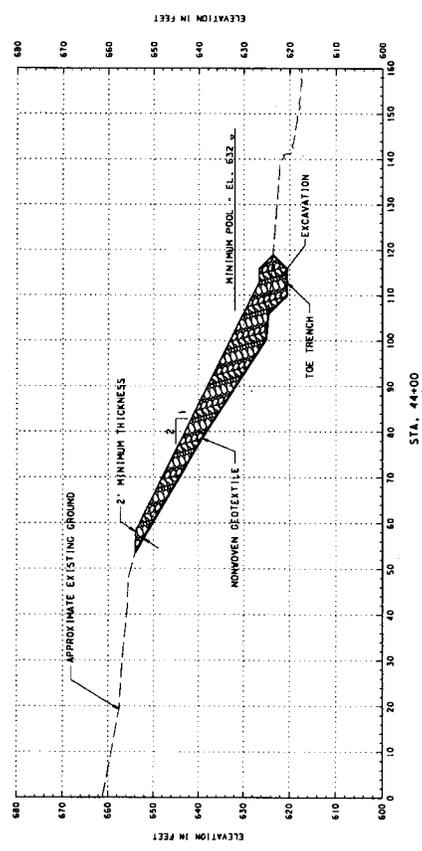
Graphic Scale

	U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS 1000 EAST 10TH AVENUE WASHINGTON, D.C. 20315
	U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS 1000 EAST 10TH AVENUE WASHINGTON, D.C. 20315
Drawn By: L.J.L.	Checked By: OYLAN B. JOHNSON License No. 02-4247-64278
Approved By: OYLAN B. JOHNSON License No. 02-4247-64278	Date: JUNE 2012 Scale: 1"=30' Project No.: 02-4247-64278

- NOTE:
- SEE DMC 02-L424.7-64/278 FOR LOCATION OF CROSS SECTIONS.
 - THERE WILL BE NO EXCAVATION ALLOWED EXCEPT FOR THE TOE TRENCH.
 - UTILITIES SHALL BE PROTECTED AT ALL TIMES. DAMAGE SHALL BE REPAIRED OR REPAIRED BY THE CONTRACTOR AT NO COST TO THE GOVERNMENT.

Checked By: Oylan B. Johnson
 Date: June 2012
 License No. 02-4247-64278

REV	DESCRIPTION	DATE	BY	APPROVED
1				



- NOTE:
1. SEE DWG. 02-L424.7-64/276 FOR LOCATION OF CROSS SECTIONS.
 2. THERE WILL BE NO EXCAVATION ALLOWED EXCEPT FOR THE TOE TRENCH.
 3. RETAINING WALLS SHALL BE PROTECTED AT ALL TIMES. DAMAGE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS COST TO THE GOVERNMENT.

PRELIMINARY
SUBJECT TO CHANGE

U.S. ARMY ENGINEER DISTRICT 2-20-20 2012 CHATTANOOGA, TENNESSEE	
Drawn By: L.A.L. Checked By: D.B.C.	CONTRACTOR'S NAME: CHATTANOOGA WATER LOAN #448 444 CHATTANOOGA, TENNESSEE BUYER'S NOTATION: CROSS SECTIONS STA. 43+00 TO STA. 44+00
Date: JUNE 2012 Scale: 1"=10' Record Drawing or Construction Record	No. 02-L424.7-64/276



From: [REDACTED]
To: [Tipton, Mary LRN](#)
Cc: [REDACTED]
Subject: Chattanooga - TN River Miles 466.2 and 466.5
Date: Tuesday, May 15, 2012 8:05:48 PM

The United Keetoowah Band of Cherokee Indians in Oklahoma has reviewed your project, and at this time has no comments or objections. However, if any human remains are inadvertently discovered, please cease work and contact us immediately.

Lisa LaRue-Baker
Acting THPO
United Keetoowah Band of Cherokee Indians in Oklahoma
PO Box 748
Tahlequah, OK 74465

[REDACTED]



TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

May 21, 2012

Mr. Russ Rote
United States Army Corps of Engineers
Nashville District
Project Planning Branch
Post Office Box 1070
Nashville, Tennessee 37202-1070

RE: COE-N, BANK STAB./TRM 466.2R - 466.5R, CHATTANOOGA, HAMILTON COUNTY

Dear Mr. Rote:

The above-referenced undertaking has been reviewed with regard to National Historic Preservation Act compliance by the participating federal agency or its designated representative. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

We concur with your agency that in order to complete our review of this undertaking, will need to receive from you a detailed archaeological survey report on the area of potential effect. A list of individuals and organizations which have indicated a desire to work in Tennessee is available at <http://www.tn.gov/environment/hist/pdf/archaeol.pdf>. This list is solely for the convenience of persons or firms seeking archaeological services. It does not indicate nor imply any sanction, certification, or approval by the State of Tennessee.

Upon receipt of the survey report and your additional consultation, we will complete our review of this undertaking as expeditiously as possible. Until such time as this office has rendered a final comment on this project, your Section 106 obligation under federal law has not been met. Please inform this office if this project is canceled or not funded or permitted by the federal agency. Questions and comments may be directed to Jennifer M. Barnett (615) 741-1588, ext. 105.

Your cooperation is appreciated.

Sincerely,

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

EPM/jmb



the
Chickasaw
Nation HEADQUARTERS

Arlington at Mississippi / Box 1548 / Ada, OK 74821-1548 / (580) 436-2603

Bill Anoatubby
Governor

Jefferson Keel
Lieutenant
Governor

July 10, 2012

Mary Tipton, Biologist
DOA, Nashville District, COE
P.O. Box 1070
Nashville, TN 37202-1070

Dear Ms. Tipton:

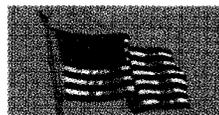
Thank you for the letter regarding the US Army Corps of Engineers (Corps), Nashville District initiation of scoping under the National Environmental Policy Act (NEPA) to evaluate impacts of a proposed riverbank stabilization project approximately located between Tennessee River Miles 466.2 and 466.5 right descending bank in the city of Chattanooga, Tennessee.

At this time we have no comments concerning issues to be addressed in the Environmental Assessment.

If you have any questions, please contact Ms. Amber Jarrett, preservation and repatriation manager, at [REDACTED] or LaDonna Brown, historic preservation officer, at [REDACTED]

Sincerely,

Jefferson Keel, Lt. Governor
The Chickasaw Nation



God Bless America!



TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

August 7, 2012

Mr. Russ Rote
United States Army Corps of Engineers
Nashville District
Project Planning Branch
Post Office Box 1070
Nashville, Tennessee 37202-1070

RE: COE-N, ARCHAEOLOGICAL ASSESSMENT, BANK STAB./TRM 466.2 - 466.5L,
CHATTANOOGA, HAMILTON COUNTY

Dear Mr. Rote:

At your request, our office has reviewed the above-referenced undertaking in accordance with regulations codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739). We concur with your agency that phased compliance is an appropriate strategy for you to meet your obligations under the National Historic Preservation Act

Your continued cooperation is appreciated.

Sincerely,

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

EPM/jmb



the
Chickasaw
Nation HEADQUARTERS

Arlington at Mississippi / Box 1548 / Ada, OK 74821-1548 / (580) 436-2603

Bill Anoatubby
Governor

Jefferson Keel
Lieutenant
Governor

September 21, 2012

Ms. Mary E. Tipton
Department of the Army
Nashville District Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

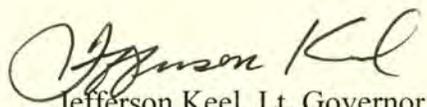
Dear Ms. Tipton:

Thank you for the letter regarding the Draft Environmental Assessment (EA) and unsigned Finding of No Significant Impact (FONSI) for the proposed riverbank stabilization on the Tennessee River Mile at approximate Tennessee River Mile 466.2 – 466.5 in Chattanooga, Hamilton County, Tennessee.

After reviewing information from the Cultural Resources section of the Environmental Assessment, we are in favor of implementing the preferred alternative – full bank build-out (no sloping of bank) placing riprap along approximately 1,200 linear feet of the riverbank. We concur with the finding of no adverse effect to historic properties and we accept the special conditions set forth in this report. We do not presently know of any specific historic properties or properties of significant religious or sacred value.

In the event the agency becomes aware of the need to enforce other statutes we request to be notified under NEPA, NAGPRA, AIRFA, ARPA, NHPA and Professional Standards. If you have any questions, please contact Ms. Amber Jarrett, preservation and repatriation manager, at [REDACTED] or Ms. LaDonna Brown, historic preservation officer, at [REDACTED]

Sincerely,


Jefferson Keel, Lt. Governor
The Chickasaw Nation



God Bless America!

Appendix C

404(b)(1) Evaluation

**Continuing Authorities Program
404 (b) (1) Evaluation
Emergency Streambank Stabilization
Chattanooga, Tennessee
Tennessee River Mile 466.2 – 466.5
Hamilton County, Tennessee**

This project requires bank stabilization at Tennessee River Mile 466.2 – 466.5, and will be stabilized with riprap. Therefore, an upland alternative is not feasible and requires placement of riprap in river.

I Project Description

- a. Location: The project site is in Chattanooga, Hamilton County, Tennessee. Severe erosion is occurring along portions of the Tennessee River (Nickajack Reservoir) on the right descending bank at Tennessee River Mile (TRM) 466.2 – 466.5. See Figure 1 of the Environmental Assessment (EA).
- b. General Description: The proposal involves stabilization of approximately 1,200 feet of riverbank along the Tennessee River within the City of Chattanooga, Tennessee to protect important city infrastructure and to prevent further erosion and bank deterioration at the proposed project location. Proposed bank stabilization alternatives considered include riprapping the entire length of the project area with a full bank build-out (no sloping of the bank) and No Action.
- c. Authority and Purpose: Authorization for this project is provided by the Flood Control Act (FCA) of 1946 (Public Law 79-526), as amended. Section 14 of the FCA authorizes the U.S. Army Corps of Engineers (Corps) to study, adopt, and construct emergency streambank and shoreline protection works to protect public infrastructure such as roads, utilities, and other important community public works assets.
- d. General Description of Dredged or Fill Material:
 - (1) General characteristics of material: Fill material used for bank stabilization would be commercial grade quarry run limestone approximately sized for the location. Riprap used below ordinary high water (OHW) would include clean rock free of fine materials.
 - (2) Quantity of material: Approximately 24,300 tons (16,200 cubic yards) of limestone riprap along with 11,600 square yards of geotextile filter fabric would be used to complete the project. Clearing and grubbing of approximately 2.1 acres along the riverbank would be necessary to prepare the site for stabilization. Bank stabilization below OHW would include approximately 12,900 tons (8,600 cubic yards) of riprap as well as 6,700 square yards of geotextile filter fabric.
 - (3) Source of material: Riprap would be obtained from commercial rock quarries in the vicinity of the project area.

e. Description of the Proposed Discharge Sites:

(1) Location: The proposed project site is located on the Tennessee River at TRM 466.2 – 466.5, right descending bank. Any cleared and grubbed vegetation, to be removed to prepare for stabilization, and any associated construction debris would be disposed of at an approved landfill within the vicinity of the project area.

(2) Size: The proposed bank stabilization would occur along a 1,200 foot section of bank with clearing and grubbing approximately 2.1 acres along the riverbank to prepare the site for stabilization.

(3) Type of site: Construction equipment would be used to build a slope toe between approximate elevations 612 – 625 feet above mean sea level (msl) to provide firm footing for the placement of overlying riprap material. Riprap would be placed along the project area up to approximate elevations 646 - 667 feet above msl, and would tie in with existing bank stabilization projects previously completed upstream and downstream from the project area.

(4) Type of Habitat: In stream habitat consists of the water column and various sediments along the river bottom and bank slopes along with various sizes of rock material along portions of the project area. Riverbank slopes are vegetated with few mature trees and areas having exposed soil.

(5) Timing and duration of discharge: Construction below OHW elevation 634.5 feet above msl would be scheduled to coincide with low flow conditions along the Tennessee River to minimize impacts to water quality to the greatest extent possible. Anticipated length of time for construction is 4 weeks.

f. Description of Disposal Method: Sound environmental and engineering practices commonly referred to as best management practices (BMP's) would be followed during all phases of project construction. The Corps would remove and dispose of excavated material in an approved and in accordance with local ordinances. Riverbank protection materials would be completed with water-based equipment (barge) after geotextile fabric is prepared.

II. Factual Determination

a. Physical Substrate Determinations:

(1) Channel Morphology: This reach of the Tennessee River bottom would be altered at the construction site by placement of riprap along the right descending bank

(2) Storage Volume: Storage capacity of the Tennessee River would be reduced by an insignificant amount. The Corps performed a No-Rise analysis and determined that the proposed project would not have any impacts to the 100-year floodplain.

(3) Water Column: Removal of small amounts of substrate to prepare the site for riprapping may cause minor localized and short-term increases in turbidity and suspended solids.

(4) Sediment Type: Substrate conditions within the vicinity of the project area consist of gravels, cobbles, fines, bedrock, and boulders. Sediments resulting from erosion along the riverbank transported by water flow are composed of sorted gravel, sand, silt, and other fine materials.

(5) Dredged/Fill Material Movement: Riverbank site preparation would result in de minimis discharge of material into the Tennessee River. Construction during low flow conditions would reduce the movement of riprap placement as well as potential sediment plumes moving downstream. Placement of riprap by barge would also minimize incidental fallback of material into the water. Construction BMP's would minimize material from entering the water.

(6) Actions Taken to Minimize Impacts:

- Construction BMPs implemented would minimize impacts to the riparian zone and riverbed. BMP's, such as silt fencing, riprap, and filter cloth would also help control erosion and resuspension of soil and sediments.
- Bank stabilization operations would be coordinated with low water flow conditions where possible to minimize impacts to sediment disturbances.

b. Water Circulation, Fluctuation, and Salinity Determinations: Water chemistry, odor, taste, dissolved oxygen levels, nutrients, and eutrophication would not be significantly affected by the construction. Any minor effects would be stabilized to preconstruction ranges quickly when construction activities are complete.

(1) Water:

(a) Salinity: Water salinity is not applicable

(b) Water Chemistry: The proposed project should not have any effects

(c) Clarity: The proposed project could cause periodic increases in total solids and total suspended solids during and for a short period after site preparation and during rock placement. Once construction is complete, there should be localized improvements from current conditions due to reduction in sediments entering the water along the project area.

(d) Color: No significant impact is expected.

(e) Odor: No significant impact is expected.

(f) Taste: No significant impact is expected.

(g) Nutrients: The proposed action could cause temporary nutrient increases during periods of resuspension of sediment and organic debris. Once construction is complete, nutrients entering the water column from would be prevented.

(h) Eutrophication: No significant impacts are expected.

(2) Current Patterns and Circulation:

(a) Current Patterns and Flow: These are regulated with operations at Chickamauga Dam. Tennessee River flow patterns would not be significantly changed within the project area.

(b) Velocity: The proposed project would not reduce velocities and flood heights during high flow events. No significant effects should occur under normal and low flow conditions.

(c) Stratification: No changes in water stratification are anticipated.

(d) Hydrologic Regime: No significant impact is expected.

(3) Normal Water Fluctuation: Regulated by TVA operations. No changes associated with this project.

(4) Salinity Gradients: Not applicable.

(5) Actions That Will Be Taken To Minimize Impacts

- Alterations would be limited to the right descending bank of the Tennessee River.
- Slope toe construction would provide firm footing for riprap placement and reduce the potential for slope failure.
- Bank stabilization operations would be limited to low flow conditions to minimize overall impacts of sediment disturbances.

c. Suspended Particulate/Turbidity Determinations:

(1) Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site: Placement of riprap for bank stabilization would result in short-term suspension of particulates (soil) that would temporarily increase turbidity and total suspended solids. However, adverse impacts would be limited to periods of construction and for a short period following construction activities. Suspension of soils causing turbidity would be reduced with the project being implemented.

(2) Effects on Chemical and Physical Properties of the Water Column: The proposed action would have no effect on chemical or physical properties of the water column.

(a) Light Penetration: Temporary increases in suspended sediment loads and turbidity would decrease light penetration through the water column, but impacts would be of short duration and have no long term impacts.

(b) Dissolved Oxygen: Dissolved oxygen levels could decrease during construction; however, this would be temporary during construction and no significant impact is expected.

(c) Aesthetics: Vegetation would be removed and eroded banks would be replaced with stone. The current project would be tying into previously placed riprap just upstream and downstream of the proposed site. Short-term construction impacts would be anticipated.

d. Contaminant Determinations: No contaminated materials would be released during construction of this project. Should contamination be found, necessary steps to avoid the materials or clean up of the area would take place.

e. Aquatic Ecosystem and Organism Determinations:

(1) Effects on Plankton: The proposed action could cause some mortality because of increases in total suspended solids and turbidity and decreases in dissolved oxygen levels during construction periods. Impacts would be temporary and short-term in nature, and recolonization of the area by plankton should occur quickly after construction is complete.

(2) Effects on Benthos: Temporary effects on benthic macroinvertebrates could occur during construction or near the excavation areas (toe slope), but once bank stabilization is complete, positive effects on benthic macroinvertebrates would be anticipated with the prevention of sediment/erosion.

(3) Effects on Nekton: No significant impacts are anticipated.

(4) Effects on the Aquatic Food Web: The proposed action would have negative short-term and positive long-term effects on the aquatic food chain. Completion of the bank stabilization project would have positive effects on the aquatic food chain by providing additional habitat below OHW for aquatic plant and animal species.

(5) Threatened and Endangered Species: Coordination is ongoing with the U.S. Fish and Wildlife Service (USFWS) and the Tennessee Wildlife Resources Agency (TWRA). Both have stated that the pink mucket and snail darter may be present in the vicinity of the proposed project. The Corp's has made a determination of "may effect, but not likely to adversely affect" for both species.

(6) Wildlife Habitat: Because existing conditions within the proposed project area provide poor quality wildlife habitat, there would be no significant loss of wildlife habitat. However, placed stone, over time, could provide wildlife habitat.

(7) Actions to Minimize Impacts:

- Placement of riprap would provide stabilization and erosion control, as well as habitat for fish and benthic invertebrates.

- Construction and riprap placement operations would be limited to low flow conditions, where possible, to minimize the overall impacts of disturbance.
- Construction BMP's would be implemented to minimize impacts.
- Construction would be timed to avoid stone placement during periods when snail darters could occupy the action area (March 1 – July 15).

g. Determination of Cumulative Effects on the Aquatic Ecosystem: From a watershed perspective, the stabilized 1,200 feet of riverbank would not be highly visible in the overall reduction of aquatic resource impairments due to sedimentation; however it would provide some minor progress in reducing riverbank erosion. Many existing stream banks have already been stabilized and those that are not are experiencing erosion from stresses put on the bank from managed river operations. Many bank reaches outside of the project area have existing bank protection and additional bank stabilization would help reduce erosion. However, the loss of limited tree cover would be a negative consequence from stabilizing the bank with riprap. There could be negative impacts from increased velocities and loss of storage from placement of riprap throughout Nickajack Reservoir; however, in regards to the project site, storage volumes would be reduced by an insignificant amount and impacts from increased velocities would be negligible. Cumulative effects are discussed in further detail in Section 4 of the EA.

h. Determination of Secondary Effects on the Aquatic Ecosystem: No significant impact is anticipated.

III Findings of Compliance or Non-Compliance with Restrictions on Discharge:

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation: No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem: There is no feasible alternative to working in and adjacent to the river that would achieve the results required for bank stabilization. To lessen the impacts, construction BMP's would be implemented to limit impacts to the aquatic ecosystem.

c. Compliance with Applicable State Water Quality Standards: Compliance with the Tennessee water quality standards would be maintained and monitored. An Aquatic Resource Alteration Permit (ARAP) application was submitted to the Tennessee Department of Environment and Conservation, Water Pollution Control (TDEC WPC) on August 22, 2012 and certification was permitted on September 10, 2012.

d. Compliance with Applicable Toxic Effluent Standard of Prohibition Under Section 307 of the Clean Water Act: Bank stabilization operations would not violate Section 307 of the Clean Water Act.

e. Compliance with the Endangered Species Act: The scoping response received from the USFWS on June 12, 2012 noted that after review of recent and historical endangered species collection records within the locality of the proposed project, the federally endangered pink

mucket (*Lampsilis abrupta*) and the federally threatened snail darter (*Percina tanasi*) may be present within the vicinity of the proposed project. Individuals of these species have been collected near the proposed project during recent years. Coordination has been ongoing with the USFWS and the Corps has made a determination of “may affect, not likely to adversely affect”, for the pink mucket and snail darter.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972: Not applicable.

g. Evaluation of Extent of Degradation of the Waters of the United States:

(1) Significant Adverse Effects on Human Health and Welfare:

(a) Municipal and Private Water Supplies: The proposed bank stabilization project is intended to protect the bank due to concerns for existing sewer lines (42-inch concrete gravity sanitary main, two manholes, and a 30-inch iron sanitary sewer force main) being endangered by severe erosion. With implementation of the No Action alternative, erosion would continue to degrade the riverbank and likely result in failure of the existing utilities. This would create adverse impacts to public health and aquatic resources from untreated sewage.

(b) Recreation and Commercial Fisheries: With implementation of the No Action alternative, recreation and commercial fisheries would be affected. As described above, erosion would continue causing concerns for potential failure of the existing sewer lines. River recreation would be affected as potential closures of the area and vicinity would be required for extensive response and clean-up of the site. There would also be adverse impacts to fishing as aquatic habitat and water quality would be damaged. Implementation of the action alternative would prevent these health and safety concerns.

(c) Benthic Organisms: Populations of benthic organisms would experience minimal impacts during construction. Without implementation of the preferred alternative, further erosion threatens existing utilities located within the bank. Increased erosion and sedimentation, loss of riparian habitat, and untreated sewage would threaten benthic organisms found within the area. Implementation of the preferred alternative would provide new substrate for colonization of sessile plants and animals such as algae.

(d) Fisheries Resources: There would be minor adverse impacts from stabilizing the riverbank with the preferred alternative. Temporary impacts include increased erosion, sedimentation, and increased turbidity levels during construction. With completion of construction, the preferred alternative could provide beneficial habitat to aquatic species. Implementation of the No Action alternative would result in continued erosion along the riverbank, increasing sedimentation and potential failure of the existing sewer lines adjacent to the bank.

(e) Shellfish: The proposed project could have potential impacts to freshwater mussels with implementation of the preferred alternative as more riprap would be placed in river to protect

cultural resources with a full bank build-out. Coordination is ongoing with the USFWS and TWRA.

(f) Wildlife: The proposed action would not have any significant adverse effects.

(g) Special Aquatic Sites: No special aquatic sites are identified within the project area.

(2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems: Life stages of aquatic and terrestrial species would not be adversely affected.

(3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability: The proposed action would have no significant adverse impacts on life stages of aquatic life and other wildlife dependent on aquatic ecosystems.

(4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values: The proposed action would not have any significant adverse effects. Recreational benefits would be experienced due to providing additional fish habitat within the project area. Economic benefits would also be provided by reducing the potential for needed dredging within the reach of river due to continued erosion within the proposed project area, and could provide economic benefits to local construction businesses that could perform the work. Other benefits include protecting the existing utilities with no concerns for failure and the need to repair in the future.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the discharge on the Aquatic Ecosystem:

- Construction BMP's would be implemented to minimize impacts to the riparian zone and the riverbed. BMP's would also help control erosion and resuspension of soil and sediments.
- Construction activities would be limited to low flow conditions to minimize the overall effects of sediment disturbance.
- The riverbank would be stabilized with riprap to reduce bank erosion.
- Alterations of the river bank, riparian vegetation, and the river substrate would be limited to the greatest extent possible.

i. On the Basis of EPA 404 (b) (1) Guidelines, the Proposed Disposal Site for the Discharge of Dredged or Fill Material is: in compliance with requirements of these guidelines, with the inclusion of the appropriate conditions and construction BMP's to minimize impacts to the aquatic ecosystem.

Appendix D

Water Quality Certification



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER RESOURCES
NATURAL RESOURCES SECTION
401 CHURCH STREET, 7TH FLOOR L & C ANNEX
NASHVILLE, TENNESSEE 37243

September 10, 2012

Mr. Ramune Morales
Community Planner
US Army Corps of Engineers, Nashville District
e-copy: Ramune.Morales@usace.army.mil PO Box 1070
Nashville, TN 37202

Subject: **General Permit for Bank Stabilization
Aquatic Resource Alteration Permit (ARAP) NRS12.175
US Army Corps of Engineers Nashville District, Bank Stabilization - Nickajack Reservoir
River Mile 466.2-466.5, Chattanooga, Hamilton County, Tennessee**

Dear Mr. Morales:

We have reviewed your application for the proposed bank stabilization - Nickajack Reservoir River Mile 466.2-466.5. Pursuant to the *Tennessee Water Quality Control Act of 1977* (T.C.A. § 69-3-101 et seq.) and supporting regulations the Division of Water Resources is required to determine whether the activity described in the attached notice of coverage will violate applicable water quality standards.

This activity is governed by the *General Permit for Bank Stabilization*. The work must be accomplished in conformance with accepted plans and information submitted in support of application NRS12.175 and the limitations and conditions set forth in the *General Permit for Bank Stabilization* (enclosed). It is the responsibility of the permittee to ensure that all contractors involved with this project have read and understand the permit conditions before the project begins.

Please note that unnecessary vegetation removal is prohibited and stabilization activities are limited to the stream bank. In addition, adequate erosion controls must be installed prior to construction and maintained during construction of the project. All disturbed areas must be revegetated or otherwise stabilized upon completion of construction. Please make the necessary provisions for these circumstances.

We appreciate your attention to the Aquatic Resource Alteration Permit program. If you have any questions, please contact Mr. Brian Canada at (615) 532-0660 or by e-mail at Brian.Canada@tn.gov.

Sincerely,

Daniel C. Eagar
Manager, Natural Resources Section

Encl: NOC and copy of general permit
CC: DWR, Chattanooga Environmental Field Office
File copy
Ms. Mary Tipton, Biologist, US Army Corps of Engineers, Nashville District

Tennessee Department of Environment and Conservation

General Permit for Bank Stabilization



Effective Date: July 1, 2010
Expiration Date: June 30, 2015

Activities Covered by this Permit:

This general permit authorizes the repair and protection of eroded stream and reservoir banks. Bank stabilization activities typically include grading of the bank to the appropriate slope, based on hydrology, in conjunction with the placement of riprap, gabion baskets and/or installation of bioengineering techniques. Bioengineering techniques shall incorporate primarily materials found in the natural riparian environment, such as cedar tree revetments, rock or log current deflection weirs, live willow post application and log crib structures.

Limitations of this Permit:

Certain activities due to size, location or potential water quality impacts are not covered under this general permit. Those activities are described in this section. Activities not qualifying for authorization under this general permit may be authorized by an individual permit provided that all requirements of the *Tennessee Water Quality Control Act of 1977* are met.

- 1) Except as provided in item 1)a and 1)b of this section, the length of bank stabilization is limited to **300** linear feet.
 - a. Activities located within water resource development lands and waters, including flowage easements, managed by the Tennessee Valley Authority or the United States Corps of Engineers **are not** limited to 300 linear feet.
 - b. Activities using bioengineering techniques **are not** limited to 300 linear feet.
- 2) Activities that may adversely affect wetlands are not covered.
- 3) Activities located in any waterways which have been identified by the department as having contaminated sediments, and the activity will likely mobilize the contaminated sediments are not covered.
- 4) Activities that may result in an adverse effect to a threatened or endangered species, or to designated critical habitat; or is likely to jeopardize the continued existence of a species proposed for listing as endangered or threatened without prior authorization from the U.S. Fish and Wildlife Service as required by section 7 or section 10 of the Endangered Species Act where applicable are not covered. Adverse effects comprise, but are not necessarily limited to, the following: (a) death or injury to one or more individuals that results from activities associated with an action, (b) a change in habitat quantity or quality that results from activities associated with an action that renders the habitat unsuitable for the species, or (c) activities associated with an action that disrupts normal behavior or functions of individuals.
- 5) Activities that may result in the take, harassment, or destruction of plant or wildlife listed as threatened or endangered or a species deemed to be in need of management, as defined and identified under Tennessee Code Annotated (TCA) 70-08-103, Tennessee Wildlife Resources Agency (TWRA) Proclamations 00-14 and 00-15, and Division of Natural Heritage (DNH) Rule 0400-6-2 or which will destroy the habitat of such species without prior authorization from TWRA and/or DNH where applicable are not covered.
- 6) Activities, either individually or cumulatively, that may result in degradation to waters of the state are not covered. For example, this general permit shall not be used in incremental means to combine with other projects to alter larger areas of stream.
- 7) Activities that otherwise require an individual permit are not covered.

Obtaining Permit Coverage:

Coverage under this general permit may be obtained by submitting a signed and completed application (form CN-1091) to the division. Work shall not commence until written authorization from the division is received. As noted above, not all activities can be covered under this general permit, and an application for coverage may be denied when appropriate.

Certain activities do not require the submittal of an application or written authorization from the division prior to commencement of work. Those activities are:

- 1) where the length of the stream or reservoir bank to be treated does not to exceed a total length of 50 feet (limited to one site per 1000 linear feet of stream or reservoir bank and may be done only once without notification); or
- 2) where the activity is located within water resource development lands and waters, including flowage easement, managed by the Tennessee Valley Authority (TVA) or the United States Army Corps of Engineers (USCOE).

However, authorization from the appropriate federal management agency (TVA or USCOE) must first be obtained. Even though written authorization is not required, the proposed activity shall be performed in accordance with all limitations, terms and conditions of this permit, and authorization from the appropriate federal management agency (TVA or USCOE) must be obtained.

Where written authorization is required, the division will establish an expiration date for coverage under this general permit that is specific to the authorization and separate from the general permit's expiration date.

Terms and Conditions of this Permit:

All activities covered under this general permit shall comply with all terms and conditions contained hereinafter.

- 1) All work shall be accomplished in conformance with the accepted plans, specifications, data and other information submitted in support of the above mentioned application and the limitations, requirements, and conditions set forth herein.
- 2) All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in Rule 1200-4-3-.03 of the Rules of the Tennessee Department of Environment and Conservation. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of waters of the state for any of the uses designated by Rule 1200-4-4. These uses include fish and aquatic life (including trout streams and naturally reproducing trout streams), livestock watering and wildlife, recreation, irrigation, industrial water supply, domestic water supply, and navigation.
- 3) Applicant is responsible for obtaining the necessary authorization pursuant to applicable provisions of §10 of *The Rivers and Harbors Act of 1899*; §404 of *The Clean Water Act* and §26a of *The Tennessee Valley Authority Act*, as well as any other federal, state or local laws.
- 4) Applicant is responsible for obtaining coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activities for construction sites involving clearing, grading or excavation that result in an area of disturbance of one or more acres, and activities that result in the disturbance of less than one acre if it is part of a larger common plan of development or sale.
- 5) Sediment shall be prevented from entering waters of the state. Erosion and sediment control measures shall be designed according to the size and slope of disturbed or drainage areas to detain runoff and trap sediment, and shall be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. Information on erosion and sediment control measures can be found in the department's Erosion and Sediment Control Handbook (www.tn.gov/environment/wpc/sed_ero_controlhandbook/).
- 6) Erosion and sediment control measures shall be in place and functional before earth moving operations begin, and shall be constructed and maintained throughout the construction period. Temporary measures may be removed at the beginning of the work day, but shall be replaced at the end of the work day.
- 7) Litter, construction debris, and construction chemicals exposed to storm water shall be picked up prior to anticipated storm events (e.g. forecasted by local weather reports), or otherwise prevented from becoming a pollutant source for storm water discharges (e.g., screening outfalls, daily pick-up, etc.). After use, silt fences should be removed or otherwise prevented from becoming a pollutant source for storm water discharges.
- 8) Clearing, grubbing and other disturbance to the riparian vegetation shall be kept at the minimum necessary for slope construction and equipment operations. Unnecessary riparian vegetation removal, including trees, is prohibited.
- 9) Excavated materials, removed vegetation, construction debris, and other wastes shall be removed to an upland location and properly stabilized or disposed of in such a manner as to prevent reentry into the waterway.
- 10) The activity may not be conducted in a manner that would permanently disrupt the movement of fish and aquatic life.
- 11) Stream beds shall not be used as transportation routes for construction equipment. Temporary stream crossings shall be limited to one point in the construction area and erosion control measures shall be utilized where stream banks are disturbed. The crossing shall be constructed so that stream flow is not obstructed. Following construction, all materials used for the temporary crossing shall be removed and disturbed stream banks shall be restored and stabilized if needed.
- 12) Materials used in bank stabilization shall include clean rock, riprap, anchored trees or other non-erodible materials found in the natural environment. Unsuitable materials (e.g., trash, debris, car bodies, asphalt, etc.) are strictly prohibited. Furthermore, the materials shall be free of contaminants, including toxic pollutants, hazardous substances, waste metal, construction debris and other wastes as defined by T.C.A. 69-3-103(18).
- 13) Material may not be placed in a location or manner so as to impair surface water flow into or out of any wetland area.

- 14) Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the state. All spills shall be reported to the appropriate emergency management agency and to the division. In the event of a spill, measures shall be taken immediately to prevent pollution of waters of the state, including groundwater.
- 15) This general permit does not authorize impacts to cultural, historical or archaeological features or sites.
- 16) Failure to comply with the terms and conditions of this permit is a violation of the *Tennessee Water Quality Control Act of 1977* and is subject to penalty in accordance with T.C.A. §69-3-115.

APPROVED: _____

Paul E. Davis, Director, Water Pollution Control

DATE: 6/29/10

Appendix E

Scoping Responses



REPLY TO
ATTENTION OF

Project Planning Branch

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1070
NASHVILLE TN 37202-1070

MAY 08 2012

To All Interested Parties

The U.S. Army Corps of Engineers (Corps), Nashville District is initiating scoping under the National Environmental Policy Act (NEPA) to evaluate the impacts of a proposed riverbank stabilization project approximately located between Tennessee River Miles 466.2 and 466.5 right descending bank within the city of Chattanooga, Tennessee. The study is being conducted under the authority of Section 14 of the Rivers and Harbors Act of 1946, as amended.

The City of Chattanooga has requested Corps assistance with riverbank stabilization along approximately 1,200 feet of bank. Bank erosion is endangering a 42-inch concrete gravity sanitary sewer main, two manholes and a 30-inch iron sanitary sewer force main. Vicinity and location maps are included for project orientation and location (Figure 1 and 2). Bank stabilization alternatives being considered are riprap, a combination of bioengineering and riprap, and no action. The project is also located between two previous Corps' projects. Upstream of the eroding section is the Chattanooga Interceptor Sewer Line project constructed in 1998 and downstream is the Chattanooga Sewer Line project constructed in 1994.

In accordance with NEPA and applicable implementing regulations, an Environmental Assessment (EA) will be prepared to evaluate viable alternatives for this proposal as an integral part of this planning study. We are soliciting public and agency comments concerning environmental issues that should be addressed in the course of the NEPA process, and encourage public comments regarding plans and proposals which may impact or influence community resources. This EA will provide the basis for a decision whether to proceed with an Environmental Impact Statement or a Finding of No Significant Impact.

This letter also serves to initiate public involvement requirements of Section 106 of the National Historic Preservation Act of 1966, as amended. Section 106, implemented by regulations at 36 Code of Federal Regulations 800, requires the Corps to consider the effects of its undertakings on historic properties. Appropriate architectural and archeological investigations will be conducted within areas affected by the proposed activities and the results will be coordinated with the Tennessee State Historic Preservation Officer, Tribal Nations, and other consulting parties.

Please provide any comments concerning issues to be addressed in the EA prior to June 15, 2012. Responses should be mailed to the address listed above or emailed to the addressor listed below. If you have any questions, please contact Mary Tipton, Biologist, at (615) 736-7845 or email at Mary.E.Tipton@usace.army.mil. Your participation is greatly appreciated.

Sincerely,

Russ Rote, P.E., PMP, CFM
Chief, Project Planning Branch



Figure 1 – Vicinity Map

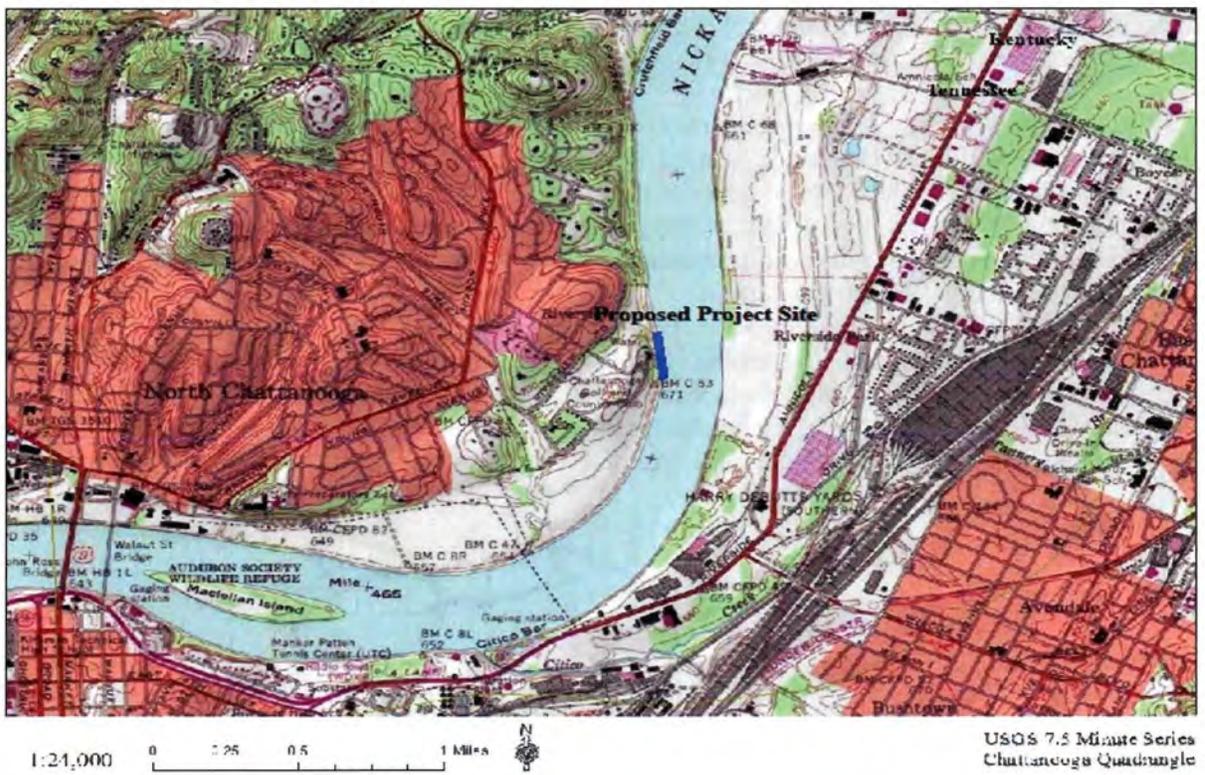


Figure 2 – Location Map



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

June 24, 2012

Mr. Russ Rote
Chief, Project Planning Branch
Department of the Army
Corps of Engineers
P.O. Box 1070
Nashville TN 37202-1070

Re: Riverbank Stabilization, Chattanooga - Comments

Dear Mr. Rote:

I have reviewed your letter concerning the riverbank stabilization project located between Tennessee River for the sanitary sewer system. At this time, the Tennessee Department of Transportation (TDOT) does not have any comments and we are unaware of any conflicts with proposed road projects.

Thank you for the opportunity to review this notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Ann Andrews".

Ann Andrews
Manager 2, Environmental Division

cc: Jim Ozment, TDOT

AA



United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

June 12, 2012

Mr. Russ Rote
Chief, Project Planning Branch
U.S. Army Corps of Engineers
P.O. Box 1070
Nashville, Tennessee 37202-1070

Attention: Mary E. Tipton, Project Planning Branch

Re: FWS #12-CPA-0515. City of Chattanooga, Tennessee Proposed Riverbank Stabilization Project

Dear Ms. Tipton:

U.S. Fish and Wildlife Service (Service) personnel have reviewed your letter, which we received on May 9, 2012, concerning the preparation of an environmental assessment for a proposed riverbank stabilization project between Tennessee River Mile 466.2 and 466.5, right descending bank, within the City of Chattanooga, Hamilton County, Tennessee. The U.S. Army Corps of Engineers, Nashville District (Corps) is soliciting comments concerning environmental issues that should be addressed in the course of the National Environmental Policy Act (NEPA) process.

You have indicated that the proposed action is to stabilize 1,200 feet of riverbank on the right descending bank of the Tennessee River. Currently, erosion along the streambank is endangering the City of Chattanooga's 42-inch concrete gravity sanitary sewer main, two manholes and a 30-inch iron sanitary sewer force main. Bank stabilization alternatives being considered include riprap, a combination of riprap and bioengineering, and no action.

We have reviewed recent and historical endangered species collection records within the locality of the proposed project. Records indicate that the federally endangered pink mucket (*Lampsilis abrupta*) and federally threatened snail darter (*Percina tanasi*) may be present in the vicinity of the proposed project. Individuals of these species have been collected near the proposed project during recent years. Due to the possible presence of these species within the proposed project's impact area, your NEPA document should analyze potential project impacts to these species.

The Service further encourages you to develop a preferred alternative that would include working from the shoreline and not using barges or boats to accomplish the proposed project. Towboat wash could potentially dislodge any mussels present from the substrate in the shallow water areas, so it is preferable that all work be accomplished from the bank. Snail darters could also potentially be disturbed if the proposed work would occur during periods when larval snail darters could drift through and/or juveniles temporarily occupy the action area (March 1 – July 15) or from increased turbidity due to construction activities, compelling the fish to relocate to less suitable habitat outside of the action area. Measures should be taken to minimize sediment inputs and turbidity levels.

We would further encourage the preferred alternative to include bioengineering methods. Increasing native riparian plant community density and diversity would not only improve bank stability, but benefit fish and wildlife resources by providing insect drop and shading the stream margins.

These 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.). Please contact Todd Shaw of my staff at 931/525-4985 if you have questions regarding the information provided in this letter.

Sincerely,

A handwritten signature in cursive script that reads "Mary E. Jennings". The signature is written in dark ink and is positioned to the right of the typed name.

Mary E. Jennings,
Field Supervisor

xc: Dan Eagar, TDEC, Nashville, TN
Rob Todd, TWRA, Nashville, TN



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
WATER SUPPLY

9th Floor, 401 Church Street
Nashville, Tennessee 37243-1549
Phone: (615) 532-0191; Fax: (615) 532-0503

May 30, 2012

Ms. Mary E. Tipton
Chief Project Planning Branch
Department of the Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, Tennessee 37202

RE: Request for Comments, Streambank Erosion along Tennessee River between river mile 466.2 and 466.5 Hamilton County Tennessee
Environmental Assessment (EA)

Ms. Tipton:

The Division of Water Supply has received and reviewed the Environmental Assessment (EA) for the Streambank Erosion along the Tennessee River between river mile 466.2 and 466.5 Project and would like to thank the Nashville District, Corps of Engineers for the opportunity to comment on this plan.

Drinking Water

In regards to this project, there may be water distribution lines in the area that may need to be relocated; if there are any water line relocations then plans must first be approved by the Division's Engineering section. The contact for information in the Drinking Water Program can be obtained from Mr. Bill Hench is the chief engineer for the division. Mr. Hench may be reached by e-mail bill.hench@tn.gov or by telephone at (615)532-0165

Safe Dams Program:

A file review was conducted of all registered sites in the Safe dam program. There are no registered dams in the proposed project area. The contact for information in the Safe Dams Program can be obtained from Mr. Lyle Bentley Manger of the Safe Dams Section in the Division of Water Supply. Mr. Bentley may be reached by e-mail lyle.bentley@tn.gov or by telephone at (615) 532-0154.

Source Water Protection Program:

A review of the community and non-community water supplies in the area shows that the proposed project will be in the Tennessee American Source Water Protection Area. This system should be notified before any work in the area. Any information on the Source Water/Wellhead Protection areas can be directed to Mr. Scotty D. Sorrells Manager Groundwater Management Section. Mr. Sorrells may be reached by e-mail scotty.sorrells@tn.gov or by telephone at (615) 532-9224.

Ms. Tipton

Request for Comments, Streambank Erosion along Tennessee River between river mile 466.2 and 466.5
Hamilton County Tennessee, Environmental Assessment (EA)

May 30, 2012

Page 2

Water Well Program:

A file review was conducted of all the registered private water wells within this proposed route. Please contact Mr. Luke Ewing with the names of the topographic quads. There are private water supplies in the proposed area. Please be advised that not all the water wells that are in existence are on this database and that there may be older wells that we have no record of as well as hand dug wells whose existence we would not have recorded. All water wells that are encountered should be plugged and abandoned by a licensed well contractor. Any information related to the Water Well Program can be directed to Mr. Luke Ewing Manager Water Well Program. Mr. Ewing can be reached by e-mail luke.ewing@tn.gov or by telephone at (615) 532-0176.

Underground Injection Control:

A file review was conducted of all the registered Underground Injection Control (UIC) points within the area of review. No registered UIC sites are within the proposed area. Please be advised that not all old large capacity septic systems or stormwater injection points that are in existence are on this database. All UIC wells that are encountered should be plugged and abandoned according to approval from the UIC program. Any information on the UIC programs can be directed to Ms. Carolyn Sullivan UIC Program Groundwater Management Section. Ms. Sullivan may be reached by e-mail carolyn.sullivan@tn.gov or by telephone at (615) 532-0180.

This letter represents a brief review off best available data sources and not a comprehensive field evaluation. Please verify all information contained within this letter in the field.

The issuance of this letter does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, State, or local laws or regulations.

If you have any questions, feel free to call me at (615) 532-9224 or email at scotty.sorrells@tn.gov.

Sincerely,



Scotty D. Sorrells
Manager Ground Water Management Section
Source Water Protection Coordinator
Division of Water Supply

c: Thomas A. Moss Acting Director DWS
William Hench PE Engineering Section
Lyle Bentley Chief SDP
Luke Ewing Manager WWP
Carolyn Sullivan UIC
David Greif GWMS



Alexander Archæological Consultants, Inc.

P.O. Box 62
209 Walker Road
Wildwood, Georgia 30757

June 8, 2012

Mr. Ross Rote, P.E., PMP, CFM
Chief, Project Planning Branch
Department of the Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

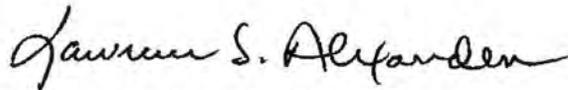
Re: River Bank Stabilization Project from Tennessee River Mile 466.2–466.5 in Chattanooga, TN

Dear Mr. Rote,

It has come to our attention that the U.S. Army Corps of Engineers is evaluating the impacts of a proposed stabilization project located within the above referenced river mile. As a cultural resource management company working in the area for decades, we are extremely familiar with the potential for cultural resources within your proposed project area. There is a very high potential for significant archaeological resources (both prehistoric and historic) that could be eligible to the National Register of Historic Places. Citico village, a well known Mississippian mound and village, lies across the river from the proposed project area.

As such, we urge that you take seriously the Corps of Engineers obligation to fulfill the Section 106 requirement for this proposed project.

Sincerely,



Lawrence S. Alexander, MA, RPA
Alexander Archaeological Consultants, Inc.

cc. Mitzy Schaney



CHATTANOOGA ENVIRONMENTAL FIELD OFFICE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
540 McCALLIE AVENUE, SUITE 550 - STATE OFFICE BUILDING
CHATTANOOGA, TENNESSEE 37402
(423) 634-5745 STATEWIDE 1-888-891-8332 FAX (423) 634-6389

May 22, 2012

Mr. Russ Rote, P.E., PMP, CFM
Chief, Project Planning Branch
Department of the Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

RE: Riverbank Stabilization Project for Tennessee River Right Descending Bank Between Miles
466.2 and 466.5, Chattanooga, Hamilton County, Tennessee

Dear Mr. Rote:

The Division of Underground Storage Tanks (Division) has received the May 8, 2012 Public Notice regarding the above referenced riverbank stabilization project.

The Division is not presently aware of any circumstances relative to the UST Program which might adversely affect the riverbank stabilization project as described in the referenced correspondence and attachments.

Should you have additional questions concerning this correspondence, please contact me at (423) 634-5737.

Sincerely,

William Randy Slater
Field Office Manager
Division of Underground Storage Tanks

c: Mary Tipton, US Army Corps of Engineers, Project Planning Branch (Electronic Copy)
Stanley R. Boyd, UST Division Director c/o Ernestine Ellis
Chattanooga EFO - Hamilton County General File



IN REPLY REFER TO:

United States Department of the Interior



National Park Service
Chickamauga and Chattanooga
National Military Park
P.O. Box 2128
Fort Oglethorpe, Georgia 30742

H4217(5221)

May 30, 2012

Mr. Russ Rote, P.E., PMP, CFM
Chief, Project Planning Branch
Department of the Army
Nashville District, Corps of Engineers
P. O. Box 1070
Nashville, Tennessee 37202-1070

Dear Mr. Rote:

Thank you for the opportunity to provide information on possible cultural resource impacts from the proposal to stabilize the stretch of the right bank of the Tennessee River between Miles 466.2 and 466.5.

As with just about any stretch of the Tennessee in this area up-river of Williams Island (Mile 455), it is likely that some evidence of early American Indians could be encountered. Sites are known both up-and downstream of the project area. While this National Military Park is not aware of a specific site within the project area, the site files of the Tennessee Division of Archeology there in Nashville should be consulted. Additionally, you may want to contact two locally knowledgeable archeologist to see if they are aware of a site(s) in that area:

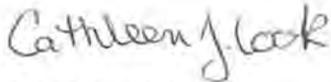
Lawrence Alexander
Alexander Archeological Consultants
P. O. Box 62
Wildwood, Georgia 30757
706-820-4344 o
706.820.4076 fax
lalexander@alexanderconsultants.net

Dr. Nicholas "Nick" Honerkamp
Department of Sociology, Anthropology, and Geography
University of Tennessee at Chattanooga
308 Brock Hall
615 McCallie Avenue
Chattanooga, Tennessee 37403
nick-honerkamp@utc.edu
423-425-4325
423-425-2251(f)



During the Civil War Siege and Battles for Chattanooga (September 22, 1863-November 25, 1863), the Union Army did maintain a chain of picket posts along the right bank upstream of Chattanooga. Hence, it is possible that some evidence of Civil War activity could be encountered in the project area, most probably in the form of a small encampment. Earthworks or notable structures are not known to have been constructed along the picket line in the project area. Should you have additional questions about possible cultural resources in the area of this project, feel free to contact Historian Jim Ogden at james_ogden@nps.gov or 423-752-5213, ext. 116

Sincerely,

A handwritten signature in cursive script that reads "Cathleen J. Cook". The signature is written in dark ink and is positioned above the typed name.

Cathleen J. Cook,
Superintendent



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

June 14, 2012

Russ Rote
Chief, Project Planning Branch
U.S Army Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

Attention: Mary E. Tipton, Project Planning Branch

Re: City of Chattanooga, Tennessee Proposed Riverbank Stabilization Project

Dear Ms. Tuck:

The Tennessee Wildlife Resources Agency has reviewed the information that your office provided regarding the preparation of an environmental assessment for a proposed riverbank stabilization project between Tennessee River Mile 466.2 and 466.5, right descending bank in Chattanooga, Tennessee. Information available to us regarding listed species under our authority indicates that the state and federally threatened snail darter (*Percina tanasi*) and the state and federally endangered pink mucket (*Lampsilis abrupta*) may be present in the vicinity of the proposed project. We request that potential impacts to these listed species be addressed in the environmental assessment for this proposed project. We also request that coordination occur with our agency on measures to be employed to minimize potential impacts to these listed species under our authority.

We thank you for the opportunity to comment on this public notice.

Sincerely,

Robert M. Todd
Fish and Wildlife Environmentalist

cc: Bobby Brown, Region III Habitat Biologist
John Mayer, Region III Manager
Mary Jennings, U.S. Fish and Wildlife Service
Todd Bowers, Environmental Protection Agency

The State of Tennessee

IS AN EQUAL OPPORTUNITY, EQUAL ACCESS, AFFIRMATIVE ACTION EMPLOYER



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Remediation
401 Church Street
4th Floor, L&C Annex
Nashville, TN 37243

May 10, 2012

Ms. Mary E. Tipton
Department of the Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070
615-736-7845
Mary.E.Tipton@usace.army.mil

Re: Proposed Riverbank Stabilization Project
City of Chattanooga

Dear Ms. Tipton,

The Division of Remediation (DoR) has received your environmental review request dated May 8, 2012 for the proposed riverbank stabilization project within the city of Chattanooga. After reviewing your maps and our project files, we concluded that there are no DoR issues within the area depicted.

If you have any further questions, do not hesitate to contact Troy Keith, our Chattanooga Field Office manager at troy.keith@tn.gov or (423) 634-5755 if you have any further questions

Sincerely,

Robert A. Binford, Director

RAB:TRK:mdd

cc: Chattanooga Field Office
Central Office Files: #33-000

Appendix F

Public and Agency Review Comments



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Remediation
401 Church Street
4th Floor, L&C Annex
Nashville, TN 37243

September 10, 2012

Department of the Army
Nashville District, Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070
ATTN: CELRN-PM-P (Mary Tipton)
Mary.E.Tipton@usace.army.mil

**Environmental Assessment
Proposed Riverbank Stabilization
Tennessee River Mile 466.2 -466.5**

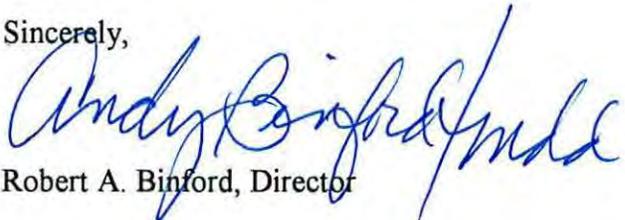
Dear Ms. Tipton:

The Division of Remediation (DoR) has received your environmental review request dated August 29, 2012 concerning the environmental assessment for the proposed riverbank stabilization at Tennessee River Mile 466.2-466.5.

After reviewing your map and our project files, we concluded that there are no known DoR related issues.

If you have any further questions, do not hesitate to contact Troy Keith, our Chattanooga Field Office manager at troy.keith@tn.gov or (423) 634-5755.

Sincerely,


Robert A. Binford, Director

RAB:TRK:mdd

cc: Chattanooga Field Office
Central Office Files: #33-000

Tennessee Department of Environment and Conservation Division of Natural Heritage

From: [Chelsea Broach](#)
To: [Tipton, Mary LRN](#)
Cc: [David Wilbes](#)
Subject: USACE EA and FONSI Proposed River Bank Stabilization on the Tennessee River at River Mile 466.2-466.5, Chattanooga, Hamilton County
Date: Monday, September 24, 2012 1:09:38 PM

ATTN: CELRN-PM-P (Mary Tipton):

Thank you for your review request for the USACE Environmental Assessment (EA) and unsigned Finding of No Significant Impact (FONSI) for the proposed riverbank stabilization project at Tennessee River Mile 466.2-466.5 in Chattanooga, Hamilton County, Tennessee. We have reviewed the state's natural heritage database with regard to the project location, and we find that numerous rare species have been observed previously within one mile of the project. However, our office does not anticipate any impacts.

If you have any questions, please feel free to contact me.

Thank you,

Chelsea L. Broach

Interim Data Manager

Tennessee Natural Heritage Program

7th Floor L&C Tower, 401 Church Street

Nashville, TN 37243-0447

(615) 532-0440

chelsea.broach@tn.gov <<mailto:chelsea.broach@tn.gov>>

<http://www.tn.gov/environment/na/data.shtml> <<http://www.tn.gov/environment/na/data.shtml>>

Tennessee Wildlife Resources Agency

From: [Rob Todd](#)
To: [Tipton, Mary LRN](#)
Cc: [Robbie Sykes - FWS](#)
Subject: RE: Chattanooga Tennessee River Mile 466.2-466.5 Draft Environmental Assessment (EA) and Unsigned FONSI (UNCLASSIFIED)
Date: Wednesday, October 03, 2012 12:11:43 PM

Ms. Tipton:

The Tennessee Wildlife Resources Agency has reviewed the DEA and FONSI for the proposed bank stabilization project located at Tennessee River Mile 466.2-466.5 and we have no concerns or objection to the proposed project and concur with the U.S. Fish and Wildlife Service's position regarding this project. If I may be of further assistance, please contact me.

Robert Todd
Fish & Wildlife Environmentalist
Tennessee Wildlife Resources Agency
Ellington Agricultural Center
P.O. Box 40747
Nashville, TN 37204
Office: 615-781-6572
Cell: 931-881-8240
Fax: 615-781-6667
Email: rob.todd@tn.gov

-----Original Message-----

From: Tipton, Mary LRN [<mailto:Mary.E.Tipton@usace.army.mil>]
Sent: Thursday, August 30, 2012 1:07 PM
To: Rob Todd
Subject: Chattanooga Tennessee River Mile 466.2-466.5 Draft Environmental Assessment (EA) and Unsigned FONSI (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Rob,
Attached is the draft EA along with the Public Review Notice of Availability. A hard copy of the draft EA is being sent to your office. My apologies, but the unsigned FONSI was not sent with the draft, but is attached (titled: Unsigned FONSI) with this message.

Thank you,

Mary Tipton
Biologist/Customer Outreach and IIS Coordinator Project Planning Branch U.S. Army Corps of Engineers
Nashville District

Office: (615)736-7845

Internet: <http://www.lrn.usace.army.mil>
Facebook: <http://www.facebook.com/nashvillecorps>

Classification: UNCLASSIFIED
Caveats: NONE



United States Department of the Interior

FISH AND WILDLIFE SERVICE

446 Neal Street
Cookeville, TN 38501

September 28, 2012

Ms. Mary Tipton
Project Planning Branch
U.S. Army Corps of Engineers
P.O. Box 1070
Nashville, Tennessee 37202-1070

Re: 2012-CPA--0515. Comments for Draft Environmental Assessment for Proposed Riverbank Stabilization on the Tennessee River at Approximate Tennessee River Mile 466.2-466.5

Dear Ms. Tipton:

U.S. Fish and Wildlife Service (Service) personnel have reviewed the U.S. Army Corps of Engineers, Nashville District's (Corps) draft environmental assessment (DEA) for Proposed Riverbank Stabilization on the Tennessee River at Approximate Tennessee River Mile 466.2-466.5, right descending bank, within the City of Chattanooga (City), Hamilton County, Tennessee. The proposed project would stabilize approximately 1,200 feet of currently eroding riverbank in Nickajack Reservoir, endangering the City's 42-inch concrete gravity sanitary sewer main, two manholes and a 30-inch iron sanitary sewer force main. The project would be located between two previous Corp's bank stabilization projects.

The Corps has developed four alternatives to the proposed action. These alternatives are: Alternative 1 - No Action Alternative, Alternative 2 - Bank Stabilization by Sloping of Bank and Placing Riprap, Alternative 3 - Preferred Alternative - Full Bank Build-Out (No Sloping of Bank) Placing Riprap and Alternative 4 - Combination of Bioengineering and Riprap. Under the No Action Alternative, the Corps would allow existing conditions to continue along the affected reach of the Tennessee River and erosion would continue to degrade the river bank, potentially resulting in additional and more costly erosion control remedies for the City and possible damage to adjacent infrastructure. Alternative 2 would involve sloping the bank, laying geotextile fabric, and placing riprap in a toe and extending it to the top of the bank at a 2:1 slope on 1,200 linear feet of riverbank; this alternative was eliminated due to cultural resource concerns with excavation and bank sloping. Alternative 3 would consist of placing geotextile fabric and riprap in a toe trench and extending them up the existing, eroded bank to the top of the bank on a 2:1 slope to the top of the point of erosion; this preferred alternative would stabilize the entire bank,

prevent soil erosion and create a physical barrier to the bank face without requiring any bank excavation (sloping). Alternative 4 would involve a combination of riprap and bioengineering with riprap construction similar to Alternatives 2 and 3 being implemented on the lower portion of the river bank (in areas more frequently inundated during high water events), and bioengineering methods being implemented on the upper riverbanks; this alternative was eliminated due to concerns regarding high water velocities, the highly erodible nature of silty soils in this location, excavating the bank to establish plantings potentially impacting cultural resources, interactions with previously placed riprap immediately upstream and downstream of the proposed project location, and close proximity to existing utilities.

Based upon previous coordination with the Service and the Tennessee Wildlife Resources Agency, you have indicated that the federally endangered pink mucket (*Lampsilis abrupta*) and federally endangered snail darter (*Percina tanasi*) may be present within the proposed project vicinity. You have further indicated that the preferred alternative would have short-term impacts on these two species due to additional riprap placement below a 632-foot mean sea level (msl) elevation and potential construction impacts as a result of spud placements impacting substrate, incidental spillage of construction materials, incidental fall-back of stone and prop wash from the tow vessel during repositioning of the work barge. Minimization measures would include constructing from barge platforms to reduce contact with and disturbance of banks and substrate, visual turbidity monitoring and prop wash restrictions (as needed) to reduce turbidity, limiting spud placement, avoiding incidental fallback and avoiding barge contact with the river bottom. Based upon your review of recent native mussel surveys that have been conducted near the proposed action (downstream of Chickamauga Dam and Moccasin Bend) and the similarity of a recent riprap installation project at Moccasin Bend, the Corps has determined that the proposed project "may affect, but is not likely to adversely affect" the federally listed pink mucket. You have further determined that the proposed project "may affect, but is not likely to adversely affect" the federally listed snail darter because the bank stabilization work would be implemented outside of the March 1 through July 15 time period, when larval snail darters could potentially drift through and/or juveniles temporarily occupy the action area and be affected by increased turbidity from construction activities.

In response to the Service's recommendation in our previous June 12, 2012, letter, regarding developing a preferred alternative that would include working from the shoreline and not using barges or boats to accomplish the proposed project, you have indicated that access to the proposed project site from shore would be limited due to: 1) a restricted work area (minimal area for equipment to access the shoreline with non-specialized equipment, which would lack sufficient reach to place riprap on the toe of the bank), and 2) costs associated with entry via a private property (haul roads placed on a golf course, potential damage to the country club's existing roads and parking areas, restoring the golf course to its original state and impacts to the country clubs operations during project construction).

The Corps has also determined that there would be no adverse effects to wetlands as a result of the proposed action because none were found with the proposed project area.

Based upon our review of recent and historical endangered species collection records within the proposed project vicinity and TVA's effect determinations (described in the above paragraphs), we concur with the Corp's "may affect, but is not likely to adversely affect" determination for the federally listed pink mucket and snail darter because: 1) the minimization measures (described above) would abate the potential for towboat wash to dislodge any pink muckets present in substrate in shallow water areas, and decrease sediment inputs and turbidity levels that could affect the species, and 2) the proposed work would occur outside of the sensitive larval and juvenile life history period for the snail darter (March 1 – July 15), and adult snail darters would likely swim out of harm's way and not be affected by increased turbidity from construction activities.

The DEA does not indicate whether federally designated critical habitat exists in the proposed project's action area and, if so, the potential effects the proposed action could have to critical habitat. The Corps should include an effects determination for critical habitat in your final environmental assessment.

Based upon our review of National Wetlands Inventory data, we agree with your determination that no wetlands occur with the project vicinity, and therefore, no adverse effects to wetland would occur. Our wetlands determination has been made in the absence of a field inspection and does not constitute a wetlands' delineation for the purposes of Section 404 of the Clean Water Act. Based on the best available information, the DEA adequately addresses wetlands.

We agree with your selection of Alternative 3 as the preferred alternative for the proposed action. Considering the logistics involving property access, characteristics of the proposed work site and the proposed minimization measures, this alternative would result in may affect, but is not likely to adversely affect threatened or endangered species, no adverse modification to critical habitats and no adverse effects to wetlands.

These 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.). Please contact Todd Shaw (telephone 931/525-4985) of my staff if you have questions regarding the information provided in this letter.

Sincerely,



for Mary E. Jennings,
Field Supervisor

xc: Robert Todd, TWRA, Nashville, TN
Dan Eagar, TDEC, Nashville, TN
Todd Bowers, EPA, Atlanta, GA

Tennessee Valley Authority

From: [Nicholson, Charles P.](#)
To: [Tipton, Mary LRN](#)
Subject: EA for Chattanooga Section 14 Riverbank Stabilization
Date: Monday, October 15, 2012 10:38:21 AM

Mary,

We have reviewed the subject Draft EA and FONSI and have a couple comments on it. Section 3.7 Cultural Resources states that Appendix B includes a letter from the Tennessee State Historic Preservation Officer concurring with the phased compliance approach for Section 106. This letter is missing from the copy of the Draft EA that we received. A wildlife-related concern that we have previously addressed for large bank stabilization projects in this general area is the permanent loss of vertical or near-vertical dirt bank nest habitat used by species such as the belted kingfisher. Suitable banks are typically at least four to five feet tall. The EA does not address this the effects on this habitat and I cannot tell from the figures in the EA whether such habitat occurs in the project area. These types of projects are likely having a negative cumulative effect on the kingfisher and other species dependent on this habitat type.

Chuck N.

Charles P. Nicholson, PhD
Manager, NEPA Compliance
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11B
Knoxville, TN 37902-1499
Phone: 865-632-3582
Mobile: 865-405-7948
Fax: 865-632-2345