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FINAL ENVIRONMENTAL ASSESSMENT

UNIVERSITY OF TENNESSEE PROPOSED GREENWAY AND GOLF PRACTICE FACILITY Knox County, Tennessee

PREPARED BY:
TENNESSEE VALLEY AUTHORITY

COOPERATING AGENCY:
U.S. ARMY CORPS OF ENGINEERS

MARCH 2008

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ENVIRONMENTAL ASSESSMENT

UNIVERSITY OF TENNESSEE PROPERTY AT TENNESSEE RIVER MILE 643.5 TO 645.2 LEFT BANK KNOX COUNTY, TENNESSEE

TENNESSEE VALLEY AUTHORITY

FEBRUARY 2008

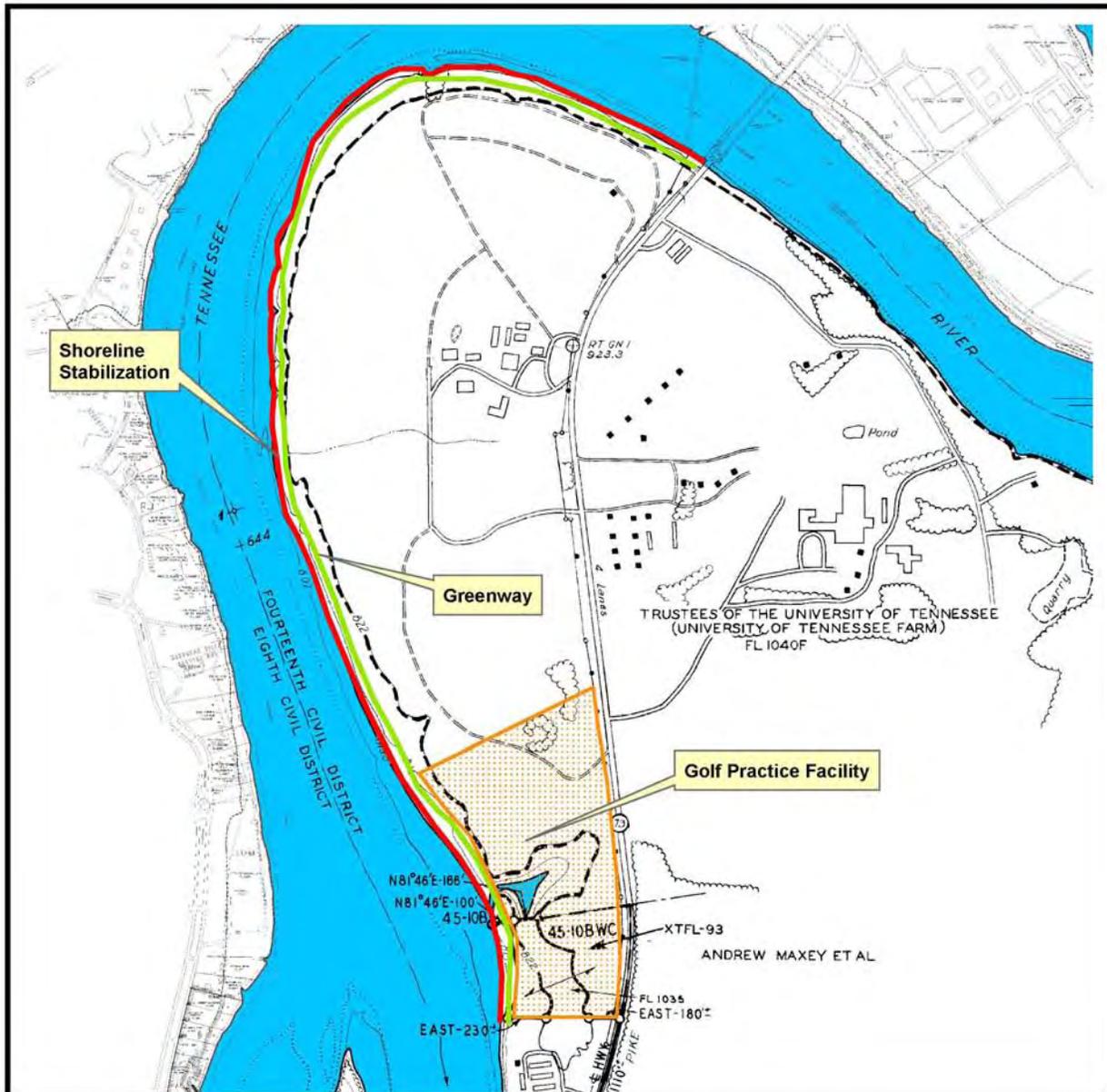
The Proposed Decision and Need

The University of Tennessee (UT) in partnership with Knox County, Tennessee (Knox County), and the City of Knoxville (Knoxville) propose to develop a greenway and golf practice facility on 4 acres of Tennessee Valley Authority (TVA) property, 7 acres of previously owned TVA property transferred to Knox County, and 38 acres of UT property on Fort Loudoun Reservoir in Knox County, Tennessee. In October 2007, UT requested that TVA and the U.S. Army Corps of Engineers (USACE) approve pedestrian bridges and fill for the greenway and golf practice facility, a culvert for the greenway, and riprap stabilization. Knox County and UT have requested that TVA grant land use licenses for a portion of the greenway and golf practice facility located on TVA property. This environmental assessment (EA) assesses the potential impacts of TVA and USACE issuing the requested permits and land use licenses and the resulting development of the greenway, golf practice facility, and riprap stabilization.

Background

This property is located in Knox County, on the south shore of Fort Loudoun Reservoir between Tennessee River Mile (TRM) 643.5 and TRM 645.2 along the left-descending bank (L) (Figure 1). It was purchased by TVA as part of the original Fort Loudoun project for establishment of the Fort Loudoun Reservoir in the early 1940s. In 1952, TVA transferred 7 acres, along with several other similar parcels, to Knox County under Section 4(k)(a) of the TVA Act to provide for public access and recreation along Fort Loudoun Reservoir. As required by Section 4(k)(a), the Deed of Transfer specifies that Knox County must use the property for public recreational purposes for the benefit of the general public. In 1960, TVA granted Knox County a land use license revocable on 30 days' notice for the use of 4 acres of TVA property below the 822-foot mean sea level (msl) elevation. The land use license specifies that Knox County must use the property for public recreational purposes.

Knox County had requested that TVA modify the Deed of Transfer and remove the public recreation restriction. In 2006, the TVA Board of Directors approved TVA's Land Policy (Policy) to govern the retention, disposal, and planning of interests in real property. Removing the public recreation restriction as requested by Knox County was not consistent with the Policy and was not approved by TVA. Since that time, UT has entered into an agreement with Knox County to use these properties for the golf practice facility development. The following measures will govern operation of the golf practice facility:



Knoxville Quad 147NW
Map 45D

Fort Loudoun Reservoir
Tennessee River Mile 643.5 - 645.2 Left Bank
Section 26a Request - University of Tennessee

TVA Tract Numbers
FL-1040F
XTFL-93

Legend:

-  Shoreline Stabilization
-  Greenway
-  Golf Practice Facility

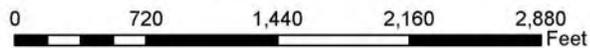


Figure 1. Project Exhibit Map

- UT would build, maintain, and dedicate for public use a practice tee and putting green of approximately 8,000 square feet and 5,000 square feet, respectively.
- UT would make the public tees and greens available for public use from April 15 through October 15 each year. The public would be allowed to access the golf practice facility a minimum of eight hours each week. General hours of operation for public use would be Saturdays from 2:00 p.m. until 6:00 p.m. and Sundays from 1:00 p.m. until 5:00 p.m.
- UT would continue to offer golf instruction to the general public through a noncredit golf class. The golf classes would be offered once in the fall, spring, and summer each year. The new golf practice facility would be used for these classes.

Necessary Permits and Public Involvement

Approval under Section 26a of the TVA Act of 1933, as amended, is required for the construction of any obstructions in and along the Tennessee River or its tributaries. Land use authorization (license) has been requested by Knox County and UT for approximately 4 acres of TVA property located below the 822-foot msl elevation. The license would allow use of TVA property for public recreation purposes and facilitate the development of the greenway and golf practice facility. In order to accommodate the UT request, the existing license agreement between TVA and Knox County would be revoked.

The proposal would also require approval by USACE under Section 10 of the River and Harbor Act, Section 404 of the Clean Water Act, and Nationwide Permit 42. Section 401 Water Quality Certification and an Aquatic Resource Alteration Permit (ARAP) would be required by the State of Tennessee, Department of Environment and Conservation Division of Water Pollution Control (TDEC). A General ARAP Permit was issued for the riprap stabilization on September 25, 2006. TDEC confirmed, by email dated November 8, 2007, that Section 401 Water Quality Certification would not be required for construction of the greenway. Section 401 Water Quality Certification was issued for the golf practice facility on December 18, 2007. A General National Pollutant Discharge Elimination System Permit was issued for the construction of the golf practice facility on December 18, 2007. Copies of these permits and emails are located in Attachment A.

The proposed action was the subject of joint public notice (PN07-83) issued by TVA and USACE on November 23, 2007, for a 30-day public comment period. The comments received during this period along with a copy of the joint public notice are located in Attachment B. TDEC's Division of Natural Areas noted rare aquatic species occurring within the vicinity of the proposal and suggested that the applicants contact Tennessee Wildlife Resources Agency (TWRA) and the U.S. Fish and Wildlife Service (USFWS) to ensure rare aquatic fauna would not be potentially impacted by the proposal. Historically, there were three federally listed mussels in the area, but due to Fort Loudoun's impoundment, the mussels nor their habitats exist. After a review of the area, we have concluded that there are no state- or federally listed aquatic species are located near the project area. USFWS commented that Section 7 of the Endangered Species Act of 1973, as amended, has been fulfilled. In addition, USFWS has no objection to the issuance of a permit for the work described in the public notice. Based upon this information, the USACE has reached a "no effect" determination for the riprap proposal. TWRA did not comment on the public notice.

The Tennessee State Historic Preservation Officer (SHPO) commented by letter dated December 6, 2007, that the project as currently proposed will not adversely affect any archaeological resources and that his office has no objection to the implementation of the project. On January 18, 2008, TVA Cultural Resources sent a letter to the SHPO stating that the golf practice facility, greenway, and riprap stabilization would not adversely affect historic structures eligible for or listed in the National Register of Historic Places (NRHP). In a letter dated February 20, 2008, the SHPO requested that TVA consult with the owners of certain affected historic structures and the Sequoyah Hills Neighborhood Association to solicit their views regarding potential impacts of the installation of riprap stabilization associated with the project. On February 25, 2008, TVA sent notices to representatives of the affected historic structures and the Sequoyah Hills Neighborhood Association requesting their comments within 15 days regarding the installation of riprap stabilization.

Alternatives

The alternatives considered are the No Action Alternative, under which TVA and USACE would not provide the necessary approvals to facilitate the construction of the greenway and golf practice facility and the installation of riprap stabilization, and the proposed Action Alternative under which TVA and USACE would provide the necessary approvals to facilitate the construction of the greenway and golf practice facility and the installation of riprap stabilization.

Under the No Action Alternative, the greenway and golf practice facility would not be constructed, and the shoreline would continue to erode, potentially exposing archaeological sites. The transferred tract of land would continue to have the potential to provide public recreation opportunities for Knox County.

Under the Action Alternative, TVA would provide Section 26a approval to UT for three pedestrian bridges, one culvert, fill within TVA's Flood Risk Profile, and 9,000 feet of riprap stabilization. TVA would provide revocable land use licenses to UT and Knox County for public recreation purposes. USACE would provide Section 10 and Section 404 approvals for the riprap stabilization. The culvert and pedestrian bridges meet the criteria for Nationwide Permit 42, Recreational Facilities. The greenway and golf practice facility would be constructed, providing additional public recreation opportunities within Knox County, and the shoreline would be stabilized to protect archaeological sites.

UT's conceptual golf practice facility design for 41 acres of UT, Knox County, and TVA land is comprised of a nine-hole challenge/practice collegiate golf facility with practice tees and greens. Approximately 4 acres of the golf practice facility would be located on TVA property lying below the 822-foot msl elevation. Approximately 7 acres of the golf practice facility would be located on previously owned TVA property transferred to Knox County. The remaining 34 acres is owned by UT (Figure 2). UT requests permission to place 18,000 cubic yards of fill material below TVA's Flood Risk Profile (FRP). However, UT would remove 22,000 cubic yards of material below TVA's FRP, creating 4,000 cubic yards of net gain. The material removed during the construction of the golf practice facility would be located upland on UT property (Figure 3). UT would construct two bridges to accommodate golf carts. Existing parking areas located on adjacent UT property would be utilized for the greenway or golf practice facility.

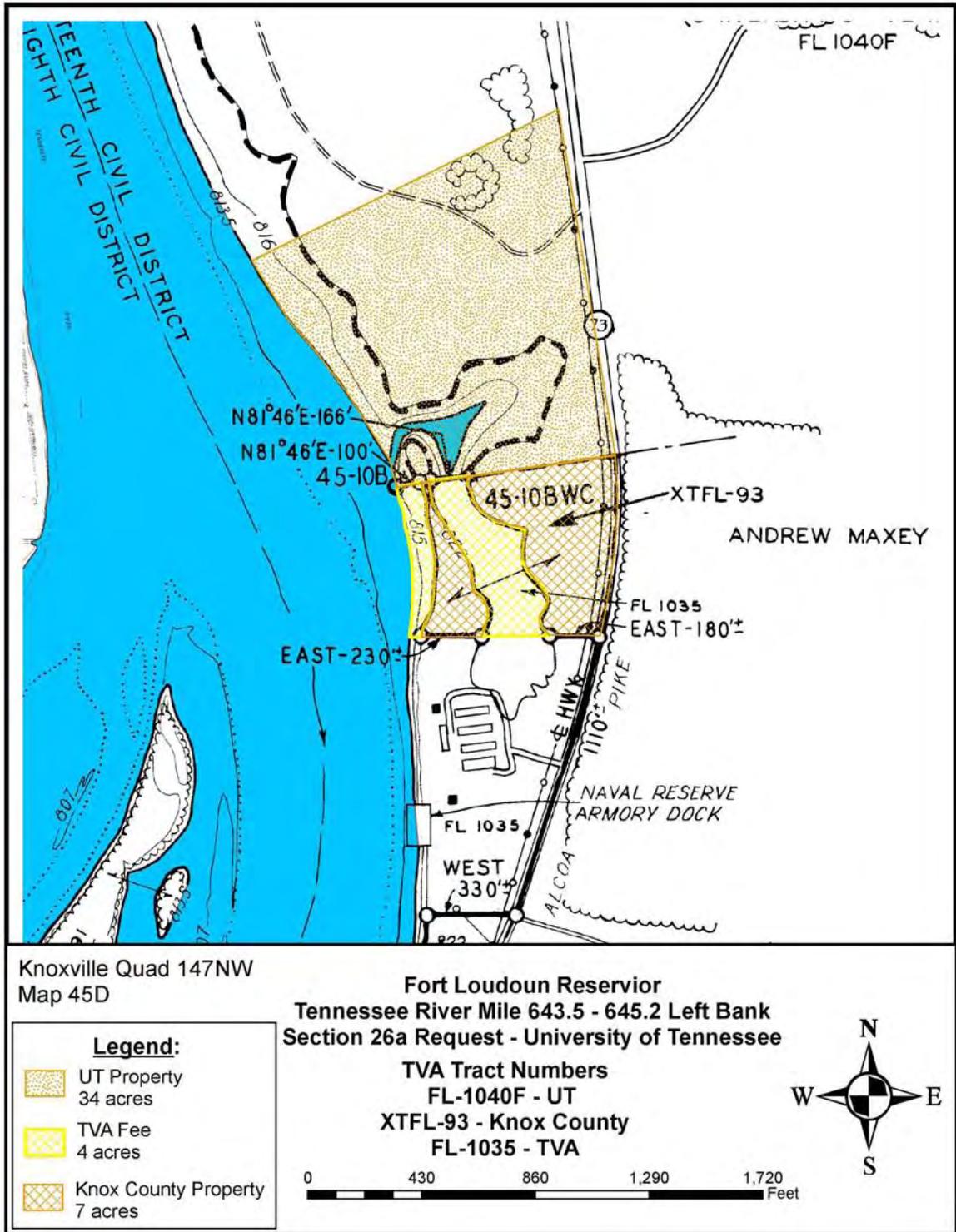


Figure 2. Golf Practice Facility Location Map

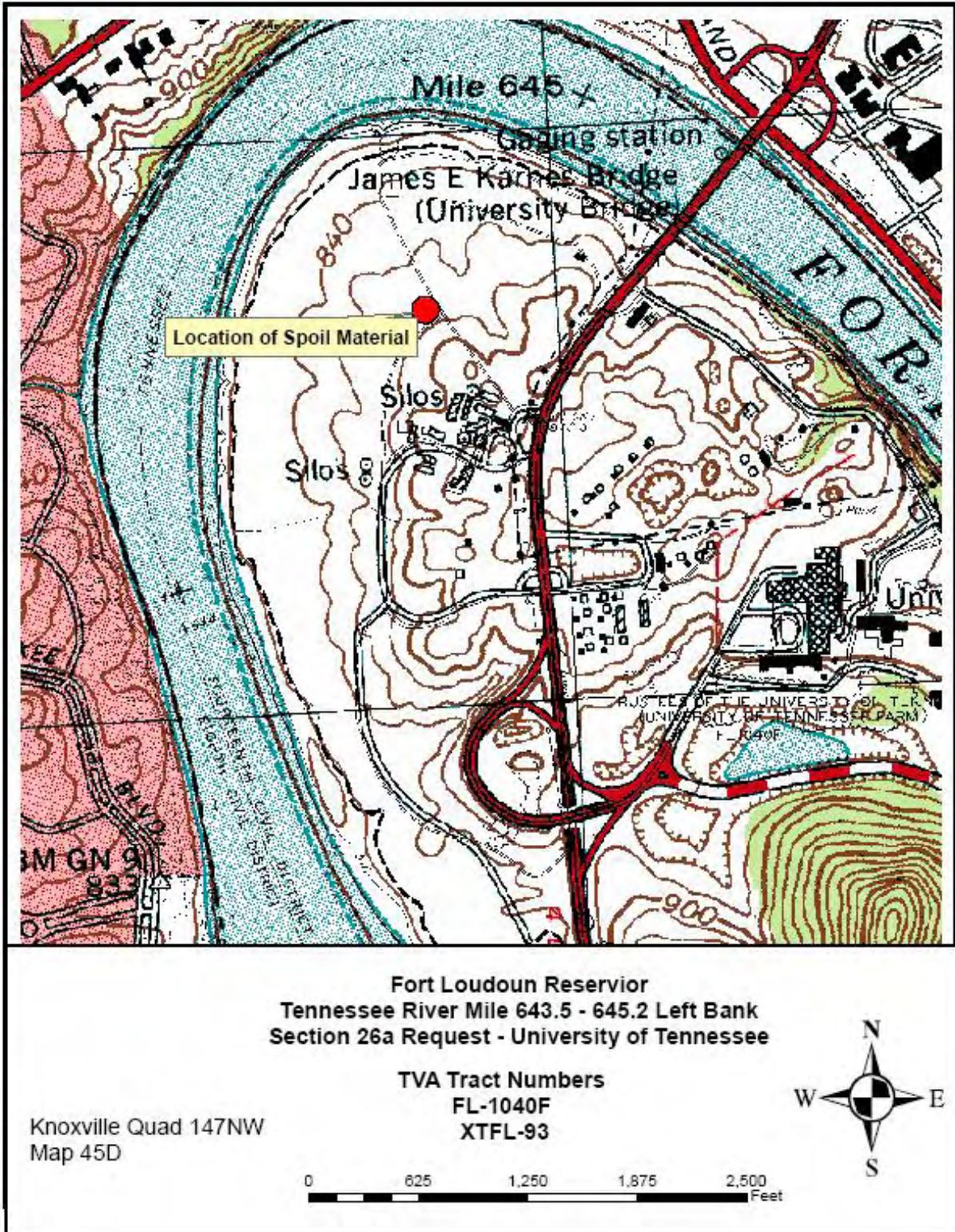


Figure 3. Spoil Location Map

Knoxville has designed a greenway along Fort Loudoun Reservoir shoreline that encompasses 4 acres of UT, Knox County, and TVA property. A portion of the greenway, approximately 0.5 acres, would be located on TVA property lying below the 822-foot msl elevation. The greenway would extend from TRM 643.5L to TRM 645.2L, approximately 1.75 miles in length. The greenway design would require one pedestrian bridge and one culvert along the shoreline and 76 cubic yards of fill within TVA's FRP. UT requests permission to install 9,000 feet of riprap stabilization within the greenway area and along the shoreline. The installation of the riprap stabilization would require an earthen key to be dug below normal summer pool, resulting in spoil material. The spoil material would be deposited in an upland containment area above TVA's FRP on UT property (Figure 3). The applicants would implement measures to prevent discharges of spoil material into the reservoir.

Because there are known archaeological and historical sites in the project area, TVA has entered into a memorandum of agreement (MOA) with the Tennessee SHPO, UT, and Knox County. This MOA, along with a summary of cultural resources assessments, appears in Attachment C.

The overall project cost is estimated at \$6.5 million and would be funded by UT and the Federal Highway Administration. The golf practice facility has an estimated project cost of \$4 million and has been funded by UT. The greenway has an estimated project cost of \$1.4 million and has been funded by a grant from the Federal Highway Administration. The riprap stabilization has an estimated project cost of \$1.1 million and has been funded by UT.

Affected Environment and Evaluation of Impacts

As previously mentioned, this property is located in Knox County, Tennessee, on the south shore of Fort Loudoun Reservoir between TRM 643.5L and TRM 645.2L. The areas assessed here are the footprints of the greenway, golf practice facility, riprap stabilization, and spoil location. Under the No Action Alternative, the greenway and golf practice facility would not be constructed, and the shoreline would continue to erode, potentially exposing archaeological sites. Under the Action Alternative, the greenway and golf practice facility would be constructed, and riprap stabilization would be installed along the shoreline.

Because of the nature of the project, TVA has determined that the Action Alternative would not result in waste stream generation or alteration involving air, hazardous materials, solid wastes, or special material. Likewise, TVA has determined there would be no impacts to navigation, groundwater, or noise. In addition, the proposal would not visually contrast significantly with the existing landscape character.

Construction of the greenway and golf practice facility would create a transient and temporary impact on traffic, but this would be difficult to distinguish from existing movements of construction activities and heavy equipment already occurring under the No Action Alternative. Likewise, parking associated with the greenway and golf practice facility would be accommodated by using existing parking areas on adjacent UT property and would be difficult to distinguish from the existing traffic movements already occurring under the No Action Alternative. The riprap stabilization would be installed by barge, resulting in no impacts to traffic. Similarly, the socioeconomic impact on the community of the workers

needed to construct the greenway and golf practice facility and, if necessary, install the riprap stabilization would be temporary and insignificant.

Recreation and Managed Areas

With its close proximity to urban centers, Fort Loudoun Reservoir is an important resource for recreational users of the Tennessee Valley. Due to the lack of forested land cover and because the area is in close proximity to a heavily used highway, the potential for future management enhancements for informal recreation activities occurring on this parcel of land is remote. In addition, TVA conducted a survey in 2007 of all informal recreation areas on Fort Loudoun Reservoir. No informal reservoir-based recreation sites were present in the immediate vicinity of the proposal.

Based on the 2006 National Survey on Recreation and the Environment, estimates have been made of the outdoor recreation participation of the residents of the counties surrounding Fort Loudoun Reservoir in Tennessee (Green). Table 1 is a summary of the participation rates for prominent activities that would occur if the proposal were developed.

Table 1. Fort Loudoun Area Recreational Activity Participation Rates (Project Focused)

Activity	Project Development	Percent Participating	Number of Participants
Walk for pleasure	Greenway	82.4	505,000
Bicycling	Greenway	30.6	188,000
Golf	Golf Facilities	13.7	84,000

Walking for pleasure is the second most popular recreational activity occurring in developed settings, and bicycling is the seventh. Greenway development facilitates these high-demand activities. Playing golf has a lower participation rate at 13.7 percent of the population of the Fort Loudoun area.

Under the No Action Alternative, no change to the baseline recreation resource would occur. Under the Action Alternative, the public would benefit from the development of the proposed greenway. Participation in greenway activities is among the highest for developed activities in this area. However, the public recreation benefit would be less with the development of the golf practice facility. Under the applicants’ proposal, public access to the golf practice facility is restricted to eight hours per week from April 15 to October 15. The public could also participate through paid UT training courses. Overall, the public would benefit from the proposed project.

The Tennessee Wildlife Resources Agency’s Fort Loudoun Wildlife Management Area (WMA) is located adjacent to the proposal. The WMA includes TVA property and all public waters from TRM 638.5 to TRM 649.5. The WMA was established to set special regulations for waterfowl hunting along this portion of Fort Loudoun Reservoir. Both the No Action and Action Alternatives would not affect or conflict with the strict hunting regulations established under the WMA proclamation. Before greenway construction is complete, the applicants would coordinate with WMA personnel to determine if signage describing the strict hunting regulations is necessary and, if so, the appropriate location of such signage along the greenway.

Floodplains

Portions of the golf practice facility and greenway would be located within the 100-year floodplain and flood control storage zone. The 100-year flood elevations for the Tennessee River vary from 819.6-foot msl elevation at TRM 643.5 to 820.3-foot msl elevation at TRM 645.2. The FRP elevations vary from 824.4-foot msl elevation at TRM 643.5 to 825.5-foot msl elevation at TRM 645.2. The golf practice facility and greenway would be considered a recreational use of the floodplain that is acceptable under Executive Order (EO) 11988. In order to facilitate the development of the golf practice facility and greenway, soil would be relocated within the 100-year floodplain and flood control storage zone. The volume of soil removed would exceed the volume of fill for the project. The golf practice facility and greenway development would further comply with EO 11988 and the TVA Flood Control Storage Loss Guideline because there would be no loss of flood control storage.

The placement of riprap is considered a repetitive action in the floodplain and is consistent with EO 11988. However, the proposed riprap would be located within the published floodway on the Tennessee River. Information concerning the placement of riprap in the published 100-year floodway was provided to Knoxville for review. A "No-Rise" Certification for Floodway Encroachment was issued to UT on January 10, 2008 for the shoreline stabilization. The City of Knoxville has adopted the 500-year flood as the basis for their floodplain regulations, and any development must be consistent with these regulations. The riprap would displace about 3.3 acre-feet of flood control storage. There is no practical alternative to the quantity of riprap because no bank shaping would occur to protect cultural resources. Therefore, this portion of the project would comply with the TVA Flood Control Storage Loss Guideline.

To further ensure that the proposal would not impact floodplains and flood control, TVA would include the following Standard Conditions in the Section 26a approval:

- Standard Condition 3a: For purposes of shoreline bank stabilization, all portions will be constructed or placed, on average, no more than 2 feet from the existing shoreline at normal summer pool elevation.
- Standard Condition 3b: You agree that spoil material will be disposed of and contained on land lying and being above the 824.4-foot contour. Every precaution will be made to prevent the reentry of the spoil material into the reservoir.

TVA's General and Standard Conditions for Section 26a permits appear in Attachment D.

Wetlands

A wetland delineation performed by the applicants indicated that small areas of wetland vegetation are present below the 820-foot msl elevation and along a stream that bisects the site. The remainder of the shoreline is steep and highly eroded, and no wetlands occur in this area. The applicants' proposal indicates that no fill or construction would occur in the wetlands. There may be some minor impacts to wetland vegetation associated with the golf practice facility maintenance, but overall impacts would be insignificant.

Terrestrial Ecology

The majority of the golf practice facility area has been maintained as open grassland by periodic mowing for hay operations by UT. The dominant vegetative cover in this area is

exotic tall fescue along with Bradford pear seedlings scattered across the field site. A small stream bisects the site. The stream vegetative buffer is typical for moist site riparian zones on Fort Loudoun Reservoir including small native trees and shrubs and an herbaceous layer containing native and exotic plant species. The shoreline area along the reservoir is comprised of a narrow riparian zone with a mix of common native and invasive exotic species. The area proposed for the greenway trail is planted with a rotation of winter wheat and corn or other forage crop. Wildlife species observed, or expected to use the available habitats on the site, include resident and migratory and bank nesting birds, small mammals, amphibians, and reptiles. Species identified in the project area are listed in Attachment E.

The golf practice facility design incorporates the use of native grasses along the shoreline. However, the proposed design does not address the presence of exotic plant species. In order to ensure that the proposal minimizes impacts to bank nesting bird species and to prevent the spread of invasive plant species, the following conditions would be incorporated into TVA's Section 26a approval:

- Bank stabilization would not be conducted from March through June to protect bank nesting bird species.
- The golf practice facility would follow guidelines in the Tennessee Handbook for Golf Course Environmental Management.
- Applicants would incorporate measures into their landscape plan to address the exotic, invasive plants found in the riparian zone along the entire shoreline area in an effort to replace these species with native flora that would provide the highest level of natural habitat for the proposal.

Water Quality and Aquatic Ecology

Under the No Action Alternative, shoreline erosion and bank failure would continue. In shoreline erosion and associated bank failure, sediment is immediately deposited in the reservoir, where it can adversely impact aquatic life and water quality.

Under the Action Alternative, eroded soil or sediment would be the most prevalent pollutant associated with the proposal. State-of-the-art approaches for minimizing soil erosion and sedimentation are adequate preconstruction planning and proper selection, installation, and maintenance of specific best management practices (BMPs).

Since the installation of riprap stabilization would occur during low-flow conditions, the stream banks would be out of the water, and runoff would be minimal. TVA would require the use of applicable General and Standard Conditions in the Section 26a permit and BMPs to prevent sediment from reaching the reservoir. If the riprap stabilization could not be placed by barge, mats would need to be installed on the area exposed during winter pool. The mats would increase the stability of the soil to withstand the equipment weight and decrease potential runoff. If all applicable General and Standard Conditions in the Section 26a permit and BMPs are followed, short-term turbidity associated with the proposal would soon dissipate and would have only temporary, insignificant effects on aquatic life and water quality. Riprap would result in a small long-term improvement in water quality through reduced sediment input. To further reduce potential impacts on aquatic life and water quality, the golf practice facility would follow guidelines in the Tennessee Handbook for Golf Course Environmental Management.

Endangered and Threatened Species and Species of Conservation Concern

A review of the proposal area and TVA's Natural Heritage database indicated that no federally listed terrestrial species are located within the proposal area. State-listed plants and animals known to be extant within a 5-mile radius of the project site include American ginseng, goldenseal, southeastern shrew, Tennessee cave salamander, and common barn owl. Very little, if any, habitat exists in the project area for any of these species. Therefore, there would be no impacts to sensitive plant or animal species or their habitats.

A wading bird nesting colony (predominantly great blue herons) is located on Looney Island, which is approximately 1,700 feet from the proposal. Several active nesting pairs of osprey are located within a 5-mile radius of the proposal. The proposal would not affect the osprey or great blue heron nesting colony because the level of activity and noise would not substantially change as a result of the proposal.

Within a 10-mile radius of the proposal, 10 state- and seven federally listed aquatic species are known to occur. However, only two state-listed species, the orange-foot pimpleback (mussel) and ornate rocksnail (snail), occur within 2 miles of the proposal. Both state records are historical and not likely to exist near the proposal due to habitat changes from the river impoundment. The remaining listed species are either historical, located upstream or in a different watershed of the proposal and would not be affected. The 17 listed species identified near the proposal area are shown in Attachment E. Because the habitat for the orange-foot pimpleback and ornate rocksnail does not exist near the proposal area, the Action Alternative would not affect state- or federally listed aquatic species.

Prime Farmland

Prime farmland is defined by the U.S. Department of Agriculture as land that has the best combination of chemical and physical characteristics for producing food, feed, forage, fiber, and oilseed crops. To be considered prime farmland, it can not be urban, built-up, or covered by water. Concern regarding the conversion of prime farmland to urban or industrial use prompted the creation in 1981 of Farmland Protection Policy Act. This act requires that all federal agencies evaluate impacts to farmland prior to permanently converting the land to non-agricultural use. Approximately 14 acres of the greenway and golf practice facility are considered prime farmland based on their chemical and physical characteristics.

A Farmland Conversion Impact Rating was completed using input from the National Resource Conservation Service (NRCS). The NRCS "Relative Value of Farmland to be Converted" in the area was given a score of 100 out of a possible maximum of 100. The "Site Assessment Criteria" rating, which must be completed by the federal agency involved in the action, yielded a score of 23 out of a possible maximum of 160 points. The site assessment score was low due to the extent of urban development around the site. The sum of the two scores is the Farmland Conversion Impact Rating and, for this site, the score is 123. A score of 160 or higher implies that the land's value for farming is high enough to recommend that it not be converted to non-farm use. Therefore, the Action Alternative would not adversely affect prime farmlands.

Archaeological Resources and Historic Structures

Pursuant to the National Historic Preservation Act (NHPA) of 1966, TVA takes steps to preserve important historic properties affected by TVA undertakings. Based on a review of

the initial project and associated federal permits and approvals, TVA Cultural Resources and the SHPO determined the area of potential effects (APE) for historic properties to be the golf practice facility and greenway route. Since the initial request, the shoreline stabilization has been included in the APE for the EA.

Personnel from the UT Archaeological Research Laboratory (ARL) conducted a site identification (Phase I) archaeological survey within the proposal area. Portions of two previously recorded sites are partially located within the proposal area. Both previously recorded sites were reexamined.

One site (40KN45) is located on the alluvial terrace and colluvial bench north of the unnamed drainage that runs through the project area. Soil profiles suggested a high probability for the occurrence of intact subsurface cultural features on the site (Marcel).

The second site (40KN113) is located on a natural levee and colluvial bench. There were two distinct components of this site. Soil profiles and the occurrence of intact subsurface cultural features suggest prehistoric use of the area. The recovery of historic ceramic fragments also indicated a previously unknown early 19th century deposit as well (Marcel).

After the site identification survey, it was recommended that the sites should be avoided or site evaluation (Phase II) investigations would be necessary. The SHPO concurred with this finding by letter dated July 24, 2004. The following federally recognized tribes were notified of this finding and were invited to participate: Eastern Band of Cherokee Indians, United Keetoowah Band of Cherokee Indians in Oklahoma, Cherokee Nation, Muscogee (Creek) Nation of Oklahoma, Alabama-Coushatta Tribe, Alabama-Quassarte Tribal Town, Kialegee Tribal Town, Thlopthlocco Tribal Town, Poarch Band of Creek Indians, Shawnee Tribe, Absentee-Shawnee Tribe of Oklahoma, and Eastern Shawnee Tribe of Oklahoma. Only the Eastern Band of Cherokee Indians chose to participate in the process.

Based on the limited acreage, UT could not redesign the golf practice facility to avoid the resources, and site evaluation (Phase II) was conducted at 40KN45 and 40KN113 (Angst et al.). Personnel from ARL and UT Department of Anthropology conducted a Phase II archaeological evaluation of the two sites. Based on this assessment, portions of both sites contain significant archaeological data and are eligible for the National Register of Historic Places. The sites contain information important to history and prehistory and may be adversely affected by the construction of the golf practice facility. TVA, the SHPO, UT, and Knox County agreed that an MOA should be drafted to address the adverse effects on historic properties associated with the golf practice facility construction. Since a greenway route had not been selected at the time, the MOA allowed for survey-phased compliance for the greenway route. The MOA was executed on April 18, 2006. The Eastern Band of Cherokee Indians chose not to sign as a concurring party.

Additional archaeological investigations were initiated in April 2006 to include the areas proposed for the greenway and bank stabilization activities. In a letter dated October 30, 2007, TVA Cultural Resources placed conditions on the installation of the greenway and riprap to minimize potential adverse effects on historic properties. The SHPO concurred with TVA findings in a letter dated November 2, 2007. They further stated that the construction, as currently proposed, with mitigation measures, would not adversely affect any property that is eligible for listing in the National Register of Historic Places. Additionally, a letter was sent to the tribes listed above allowing them the opportunity to

provide comments regarding the proposed shoreline stabilization procedures. The Chickasaw Nation concurred with TVA findings in a letter dated January 7, 2008.

Under the No Action Alternative, there would be no effects on archaeological resources. In addition, the MOA would be terminated. The shoreline stabilization would not be permitted, and cumulative effects would be continual degradation of archaeological resources along the shoreline.

Under the Action Alternative, the stipulations in the MOA would be followed to minimize effects to archaeological resources. Additional commitments would also be followed during the installation of riprap stabilization. The installation of riprap would eliminate erosion, and the protection would be a benefit to archaeological resources. Provided the MOA stipulations and the following commitments are followed, there would be no significant impacts to archaeological resources.

- No golf practice facility construction would occur along the lower terrace as described in the site evaluation (Phase II).
- The placement of cut and fill for the golf practice facility would be monitored by qualified archaeologists (ARL personnel), and archaeological features would be marked for avoidance. No cuts would occur where intact features were recorded; the location would remain the same or fill would be placed above it.
- During the greenway construction, personnel from the ARL would monitor the installation of pipe and headwalls in existing ditches (where excavation is necessary) to determine the existence of archaeologically significant materials.
- During the drainage placement under the greenway (where excavation is necessary), personnel from the ARL would monitor to determine the existence of archaeologically significant materials.
- During the installation of bridge abutments for the greenway, ARL personnel would investigate the abutment footprints to determine the existence of archaeologically significant materials.
- If archaeological features were encountered during the golf practice facility and greenway construction monitoring, UT would abide by the stipulations in the MOA.
- If it is necessary to cut a keyway along the beach area, personnel from ARL would monitor the installation of riprap stabilization to determine the existence of archaeologically significant materials.
- There would be no bank reshaping, and all vegetation would be removed by hand.
- A layer of non-woven 6.4 oz. per yard geotextile filter fabric would be placed along the entire shoreline proposed for stabilization prior to placing riprap.
- The applicants would place Class C, D, or D50 riprap to the top of the bank.
- All work would be conducted during dry weather conditions.

- If heavy equipment (trackhoe) were required for accessing areas for stabilization that a barge cannot reach or if a keyway were necessary, archaeological monitoring would be necessary. If archaeological resources were exposed during this procedure, all work would cease in the area where the resources have been encountered.
- If this proposal is not completed within five years of submittal to TVA, UT would consult with the SHPO to determine if these requirements were still suitable or if additional investigations would be necessary.

No historic structures listed in the National Register of Historic Places (NRHP) are located on the property where the proposed golf practice facility and greenway route will be located or along the shoreline proposed for stabilization. However, there are NRHP-listed historic structures (Bleak House and H.L. Dulin House) and other historic structures along the shoreline in the Sequoyah Hills residential community across the Tennessee River that may be visually affected by the proposed action. It is the opinion of TVA Cultural Resources that the proposed action may have visual effects on historic structures; however, the effects would not be adverse because of existing tree screening and the previous impacts adjacent to the Bleak House, the H.L. Dulin House, and the Sequoyah Hills residential community. The Bleak House has been previously visually impacted by the construction of a church and parking area adjacent to the house. Furthermore, there is tree screening behind the house that would further minimize the view of the opposite shoreline. The H.L. Dulin House has generous vegetation screening next to the house and on the backside of the property adjacent to the shoreline. The tree and vegetation screenings would minimize the view of the opposite shoreline. The view shed of Sequoyah Hills residents living along the shoreline has been previously altered and impacted by adjacent shoreline development. There are covered water-use facilities and riprap stabilization along the shoreline of the community. In other locations where shoreline development has not occurred, there is an ample amount of vegetation screening.

In a letter dated January 18, 2008, TVA Cultural Resources requested SHPO concurrence with TVA's finding that the golf practice facility, greenway, and riprap stabilization would not adversely affect historic structures eligible for or listed in the NRHP. It is the opinion of TVA Cultural Resources that the visual effects of the golf practice facility and greenway on historic structures would be benign. The riprap would, over time, become weathered and have a more "natural" appearance. In a letter dated February 20, 2008, the SHPO requested that TVA consult with representatives of the Bleak House, the H.L. Dulin House, and the Sequoyah Hill Neighborhood Association to solicit their views regarding potential impacts of the installation of riprap stabilization associated with the project. On February 25, 2008, TVA sent notices to representatives of the affected historic structures and the Sequoyah Hills Neighborhood Association requesting their comments within 15 days regarding the installation of riprap stabilization. TVA Cultural Resources will reassess its finding of "no adverse effects" in coordination with the SHPO taking into account any comments received during the 15-day comment period. In light of the fact that no comments were received from these groups during the comment period for the public notice, TVA anticipates confirming its earlier finding that the golf practice facility, greenway, and riprap stabilization would not adversely affect historic structures eligible for or listed in the NRHP.

Cumulative Impacts

Resources that could cumulatively be affected by the greenway, golf practice facility, and riprap stabilization are nesting migratory bird habitat, water quality, and public recreation. The Action Alternative would result in a net loss of nesting migratory bird habitat, especially belted kingfishers, along this shoreline portion of Fort Loudoun Reservoir. However, this action will not result in cumulative impacts to these species on a regional or Valley-wide basis because of the remaining amount of open properties. Water quality would continue to be affected by general population and lakefront development growth in the area. In order to avoid contributing to water quality degradation in the area, TVA would require use of erosion control measures during construction of the greenway and golf practice facility. Furthermore, the installation of riprap stabilization along approximately 1.75 miles of shoreline would avoid contributing to water quality degradation. Although it would have a somewhat greater impact than the No Action Alternative, the Action Alternative would result in a minimal impact on the environment and improve local public recreation opportunities when the proposal was completed. Therefore, TVA has determined that cumulative impacts of this action would be insignificant.

Mitigation Measures

TVA proposes the following measures to minimize and mitigate the adverse effects of this proposal.

- Bank stabilization would not be conducted from March through June to protect bank nesting bird species.
- The golf practice facility would follow guidelines in the Tennessee Handbook for Golf Course Environmental Management.
- Applicants would incorporate measures into their landscape plan to address the exotic, invasive plants found in the riparian zone along the entire shoreline area in an effort to replace these species with native flora that would provide the highest level of natural habitat for the proposal.
- Before greenway construction is complete, the applicant would coordinate with WMA personnel to determine if signage describing the strict hunting regulations is necessary and, if so, the appropriate location of such signage along the greenway.
- No golf practice facility construction would occur along the lower terrace as described in the site evaluation (Phase II).
- The placement of cut and fill for the golf practice facility would be monitored by qualified archaeologists (ARL personnel), and archaeological features would be marked for avoidance. No cuts would occur where intact features were recorded; the location would remain the same or fill would be placed above it.
- During the greenway construction, personnel from the ARL would monitor the installation of pipe and headwalls in existing ditches (where excavation is necessary) to determine the existence of archaeologically significant materials.

- During the drainage placement under greenway (where excavation is necessary), personnel from the ARL would monitor to determine the existence of archaeologically significant materials.
- During the installation of bridge abutments for the greenway, ARL personnel would investigate the abutment footprints to determine the existence of archaeologically significant materials.
- If archaeological features were encountered during the golf practice facility and greenway construction monitoring, UT would abide by the stipulations in the MOA.
- If it is necessary to cut a keyway along the beach area, personnel from ARL would monitor the installation of riprap stabilization to determine the existence of archaeologically significant materials.
- There would be no bank reshaping, and all vegetation would be removed by hand.
- A layer of non-woven 6.4 oz. per yard geotextile filter fabric would be placed along the entire shoreline proposed for stabilization prior to placing riprap.
- The applicants would place Class C, D, or D50 riprap to the top of the bank.
- All work would be conducted during dry weather conditions.
- If heavy equipment (trackhoe) were required for accessing areas for stabilization that a barge cannot reach or if a keyway were necessary, archaeological monitoring would be necessary. If archaeological resources were exposed during this procedure, all work would cease in the area where the resources have been encountered.
- If this project is not completed within five years of submittal to TVA, UT would consult with the SHPO to determine if these requirements were still suitable or if additional investigations would be necessary.

Preferred Alternative

TVA's preferred alternative is the Action Alternative. USACE has no preferred alternative as regulations prevent them from being for or against an applicant's proposal during permit or approval evaluations.

TVA Preparers

Michael F. Broder, Environmental Engineer, Prime Farmlands

Janet Duffey, Land Use Representative, Land Use

S. Clay Guerry, Recreation Representative, Recreation

A. Eric Howard, Archaeologist, NHPA Section 106 Compliance and MOA preparation

Wesley K. James, Wildlife Biologist, Terrestrial Ecology

Clinton E. Jones, Aquatic Community Ecologist, Aquatic Ecology and Aquatic Threatened and Endangered Species

Heather L. McGee, Lead Preparer, Rotational NEPA Specialist, NEPA Compliance and Document Preparation

Roger A. Milstead, Manager, TVA Flood Risk and Data Management, Floodplains

Charles P. Nicholson, NEPA Policy Program Manager, NEPA Compliance

Richard L. Toennisson, Preparer, Senior NEPA Specialist, NEPA Compliance and Document Preparation

Agencies and Others Consulted

Jennifer Barnett, Division of Archaeology, Tennessee Department of Environment and Conservation (Archaeological Resources and Historic Structures)

Clarence Conner, Tennessee Resource Soil Scientist, Natural Resource Conservation Service (Prime Farmlands)

Chris Howley, Engineer, City of Knoxville (No Rise Study)

Silas Mathes, Natural Heritage Division Manager, Tennessee Department of Environment and Conservation (Endangered and Threatened Species and Species of Conservation Concern)

E. Patrick McIntyre, Jr., Executive Director and State Historic Preservation Officer, Tennessee Historical Commission (Historic Structures)

Michael R. Ragsdale, Mayor, Knox County, Tennessee (Preparation of MOA)

Richard G. Tune, Deputy State Historic Preservation Officer, Tennessee Historical Commission (Preparation of MOA)

Literature Referenced

- Angst, M. G. 2007. *Phase I Archaeological Survey of the University of Tennessee-Knoxville Experiment Station (Cherokee Campus) West of Alcoa Highway, Knox County, Tennessee*. Submitted to Facilities and Planning, The University of Tennessee, Knoxville.
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Attachments

Attachment A – Aquatic Resource Alteration Permit and Water Quality Certification

Attachment B – Joint Public Notice and Public Comments

Attachment C – Summary of Cultural Resources Assessments and MOA

Attachment D – Section 26a General and Standard Conditions

Attachment E – Summary of Species Found Within the Proposal Area

Attachment F – Application, Proposal Drawings, and Maps

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**Attachment A – Aquatic Resource Alteration Permit and Water
Quality Certification**

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STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER POLLUTION CONTROL
NATURAL RESOURCES SECTION
401 CHURCH STREET, 7TH FLOOR L & C ANNEX
NASHVILLE, TENNESSEE 37243-1534

September 25, 2006

Mr. George Criss
Director of Facilities Planning
University of Tennessee; Division of Facilities Planning
5723 Middlebrook Pike, Suite 119
Knoxville, TN 37921

9 28 OCT 2006

Subject: **General Permit for Bank Stabilization**
Aquatic Resource Alteration Permit (ARAP) NRS06.252
George Criss, University of Tennessee, University of Tennessee,
Knoxville, Knox County, Tennessee

Dear Mr. Criss:

We have reviewed your application for the proposed bank stabilization. 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 Pollution Control 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 NRS06.252 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. Trent Thomas at (615) 532-0700 or by e-mail at Trent.Thomas@state.tn.us.

Sincerely,

Daniel C. Eagar
Manager, Natural Resources Section

Encl: NOC and copy of general permit
CC: DWPC, Knoxville Environmental Field Office
File copy
U.S. Army Corps of Engineers, Nashville District



Under the Aquatic Resource Alteration
General Permit for Bank Stabilization
Tennessee Department of Environment and Conservation
Division of Water Pollution Control
401 Church Street, 6th Floor, L&C Annex
Nashville, Tennessee 37243-1534

ARAP - NRS06.252

Under authority of the Tennessee Water Quality Control Act of 1977 (TWQCA, T.C.A. 69-3-101 *et seq.*) the Division of Water Pollution Control has determined the activity described below would not violate applicable water quality standards.

This activity is governed by the *General Permit for Bank Stabilization* (effective July 1, 2005) issued pursuant to the TWQCA. The work must be accomplished in conformance with accepted plans, specifications, data and other information submitted in support of application NRS06.252 and the terms and conditions set forth in the above referenced general permit.

PERMITTEE: George Criss, University of Tennessee

AUTHORIZED WORK: Approximately 9,000 feet of riprap bank stabilization along the Tennessee River from just north of the Alcoa Highway bridge to Lonney Island on the right descending bank.

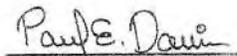
LOCATION: Knoxville, TN, Knox County

WATERBODY NAME: Tennessee River

EFFECTIVE DATE: 25-SEP-06 **EXPIRATION DATE:** 24-SEP-08

This does not preclude requirements of other federal, state or local laws. In particular, work shall not commence until the applicant has received the federal §404 permit from the U. S. Army Corps of Engineers, a §26a permit from the Tennessee Valley Authority or authorization under a Tennessee NPDES Storm Water Construction Permit where necessary. This permit may also serve as a federal §401 water quality certification (pursuant to 40 C.F.R. §121.2) since the planned activity was reviewed and the division has reasonable assurance that the activity will be conducted in a manner that will not violate applicable water quality standards (T.C.A. § 69-3-101 *et seq.* or of § § 301, 302, 303, 306 or 307 of *The Clean Water Act*).

The state of Tennessee may modify, suspend or revoke this authorization or seek modification or revocation should the state determine that the activity results in more than an insignificant violation of applicable water quality standards or violation of the TWQCA. Failure to comply with permit terms may result in penalty in accordance with T.C.A. §69-3-115.



Paul E. Davis, P.E.
Director, Division of Water Pollution Control

General Permit for Bank Stabilization

Effective Date: July 1, 2005
Expiration Date: June 30, 2010

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.

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.

Exclusions

This general permit shall not be used to authorize activities in the following circumstances:

- 1) where the proposed activity may adversely affect wetlands;
- 2) where a portion of the proposed activity is located in any waterway which is identified by the department as having contaminated sediments, and where the activity will likely mobilize the contaminated sediments;
- 3) when the proposed activity will adversely affect a species formally listed on either state or federal lists of threatened or endangered species or their critical habitat;
- 4) when the department determines that the proposed activities, either individually or cumulatively, may result in degradation to waters of the state; or
- 5) when an individual permit is otherwise required.

Projects 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.

Notification

- 1) Notification to the division is not required where:
 - (a) the length of the stream or reservoir bank to be treated is less than three times the top-of-bank width of the stream channel, not to exceed a total length of 50 feet, and where the total volume of soil, sand or gravel disturbed or re-deposited is less than ten cubic yards. Bank stabilization work conducted in accordance with this provision is limited to one site per 1000 linear feet of stream or reservoir bank, and may be done only once without notification; or
 - (b) 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)
- 2) Except as provided in item 1) of this section, notification to the division is required by submission of an original, signed application (form CN-1091) along with the following minimum information:
 - (a) a cover letter explaining the scope of the project;
 - (b) a USGS topographical map showing the exact location of the proposed project; and
 - (c) a single copy of construction plans and drawings which include all dimensions and specifications for the proposed work, as well as pollution control methods and/or structures.

Except as provided in item 1) of this section, work shall not commence until the applicant has received written authorization from the division that the proposed activities may proceed under this general permit or that an individual permit has been issued.

All activities covered under this general permit, with or without notification, shall comply with all terms and conditions contained hereinafter.

General Permit for Bank Stabilization

Terms and Conditions

- 1) The 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) 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.
- 3) 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.
- 4) Where the activity is not located within water resource development lands and waters, including flowage easement, managed by the TVA or the USCOE, the placement of riprap is limited to 300 linear feet of stream or reservoir bank. Vegetative or bioengineering methods of bank stabilization and activities located within water resource development lands and waters, including flowage easement, managed by the TVA or the USCOE are not subject to this restriction.
- 5) Sediment shall be prevented from entering waters of the state. Erosion and sediment controls 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.
- 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) Sediment should be removed from sediment traps, silt fences, sedimentation ponds, and other sediment controls as necessary, and shall be removed when design capacity has been reduced by 50%. Discharges from sediment basins and traps shall be through a pipe or lined or well-grassed channel so that the discharge does not cause erosion.
- 8) 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.
- 9) 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.
- 10) Pre-construction vegetative ground cover shall not be destroyed, removed or disturbed more than 10 calendar days prior to grading or earth moving unless the area is seeded and/or mulched or other temporary cover is installed.
- 11) 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.
- 12) Stabilization measures shall be initiated within seven days after the construction activity has temporarily or permanently ceased.
- 13) Temporary or permanent soil stabilization shall be accomplished within 15 days after final grading or other earth work. Permanent stabilization with perennial vegetation (using native herbaceous and woody plants where practicable) or other permanently stable, non-eroding surface shall replace any temporary measures as soon as practicable.
- 14) Muddy water to be pumped from excavation and work areas shall be held in settling basins or filtered prior to its discharge into surface waters. Settling basins shall not be located closer than 20 feet from the top bank of the stream and water shall be discharged through a pipe, well grassed or lined channel or other equivalent means so that the discharge does not cause erosion and sedimentation.
- 15) The activity may not be conducted in a manner that would permanently disrupt the movement of fish and aquatic life.

General Permit for Bank Stabilization

- 16) 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. Stream crossings should be constructed of clean rock and stream flow should be conveyed in appropriately sized pipe. 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.
- 17) Materials used in bank stabilization shall include clean rock, riprap, anchored trees or other non-erodible materials found in the natural environment. Except for activities covered by item 1)(a) of the Notification section, stabilization materials shall not include gravel, sand, sediments, chert, soil or other materials that are likely to erode.
- 18) Materials used in bank stabilization projects 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).
- 19) Material may not be placed in a location or manner so as to impair surface water flow into or out of any wetland area.
- 20) 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.
- 21) This general permit does not authorize impacts to cultural, historical or archaeological features or sites.
- 22) Where 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 expiration date.

APPROVED:


Paul E. Davis, Director, Water Pollution Control

DATE: 6-30-05

General Permit for Bank Stabilization

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

From: Larry Everett [mailto:Larry.Everett@state.tn.us]
Sent: Thursday, November 08, 2007 4:50 PM
To: George Daws
Subject: Re: Knox/Blount Greenway

Mr. Daws,

Based on our discussions and your description of the proposed activities associated with the greenway it does not appear that an Aquatic Resource Alteration Permit or 401 Water Quality Certification will be necessary. Such permits are required for physical alteration of streams (top of bank to top of bank) and wetlands.

Thanks,

Larry Everett, Biologist
TDEC-Water Pollution Control
3711 Middlebrook Pike
Knoxville, TN 37921
(865) 594-5593 phone
(865) 594-5601 fax
larry.everett@state.tn.us e-mail

>>> "George Daws" <GDaws@cityofknoxville.org> 11/8/2007 2:49 PM >>>

Larry,

The City of Knoxville is proposing to construct a greenway that would extend along the top of bank of the Tennessee River from the Buck Karnes Bridge to the Knox County Marine Park. The total length of the proposed greenway is approximately 10,000 feet. The 10' wide greenway will be constructed between 10 and 20 foot away from the existing top of bank along the Tennessee River.

We will be installing a 37' pedestrian bridge as part of this project as indicated on the attached .pdf. This is necessary to bridge over a small stream perpendicular to the Tennessee River. As we discussed over the phone, we do not feel that this bridge or the abutments will alter this stream and therefore will not need to obtain an ARAP permit.

After you have had a chance to review the attached pdf's, please let us know in writing if you feel that we will need to obtain an ARAP permit. If you have any questions or need any additional information, feel free to give me a call at 215-6121.

Thanks,

George Daws, P.E.
Civil Engineering Division
City of Knoxville
865-215-6121



STATE OF TENNESSEE
 DEPARTMENT OF ENVIRONMENT AND CONSERVATION
 KNOXVILLE ENVIRONMENTAL FIELD OFFICE
 DIVISION OF WATER POLLUTION CONTROL
 3711 MIDDLEBROOK PIKE
 KNOXVILLE, TN 37921



December 18, 2007

Mr. George Criss
 Director of Facilities Planning
 University of Tennessee, Division of Facilities Planning
 5723 Middlebrook Pike, Suite 119
 Knoxville, TN 37921

Subject: **General Permit for Construction and Removal of Minor Road Crossings
 Aquatic Resource Alteration Permit (ARAP) NR0703.218
 University of Tennessee Golf Team Facility (Practice Course)
 University of Tennessee - Division of Facilities Planning
 Knoxville, Knox County, Tennessee**

Dear Mr. Criss:

We have reviewed your application for the proposed construction of two pedestrian bridges. 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 Pollution Control 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 Construction and Removal of Minor Road Crossings*. The work must be accomplished in conformance with accepted plans and information submitted in support of application NR0703.218 and the limitations and conditions set forth in the *General Permit for Construction and Removal of Minor Road Crossings* (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 excavation and fill activities associated with the road crossing must be separated from flowing waters. This may be accomplished through the utilization of cofferdams (non-erodible materials), berms or temporary channels. Channel widening is expressly prohibited under the terms of the general permit. 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. Jason Mann at (865) 594-1077 or by e-mail at Jason.Mann@state.tn.us.

Sincerely,

Natalie Harris
 Natalie Harris
 Knoxville Environmental Field Office Manager

Encl: NOC and copy of general permit
 CC: TNR132888

FACILITIES PLANNING Fax: 865-974-7313 Dec 21 2007 11:34 P.02



Under the Aquatic Resource Alteration
General Permit for Construction and Removal of Minor Road Crossings

Tennessee Department of Environment and Conservation
Division of Water Pollution Control
401 Church Street, 6th Floor, L&C Annex
Nashville, Tennessee 37243-1534

ARAP - NR0703.218

Under authority of the Tennessee Water Quality Control Act of 1977 (TWQCA, T.C.A. 69-3-101 et seq.) the Division of Water Pollution Control has determined the activity described below would not violate applicable water quality standards.

This activity is governed by the General Permit for Construction and Removal of Minor Road Crossings (effective July 1, 2005) issued pursuant to the TWQCA. The work must be accomplished in conformance with accepted plans, specifications, data and other information submitted in support of application NR0703.218 and the terms and conditions set forth in the above referenced general permit.

PERMITTEE: University of Tennessee - Division of Facilities Planning
AUTHORIZED WORK: Construction of two pedestrian bridges
LOCATION: Fort Loudon Lake @ 2045 Alcoa Highway, Knoxville, TN 37920, Knox County
WATERBODY NAME: Fort Loudon Lake

EFFECTIVE DATE: 18-DEC-07 EXPIRATION DATE: 18-DEC-08

This does not preclude requirements of other federal, state or local laws. In particular, work shall not commence until the applicant has received the federal §404 permit from the U. S. Army Corps of Engineers, a §26a permit from the Tennessee Valley Authority or authorization under a Tennessee NPDES Storm Water Construction Permit where necessary. This permit may also serve as a federal §401 water quality certification (pursuant to 40 C.F.R. §121.2) since the planned activity was reviewed and the division has reasonable assurance that the activity will be conducted in a manner that will not violate applicable water quality standards (T.C.A. § 69-3-101 et seq. or of § § 301, 302, 303, 306 or 307 of The Clean Water Act).

The state of Tennessee may modify, suspend or revoke this authorization or seek modification or revocation should the state determine that the activity results in more than an insignificant violation of applicable water quality standards or violation of the TWQCA. Failure to comply with permit terms may result in penalty in accordance with T.C.A. §69-3-115.

Paul E. Davis (handwritten signature)

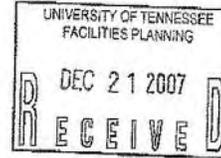
Paul E. Davis, P.E.
Director, Division of Water Pollution Control

RDA 2971

80 p Dec 21 2007 11:35 Fax: 865-974-7319 FACILITIES PLANNING



STATE OF TENNESSEE
 DEPARTMENT OF ENVIRONMENT AND CONSERVATION
 KNOXVILLE ENVIRONMENTAL FIELD OFFICE
 DIVISION OF WATER POLLUTION CONTROL
 3711 MIDDLEBROOK PIKE
 KNOXVILLE, TN 37921
 PHONE 865-594-6035 STATEWIDE 1-888-891-8332 FAX 865-594-6105



December 18, 2007

Mr. George Criss
 Director of Facilities Planning
 University of Tennessee, Division of Facilities Planning
 5723 Middlebrook Pike, Suite 119
 Knoxville, TN 37921

Subject: **NPDES Construction General Permit Tracking No. TNR132888**
University of Tennessee Golf Team Facility (Practice Course)
University of Tennessee - Division of Facilities Planning
Knoxville, Knox County, Tennessee

Dear Mr. Criss:

The Division of Water Pollution Control (the division) acknowledges receipt of the Notice of Intent (NOI) form for the above referenced project. The NOI was received on November 2, 2007. The NOI was submitted to obtain coverage under a General NPDES Permit for Storm Water Discharges Associated with Construction Activity. Enclosed is the Notice of Coverage (NOC) form which shows the site name and location, receiving stream, effective date of coverage, etc.

Contractor Information

As of the date this NOI was processed, no contractor was identified on the NOI. A primary contractor, or contractor otherwise responsible for sediment and erosion controls on the construction site, must be identified and must submit an NOI to this office prior to beginning earth clearing operations on site. When submitting the NOI, the contractor should indicate on the NOI form the above referenced permit tracking number.

Storm Water Pollution Prevention Plan (SWPPP)

You have submitted a Storm Water Pollution Prevention Plan (SWPPP) as required by Part 1.4.2 of the CGP. Please note that the division has not performed an engineering review of the SWPPP and does not certify whether the SWPPP adequately provides for the pollution prevention requirements at the site as described in the general permit. The division acknowledges that you have submitted a SWPPP that appears to include the required components of a SWPPP. It is the responsibility of all site operators to design, implement, and maintain measures that are sufficient to prevent pollution at the referenced site, and to remain in compliance with the terms and conditions of the general permit.

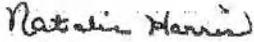
Dec 21 2007 11:36 FAX: 865-974-7313 FACILITIES PLANNING P.04

Threatened and Endangered Species

The receiving stream for a construction site for which the NOI was submitted has federal or state listed threatened and endangered species in the area, or downstream of your project. Storm water discharges and storm water discharge-related activities that are not protective of legally protected listed or proposed threatened or endangered aquatic fauna in the receiving stream; or discharges or activities that would result in a 'take' of a federally listed endangered or threatened fish or wildlife species are not authorized by the general permit. If the division finds that storm water discharges or storm water related activities are likely to result in any of the above effects, the division will deny the coverage under this general permit unless and until project plans are changed to protect the listed species. In addition, discharges from your construction site that result in harm to such species may incur additional fines and penalties from the US Fish and Wildlife Service and/or the Tennessee Wildlife Resources Agency.

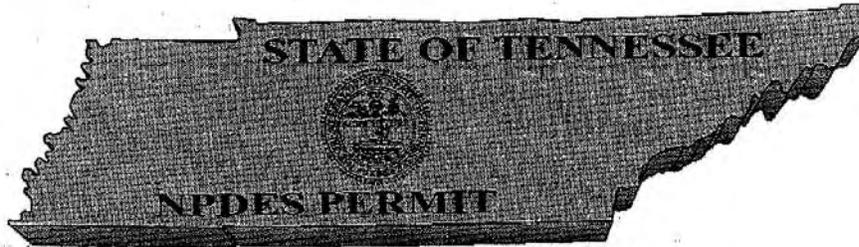
We appreciate your attention to the general construction storm water permit and its requirements. We believe this does make a difference to the quality of state waters. If you have any questions, please contact Mr. Jason Mann at (865) 594-1077 or by e-mail at Jason.Mann@state.tn.us.

Sincerely,



Natalie Harris
Knoxville Environmental Field Office Manager
Division of Water Pollution Control

CC: TNR132888
JTM



Tracking No. TNR132888

**NOTICE OF COVERAGE UNDER THE GENERAL NPDES
PERMIT FOR STORM WATER DISCHARGES ASSOCIATED
WITH CONSTRUCTION ACTIVITY (CGP)**

Tennessee Department of Environment and Conservation
Division of Water Pollution Control
401 Church Street, 6th Floor, L&C Annex
Nashville, Tennessee 37243-1534

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 *et seq.*) and the delegation of authority from the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, *et seq.*):

Name of the Construction Project: **University of Tennessee Golf Team Facility (Practice Course) (27.1 acres)**

Construction site Owner/Developer: **University of Tennessee-Division of Facilities Planning**

Contractor(s): **no contractor**
is authorized to discharge: **storm water associated with construction activity**

from site located at: **Fort Loudon Lake @ 2045 Alcoa Highway, Knoxville, TN
37920, Knox County**

to receiving waters named: **Fort Loudon Lake**

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

Likely presence of threatened or endangered species in one mile radius: **YES**
Likely presence of threatened or endangered species downstream: **YES**

Additional pollution prevention requirements apply for discharges into waters which TDEC identifies as:
a) impaired by siltation: **NO** b) high quality waters: **NO**

Your coverage under the CGP shall become effective on , and shall be terminated upon receipt of Notice of Termination, or the date of expiration of the CGP, **May 30, 2010**.

Paul E. Davis, Director
Division of Water Pollution Control

CN-0759

RDA4 2352 and 2366

Facilities Planning Fax: 865-974-7313 Dec 21 2007 11:36 p.m.

UNIVERSITY OF TENNESSEE
FACILITIES PLANNING

DEC 21 2007

RECEIVED

STATE OF TENNESSEE



NPDES PERMIT

GENERAL NPDES PERMIT
FOR DISCHARGES OF STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITIES

PERMIT NO. TNR100000

Under authority of the Tennessee Water Quality Control Act of 1977 (T.C.A. 69-3-101 et seq.) and the authorization by the United States Environmental Protection Agency under the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (33 U.S.C. 1251, et seq.) and the Water Quality Act of 1987, P.L. 100-4, except as provided in part 4.4 (Discharges into Impaired or High Quality Waters) of this general permit, operators of point source discharges of storm water associated with construction activities into waters of the State of Tennessee, are authorized to discharge storm water associated with construction activities in accordance with the following permit monitoring and reporting requirements, effluent limitations, and other provisions as set forth in parts 1 through 8 herein, from the subject outfalls to waters of the State of Tennessee.

This permit is issued on: June 16, 2005

This permit is effective on: June 17, 2005

This permit expires on: May 30, 2010

Paul E. Davis, P.E., Director
Division of Water Pollution Control

CN-0739

RDAs 2352 and 2366



**ENGINEERING "NO-RISE" CERTIFICATION
FOR FLOODWAY ENCROACHMENT**

This is to certify that I am a duly qualified engineer licensed to practice in the state of Tennessee. It is to further certify that the attached technical data supports the fact that proposed UT Riverbank Stabilization - Phase 2 will not impact (Name of Development) the Base Flood Elevations (500-year flood), floodway elevations and the floodway widths on Tennessee River at published sections in the Flood Insurance Study for (Name of Stream) Knoxville / Knox County; 475434 / 475433, dated May 2, 2007 (Name of Community & Community ID Number) and will not impact the Base Flood Elevations (500-year flood), floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

Signature W. J. Goddard
Phone Number 865-588-8544 (x1124) EMAIL wjgoddard@mactec.com
Representing University of Tennessee, Facilities Planning
Address 5723 Middlebrook Pike, Suite 119
City Knoxville State TN Zip Code 37921-0040
December 6, 2007
(Date)

**DEPARTMENT OF ENGINEERING
APPROVED**

CHANGES INDICATED IN: —
Based upon R4-MT Form
DATE: 1/10/08
Revised 6/03
BY: Chris Rowley



* The minimum flood required for FEMA floodplain analysis is the 100-year flood, unless local regulations are stricter.
** The base flood in the City of Knoxville is defined as the 500-year flood by City Ordinance, Chapter 12, Section 12-4.

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Attachment B – Joint Public Notice and Public Comments

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Public Notice

[Return to previous page](#)

Tennessee Valley Authority

November 20, 2007

Proposed action

Greenway development and public golf practice facility

Location

Fort Loudoun Reservoir, Knox County, Tennessee

Description

TVA and the U.S. Army Corps of Engineers (USACE) request your comments on a proposal to develop a greenway and public golf practice facility along the Tennessee River on Fort Loudoun Reservoir.

In October 2007, TVA and USACE received a joint application from the University of Tennessee (UT) for 9,000 liner feet of riprap stabilization, two pedestrian bridges that will be shared by the greenway and golf facility, a culvert for the greenway, and 18,000 cubic yards of fill along the left descending bank of Fort Loudoun Reservoir between Tennessee River miles 643.5 and 645.2. TVA and USACE are jointly preparing an environmental assessment on the impacts of the proposal.

The greenway is part of a recreational walking and biking trail planned by UT and the City of Knoxville. A portion of the greenway, approximately one acre, would be located on TVA property lying below the 822-foot mean sea level (msl) elevation contour. The facility would be constructed by UT and regularly made available for public use. UT would also utilize the facility for noncredit golf classes and collegiate golf practice. Approximately three acres of the 35-acre facility would be located on TVA property lying below the 822-foot msl elevation contour. The rough areas would be planted in native grasses and create a natural buffer to adjacent streams.

The riprap stabilization, pedestrian bridges, culvert, and fill would require approval by TVA under Section 26a of the TVA Act and by USACE under Section 10 of the River and Harbors Act and Section 404 of the Clean Water Act. The use of TVA land would

require approval and execution of a land use license for public recreation purposes to the City of Knoxville and UT.

Please submit your comments to Heather McGee by letter, e-mail, or fax at the appropriate address or fax number below by December 23, 2007. Comments can also be submitted to Deborah T. Tuck, Regulatory Specialist, U.S. Army Corps of Engineers, 3701 Bell Road, Nashville, TN 37214, by letter or e-mail: deborah.s.tuck@usace.army.mil.

Please note that any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection.

Additional information is available at the [Corps of Engineers site](#) or by contacting:

Heather L. McGee
NEPA Services, Tennessee Valley Authority
400 West Summit Hill Drive, WT11-D
Knoxville, TN 37902
E-mail: hmcgee@tva.gov
Phone: 256-386-2561
Fax: 865-632-3451



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

Public Notice

Public Notice No. 07-83

Date: November 23, 2007

Application No. 2006-01627

Expiration: December 23, 2007

Please address all comments to: Ms. Deborah T. Tuck
Nashville District Corps of Engineers, Regulatory Branch
3701 Bell Road, Nashville, TN 37214

JOINT PUBLIC NOTICE

US ARMY CORPS OF ENGINEERS
AND
TENNESSEE VALLEY AUTHORITY

SUBJECT: Proposed Riprap, Golf Practice Facility and Greenway Between Tennessee River Miles 643.5, Left Bank and 645.2, Left Bank, Fort Loudoun Lake, Knox County, Tennessee

TO ALL CONCERNED: The application described below has been submitted for a Department of the Army (DA) Permit pursuant to **Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act (CWA)**.

APPLICANT: The University of Tennessee (UT)
Attn: Mr. Robbi Stivers
Director, Office of Real Estate Administration
5723 Middlebrook Pike, Suite 120
Knoxville, Tennessee 37996

LOCATION: Between Tennessee River Miles 643.5, Left Bank and 645.2, Left Bank, Fort Loudoun Lake, Knox County, Tennessee
Latitude N35.9476; Longitude W-83.9535, Knoxville, Tennessee
USGS Quadrangle

DESCRIPTION: The applicant proposes to install approximately 9,000 linear feet of riprap to stabilize the eroded shoreline at the subject location. The work would involve placement of approximately 5,200 cubic yards (cy) of rock fill material to armor the bank with heights ranging from 3'-8'. Riprap approximately 16" in diameter would be placed between Elevation 815 and 807. Approximately 3,900 cy of material would be placed below the normal summer pool Elevation 813. Approximately 1,000 cy of lakebed material would be removed to construct a keyway at the toe to prevent washout. The project would be performed in phases. There would be no bank shaping. Riparian vegetation would be removed by hand and kept to a minimum. Prior to placement of the riprap, a layer of 10-ounce geo-textile filter fabric would be placed along the entire length being stabilized.

PN 07-83
FN 2006-01627

All excavated material would be removed to an upland location. All work would be performed during dry weather conditions. This work would also require TVA approval.

In addition to the above, the applicant, in partnership with Knox County and the City of Knoxville, proposes to develop a greenway and golf practice facility. The greenway is part of a recreational walking/bike riding path planned by UT and the City of Knoxville. A portion of the greenway, approximately one acre, would be located on TVA property lying below the 822-foot mean sea level (msl) elevation contour. The golf practice facility would be constructed by UT and regularly made available for public use. UT would also utilize the golf practice facility for non-credit golf classes and collegiate golf practice. Approximately three acres of the thirty-five acre golf practice facility would be located on TVA property lying below the 822-foot msl elevation contour. The majority of TVA property would be utilized as rough areas and would be planted in native grasses creating a natural buffer to adjacent streams. Construction of the golf practice facility and greenway would involve the excavation of approximately 22,000 cubic yards of upland material and the placement of approximately 18,000 of upland fill. The greenway would be located on UT property and extend 1.75 miles in length along the shoreline. The golf practice facility and greenway would not require a DA permit but would require TVA approval. The use of TVA land would require execution of a land use license for public recreation purposes to the City of Knoxville and UT. The associated work would involve the construction of two pedestrian (span) bridges, and one pedestrian bridge with a culvert, over a small drainage. The greenway trail and pedestrian bridges meet the criteria of DA Nationwide Permit #42, Recreational Facilities, which became effective March 19, 2007. These structures would also require approval by TVA under Section 26a of the TVA Act.

The decision whether to issue a permit will be based on an evaluation of the probable impacts including cumulative impacts of the activity on the public interest. That decision will reflect the national concern for both the protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the work, must be balanced against its reasonably foreseeable detriments.

All factors which may be relevant to the work will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and

PN 07-83
FN 2006-01627

wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. In addition, the evaluation of the impact of the activity on the public interest will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency, under authority of Section 404(b)(1) of the CWA (40 CFR Part 230).

A permit will be granted unless the District Engineer determines that it would be contrary to the public interest. The Corps of Engineers is soliciting comments from the public; federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity.

Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments may be used in the preparation of an Environmental Assessment (EA) and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments may also be used to determine the need for a public hearing and to determine the overall public interest of the proposed activity. An EA will be prepared by this office prior to a final decision concerning issuance or denial of the requested DA Permit. The Corps and TVA are jointly preparing the EA.

Archaeological surveys (Phase I) were conducted along the UT property, this includes the golf practice facility, greenway and shoreline. In addition, Site evaluation (Phase II) investigations were also performed for the remainder of the proposed project site for the golf practice facility. Historic Properties were identified in the project area. A Memorandum of Agreement was executed between TVA, Tennessee State Historic Preservation Office (SHPO) and UT and Knox County regarding the potential adverse affects on historic properties. The signatories to the MOA have agreed on a Treatment Plan and archaeological monitoring to avoid adversely affecting historic properties. This Plan places restrictions on the installation of the riprap, greenway and golf practice facility.

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FN 2006-01627

Upon review of the proposed project and Treatment Plan for preserving the historic properties, the Corps has determined that as proposed the project has no potential to adversely effect National Register of Historic Places listed or eligible properties. This review constitutes the full extent of cultural resources investigations unless comment to this notice is received documenting that significant sites or properties exist which may be adversely affected by this work. Copies of this notice are being sent to the office of the State Historic Preservation Officer.

Based on available information, the proposed work will not destroy or endanger any federally-listed threatened or endangered species or their critical habitats, as identified under the Endangered Species Act. Therefore, we have reached a no effect determination and initiation of formal consultation procedures with the U.S. Fish and Wildlife Service is not planned at this time.

Other federal and state approvals may be required for the proposed work. Specifically, the Tennessee Valley Authority would require approval under Section 26a of the TVA Act. In addition to other provisions of its approval, TVA would require the applicant to employ best management practices to control erosion and sedimentation, as necessary, to prevent adverse aquatic impacts.

The state of Tennessee, Department of Environment and Conservation (TDEC), Division of Water Pollution Control, must certify that applicable water quality standards will not be violated by the bank stabilization activity, pursuant to Section 401(a)(1) of the CWA. On September 25, 2006, TDEC issued an Aquatic Resources Alterations Permit (ARAP) NRS06.252, pursuant to the Tennessee Water Quality Control Act for the proposed bank stabilization activity. The applicant has been advised to contact TDEC directly for other approvals that may be required from that agency.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing.

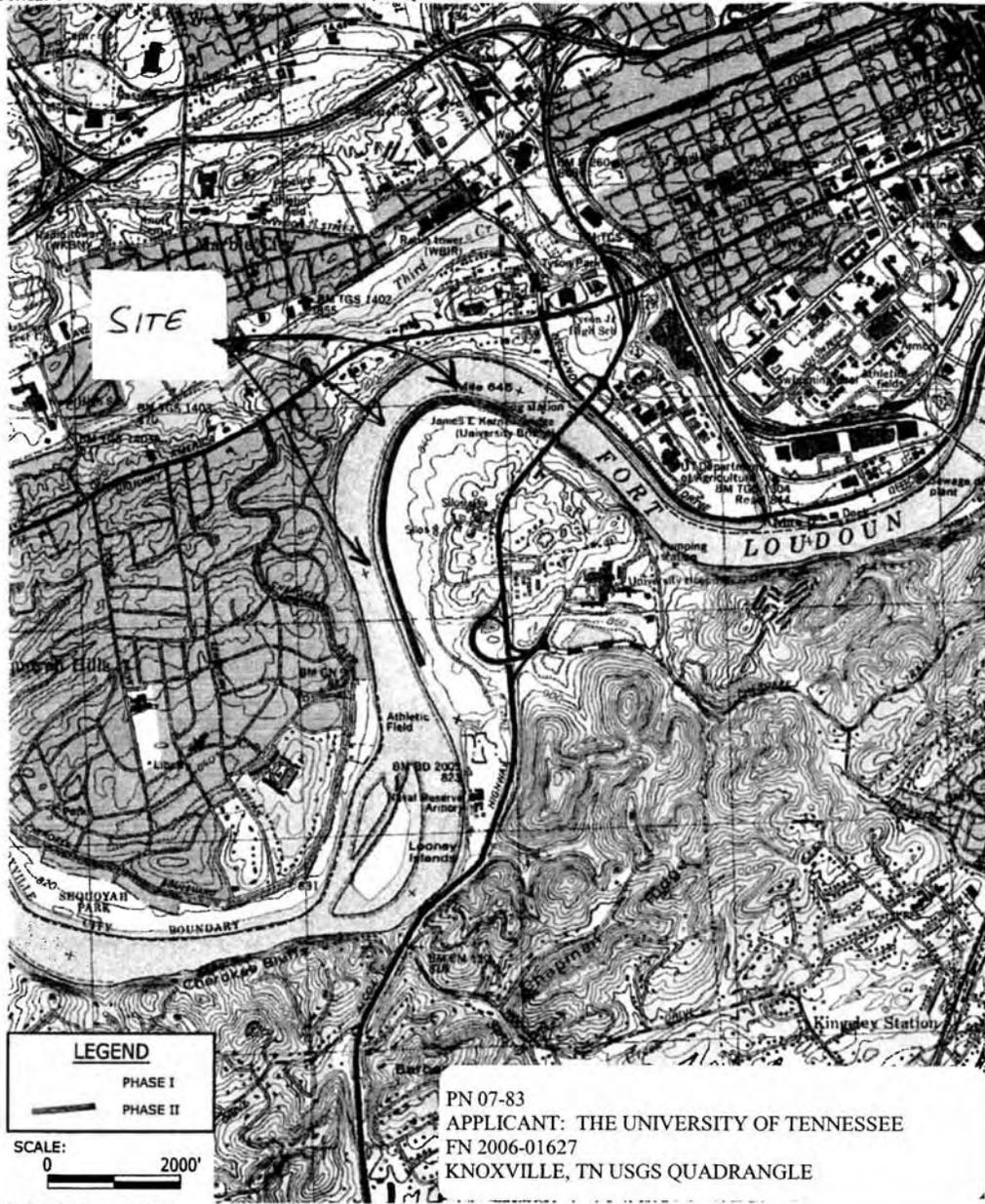
Written statements received in this office on or before the expiration date will become a part of the record and will be considered in the determination. Any response to this notice should be directed to the Regulatory Branch, Attention: Ms. Deborah T. Tuck, at the above address, telephone (615) 369-7518.

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FN 2006-01627

It is not necessary to comment separately to TVA since copies of all comments will be sent to that agency and will become part of its record on the proposal. Please direct any questions relative to the TVA 26a permit or land use agreement to Ms. Heather McGee, NEPA Services, Tennessee Valley Authority, 400 West Summit Hill Drive, WT11-D, Knoxville, Tennessee 37902. E-mail: hlmcgee@tva.gov. More information regarding the proposal may also be found at TVA's website at tva.gov, Public Notices link.

Detailed plans of the proposed work are available upon request. If you received this notice by mail and wish to view all of the diagrams, visit our web site at <http://www.lrn.usace.army.mil/cof/notices.htm>, or contact Ms. Tuck at the above address or phone number.

SOURCE: USGS TOPOGRAPHIC MAP OF THE KNOXVILLE, TN QUADRANGLE.



UNIVERSITY OF TENNESSEE
KNOXVILLE, TENNESSEE

MACTEC
1725 Louisville Drive
Knoxville, TN 37921
Phone: 865-588-8544 Fax: 865-588-8026

UT RIVERBANK REPAIR AND DESIGN
KNOXVILLE, TENNESSEE

PROJECT NO. 3043-05-1055-03 FIGURE 1

PN 07-83
 APPLICANT: THE UNIVERSITY OF TENNESSEE
 FN 2006-01627
 KNOXVILLE, TN USGS QUADRANGLE

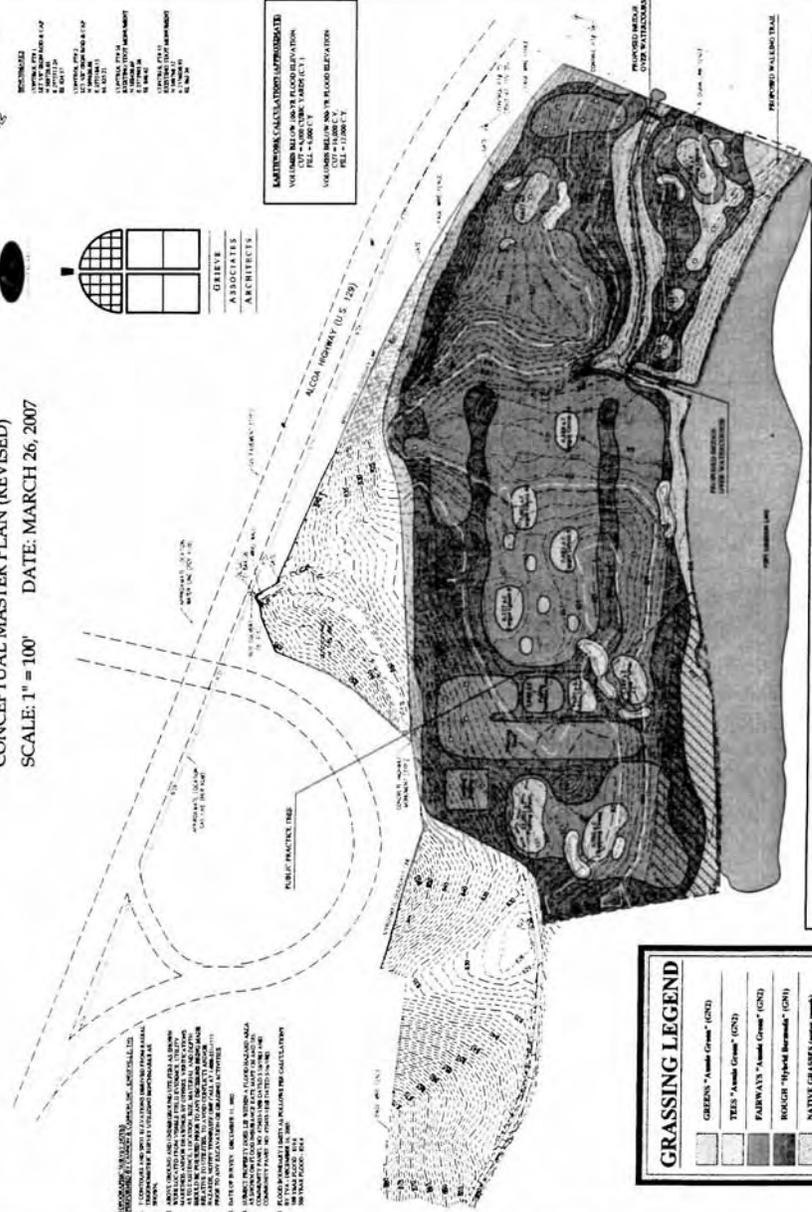


UT INTERCOLLEGIATE GOLF COMPLEX
 CONCEPTUAL MASTER PLAN (REVISED)
 SCALE: 1" = 100' DATE: MARCH 26, 2007

TN STATE PLANE (NAD 83)
 UNITS: FEET
 TYPICAL CURVE RADIUS: 500 FT
 TYPICAL CURVE RADIUS: 1000 FT
 TYPICAL CURVE RADIUS: 1500 FT
 TYPICAL CURVE RADIUS: 2000 FT
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GRIEVE ASSOCIATES ARCHITECTS

ENGINEERING CALCULATIONS APPROXIMATED
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GRASSING LEGEND

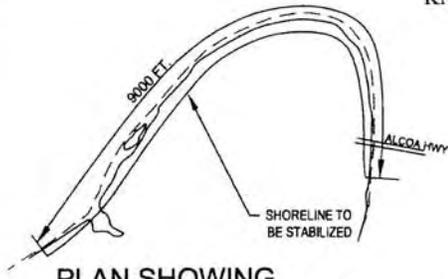
[Symbol]	GREENS "A" Grade Grass" (G2)
[Symbol]	TREES "A" Grade Grass" (G2)
[Symbol]	FAIRWAYS "A" Grade Grass" (G2)
[Symbol]	ROUGH "B" Grade Grass" (G2)
[Symbol]	NATIVE GRASSES (lower rough)
[Symbol]	TEST PLOTS (TPB)

SITE GRADING KEY

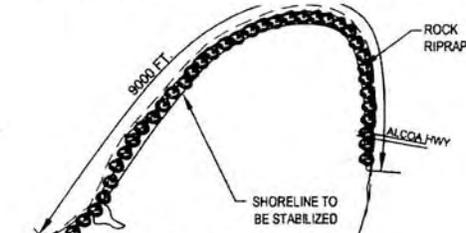
[Symbol]	100 Year Flood Elevation (Approx.)
[Symbol]	500 Year Flood Elevation (Approx.)
[Symbol]	Architecturally Significant Area
[Symbol]	Area of Total Avoidance (No Fill Allowed)
[Symbol]	Finished Ground Elevation Contour (10-Ft)
[Symbol]	Finished Ground Elevation Contour (2-Ft)

C1.2

PN 07-83
 APPLICANT: THE UNIVERSITY OF TENNESSEE
 FN 2006-01627
 KNOXVILLE, TN USGS QUADRANGLE



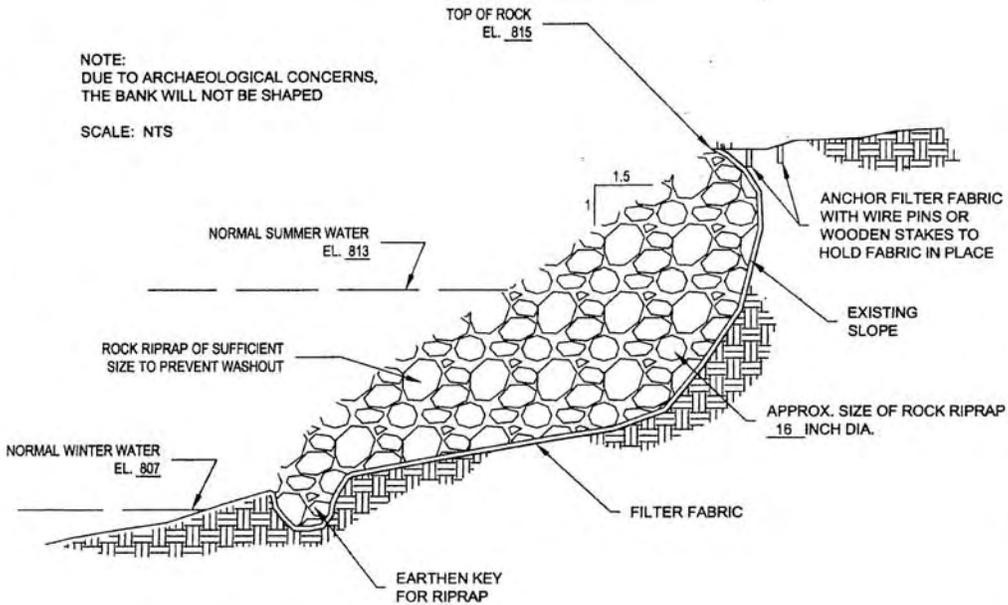
PLAN SHOWING EXISTING SHORELINE



PLAN SHOWING STABILIZED SHORELINE

NOTE:
 DUE TO ARCHAEOLOGICAL CONCERNS,
 THE BANK WILL NOT BE SHAPED

SCALE: NTS



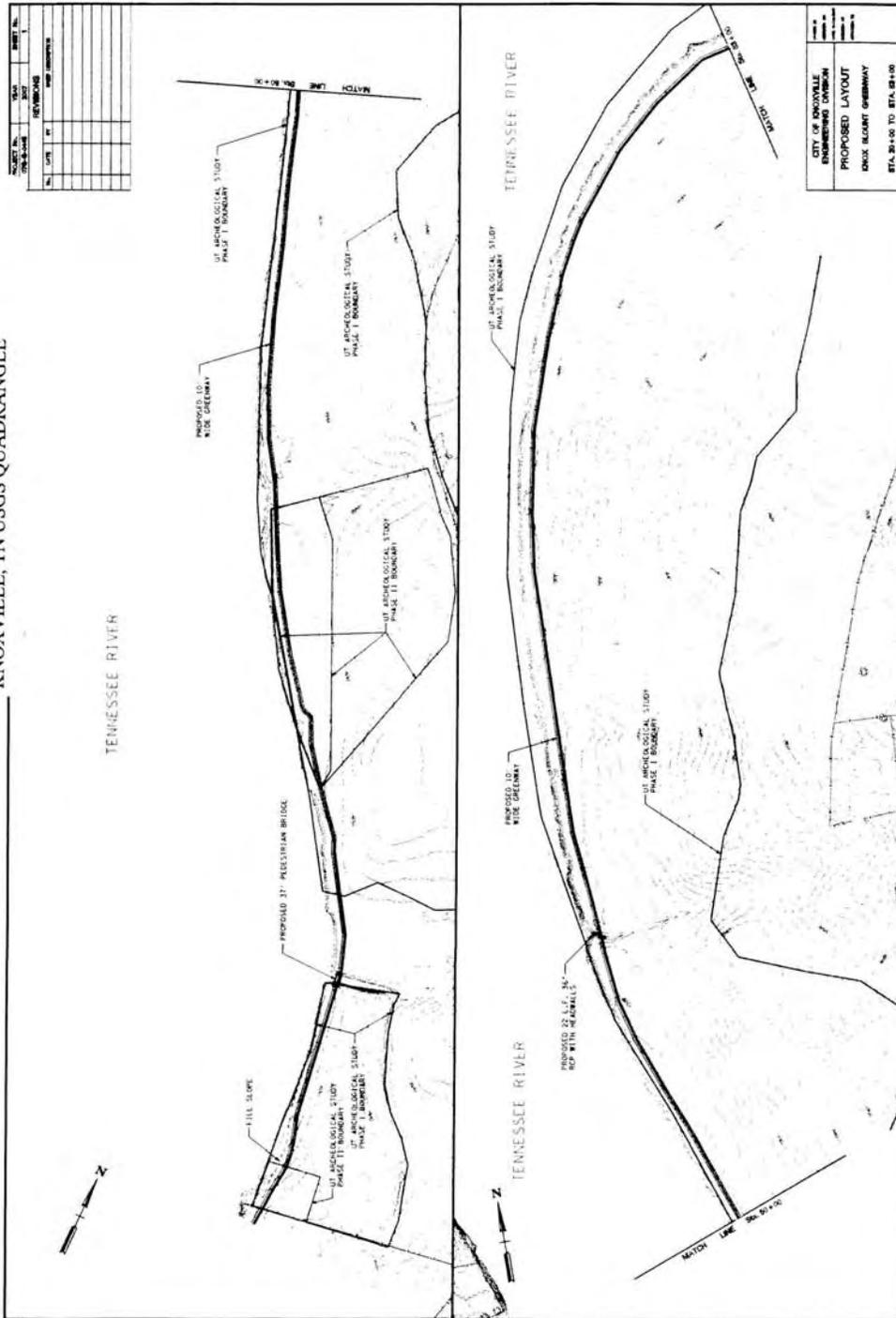
SECTION SHOWING STABILIZED SHORE LINE

THE NORMAL SUMMER WATER LEVEL IS: EL. 813

NOTE:
 INCLUDE ALL DIMENSIONS AND ELEVATIONS
 WHERE INDICATED.

TYPICAL SHORELINE ROCK RIPRAP			
PROJECT LOCATION INFORMATION:			
STREAM NAME	TENNESSEE RIVER	SUBDIVISION NAME	N/A
RESERVOIR NAME	FORT LOUDOUN	LOT NUMBER	PARCEL 001
MILE MARKER	693.5 - 645.2 LB	MAP NO.	CLT MAP 108
(APPLICANT'S NAME) GEORGE CRISS, DIRECTOR, UNIVERSITY OF TENNESSEE, DIVISION OF FACILITIES			

PN 07-83
 APPLICANT: THE UNIVERSITY OF TENNESSEE
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 KNOXVILLE, TN USGS QUADRANGLE



PN 07-83
 APPLICANT: THE UNIVERSITY OF TENNESSEE
 FN 2006-01627
 KNOXVILLE, TN USGS QUADRANGLE





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

→ DT
or
12/17

December 6, 2007

Ms. Deborah Tuck
U.S. Army Corps of Engineers, Nashville District
Regulatory Branch
3701 Bell Road
Nashville, Tennessee 37214

RE: COE-N, PN# 07-83/BANK STAB. TRM 643.5L, KNOXVILLE, KNOX COUNTY

Dear Ms. Tuck:

Pursuant to your request, this office has reviewed documentation concerning the above-referenced undertaking received Wednesday, November 28, 2007. This is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Considering available information, we concur that the project as currently proposed will not adversely affect any property that is eligible for listing in the National Register of Historic Places. Therefore, this office has no objection to the implementation of this project. Please direct questions and comments to Jennifer M. Barnett (615) 741-1588, ext. 105. We appreciate your cooperation.

Sincerely,

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

EPM/jmb

01 DEC 2007



→ DT
12/17

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

December 13, 2007

(Name)
Address
Address
Address
Address

Dear _____:

TVA, UNIVERSITY OF TENNESSEE SHORELINE STABILIZATION, KNOXVILLE,
KNOX COUNTY, TENNESSEE

The University of Tennessee (UT) at Knoxville is considering placing approximately 9000 feet of riprap to stabilize shoreline and protect the archaeological resources fronting a tract of UT property. This stabilization is on Tennessee Valley Authority (TVA) flowage easement, and TVA must approve this type of activity under a federal permit. Therefore, the project is subject to compliance with the regulations of the Advisory Council (36 CFR Part 800) implementing Section 106 of the *National Historic Preservation Act of 1966*. The project area is located on Fort Loudoun Reservoir in Knox County, Tennessee (between Tennessee River Mile 643.4 and 645.1L; 7.5' Quadrangle Knoxville, TN- TVA 147NW).

UT has submitted *Phase I Archaeological Survey of the University of Tennessee-Knoxville Experiment Station (Cherokee Campus) West of Alcoa Highway, Knox County, Tennessee*. To access this report, please go to the following website (http://arl.as.utk.edu/files/Cherokee_campus_draft.pdf). These investigations demonstrated that the upper 18 to 24 inches of soil across the river terraces of the Cherokee farm are part of the disturbed plow zone. A late 19th to early 20th century historic scatter (40KN112) was reviewed, and due to lack of intact archaeological deposits, it was recommended as ineligible for listing in the National Register of Historic Places (NRHP). In addition, the survey extended the boundary of 40KN045 and recommended the additional portions as eligible for listing in the NRHP. 40KN45 is located with the project area proposed for stabilization. TVA Cultural Resources concurred with the recommendation of 40KN112 as ineligible and agreed that 40KN045 is eligible for the NRHP; including the extension of the site boundary of 40KN45.

To preserve the resources without impacting the archaeology, our office placed commitments on the installation of the riprap:

- Due to the large size of the beach area below summer pool elevation, the rock will be extended toward the channel and not into the bank; therefore, it should not be necessary to cut a keyway in the beach to hold the rock into place--no bank reshaping and all vegetation will be removed by hand

17 DEC 2007

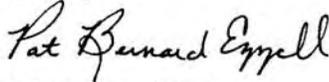
- a layer of 10 ounce geo-textile filter fabric placed along the entire shoreline proposed for stabilization prior to placing rock
- placement of Class 2 (or Class B ~ a nominal weight of 125 pounds per rock) riprap to the top of the bank
- all work will be conducted during dry weather conditions
- in addition, if heavy equipment (track hoe) is required for accessing areas for stabilization that a barge cannot reach or a keyway is necessary, archaeological monitoring will be necessary
- if archaeological resources are exposed during this procedure, all work will cease in the area where the resources have been encountered.

TVA Cultural Resources is requesting your comments on shoreline stabilization procedures.

TVA Cultural Resources is conducting this consultation as prescribed pursuant to 36 CFR Part 800.3(f)(2) of the Advisory Council's regulations. Please review your records and documentation within the project area regarding historic properties or areas that you have attached religious, cultural or traditional significance. Should such sites or areas of interest be present, TVA Cultural Resources is inviting your office to be a consulting party to the project. If you wish to participate, please respond within thirty (30) calendar days after receipt of this letter.

The same letter has been forwarded to the following tribes: United Keetoowah Band of Cherokee Indians in Oklahoma; Cherokee Nation; Eastern Band of Cherokee Indians; Muscogee (Creek) Nation of Oklahoma; Alabama-Coushatta Tribe of Texas; Alabama-Quassarte Tribal Town; Kialegee Tribal Town; Thlopthlocco Tribal Town; Shawnee Tribe; Absentee-Shawnee Tribe of Oklahoma; Eastern Shawnee Tribe of Oklahoma; The Chickasaw Nation; Seminole Tribe of Florida; and Choctaw Nation of Oklahoma.

Sincerely,



Patricia Bernard Ezzell
Historian/Native American Liaison

cc: Ms. Jennifer Barnett
Tennessee Division of Archaeology
Cole Building, #3
1216 Foster Avenue
Nashville, Tennessee 37210

Mr. J. Ruben Hernandez ✓
U.S. Army Corps of Engineers
3701 Bell Road
Nashville, Tennessee 37214



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Natural Areas
 7th Floor L&C Annex
 401 Church Street
 Nashville, Tennessee 37243
 Phone 615/532-0431 Fax 615/532-0046

December 19, 2007

Deborah Tuck
 Department of the Army
 Nashville District Corps of Engineers, Regulatory Branch
 3701 Bell Road
 Nashville, Tennessee 37214

Re: Public Notice 07-83, UTK Rip-rap Shoreline Stabilization, Fort Loudon Lake, Knox County, TN

Dear Ms. Tuck:

The Division of Natural Areas (Division) has reviewed Public Notice 07-83 for rip-rap shoreline stabilization on Fort Loudon Lake in Knox County, Tennessee. Our natural heritage database indicates that rare aquatic species have been observed in the immediate vicinity (within one-mile) of the proposed stabilization:

Type	Scientific Name	Common Name	Global Rank	State Rank	Fed. Protection	St. Protection
Heron Rookery	Heron rookery	Heron Rookery	GNR	SNR	**	**
Mollusc	<i>Athearnia anthonyi</i>	Anthony's River Snail	G1	S1	LE,XN	E
Mollusc	<i>Dromus dromas</i>	Dromedary Pearlymussel	G1	S1	LE	E
Mollusc	<i>Plethobasus cooperianus</i>	Orange-foot Pimpleback	G1	S1	LE	E

Within four miles of the project, the state-rare spiny river-snail (*Io fluviatilis*) and the federally threatened yellowfin madtom (*Noturus flavipinnis*) have been observed in Fort Loudon Lake. Several of these rare species observations are historical in nature, and their populations may have been extirpated by impoundment of the Tennessee River. If conversations have not yet been initiated, the applicant should contact the Tennessee Wildlife Resources Agency and the US Fish and Wildlife Service to ensure that rare aquatic fauna will not be potentially impacted by the proposed activity.

Please keep in mind that not all areas of Tennessee have been surveyed and that a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. For additional information regarding Tennessee's rare and endangered species or interpretation of status or ranks, please visit our website at <http://www.state.tn.us/environment/na/>.

Thank you for the opportunity to comment on the subject permit and for considering Tennessee's rare species throughout the planning of this project. Should you have any questions, please do not hesitate to contact me at (615) 532-0440.

Sincerely,

Silas Mathes
 Natural Heritage Data Manager

Field Descriptions for the Rare Species Coverage

G_rank-The global or world-wide rank of a species which is a non-legal rank indicating the rarity and vulnerability of a species.

G1	Extremely rare and critically imperiled in the world with five or fewer occurrences, or very few remaining individuals, or because of some special condition where the species is particularly vulnerable to extinction
G2	Very rare and imperiled within the world, six to twenty occurrences, or few remaining individuals, or because of some factor(s) making it vulnerable to extinction
G3	Rare and uncommon in its range or found locally in a restricted range, generally from 21-100 occurrences
G4	Widespread, abundant, and apparently secure globally, but with cause for long-term concern
G5	Demonstrably widespread and secure globally.
GH	Of historical occurrence throughout its range, e.g. formally part of the established biota, with the expectation that it may be rediscovered
GU	Can not be ranked using available information
GX	Believed to be extirpated throughout its range
HYB	Hybrid within its range in Tennessee
SSYN	Synonym for another species
_Q	Questionable taxonomy (GRANKs only)
_T#	Subspecific taxon rank (GRANKs only)

S_rank – The state rank of a species in Tennessee. Like the G_rank this is a non-legal rank indicating the rarity and vulnerability of a species at the state level.

USESAs-The federal listing under the U.S. Endangered Species Act

LE	Listed Endangered	Taxon is threatened by extinction throughout all or a significant portion of its range
E/SA	Endangered by Similarity of Appearance	Taxon is treated as an endangered species because it may not be easily distinguished from a listed species
LT	Listed Threatened	Taxon is likely to become an endangered species in the foreseeable future
T/SA	Threatened by Similarity of Appearance	Taxon is treated as a threatened species because it may not be easily distinguished from a listed species
PE	Proposed Endangered	Taxon proposed for listing as endangered
PT	Proposed Threatened	Taxon proposed for listing as threatened
C	Candidate species***	Taxon for which the USFWS has sufficient

		information to support proposals to list the species as threatened or endangered, and for which the Service anticipates a listing proposal
(PS)	Partial Status (based on taxonomy)	Taxon which is listed in part of its range, but for which Tennessee <u>subspecies</u> are not included in the Federal designation
(PS:status)	Partial Status (based on political boundaries)	Taxon which is listed in part of its range, but for which Tennessee <u>populations</u> are not included in the Federal designation e.g. (PS:LE)
(status, XN)	Non-essential experimental population in portion of range	Taxon which has been introduced or re-introduced in an area from which it has been extirpated, and for which certain provisions of the Act may not apply

SPROT-The legal listing in Tennessee

E	Endangered	Any species or subspecies whose prospects of survival or recruitment within the state are in jeopardy or are likely to become so within the foreseeable future
T	Threatened	Any species or subspecies that is likely to become an endangered species within the foreseeable future
D	“Deemed in Need of Management”	Any species or subspecies of nongame wildlife which the executive director of the TWRA believes should be investigated in order to develop information relating to populations, distribution, habitat needs, limiting factors, and other biological and ecological data to determine management measures necessary for their continued ability to sustain themselves successfully. This category is analogous to “Special Concern.”
S	Special Concern	Any species or subspecies of plant that is uncommon in Tennessee, or has unique or highly specific habitat requirements or scientific value and therefore requires careful monitoring of its status.

Additional Modifiers for the Plant SPROT		
PE	Proposed Endangered	Any species or subspecies of plant nominated by the Scientific Advisory Committee to be added to the list of Tennessee's endangered species. After approval by the commissioner of the Dept. of Environment & Conservation and the concurrence of the commissioner of Agriculture, these plants will formally become State endangered.
PT	Proposed Threatened	Any species or subspecies of a plant nominated by the Scientific Advisory Committee to be added to the list of Tennessee threatened species. After a public hearing, these plants will formally become State threatened.
E-PT	Endangered--Proposed Threatened	Species which are currently on the state list of endangered plants, but are proposed by the Scientific Advisory Committee to be down-listed to threatened. After approval by the commissioner of the Dept. of Environment & Conservation and the concurrence of the commissioner of Agriculture, these plants will formally become State threatened.
E-PS	Endangered Proposed Special Concern	Species which are currently on the state list of endangered plants, but are proposed by the Scientific Advisory Committee to be down-listed to special concern. After approval by the commissioner of the Dept. of Environment & Conservation and the concurrence of the commissioner of Agriculture, these plants will formally become State special concern.
T-PE	Threatened Proposed Endangered	Species which are currently on the state list of threatened plants, but are proposed by the Scientific Advisory Committee to be listed on the state endangered list. After approval by the commissioner of the Dept. of Environment & Conservation and the concurrence of the commissioner of Agriculture, these plants will formally become State endangered.
T-PS	Threatened Proposed Special Concern	Species which are currently on the state list of threatened plants, but are proposed by the Scientific Advisory Committee to be down-listed to special concern. After a public hearing, these plants will formally become State special concern.
P	Possibly Extirpated	Species or subspecies that have not been seen in Tennessee for the past 20 years. May no longer occur in Tennessee.
C	Commercially Exploited	Due to large numbers being taken from the wild and propagation or cultivation insufficient to meet market demand. These plants are of long-term conservation concern, but the Division of Natural Heritage does not recommend they be included in the normal environmental review process.

EO_RANK-The viability rank of the element occurrence

COUNTY-The county of the occurrences

QUAD – The 1:24000 USGS quadrangle of the occurrence

HUC- The eight-digit hydrologic unit code of the occurrence

LAST_OBS- The date when the occurrence was last observed

GENERAL DESCRIPTION – Information as to the habitat and associated species of the occurrence

EO DATA – Information as to the number, size, or condition of the occurrence

DIRECTIONS – description of the location of the occurrence



United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

December 20, 2007

Environmental Stewardship
and Policy

DEC 27 2007

Doc Type:
Index Field:
Project Name:
Project Number:

Lt. Colonel Bernard R. Lindstrom
District Engineer
U.S. Army Corps of Engineers
3701 Bell Road
Nashville, Tennessee 37214

Attention: Ms. Deborah T. Tuck, Regulatory Branch

Subject: Public Notice No. 07-83. The University of Tennessee. Proposed Riprap, Golf Practice Facility, and Greenway, Between Tennessee River Miles 643.5 and 645.2, Left Bank, Fort Loudon Lake, Knox County, Tennessee.

Dear Colonel Lindstrom:

Fish and Wildlife Service personnel have reviewed the subject public notice. The proposed project would involve the placement of riprap for bank stabilization along approximately 9,000 linear feet of eroded shoreline between Tennessee River Miles 643.5 and 645.2 in Knox County, Tennessee. Approximately 3,900 cubic yards of material would be placed below the normal summer pool elevation. The riprap would be approximately 16 inches in diameter and would be keyed in at the toe to prevent washout. A layer of 10-ounce geo-textile filter fabric would be placed along the entire length of river bank being stabilized. The applicant (The University of Tennessee), in partnership with Knox County and the City of Knoxville, also proposes to develop a greenway and a golf practice facility. Approximately one acre of the greenway and three acres of the golf facility would be located on Tennessee Valley Authority (TVA) property. The majority of the TVA property would be planted in native grasses, creating a natural buffer to adjacent streams. The following constitute the comments of the U.S. Department of the Interior, provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

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

requirements of section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. Obligations under section 7 of the Act must be reconsidered if (1) new information reveals impacts of the action that may affect listed species or critical habitat in a manner not previously considered, (2) the action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the action.

We do not anticipate significant adverse impacts to fish and wildlife or their habitats as a result of this project. Therefore, the Service has no objection to the issuance of a permit for the work described in the subject public notice.

Thank you for this opportunity to review the subject notice. Please contact Robbie Sykes of my staff at 931/528-6481 (ext. 209) if you have questions about these comments.

Sincerely,



Lee A. Barclay, Ph.D.
Field Supervisor

xc: Robert Todd, TWRA, Nashville, TN
Dan Eagar, TDEC, Nashville, TN
Darryl Williams, EPA, Atlanta, GA
Heather McGee, TVA, Knoxville, TN



United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

#2006-0106 DT
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1/29

January 18, 2008

Lt. Colonel Bernard R. Lindstrom
District Engineer
U.S. Army Corps of Engineers
3701 Bell Road
Nashville, Tennessee 37214

Attention: Ms. Deborah T. Tuck, Regulatory Branch

Subject: Public Notice No. 07-83. The University of Tennessee. Proposed Riprap, Golf Practice Facility, and Greenway, Between Tennessee River Miles 643.5 and 645.2, Left Bank, Fort Loudon Lake, Knox County, Tennessee.

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

22 JAN 2008

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We do not anticipate significant adverse impacts to fish and wildlife or their habitats as a result of this project. Therefore, the Service has no objection to the issuance of a permit for the work described in the subject public notice.

Thank you for this opportunity to review the subject notice. Please contact Robbie Sykes of my staff at 931/528-6481 (ext. 209) if you have questions about these comments.

Sincerely,



Lee A. Barclay, Ph.D.
Field Supervisor

xc: Robert Todd, TWRA, Nashville, TN
Dan Eagar, TDEC, Nashville, TN
Darryl Williams, EPA, Atlanta, GA
Heather McGee, TVA, Knoxville, TN



the
Chickasaw
Nation HEADQUARTERS

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

Bill Anoatubby
Governor

Jefferson Keel
Lieutenant
Governor

January 7, 2008

Ms. Pat Ezzell
Historian/Native American Liaison
Tennessee Valley Authority
400 west Summit Hill Drive
Knoxville, TN 37902-1499

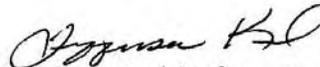
Dear Ms. Ezzell:

Thank you for your letter of notification regarding Tennessee Valley Authority, University of Tennessee Shoreline Stabilization in Knox County Tennessee. The project area is located on Fort Loudoun Reservoir between Tennessee River mile 643.4 and 645.1. We are interested in participating as a consulting party for this proposed project.

We are unaware of any specific historic properties or traditional cultural, religious and/or sacred sites at this time. However, in the event of inadvertent discoveries, we expect all construction activities to cease and we be notified according to all applicable state and federal laws.

If you have any questions, please contact Ms. Giny Nail, historic preservation officer, at (580) 332-8685.

Sincerely,


Jefferson Keel, Lt. Governor
The Chickasaw Nation



God Bless America!



Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

January 18, 2008

Dr. Joe Garrison
Tennessee Historical Commission
2941 Lebanon Pike
Nashville, Tennessee 37243

TVA, UT GOLF COURSE, STABILIZATION AND KNOX COUNTY GREENWAY,
KNOXVILLE, KNOX COUNTY, TENNESSEE

Dear Dr. Garrison:

The Tennessee Valley Authority (TVA) is compiling an Environmental Assessment for multiple actions on University of Tennessee-Knoxville (UT) property. The actions include a greenway, stabilization, and practice golf course. Currently the entire tract of UT property is used for agriculture and dairy. A 7-acre portion of the property within the proposed practice golf course was transferred by TVA to Knox County for public recreation purposes and Knox County has transferred to UT. Under the agreement between TVA and Knox County, development of the area is subject to compliance with the regulations of the Advisory Council (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act of 1966. The project area is located on Fort Loudoun Reservoir in Knox County, Tennessee (between Tennessee River Mile 643.4 and 645.3L; 7.5' Quadrangle Knoxville, TN- TVA 147NW). For the county to meet its public recreation mission, UT has agreed to construct a greenway/riverwalk between Tennessee River Mile 643.7 and 645.2L. Lastly, UT proposes to install 9000 feet of riprap to protect property and archaeological resources; this action requires a TVA 26a permit. It is TVA Cultural Resources' opinion that the area of potential effect for this project is defined as the golf course itself, the greenway, the shoreline proposed for stabilization and any area that would be visually affected by these actions.

TVA has executed a Memorandum of Agreement (MOA) with your office concerning adverse effects to historic properties (archaeology) regarding the UT-proposed practice golf course and Knox County greenway. The MOA is attached on the CD, including the appendices. Our office did not address visual effects on historic structures during the earlier consultation because the greenway route had not been selected. In addition, UT proposes to proceed with the golf course construction and to install riprap to protect UT shoreline property and archaeological resources. No historic structures listed on the National Register of Historic Places (NRHP) are located on the UT property or along the greenway route. However, there are NRHP-listed historic structures (Bleak House and H.L. Dulin House) and other historic structures along the shoreline in the Sequoyah Hills community across the Tennessee River that may be visually affected by the proposed actions.

Greenway

- The greenway is depicted in purple on the enclosed maps. Construction of the greenway will involve some small, above-ground structures (pedestrian bridges), and will be paved. No utilities will be placed along the greenway (no lights or water lines). Due to the minimal impact and low silhouette, it is TVA Cultural Resources' opinion that the installation of a greenway will not adversely affect historic properties (historic structures).

→ DT
KW
1/28

22 JAN 2008

Riprap

- The stabilization is depicted in yellow; along the shoreline, paralleling but separate from the greenway route. UT is considering placing approximately 9000 feet of riprap to stabilize the area and protect archaeological resources. Due to the large size of the beach area below summer pool elevation and to avoid impacting intact archaeological features, the rock will be extended toward the channel and not into the bank. Although the placing of stone would have more visual effects to historic structures than bio-stabilization, that is not possible in this instance. Unfortunately, hard armoring is the only effective way to stabilize the shoreline because of volume of recreational boat traffic and high energy water-flows. Re-vegetation techniques will not have the time to establish to provide proper protection. However, over time the rock will become weathered and have a more "natural" appearance. It is TVA Cultural Resources' opinion that although there will be visual effects to historic properties (historic structures) they would not be adverse.

Practice Golf Course

- The practice golf course will be on approximately 35 acres of land and will be maintained for mainly the UT golf team but would allow for public use. The course will have one small maintenance building placed along the northern edge near the Alcoa Highway off ramp loop; away from the river. Due to the minimal alterations and benign use, it is TVA Cultural Resources' opinion that the proposed golf course would have no adverse effects on historic properties (historic structures).

Therefore, pursuant to the requirements of Section 106 of the *National Historic Preservation Act* and its implementing regulations at 36 CFR Part 800.4, TVA Cultural Resources is requesting your concurrence regarding our findings of no adverse effects.

If you have any questions or comments, please contact Eric Howard at (865) 632-2457 or by e-mail at aehoward@tva.gov.

Sincerely,



Thomas O. Maher, Ph.D.
Manager
Cultural Resources

Enclosures

cc: Mr. J. Ruben Hernandez ✓
U. S. Army Corps of Engineers
3701 Bell Road
Nashville, Tennessee 37214



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

February 20, 2008

Dr. Thomas O. Maher
Tennessee Valley Authority
400 West Summit Hill Dr.
Knoxville, Tennessee, 37902-1499

RE: TVA, UT GOLF COURSE STABILIZATION/KNOX COUNTY GREENWAY, KNOXVILLE,
KNOX COUNTY

Dear Dr. Maher:

In response to your request, received on Tuesday, January 22, 2008, we have reviewed the documents you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicant for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800. You may wish to familiarize yourself with these procedures (Federal Register, December 12, 2000, pages 77698-77739) if you are unsure about the Section 106 process.

Considering available information, we find that the project as currently proposed MAY ADVERSELY AFFECT PROPERTIES THAT ARE ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES. You should now begin immediate consultation with our office, the owners of affected historic properties identified in the survey report, and the Sequoyah Hills Neighborhood Association to determine their feelings about the potential for project effects posed by the proposed riprap along the shoreline within the project's Area of Potential Effects. Please direct questions and comments to Joe Garrison (615) 532-1550-103. We appreciate your cooperation.

Sincerely,

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

EPM/jyg



Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

February 25, 2008

Bleak House and Confederate Memorial Hall
3148 Kingston Pike
Knoxville, Tennessee 37919

Dear Sir:

The University of Tennessee-Knoxville (UT) is considering placing approximately 9,000 feet of riprap to stabilize shoreline and protect the archaeological resources fronting a tract of UT property. Riprap is rock used to armor shorelines against water erosion. Riprap reduces water erosion by resisting the hydraulic pressure and dissipating the energy of wakes caused by boat traffic. This stabilization is on Tennessee Valley Authority (TVA) flowage easement, and TVA must approve this type of activity under a federal permit. Therefore, the project is subject to compliance with the regulations of the Advisory Council on Historic Preservation (36 CFR Part 800) implementing Section 106 of the *National Historic Preservation Act*. The project area (see enclosed map) is located on Fort Loudoun Reservoir in Knox County, Tennessee (between Tennessee River Mile 643.4 and 645.1L; 7.5' Quadrangle Knoxville, TN- TVA 147NW). TVA Cultural Resources is requesting your comments on the shoreline stabilization.

TVA Cultural Resources is conducting this consultation as prescribed pursuant to 36 CFR Part 800.2 of the Advisory Council's on Historic Preservation regulations. None of the proposed activities are on the Bleak House property. However, your office may have interest regarding this project since the Bleak House and Confederate Memorial Hall is across the Tennessee River from the proposed stabilization. Therefore, TVA Cultural Resources is inviting your office to provide comments on the project. Please respond within fifteen (15) calendar days after receipt of this letter.

If you have any questions or comments please Eric Howard at (865) 632-2457 or email aehoward@tva.gov.

Sincerely,

Thomas O. Maher, Ph.D.
Manager
Cultural Resources

Enclosure

cc: J. Ruben Hernandez (USACE)
Regulatory Branch
3701 Bell Road
Nashville, Tennessee 37214

Dr. Joe Garrison
Tennessee Historical Commission
2941 Lebanon Pike
Nashville, Tennessee 37243

Janet Duffey, LCB 1A-LCT
Heather McGee, SB 1H-M
EDMS, WT 11D-K



Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

February 25, 2008

H. L. Dulin House
3100 Kingston Pike
Knoxville, Tennessee 37919

Dear Sir:

The University of Tennessee-Knoxville (UT) is considering placing approximately 9,000 feet of riprap to stabilize shoreline and protect the archaeological resources fronting a tract of UT property. Riprap is rock used to armor shorelines against water erosion. Riprap reduces water erosion by resisting the hydraulic pressure and dissipating the energy of wakes caused by boat traffic. This stabilization is on Tennessee Valley Authority (TVA) flowage easement, and TVA must approve this type of activity under a federal permit. Therefore, the project is subject to compliance with the regulations of the Advisory Council on Historic Preservation (36 CFR Part 800) implementing Section 106 of the *National Historic Preservation Act*. The project area (see enclosed map) is located on Fort Loudoun Reservoir in Knox County, Tennessee (between Tennessee River Mile 643.4 and 645.1L; 7.5' Quadrangle Knoxville, TN- TVA 147NW). TVA Cultural Resources is requesting your comments on the shoreline stabilization.

TVA Cultural Resources is conducting this consultation as prescribed pursuant to 36 CFR Part 800.2 of the Advisory Council's on Historic Preservation regulations. None of the proposed activities are on the H. L. Dulin House property. However, your office may have interest regarding this project since the H. L. Dulin House is across the Tennessee River from the proposed stabilization. Therefore, TVA Cultural Resources is inviting your office to provide comments on the project. Please respond within fifteen (15) calendar days after receipt of this letter.

If you have any questions or comments please contact Eric Howard at (865) 632-2457 or by email at aehoward@tva.gov.

Sincerely,

Thomas O. Maher, Ph.D.
Manager
Cultural Resources

Enclosure

cc: J. Ruben Hernandez (USACE)
Regulatory Branch
3701 Bell Road
Nashville, Tennessee 37214

Dr. Joe Garrison
Tennessee Historical Commission
2941 Lebanon Pike
Nashville, Tennessee 37243

Janet Duffey, LCB 1A-LCT
Heather McGee, SB 1H-M
EDMS, WT 11D-K



Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

February 25, 2008

Mr. James Bletner
Kingston Pike Sequoyah Hills Association
3819 Glenfield Drive
Knoxville, Tennessee 37919

Dear Mr. Bletner:

The University of Tennessee-Knoxville (UT) is considering placing approximately 9,000 feet of riprap to stabilize shoreline and protect the archaeological resources fronting a tract of UT property. Riprap is rock used to armor shorelines against water erosion. Riprap reduces water erosion by resisting the hydraulic pressure and dissipating the energy of wakes caused by boat traffic. This stabilization is on Tennessee Valley Authority (TVA) flowage easement, and TVA must approve this type of activity under a federal permit. Therefore, the project is subject to compliance with the regulations of the Advisory Council on Historic Preservation (36 CFR Part 800) implementing Section 106 of the *National Historic Preservation Act*. The project area (see enclosed map) is located on Fort Loudoun Reservoir in Knox County, Tennessee (between Tennessee River Mile 643.4 and 645.1L; 7.5' Quadrangle Knoxville, TN- TVA 147NW). TVA Cultural Resources is requesting your comments on the shoreline stabilization.

TVA Cultural Resources is conducting this consultation as prescribed pursuant to 36 CFR Part 800.2 of the Advisory Council's on Historic Preservation regulations. None of the proposed activities are on property within the Sequoyah Hills Community. However, the Kingston Pike Sequoyah Hills Association may have interest regarding this project since the Sequoyah Hills Community is across the Tennessee River from the proposed stabilization. Therefore, TVA Cultural Resources is inviting your office to provide comments on the project. Please respond within fifteen (15) calendar days after receipt of this letter.

If you have any questions or comments please Eric Howard at (865) 632-2457 or email aehoward@tva.gov.

Sincerely,

Thomas O. Maher, Ph.D.
Manager
Cultural Resources

Enclosure

cc: Mr. J. Ruben Hernandez (USACE)
Regulatory Branch
3701 Bell Road
Nashville, Tennessee 37214

Dr. Joe Garrison
Tennessee Historical Commission
2941 Lebanon Pike
Nashville, Tennessee 37243

Janet Duffey, LCB 1A-LCT
Heather McGee, SB 1H-M
EDMS, WT 11D-K

**Attachment C – Summary of Cultural Resources
Assessments and MOA**

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For at least 12,000 years, the Tennessee River and the Little Tennessee River Valley have been an area for human occupation that became more intense through succeeding cultural periods. In East Tennessee, archaeological investigations have demonstrated that Tennessee and the eastern Ridge and Valley region were the setting for each one of these cultural/temporal traditions: Paleo-Indian (10,000-8000 B.C.), Archaic (8000-1200 B.C.), Woodland (1200 B.C.-A.D. 1000), Mississippian (A.D. 1000-1500), Protohistoric-Contact (A.D. 1500-1750), Historic European American and African American (A.D. 1750-Present) Periods. Prehistoric archaeological stages are based on changing settlement and land use patterns and artifact styles. Each of these broad periods is generally broken into subperiods (Early, Middle, and Late), which are also based on artifact styles and settlement patterns. Smaller time periods, known as 'Phases,' are represented by distinctive sets of artifactual remains.

The Paleo-Indian Period represents the documented first human occupation of the area. The settlement and land use pattern of this period was dominated by highly mobile bands of hunters and gatherers. The subsequent Archaic Period represents a continuation of the hunter-gatherer lifestyle. Through time, there is increasing social complexity and the appearance of horticulture late in the period. The settlement pattern during this period is characterized by spring and summer campsites. Increased social complexity, reliance on horticulture and agriculture, and the introduction of ceramic technology characterize the Woodland Period. The increased importance of horticulture is associated with a less mobile lifestyle as suggested by semipermanent structures. The Mississippian Period, the last prehistoric period in East Tennessee, is associated with the pinnacle of social complexity in the Southeastern United States. This period is characterized by permanent settlements, palisades, maize agriculture, and chiefdom-level societies. These settlements normally occurred on the second terrace because of the soil-rich bottomlands used for horticulture. The Protohistoric-Contact Period consisted of the effects of European contact in the region. Native American cultural traditions periodically utilizing resources in East Tennessee in this period would have been Creek, Shawnee, Yuchi, and Cherokee. However, this area was predominately occupied by the Cherokee during most of this period.

By the mid-18th century, the Historic European American and African American Period began as European hunters and fur trappers were crossing the Appalachians to explore and exploit the abundant wildlife and other natural resources of the region. The Cherokee, in an attempt to protect their fur trade, convinced the English to issue a proclamation in 1763 forbidding European access of the land west of the Blue Ridge. By 1786, European Americans were already settling in upper East Tennessee along the Watauga and Holston Rivers. After the American Revolution, attempts were made to establish the independent State of Franklin from the western territories of North Carolina. The State of Franklin ceased to exist in 1789. In 1796, the territory became the State of Tennessee (Gerson 1968). By the late 1830s, European American settlers and the United States government had effectively removed most of the Indian inhabitants from the area.

With the expansion of the United States of America, this location became part of Tennessee. The Cherokee ceded their claim to the land that is now Knox County under the terms of the Treaty of the Holston, which was signed on July 2, 1791. Later the same year, the settlement that became Knoxville was designated as the territorial capitol. In 1792, the fledgling town was named Knoxville in honor of General Henry Knox (MacArthur 1976). From 1796 until 1811, Knoxville had the distinction of being the territorial capitol of Tennessee, while the legislature rotated its meetings between Knoxville, Nashville, and

Murfreesboro. The Tennessee River waterways became a part of a significant transportation and trade network throughout the region. By the mid-1800s, railroads were constructed and a more passable roadway system connected Knoxville to Charleston and other prominent cities at that time (MacArthur 1976). All of these developments solved a number of economic needs for Knoxville and brought more settlers and skilled workers to the area. By 1850, Knoxville had left the frontier far behind and was developing into a commercial center. The local economy was no longer dominated by farming as more and more people came into the area and sons of the affluent early settlers completed their education and returned to Knoxville as doctors, lawyers, bankers, teachers, real estate holders, etc. (Young 1993). With this advantage, East Tennessee had a more mixed economic base than the middle and western portion of the state by 1860.

Knoxville was of vital importance during the Civil War because of its commercial and manufacturing strengths and, most importantly, East Tennessee's natural resources. Many East Tennesseans were loyal to the Union, but there were also many Confederate sympathizers. The Confederacy was in control of Knoxville until the Union troops, led by General Ambrose E. Burnside, arrived in the city on September 3, 1863. General Burnside established his headquarters on Gay Street in the home of John H. Crozier, a Confederate sympathizer (Seymour 1982). Union defenses for Knoxville were under the charge of Captain Orlando Poe. Confederate troops under the command of General James Longstreet attacked on November 29, 1863, and what became known as the Battle of Fort Sanders lasted for 20 minutes. Many houses and other buildings were burned or badly damaged as a result of the conflict.

After the Civil War, Knoxville began its rise to prominence as a major southern wholesale and jobbing center. The catalyst for this period of rapid economic growth was the arrival of rail transportation. The heyday of the steamboat had passed, and a new era was beginning. Outside of Knoxville, little had changed since the Civil War. Most of the area relied on agriculture and farming. With the development of TVA in 1933, the economy and lifeways changed with the wide availability of low-cost electrical services. This, in turn, brought about successful ventures in economic development and recreation to Knoxville and the surrounding communities.

TVA is mandated under the NHPA of 1966 to preserve important historic properties affected by TVA undertakings. In response to this federal legislation, TVA conducts surveys to record historic properties. From reviewing the initial project and associated federal permits and approvals, TVA Cultural Resources and the SHPO determined the APE for historic properties to be the golf practice facility and greenway route. Since the initial permit submittal, the shoreline stabilization has now been included in the APE for the EA. An archaeological site identification survey (Phase I) was recommended to determine the effects on historic properties for these actions.

In April to May 2004, personnel from the UT Archaeological Research Laboratory (ARL) conducted a site identification (Phase I) archaeological survey within a portion of the UT-Knoxville Experiment Station, Knoxville, Tennessee. The project area consists of gently rolling to flat cropland and pasture and is situated on alluvial terraces and colluvial slopes adjacent to Fort Loudoun Reservoir. The archaeological investigation met the Tennessee state guidelines for archaeological investigations. In areas with less than 30 percent surface visibility and less than 12 percent slope, shovel tests were excavated at approximately 30-meter intervals. In areas where the slope was greater than 12 percent, a visual inspection was made for cultural features. Portions of two previously recorded sites

are partially located within the project area. Both previously recorded sites were reexamined.

One site (40KN45) is located on the alluvial terrace and colluvial bench north of the unnamed drainage that runs through the project area. The artifacts recovered from the site range from the Archaic through Mississippian Periods. Soil profiles suggested a high probability for the occurrence of intact subsurface cultural features on the site.

The second site (40KN113) is located on a natural levee and colluvial bench. Results indicated that there were two distinct components of this site. Artifacts associated with this site are Woodland through Mississippian and European American Periods. Soil profiles and the occurrence of intact subsurface cultural features suggest prehistoric use of the area. The recovery of historic ceramic fragments also indicated a previously unknown early 19th century deposit as well.

After this site identification survey, it was recommended that the sites should be avoided and if that were not possible that site evaluation (Phase II) investigations would be necessary. The Tennessee SHPO concurred with this finding (July 24, 2004). The following federally recognized tribes were notified of this finding and were invited to participate: Eastern Band of Cherokee Indians; United Keetoowah Band of Cherokee Indians in Oklahoma; Cherokee Nation; Muscogee (Creek) Nation of Oklahoma; Alabama-Coushatta Tribe; Alabama-Quassarte Tribal Town; Kialegee Tribal Town; Thlopthlocco Tribal Town; Poarch Band of Creek Indians; Shawnee Tribe; Absentee-Shawnee Tribe of Oklahoma; and Eastern Shawnee Tribe of Oklahoma. Only the Eastern Band of Cherokee Indians chose to participate in the process.

Based on the limited acreage, UT could not redesign to avoid the resources, and a site evaluation (Phase II) was conducted at 40KN45 and 40KN113. In August 2004, personnel from ARL and UT Department of Anthropology conducted a Phase II archaeological evaluation of the two sites. Backhoe stripping of plowzone was initiated at 40KN113 (Angst et al. 2005). Because of the extensive amount of erosion and the lack of observed intact cultural deposits across most of the site, stripping was abbreviated only to locations that contained intact archaeological features. In order to incorporate the observations made in the field, the methodology at the other site (40KN45) was altered to accommodate a wider plowzone stripping interval of 40 meters. When intact archaeological deposits were encountered, additional stripping was conducted at the originally proposed 20-meter interval. Plowzone stripping was also abbreviated in some locations due of the absence of intact deposits and because of soil conditions making it an unlikely area for cultural activity.

Another revision to the original scope of work was the abandonment of the archaeological assessment of the lower terrace (when a trench was excavated, groundwater began to seep in 1 meter from the surface). With the water table so close to the surface, it was determined that an adequate assessment of the archaeological deposits could not be performed during summer pool of adjacent Fort Loudoun Reservoir.

Based on the data gathered during the Phase II archaeological assessment of sites 40KN113 and 40KN45, portions of both sites contain significant archaeological data and are eligible for the NRHP. The eligible portion of 40KN113 includes remains of a prehistoric activity, a historic European-American cellar, and the immediate surrounding area most likely associated with an early 19th century farmstead. Furthermore, 40KN45 contained a

deep midden identified in the lower terrace immediately adjacent to Fort Loudoun Reservoir and an apparent late Mississippian village.

Based on the studies, the sites contain information important to history and prehistory and may be adversely affected by the construction of the golf practice facility. TVA, the SHPO, UT, and Knox County agreed that an MOA should be drafted to address the adverse effects on historic properties regarding the golf practice facility construction (placement of cut and fill) and, since a greenway route had not been selected at the time, allowed for survey-phased compliance for the greenway route. The MOA was executed on April 18, 2006. The Eastern Band of Cherokee Indians chose not to sign as a concurring party.

Additional archaeological investigations occurred at the remaining portion of the UT property; this included the area proposed for stabilization and the greenway. From March to April 2006, ARL conducted a site identification (Phase I) archaeological survey (Angst 2007). The project area consists of approximately 187 acres of rolling to flat cropland, pasture, and developed areas. Pedestrian survey of the exposed shoreline of Fort Loudoun Reservoir, shovel testing, mechanical coring, and geophysical studies identified prehistoric and historic archaeological deposits on the floodplain and terraces. These investigations have demonstrated that the upper 18 to 24 inches of soil across the river terraces are part of the disturbed plowzone, sediments impacted by agriculture activities. These deposits, with prehistoric artifacts, are interpreted as an extension of 40KN45. A limited array of historic artifacts was also recovered from the terraces. In addition, a Civil War map of Knoxville depicts a house on the terrace. The house appears to be associated with a road and Confederate ferry crossing on the Tennessee River. Archival research suggests that European-American occupation in the area may date to as early as the late 18th century, and some of the artifacts recovered during this study may be associated with that occupation. During the testing, a trench-like feature was identified near the possible location of the Civil War-era house. This may be the archaeological manifestation of the road leading to the ferry. The location of the road would be important in relocating historic activity mapped along the road, such as the ferry crossing and the house.

In a letter dated, October 30, 2007, TVA Cultural Resources agreed with the extension of site boundaries regarding 40KN45 and placed conditions on the installation of the greenway and riprap to minimize potential adverse effects on historic properties. The SHPO concurred with TVA findings in a letter dated, November 2, 2007. Additionally, a letter was sent to the following tribes allowing them the opportunity to provide comments regarding the proposed shoreline stabilization procedures: Eastern Band of Cherokee Indians; United Keetoowah Band of Cherokee Indians in Oklahoma; Cherokee Nation; Muscogee (Creek) Nation of Oklahoma; Alabama-Coushatta Tribe; Alabama-Quassarte Tribal Town; Kialegee Tribal Town; Thlopthlocco Tribal Town; Poarch Band of Creek Indians; Shawnee Tribe; Absentee-Shawnee Tribe of Oklahoma; and Eastern Shawnee Tribe of Oklahoma.



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

November 2, 2007

Dr. Thomas Maher
Tennessee Valley Authority
400 W. Summit Hill Drive
WT 11D - Cultural Resources
Knoxville, Tennessee 37902

RE: TVA, U.T. KNOXVILLE EXPERIMENT STATION, KNOXVILLE, KNOX COUNTY

Dear Dr. Maher:

Pursuant to your request, and in accordance with the signed agreement document for this undertaking, this office has reviewed documentation concerning the avoidance measures for construction near National Register eligible archaeological site 40KN45. This is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Considering available information, we concur that archaeological site 40KN112 does not contain archaeological resources eligible for inclusion in the National Register of Historic Places and that the boundaries for site 40KN45 should be expanded in accordance with the results of the archaeological investigations. We further concur that the construction, as currently proposed, with the minimization and avoidance measures, will not adversely affect any property that is eligible for listing in the National Register of Historic Places. Please direct questions and comments to Jennifer M. Barnett (615) 741-1588, ext. 105. We appreciate your cooperation.

Sincerely,

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

EPM/jmb



Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499
October 30, 2007

Ms. Jennifer Barnett
Tennessee Division of Archaeology
Cole Building #3
1216 Foster Avenue
Nashville, Tennessee 37210

TVA, UT GOLF COURSE AND KNOX COUNTY GREENWAY MEMORANDUM OF AGREEMENT, KNOXVILLE, KNOX COUNTY, TENNESSEE

Dear Ms. Barnett:

Per the existing Memorandum of Agreement with the University of Tennessee-Knoxville (UT) and Knox County, our office is notifying you that the proposed greenway route has been selected, and the map and description are enclosed on CD. Additional files on the CD are sketch maps, Knox County letter to TVA, UT survey report, Cherokee Farm Archaeological Plan and other consultation letters.

UT submitted *Phase I Archaeological Survey of the University of Tennessee-Knoxville Experiment Station (Cherokee Campus) West of Alcoa Highway, Knox County, Tennessee*; your office was supplied a hard copy of the report earlier. The report details the investigations of the tract at the proposed greenway area and adjacent to the Golf Course; maps are in the report. These investigations have demonstrated that the upper 18 to 24 inches of soil across the river terraces of the Cherokee farm are part of the disturbed plow zone. A late 19th to early 20th century scatter (40KN112) was reviewed, and due to lack of intact archaeological deposits, it was recommended as ineligible for listing in the National Register of Historic Places (NRHP). In addition, the survey extended the boundary of 40KN045 and recommended the additional portions as eligible for listing in the NRHP. Our office concurs with the recommendation of 40KN112 as ineligible and agrees that 40KN045 is eligible for the NRHP.

Based on the enclosed report, TVA Cultural Resources concurs with your office and UT regarding cultural resources management along the proposed greenway route; letters dated July 10, 2006, and July 25, 2006, and Boyce Driskell's (Director, UT Archaeological Research Laboratory- ARL) Archaeological Plan, June 6, 2006 letter (see the enclosed CD). Furthermore, the Knox County-City of Knoxville proposal, submitted to our office, appears to abide by these conditions. Our office agrees that this is an appropriate approach to preserving resources while utilizing the area for recreational opportunities. Except for the remote potential of direct impact to sub-plow zone deposits during construction, the light utility nature and intent of the greenway surface will not cause an adverse impact to the archaeological resources underlying this area.

Construction of the greenway will typically be limited to the upper 18 inches of soil along the length of this project. However, some structures are proposed that will exceed this depth. These structures and the proposed measures to ensure minimal disturbance to any significant archaeological or culture resources are listed below. This strategy would have the following conducted prior to or during the construction of the greenway trail on UT property:

- Pipe and Headwalls in Existing Ditches-where excavation is necessary, personnel from the ARL will monitor to determine the existence of archeologically significant materials.

Ms. Jennifer Barnett
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October 30, 2007

- Drainage under Greenway-where excavation is necessary, personnel from the ARL will monitor to determine the existence of archeologically significant materials.
- Bridge Abutments-ARL will investigate the abutment footprints to determine the existence of archeologically significant materials.

Separate from the greenway route but along the shoreline fronting the Cherokee Campus and the proposed golf course, UT is considering placing approximately 9000 feet of riprap to stabilize the area and protect the resources. Due to the large size of the beach area below summer pool elevation, the rock will be extended toward the channel and not into the bank; therefore, it should not be necessary to cut a keyway in the beach to hold the rock into place. To have no adverse effects on 40KN045, our office recommends the following stipulations in the placement of riprap 1) no bank reshaping and all vegetation will be removed by hand, 2) a layer of 10 ounce geo-textile filter fabric placed along the entire shoreline proposed for stabilization prior to placing rock, 3) placement of Class 2 (or Class B ~ a nominal weight of 125 pounds per rock) riprap to the top of the bank, and 4) all work will be conducted during dry weather conditions. In addition, if heavy equipment (track hoe) is required for accessing areas for stabilization that a barge cannot reach or a keyway is necessary, archaeological monitoring will be necessary. If archaeological resources are exposed during this procedure, all work will cease in the area where the resources have been encountered. Furthermore, if this project is not completed within 5 years of submittal to TVA, UT will consult with your office to determine if these requirements are still suitable or if additional investigations will be necessary.

TVA Cultural Resources is requesting your concurrence on the following:

- 40KN112 is ineligible for listing in the NRHP;
- 40KN045 boundary should be extended and is eligible for listing in the NRHP;
- and
- There will be no adverse effects to historic properties if the above commitments (greenway installation and shoreline stabilization) are met.

Therefore, pursuant to the requirements of Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR Part 800.4, TVA Cultural Resources is requesting your concurrence regarding our findings.

If you have any questions or comments, please call Eric Howard at (865) 632-2457 or email aehoward@tva.gov.

Sincerely,



Thomas O. Maher, Ph.D.
Manager
Cultural Resources

Enclosure

cc: Mr. J. Ruben Hernandez (w/Enclosure)
U.S. Army Corps of Engineers
3701 Bell Road
Nashville, Tennessee 37214

95084

**MEMORANDUM OF AGREEMENT
PURSUANT TO 36 CFR PART 800**

WHEREAS, TVA transferred a 7-acre tract of land to Knox County, Tennessee ("County land") for public recreation use in 1952; and

WHEREAS, Knox County is required to obtain Tennessee Valley Authority's (TVA) approval to modify the deed for the County land such that the current restrictions that limit use of the tract for public recreation are removed; and

WHEREAS, the University of Tennessee (UT) has requested transfer of the County land to the State of Tennessee; and

WHEREAS, UT proposes to develop a private practice golf course and associated amenities on County land and 28 acres of State land adjoining the County land; and

WHEREAS, in exchange for the County land, UT proposes to allow construction of 4 miles of greenway trail by Knox County on State land; and

WHEREAS, UT shall be responsible for the construction and maintenance of the golf course and associated amenities; and

WHEREAS, the County shall be responsible for the construction and maintenance of the greenway trail; and

WHEREAS, TVA, in consultation with the Tennessee State Historic Preservation Officer (SHPO), has determined that the area of potential effects (APE) for archaeological resources will be the entire 35 acres encompassed by the proposed practice golf course and four miles of proposed greenway, as referenced in Appendix B; and

WHEREAS, archaeological resources identification and evaluation has been completed within the archaeological APE for the proposed practice golf course, as referenced in Appendix C-1 and C-2; and

WHEREAS, TVA and the SHPO have determined that the undertaking will affect archaeological sites 40KN45 and 40KN113, properties eligible for listing in the National Register of Historic Places (NRHP); and

WHEREAS, TVA has consulted with Knox County, UT, SHPO, Eastern Band of Cherokee Indians, Cherokee Nation, United Keetoowah Band, Muscogee (Creek) Nation of Oklahoma, Poarch Band of Creek Indians, Kialegee Tribal Town, Thlopthlocco Tribal Town, Alabama Quassarte Tribal Town, Alabama-Coushatta Tribe, Shawnee Nation, Absentee-Shawnee Tribe of Oklahoma and Eastern Shawnee Tribe of Oklahoma pursuant to 36 CFR Part 800, the regulations of the Advisory Council on Historic Preservation (Council) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, pursuant to 36 CFR Part 800.5(a)(3), TVA shall use a phased process consistent with identification and evaluation efforts conducted pursuant to 36 CFR Part 800.4 (b)(2); and

WHEREAS, UT has been invited to be a signatory to this agreement and will be responsible for all costs necessary for implementation of this agreement regarding the golf course and associated amenities; and

WHEREAS, Knox County has been invited to be a signatory to this agreement and will be responsible for all costs necessary for implementation of this agreement regarding the greenway trail; and

WHEREAS, the Eastern Band of Cherokee Indians has been invited to concur in this agreement; and

WHEREAS, certain terms used in this agreement are defined in Appendix A, Glossary of Terms; and

WHEREAS, the description of the proposed golf course and greenway sections; the reports *A Report on Phase I Archaeological Survey for the Proposed Golf Course at the University of Tennessee-Knoxville Experiment Station, Knoxville, Tennessee* and *Phase II Archaeological Evaluation of Sites 40KN45 and 40KN113 for the Proposed Golf Course at the University of Tennessee-Knoxville Experiment Station, Knox County, Tennessee*; and the document "Archaeological Phase Compliance Status" are made a part of this agreement by reference as Appendices B, C, and D respectively.

NOW THEREFORE, TVA, UT and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations to satisfy TVA's Section 106 responsibilities. The TVA Federal Preservation Officer, or the designee thereof, shall act for TVA in all matters concerning the administration of this Agreement.

STIPULATIONS

TVA, in consultation with the SHPO and UT AND KNOX COUNTY, will ensure that additional identification, evaluation, and treatment of historic properties are carried out by UT AND KNOX COUNTY relative to all development within the above-referenced APE before the commencement of any ground-disturbing activities within the APE that could affect such historic properties.

1. IDENTIFICATION

Identification level surveys have been completed within the Archaeological APE for the proposed practice golf course as defined in Appendix B and described in Appendix C-1. These surveys met the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23). Once the proposed greenway route has been formally selected, an identification survey will be necessary before its construction. The survey shall be carried out in a manner consistent with 48 FR 44720-23. This survey shall be conducted in consultation with TVA and the SHPO. A written report of the results of the survey shall be submitted to TVA for review and approval. TVA will submit the approved draft report to all signatories for review, allowing 30 days for comments. TVA will incorporate existing information such as previous survey data, photographs, maps, drawings, building plans, descriptions, sketches, etc. into the new data. Although no historic structures eligible for listing in the National Register of Historic Places are located within the practice golf course boundary or potential greenway route, UT AND KNOX COUNTY will assess the visual effects of this project to historic structures in the vicinity of the golf course boundary.

2. EVALUATION

Evaluation surveys have been completed within the Archaeological APE for the proposed practice golf course as defined in Appendix B and described in Appendix C-2. However, no deep testing was conducted at the Lower Terrace location (as defined in Appendix B-2) because the project was redesigned to avoid this location. Additional evaluation will be necessary if project plans are

revised and this area is impacted. In addition, if potentially eligible historic properties are identified within the selected greenway route, further evaluation will be necessary if these resources cannot be avoided and preserved. TVA, in consultation with the SHPO and UT AND KNOX COUNTY, shall cause to be conducted archaeological investigations to evaluate the significance of historic properties in accordance with 36 CFR Part 800.4(c). For historic properties that have been determined to be potentially eligible for the NRHP, UT AND KNOX COUNTY shall evaluate each site for National Register eligibility in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23) and the Tennessee SHPO Standards and Guidelines for Archaeological Resource Management Studies. The scope of work (SOW) for the evaluation study will be submitted to TVA and the SHPO for approval. Upon completion of the evaluation, UT AND KNOX COUNTY shall submit a draft report of the National Register eligibility to TVA for review and consultation. TVA will submit a copy of the report to all signatories, allowing thirty (30) days for their review and comments.

TVA, in consultation with the SHPO, UT AND KNOX COUNTY and Indian tribes that attach religious and cultural significance to identified properties, shall apply the National Register criteria (36 CFR Part 63) to properties identified within the APE in evaluating such properties for National Register eligibility. The passage of time, changing perceptions of significance, or incomplete prior evaluations may require reevaluation of properties previously determined eligible or ineligible. It is acknowledged that Indian tribes possess special expertise in assessing the eligibility of historic properties that may possess characteristics of religious and cultural significance to them.

Should a dispute arise on the eligibility of a historic property, TVA will consult with the SHPO to resolve the objection. If TVA and the SHPO do not agree, TVA shall obtain a determination of eligibility from the Secretary of Interior (Secretary) pursuant to 36 CFR Part 63. If an Indian tribe that consulted in the development of this MOA and that attaches religious and/or cultural significance to a property off tribal land does not agree with the determination of eligibility, it may ask the Council to request TVA to obtain a determination of eligibility from the Secretary.

3. TREATMENT

TVA shall ensure that a plan for the treatment of historic properties adversely affected by the proposed undertaking ("Treatment Plan") is developed and executed in consultation with the SHPO, UT AND KNOX COUNTY and those Indian tribes that attach religious and cultural significance to eligible properties. The Treatment Plan will be developed and executed before the commencement of any ground disturbing activities associated with this undertaking. The Treatment Plan will delineate a procedure for determining the most appropriate methods of avoiding, minimizing, or resolving adverse effects on historic properties. Such measures may include, but not be limited to, avoidance of the historic property, data recovery, or a combination of these. All treatment measures applied toward the avoidance and minimization of adverse effect, or a combination of these measures will be monitored by UT AND KNOX COUNTY for effectiveness on a timeframe agreed to by all signatories with a report of findings and recommendations submitted to the TVA and the SHPO for comment. Any measures found ineffective shall be resolved by TVA in consultation with the other signatories.

Development and implementation of Treatment measures will be conducted as follows:

a. AVOIDANCE:

UT AND KNOX COUNTY shall ensure, to the fullest extent practicable, that all sites determined eligible for listing in the NRHP are avoided by any activities that could affect the characteristics of a site that qualify it for listing in the NRHP. In the design of the development, every consideration to avoid adversely affecting historic properties will be exhausted. All eligible historic properties, including those subsequently discovered or identified and determined eligible for the NRHP by the evaluation process under Stipulation 2, that are avoided will be protected by a buffer zone of adequate dimensions as determined by

TVA, in consultation with the SHPO, UT AND KNOX COUNTY and Indian tribes that attach religious and cultural significance.

b. DATA RECOVERY:

When historic properties will be adversely affected by unavoidable physical destruction or damage and all practicable avenues of avoidance have been exhausted, data recovery will be implemented. Any such determination of unavoidable adverse effect shall be made by TVA, in consultation with the SHPO, UT AND KNOX COUNTY and Indian tribes that attach religious and cultural significance to the eligible properties. In such an instance, a data recovery plan shall be developed by TVA in consultation with all signatories for the recovery of historic and archaeological data from sites that are determined to be eligible for inclusion in the NRHP. Because of the unique nature of each archaeological site, requirements for data recovery at any particular site will be determined by TVA, in consultation with all signatories. TVA shall ensure that the data recovery plan is implemented in consultation with all signatories to resolve adverse effects through recovery of significant information from historic or archaeological sites.

The data recovery plan will be consistent with the Secretary of the Interior's Standards and Guidelines for Identification (48 FR 44720-23), the Secretary of Interior's Professional Qualification Standards (48 FR 22716), and the Tennessee SHPO Standards and Guidelines for Archaeological Resource Management Studies. A written report of the data recovery shall be submitted by TVA to all signatories for review and comments. The data recovery plan shall specify, at a minimum:

1. the property, properties, or portions of properties where data recovery is to be carried out;
2. any property, properties, or portions of properties that will be destroyed without data recovery;
3. the research questions to be addressed through the data recovery, with an explanation of their relevance and importance;
4. the field and laboratory methods to be used, with an explanation of their relevance to the research questions;
5. the methods to be used in analysis, data management, and dissemination of data, including a schedule;
6. the proposed disposition of recovered materials and records;
7. proposed methods for involving the interested public in the data recovery;
8. proposed methods for disseminating results of the work to the interested public;
9. a proposed schedule for the submission of progress reports to TVA and the SHPO;
10. a plan delineating the manner in which historic properties, human remains and associated funerary objects discovered subsequent to the ratification of this agreement document would be treated;

TVA shall provide all signatories an opportunity to monitor the implementation of the data recovery plan.

4. POST REVIEW DISCOVERIES

Previously unidentified historic properties discovered during the implementation of the development will be subject to the evaluation process under Stipulation 2 and treated according to the process under Stipulation 3.

5. REPORTS

TVA shall ensure that all investigations undertaken for compliance with this agreement are recorded in formal written reports that meet the Secretary of Interior's Standards and Guidelines for Identification (48 FR 44720-23) and the Tennessee SHPO Standards and Guidelines for Architectural and Archaeological Resources Management Studies. The SHPO, UT AND KNOX COUNTY and Indian tribes that attach religious and cultural significance to eligible properties shall be afforded thirty (30) days to review and comment on any reports submitted as compliance with this agreement.

6. TREATMENT OF HUMAN REMAINS AND FUNERARY OBJECTS

UT AND KNOX COUNTY, in consultation with TVA, the SHPO, and Indian tribes that attach religious and cultural significance to eligible properties (concerned Indian tribes), shall ensure that the treatment of any human remains and associated funerary objects discovered within the project area complies with all applicable state and federal laws. Should human remains be encountered during historic properties investigations or post-review discovery, all ground disturbing activities within 50 feet of the discovery will be ceased immediately. All human remains will be left in place and protected from disturbance.

UT AND KNOX COUNTY shall immediately notify the Knox County Coroner, the State Archaeologist, TVA and the SHPO, should any human remains and/or associated funerary objects be encountered in connection with an undertaking covered by this agreement. TVA will notify the concerned Indian tribes within forty-eight (48) hours of being informed of the presence of these remains and funerary objects, and invite signatories and these Indian tribes to comment on any plans developed to treat these remains and funerary objects. Whenever and wherever it is feasible, human remains will be preserved in place. UT AND KNOX COUNTY, in consultation with TVA, the SHPO, and concerned Indian tribes shall ensure that those remains and artifacts are treated in a manner that is consistent with the Advisory Council of Historic Preservation's "Policy Statement Regarding the Treatment of Human Remains and Grave Goods" (1988). Further, this treatment will be conducted in accordance with the applicable provisions of Tennessee Code Annotated (T.C.A.) 46-4-101 et seq. ("Termination of Use of Land as a Cemetery,"); T.C.A. 11-6-116, ("Excavation of Areas Containing Native American Indian Remains,"); T.C.A. 11-6-119 ("Reburial of Human Remains or Native American Burial Objects following Discovery or Confiscation") and Tennessee Rules and Regulations Chapter 0400-9-1 ("Native American Indian Cemetery Removal and Reburial,"); Native American Graves Protection and Repatriation Act (NAGPRA) and its implementing regulations (43 CFR Part 10); and the policies of the culturally affiliated Indian tribes regarding the treatment of human remains and funerary objects, if such human remains are of Native American origin and cultural affiliation can be determined.

7. TIMETABLE FOR COMPLIANCE

- a. TVA and UT AND KNOX COUNTY shall ensure that Stipulations 1-3 of this agreement are met before commencement of any ground-disturbing activities. If development is to be completed

in a phased construction, the stipulations of this agreement may be satisfied independently for each phase.

- b. Throughout this agreement, unless otherwise stated, the SHPO, UT AND KNOX COUNTY and Indian tribes that attach religious and cultural significance to eligible properties shall have thirty (30) days to review and comment on all reports concerning investigations of historic properties and proposed data recovery plans provided by TVA. Comments received from the signatories shall be taken into consideration in preparing final plans. TVA will supply copies of the final reports and data recovery plans to the signatories.

8. PHASED COMPLIANCE

Pursuant to 36 CFR Part 800.5(a)(3) TVA, in consultation with the SHPO and other consulting parties, shall use a phased process in applying the criteria of adverse effect consistent with phased identification and evaluation efforts conducted pursuant to 36 CFR Part 800.4 (b)(2).

9. LAND TRANSFER OF PROPERTY RIGHTS

The conveyance, whether by the transfer, lease or sale, of any portion of the 7-acre County land that contains or may contain a historic property, from UT to a third party will include, when necessary to protect historic properties, a legally binding preservation covenant for the protection of such properties prepared in consultation with the SHPO and other signatories. TVA may release the grantee from the preservation covenant in whole or in part, as appropriate, pursuant to the terms of the covenant and after consultation with the SHPO and other signatories. The covenant may be enforced by TVA or the United States of America. The conveyance of any land parcel that has been determined by TVA, in consultation with the SHPO and other signatories, not to contain any historic properties shall not be subject to such a preservation covenant.

10. ADMINISTRATIVE CONDITIONS

- a. If Stipulations 1 to 8 has not been implemented within ten (10) years from the date of this agreement's execution, this agreement shall be considered null and void, unless the signatories have agreed in writing as provided in Paragraph 10.b. below to an extension for carrying out its terms. Upon the agreement's becoming null and void, TVA, SHPO, and UT AND KNOX COUNTY will resume consultation pursuant to 36 CFR Part 800.
- b. If the implementation of Stipulations 1 to 8 has not commenced within 4 (four) years from the date of this agreement's execution TVA, SHPO and UT AND KNOX COUNTY shall review the agreement to determine whether the agreement should be extended. If an extension is deemed necessary, TVA, SHPO, and UT AND KNOX COUNTY will consult in accordance with 36 CFR Part 800.6(c) to make appropriate revisions to the agreement.
- c. The signatories to this agreement may agree to amend the terms of the agreement. Such amendment shall be effective upon the signatures of all signatories to this agreement, and the amendment shall be appended to the agreement as an attachment.
- d. Should any signatory object within thirty (30) days after receipt of any plans, specifications, contracts, or other documents provided for review pursuant to this agreement, TVA shall consult with the objecting party to resolve the objection.
- e. If any signatory to this agreement determines that the terms of the agreement cannot be or are not being carried out, the signatories shall consult to seek an amendment to the agreement. If the agreement is not amended, then any signatory may terminate the

agreement. If the agreement is so terminated, TVA shall ensure that historic properties within the area of potential effect for the undertaking are protected in accordance with Section 106 of the National Historic Preservation Act until such time that TVA may enter into a new MOA with the signatories or request the comments of the Council pursuant to 36 CFR Part 800.7(a).

Execution of this Agreement by TVA, SHPO, and UT AND KNOX COUNTY, and implementation of its terms evidence that TVA has taken into account the effects of the undertaking on historic properties, and that TVA has complied with its obligations under section 106 of the National Historic Preservation Act.

SIGNATORIES

TENNESSEE VALLEY AUTHORITY

By: [Signature] Date: 4.7.06
[Kathryn J. Jackson, Executive Vice President, RSO&E]

THE TENNESSEE STATE HISTORIC PRESERVATION OFFICER

By: [Signature] Date: 4/18/06
[Herbert L. Harper, Deputy State Historic Preservation Officer]

INVITED SIGNATORIES

UNIVERSITY OF TENNESSEE

By: [Signature] Date: 3-17-06
[]

KNOX COUNTY, TENNESSEE

By: [Signature] Date: 3-9-06
[Michael R. Ragsdale, Knox County Mayor]

CONCURRENCE BY OTHERS

THE EASTERN BAND OF THE CHEROKEE INDIANS

By: _____ Date: _____
[Russell Townsend, Tribal Historic Preservation Officer]

By: _____ Date: _____

By: _____ Date: _____

CONTRACT NO. 06-081
APPROVED AS TO LEGAL FORM
[Signature] 3-9-06
KNOX COUNTY LAW DIRECTOR DATE

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Attachment D – Section 26a General and Standard Conditions

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GENERAL AND STANDARD CONDITIONS Section 26a and Land Use

General Conditions

1. You agree to make every reasonable effort to construct and operate the facility authorized herein in a manner so as to minimize any adverse impact on water quality, aquatic life, wildlife, vegetation, and natural environmental values.
2. This permit may be revoked by TVA by written notice if:
 - a) the structure is not completed in accordance with approved plans;
 - b) if in TVA's judgment the structure is not maintained as provided herein;
 - c) the structure is abandoned;
 - d) the structure or work must be altered to meet the requirements of future reservoir management operations of the United States or TVA, or;
 - e) TVA finds that the structure has an adverse effect upon navigation, flood control, or public lands or reservations.
3. If this permit for this structure is revoked, you agree to remove the structure, at your expense, upon written notice from TVA. In the event you do not remove the structure within 30 days of written notice to do so, TVA shall have the right to remove or cause to have removed, the structure or any part thereof. You agree to reimburse TVA for all costs incurred in connection with removal.
4. In issuing this Approval of Plans, TVA makes no representations that the structures or work authorized or property used temporarily or permanently in connection therewith will not be subject to damage due to future operations undertaken by the United States and/or TVA for the conservation or improvement of navigation, for the control of floods, or for other purposes, or due to fluctuations in elevations of the water surface of the river or reservoir, and no claim or right to compensation shall accrue from any such damage. By the acceptance of this approval, applicant covenants and agrees to make no claim against TVA or the United States by reason of any such damage, and to indemnify and save harmless TVA and the United States from any and all claims by other persons arising out of any such damage.
5. In issuing this Approval of Plans, TVA assumes no liability and undertakes no obligation or duty (in tort, contract, strict liability or otherwise) to the applicant or to any third party for any damages to property (real or personal) or personal injuries (including death) arising out of or in any way connected with applicant's construction, operation, or maintenance of the facility which is the subject of this Approval of Plans.
6. This approval shall not be construed to be a substitute for the requirements of any federal, state, or local statute, regulation, ordinance, or code, including, but not limited to, applicable electrical building codes, now in effect or hereafter enacted.
7. The facility will not be altered, or modified, unless TVA's written approval has been obtained prior to commencing work.
8. You agree to notify TVA of any transfer of ownership of the approved structure to a third party. Third party is required to make application to TVA for permitting of the structure in their name.
9. You agree to stabilize all disturbed areas within 30 days of completion of the work authorized. All land-disturbing activities shall be conducted in accordance with Best Management Practices as defined by Section 208 of the Clean Water Act to control erosion and sedimentation to prevent adverse water quality and related aquatic impacts. Such practices shall be consistent with sound engineering and construction principles; applicable federal, state, and local statutes, regulations, or ordinances; and proven techniques for controlling erosion and sedimentation, including any *required* conditions.
10. You agree not to use or permit the use of the premises, facilities, or structures for any purposes that will result in draining or dumping into the reservoir of any refuse, sewage, or other material in violation of applicable standards or requirements relating to pollution control of any kind now in effect or hereinafter established.
11. The facility will be maintained in a good state of repair and in good, safe, and substantial condition. If the facility is damaged, destroyed, or removed from the reservoir or stream for any reason, or deteriorates beyond safe and serviceable use, it cannot be repaired or replaced without the prior written approval of TVA.
12. You agree that if any historical or prehistoric archaeological material (such as arrowheads, broken pottery, bone or similar items) is encountered during construction of this facility you will immediately contact this office and temporarily suspend work at that location until authorized by this office to proceed.
13. The Native American Graves Protection and Repatriation Act and the Archaeological Resources Protection Act apply to archaeological resources located on the premises. If LESSEE (or licensee or grantee (for easement) or applicant (for 26a permit on federal land)) discovers human remains, funerary objects, sacred objects, objects of cultural patrimony, or any other archaeological resources on or under the premises, LESSEE (or licensee, grantee, or applicant) shall immediately stop activity in the area of the discovery, make a reasonable effort to protect the items, and notify TVA by telephone (phone 8656321300). Work may not be resumed in the area of the discovery until approved by TVA.

14. On TVA land, unless otherwise stated on this permit, vegetation removal is prohibited.
15. You agree to securely anchor all floating facilities to prevent them from floating free during major floods.
16. You are responsible for accurately locating your facility, and this authorization is valid and effective only if your facility is located as shown on your application or as otherwise approved by TVA in this permit. The facility must be located on land owned or leased by you, or on TVA land at a location approved by TVA.
17. It is understood that you own adequate property rights at this location. If at any time it is determined that you do not own sufficient property rights, or that you have only partial ownership rights in the land at this location, this permit may be revoked if TVA receives an objection to your water use facility from any owner or partial owner of the property rights at this location.

Standard Conditions: (Items that pertain to your request have been checked.)

1. Structures and Facilities

- a) TVA number _____ has been assigned to your facility. When construction is complete, this number shall be placed on a readily visible part of the outside of the facility in the numbers not less than three inches high.
- b) The 100-year flood elevation at this site is estimated to be _____-feet mean sea level. As a minimum, your fixed facility should be designed to prevent damage to stored boats by forcing them against roof during a 100-year flood event.
- c) You agree that the float will be temporarily connected (i.e., by slip pin/ropes) and not permanently attached to nonnavigable houseboat.
- d) You agree that this _____ shall have no side enclosures except wire mesh or similar screening.
- e) Buildings or other enclosed structures containing sleeping or living accommodations, including toilets and related facilities, or that have enclosed floor area in excess of 32 square feet, are prohibited.
- f) Ski jumps will not be left unattended for extended periods of time. All facilities will be tied to the shoreline or to a boathouse or pier fronting your property at the completion of each day's activities.
- g) For all electrical services permitted, a disconnect must be located at or above the _____-foot contour that is accessible during flooding.
- h) You should contact your local government official(s) to ensure that this facility complies with all applicable local floodplain regulations.
- i) The entire closed-loop coil heating and air conditioning system and its support apparatus must be either placed below elevation _____ (to provide a five-foot clearance for water craft at minimum pool elevations of _____) or located underneath a TVA approved water-use facility or other TVA approved structure. The supply and return lines must be buried as they cross the reservoir drawdown zone in areas of water depth less than five feet (minimum pool). The liquid contents of the closed-loop heating and air conditioning system must be propylene glycol or water, and the applicant or authorized agent must provide TVA with written verification of this fact.
- j) You agree that only those facilities which have been approved by TVA prior to construction will be placed within the harbor limits and that permanent mooring buoys, boat slips, or other harbor facilities will not be placed outside the harbor limits.
- k) You agree that all storage, piping, and dispensing of liquid fuel shall comply with applicable requirements of the "Flammable and Combustible Liquids" section of the National Fire Codes and any additional requirements of federal, state, and local laws and regulations.
- l) You agree that the golf facility and greenway facility hereby approved will be used for public use as approved by TVA and for no other purpose unless approved in writing from TVA.
- m) You agree that if the construction project covered by this permit is not initiated within (18) months after the date of issuance, this permit will then automatically expire and you must submit a new 26a permit application for TVA approval with the applicable fee.

2. Ownership Rights

- a) No fill will be placed higher than elevation _____ maximum shoreline contour (msc), and every precaution will be taken not to disturb or alter the existing location of the _____-foot contour elevation through either excavation or placement of fill.
- b) You are advised that TVA retains the right to flood this area and that TVA will not be liable for damages resulting from flooding.
- c) You shall notify TVA of any sale or transfer of land, which would affect the landward limits of harbor area, as far in advance of such sale or transfer as possible.
- d) This approval of plans is only a determination that these harbor limits will not have any unacceptable effect on TVA programs or other interests for which TVA has responsibility. Such approval does not profess or intend to give the applicant exclusive control over the use of navigable waters involved.
- e) You recognize and understand that this authorization conveys no property rights, grants no exclusive license, and in no way restricts the general public's privilege of using shoreland owned by or subject to public access rights owned by TVA. It is also subject to any existing rights of third parties. Nothing contained in this approval shall be construed to detract or deviate from the rights of the United States and TVA held over this land under the Grant of Flowage Easement. This Approval of Plans does not give any property rights in real estate or material and does not authorize any injury to private property or invasion of private or public rights. It merely constitutes a finding that the facility, if constructed at the location specified in the plans submitted and in accordance with said plans, would not at this time constitute an obstruction unduly affecting navigation, flood control, or public lands or reservations.

3. Shoreline Modification and Stabilization

- a) For purposes of shoreline bank stabilization, all portions will be constructed or placed, on average, no more than two feet from the existing shoreline at normal summer pool elevation.
- b) You agree that spoil material will be disposed of and contained on land lying and being above the 822-foot contour. Every precaution will be made to prevent the reentry of the spoil material into the reservoir.
- c) Bank, shoreline, and floodplain stabilization will be permanently maintained in order to prevent erosion, protect water quality, and preserve aquatic habitat.
- d) You agree to reimburse TVA \$ _____, which is the current value of the _____ acre feet of power storage volume displaced by fill into the reservoir.

4. Water Intake

- a) If the reservoir falls below the elevation of the intake, the applicant will be responsible for finding another source of raw water.
- b) You must install and maintain a standard regulatory hazard buoy at the end of the intake to warn boaters of the underwater obstruction. The word "intake" should be added to the buoy and be attached using a five-foot cable.
- c) The screen openings on the intake strainer must be 1/8-inch (maximum), to minimize the entrapment of small fish.
- d) This approval does not constitute approval of the adequacy or safety of applicant's water system. TVA does not warrant that the water withdrawn and used by applicant is safe for drinking or any other purpose, and applicant is solely responsible for ensuring that all water is properly treated before using.

5. Bridges and Culverts

- a) You agree to design/construct any instream piers in such a manner as to discourage river scouring or sediment deposition.
- b) Applicant agrees to construct culvert in phases, employing adequate streambank protection measures, such that the diverted streamflow is handled without creating streambank or streambed erosion/sedimentation and without preventing fish passage.
- c) Concrete box culverts and pipe culverts (and their extensions) must create/maintain velocities and flow patterns which offer refuge for fish and other aquatic life, and allow passage of indigenous fish species, under all flow conditions. Culvert floor slabs and pipe bottoms must be buried below streambed elevation, and filled with naturally occurring streambed materials. If geologic conditions do not allow burying the floor, it must be otherwise designed to allow passage of indigenous fish species under all flow conditions.

- d) All natural stream values (including equivalent energy dissipation, elevations, and velocities; riparian vegetation; riffle/pool sequencing; habitat suitable for fish and other aquatic life) must be provided at all stream modification sites. This must be accomplished using a combination of rock and bioengineering, and is not accomplished using solid, homogeneous riprap from bank to bank.
- e) You agree to remove demolition and construction by-products from the site--for recycling if practicable, or proper disposal--outside of the 100-year floodplain. Appropriate BMPs will be used during the removal of any abandoned roadway or structures.

6. Best Management Practices

- a) You agree that removal of vegetation will be minimized, particularly any woody vegetation providing shoreline/streambank stabilization.
- b) You agree to installation of cofferdams and/or silt control structures between construction areas and surface waters prior to any soil-disturbing construction activity, and clarification of all water that accumulates behind these devices to meet state water quality criteria *at the stream mile where activity occurs* before it is returned to the *unaffected portion of the stream*. Cofferdams must be used wherever construction activity is at or below water elevation.
- c) A floating silt screen extending from the surface to the bottom is to be in place during excavation or dredging to prevent sedimentation in surrounding areas. It is to be left in place until disturbed sediments are visibly settled.
- d) You agree to keep equipment out of the reservoir or stream and off reservoir or stream banks, to the extent practicable (i.e., performing work "in the dry").
- e) You agree to avoid contact of wet concrete with the stream or reservoir, and avoid disposing of concrete washings, or other substances or materials, in those waters.
- f) You agree to use erosion control structures around any material stockpile areas.
- g) You agree to apply clean/shaken riprap or shot rock (where needed at water/bank interface) over a water permeable/soil impermeable fabric or geotextile and in such a manner as to avoid stream sedimentation or disturbance, or that any rock used for cover and stabilization shall be large enough to prevent washout and provide good aquatic habitat.
- h) You agree to remove, redistribute, and stabilize (with vegetation) all sediment which accumulates behind cofferdams or silt control structures.
- i) You agree to use vegetation (versus riprap) wherever practicable and sustainable to stabilize streambanks, shorelines, and adjacent areas. These areas will be stabilized as soon as practicable, using either an appropriate seed mixture that includes an annual (quick cover) as well as one or two perennial legumes and one or two perennial grasses, or sod. In winter or summer, this will require initial planting of a quick cover annual only, to be followed by subsequent establishment of the perennials. Seed and soil will be protected as appropriate with erosion control netting and/or mulch and provided adequate moisture. Streambank and shoreline areas will also be permanently stabilized with native woody plants, to include trees wherever practicable and sustainable (this vegetative prescription may be altered if dictated by geologic conditions or landowner requirements). You also agree to install or perform additional erosion control structures/techniques deemed necessary by TVA.

Additional Conditions

- Bank stabilization would not be conducted from March through June to protect bank nesting bird species.
- The golf practice facility would follow guidelines in the Tennessee Handbook for Golf Course Environmental Management.
- Applicants would incorporate measures into their landscape plan to address the exotic, invasive plants found in the riparian zone along the entire shoreline area in an effort to replace these species with native flora that would provide the highest level of natural habitat for the proposal.
- Before greenway construction is complete, the applicant would coordinate with WMA personnel to determine if signage describing the strict hunting regulations is necessary and, if so, the appropriate location of such signage along the greenway.
- No golf practice facility construction would occur along the lower terrace as described in the site evaluation (Phase II).
- The placement of cut and fill for the golf practice facility would be monitored by qualified archaeologists (ARL personnel), and archaeological features would be marked for avoidance. No cuts would occur where intact features were recorded; the location would remain the same or fill would be placed above it.
- During the greenway construction, personnel from the ARL would monitor the installation of pipe and headwalls in existing ditches (where excavation is necessary) to determine the existence of archaeologically significant materials.
- During the drainage placement under greenway (where excavation is necessary), personnel from the ARL would monitor to determine the existence of archaeologically significant materials.
- During the installation of bridge abutments for the greenway, ARL personnel would investigate the abutment footprints to determine the existence of archaeologically significant materials.
- If archaeological features were encountered during the golf practice facility and greenway construction monitoring, UT would abide by the stipulations in the MOA.

- If it is necessary to cut a keyway along the beach area, personnel from ARL would monitor the installation of riprap stabilization to determine the existence of archaeologically significant materials.
- There would be no bank reshaping, and all vegetation would be removed by hand.
- **A layer of non-woven 6.4 oz. per yard geotextile filter fabric would be placed along the entire shoreline proposed for stabilization prior to placing riprap.**
- **The applicants would place Class C, D, or D50 riprap to the top of the bank.**
 - If heavy equipment (trackhoe) were required for accessing areas for stabilization that a barge cannot reach or if a keyway were necessary, archaeological monitoring would be necessary. If archaeological resources were exposed during this procedure, all work would cease in the area where the resources have been encountered.
 - If this project is not completed within five years of submittal to TVA, UT would consult with the SHPO to determine if these requirements were still suitable or if additional investigations would be necessary.

GENERAL AND STANDARD CONDITIONS Section 26a and Land Use

General Conditions

1. You agree to make every reasonable effort to construct and operate the facility authorized herein in a manner so as to minimize any adverse impact on water quality, aquatic life, wildlife, vegetation, and natural environmental values.
2. This permit may be revoked by TVA by written notice if:
 - a) the structure is not completed in accordance with approved plans;
 - b) if in TVA's judgment the structure is not maintained as provided herein;
 - c) the structure is abandoned;
 - d) the structure or work must be altered to meet the requirements of future reservoir management operations of the United States or TVA, or;
 - e) TVA finds that the structure has an adverse effect upon navigation, flood control, or public lands or reservations.
3. If this permit for this structure is revoked, you agree to remove the structure, at your expense, upon written notice from TVA. In the event you do not remove the structure within 30 days of written notice to do so, TVA shall have the right to remove or cause to have removed, the structure or any part thereof. You agree to reimburse TVA for all costs incurred in connection with removal.
4. In issuing this Approval of Plans, TVA makes no representations that the structures or work authorized or property used temporarily or permanently in connection therewith will not be subject to damage due to future operations undertaken by the United States and/or TVA for the conservation or improvement of navigation, for the control of floods, or for other purposes, or due to fluctuations in elevations of the water surface of the river or reservoir, and no claim or right to compensation shall accrue from any such damage. By the acceptance of this approval, applicant covenants and agrees to make no claim against TVA or the United States by reason of any such damage, and to indemnify and save harmless TVA and the United States from any and all claims by other persons arising out of any such damage.
5. In issuing this Approval of Plans, TVA assumes no liability and undertakes no obligation or duty (in tort, contract, strict liability or otherwise) to the applicant or to any third party for any damages to property (real or personal) or personal injuries (including death) arising out of or in any way connected with applicant's construction, operation, or maintenance of the facility which is the subject of this Approval of Plans.
6. This approval shall not be construed to be a substitute for the requirements of any federal, state, or local statute, regulation, ordinance, or code, including, but not limited to, applicable electrical building codes, now in effect or hereafter enacted.
7. The facility will not be altered, or modified, unless TVA's written approval has been obtained prior to commencing work.
8. You agree to notify TVA of any transfer of ownership of the approved structure to a third party. Third party is required to make application to TVA for permitting of the structure in their name.
9. You agree to stabilize all disturbed areas within 30 days of completion of the work authorized. All land-disturbing activities shall be conducted in accordance with Best Management Practices as defined by Section 208 of the Clean Water Act to control erosion and sedimentation to prevent adverse water quality and related aquatic impacts. Such practices shall be consistent with sound engineering and construction principles; applicable federal, state, and local statutes, regulations, or ordinances; and proven techniques for controlling erosion and sedimentation, including any *required* conditions.
10. You agree not to use or permit the use of the premises, facilities, or structures for any purposes that will result in draining or dumping into the reservoir of any refuse, sewage, or other material in violation of applicable standards or requirements relating to pollution control of any kind now in effect or hereinafter established.
11. The facility will be maintained in a good state of repair and in good, safe, and substantial condition. If the facility is damaged, destroyed, or removed from the reservoir or stream for any reason, or deteriorates beyond safe and serviceable use, it cannot be repaired or replaced without the prior written approval of TVA.
12. You agree that if any historical or prehistoric archaeological material (such as arrowheads, broken pottery, bone or similar items) is encountered during construction of this facility you will immediately contact this office and temporarily suspend work at that location until authorized by this office to proceed.
13. The Native American Graves Protection and Repatriation Act and the Archaeological Resources Protection Act apply to archaeological resources located on the premises. If LESSEE (or licensee or grantee (for easement) or applicant (for 26a permit on federal land)) discovers human remains, funerary objects, sacred objects, objects of cultural patrimony, or any other archaeological resources on or under the premises, LESSEE (or licensee, grantee, or applicant) shall immediately stop activity in the area of the discovery, make a reasonable effort to protect the items, and notify TVA by telephone (phone 8656321300). Work may not be resumed in the area of the discovery until approved by TVA.

14. On TVA land, unless otherwise stated on this permit, vegetation removal is prohibited.
15. You agree to securely anchor all floating facilities to prevent them from floating free during major floods.
16. You are responsible for accurately locating your facility, and this authorization is valid and effective only if your facility is located as shown on your application or as otherwise approved by TVA in this permit. The facility must be located on land owned or leased by you, or on TVA land at a location approved by TVA.
17. It is understood that you own adequate property rights at this location. If at any time it is determined that you do not own sufficient property rights, or that you have only partial ownership rights in the land at this location, this permit may be revoked if TVA receives an objection to your water use facility from any owner or partial owner of the property rights at this location.

Standard Conditions: (Items that pertain to your request have been checked.)

1. Structures and Facilities

- a) TVA number _____ has been assigned to your facility. When construction is complete, this number shall be placed on a readily visible part of the outside of the facility in the numbers not less than three inches high.
- b) The 100-year flood elevation at this site is estimated to be _____-feet mean sea level. As a minimum, your fixed facility should be designed to prevent damage to stored boats by forcing them against roof during a 100-year flood event.
- c) You agree that the float will be temporarily connected (i.e., by slip pin/ropes) and not permanently attached to nonnavigable houseboat.
- d) You agree that this _____ shall have no side enclosures except wire mesh or similar screening.
- e) Buildings or other enclosed structures containing sleeping or living accommodations, including toilets and related facilities, or that have enclosed floor area in excess of 32 square feet, are prohibited.
- f) Ski jumps will not be left unattended for extended periods of time. All facilities will be tied to the shoreline or to a boathouse or pier fronting your property at the completion of each day's activities.
- g) For all electrical services permitted, a disconnect must be located at or above the _____-foot contour that is accessible during flooding.
- h) You should contact your local government official(s) to ensure that this facility complies with all applicable local floodplain regulations.
- i) The entire closed-loop coil heating and air conditioning system and its support apparatus must be either placed below elevation _____ (to provide a five-foot clearance for water craft at minimum pool elevations of _____) or located underneath a TVA approved water-use facility or other TVA approved structure. The supply and return lines must be buried as they cross the reservoir drawdown zone in areas of water depth less than five feet (minimum pool). The liquid contents of the closed-loop heating and air conditioning system must be propylene glycol or water, and the applicant or authorized agent must provide TVA with written verification of this fact.
- j) You agree that only those facilities which have been approved by TVA prior to construction will be placed within the harbor limits and that permanent mooring buoys, boat slips, or other harbor facilities will not be placed outside the harbor limits.
- k) You agree that all storage, piping, and dispensing of liquid fuel shall comply with applicable requirements of the "Flammable and Combustible Liquids" section of the National Fire Codes and any additional requirements of federal, state, and local laws and regulations.
- l) You agree that the GREENWAY facility hereby approved will be used for PUBLIC USE and for no other purpose unless approved in writing from TVA.
- m) You agree that if the construction project covered by this permit is not initiated within (18) months after the date of issuance, this permit will then automatically expire and you must submit a new 26a permit application for TVA approval with the applicable fee.

2. Ownership Rights

- a) No fill will be placed higher than elevation _____ maximum shoreline contour (msc), and every precaution will be taken not to disturb or alter the existing location of the _____-foot contour elevation through either excavation or placement of fill.
- b) You are advised that TVA retains the right to flood this area and that TVA will not be liable for damages resulting from flooding.
- c) You shall notify TVA of any sale or transfer of land, which would affect the landward limits of harbor area, as far in advance of such sale or transfer as possible.
- d) This approval of plans is only a determination that these harbor limits will not have any unacceptable effect on TVA programs or other interests for which TVA has responsibility. Such approval does not profess or intend to give the applicant exclusive control over the use of navigable waters involved.
- e) You recognize and understand that this authorization conveys no property rights, grants no exclusive license, and in no way restricts the general public's privilege of using shoreland owned by or subject to public access rights owned by TVA. It is also subject to any existing rights of third parties. Nothing contained in this approval shall be construed to detract or deviate from the rights of the United States and TVA held over this land under the Grant of Flowage Easement. This Approval of Plans does not give any property rights in real estate or material and does not authorize any injury to private property or invasion of private or public rights. It merely constitutes a finding that the facility, if constructed at the location specified in the plans submitted and in accordance with said plans, would not at this time constitute an obstruction unduly affecting navigation, flood control, or public lands or reservations.

3. Shoreline Modification and Stabilization

- a) For purposes of shoreline bank stabilization, all portions will be constructed or placed, on average, no more than two feet from the existing shoreline at normal summer pool elevation.
- b) You agree that spoil material will be disposed of and contained on land lying and being above the 822-foot contour. Every precaution will be made to prevent the reentry of the spoil material into the reservoir.
- c) Bank, shoreline, and floodplain stabilization will be permanently maintained in order to prevent erosion, protect water quality, and preserve aquatic habitat.
- d) You agree to reimburse TVA \$ _____, which is the current value of the _____ acre feet of power storage volume displaced by fill into the reservoir.

4. Water Intake

- a) If the reservoir falls below the elevation of the intake, the applicant will be responsible for finding another source of raw water.
- b) You must install and maintain a standard regulatory hazard buoy at the end of the intake to warn boaters of the underwater obstruction. The word "intake" should be added to the buoy and be attached using a five-foot cable.
- c) The screen openings on the intake strainer must be 1/8-inch (maximum), to minimize the entrapment of small fish.
- d) This approval does not constitute approval of the adequacy or safety of applicant's water system. TVA does not warrant that the water withdrawn and used by applicant is safe for drinking or any other purpose, and applicant is solely responsible for ensuring that all water is properly treated before using.

5. Bridges and Culverts

- a) You agree to design/construct any instream piers in such a manner as to discourage river scouring or sediment deposition.
- b) Applicant agrees to construct culvert in phases, employing adequate streambank protection measures, such that the diverted streamflow is handled without creating streambank or streambed erosion/sedimentation and without preventing fish passage.
- c) Concrete box culverts and pipe culverts (and their extensions) must create/maintain velocities and flow patterns which offer refuge for fish and other aquatic life, and allow passage of indigenous fish species, under all flow conditions. Culvert floor slabs and pipe bottoms must be buried below streambed elevation, and filled with naturally occurring streambed materials. If geologic conditions do not allow burying the floor, it must be otherwise designed to allow passage of indigenous fish species under all flow conditions.

- d) All natural stream values (including equivalent energy dissipation, elevations, and velocities; riparian vegetation; riffle/pool sequencing; habitat suitable for fish and other aquatic life) must be provided at all stream modification sites. This must be accomplished using a combination of rock and bioengineering, and is not accomplished using solid, homogeneous riprap from bank to bank.
- e) You agree to remove demolition and construction by-products from the site—for recycling if practicable, or proper disposal—outside of the 100-year floodplain. Appropriate BMPs will be used during the removal of any abandoned roadway or structures.

6. Best Management Practices

- a) You agree that removal of vegetation will be minimized, particularly any woody vegetation providing shoreline/streambank stabilization.
- b) You agree to installation of cofferdams and/or silt control structures between construction areas and surface waters prior to any soil-disturbing construction activity, and clarification of all water that accumulates behind these devices to meet state water quality criteria at the stream mile where activity occurs before it is returned to the unaffected portion of the stream. Cofferdams must be used wherever construction activity is at or below water elevation.
- c) A floating silt screen extending from the surface to the bottom is to be in place during excavation or dredging to prevent sedimentation in surrounding areas. It is to be left in place until disturbed sediments are visibly settled.
- d) You agree to keep equipment out of the reservoir or stream and off reservoir or stream banks, to the extent practicable (i.e., performing work "in the dry").
- e) You agree to avoid contact of wet concrete with the stream or reservoir, and avoid disposing of concrete washings, or other substances or materials, in those waters.
- f) You agree to use erosion control structures around any material stockpile areas.
- g) You agree to apply clean/shaken riprap or shot rock (where needed at water/bank interface) over a water permeable/soil impermeable fabric or geotextile and in such a manner as to avoid stream sedimentation or disturbance, or that any rock used for cover and stabilization shall be large enough to prevent washout and provide good aquatic habitat.
- h) You agree to remove, redistribute, and stabilize (with vegetation) all sediment which accumulates behind cofferdams or silt control structures.
- i) You agree to use vegetation (versus riprap) wherever practicable and sustainable to stabilize streambanks, shorelines, and adjacent areas. These areas will be stabilized as soon as practicable, using either an appropriate seed mixture that includes an annual (quick cover) as well as one or two perennial legumes and one or two perennial grasses, or sod. In winter or summer, this will require initial planting of a quick cover annual only, to be followed by subsequent establishment of the perennials. Seed and soil will be protected as appropriate with erosion control netting and/or mulch and provided adequate moisture. Streambank and shoreline areas will also be permanently stabilized with native woody plants, to include trees wherever practicable and sustainable (this vegetative prescription may be altered if dictated by geologic conditions or landowner requirements). You also agree to install or perform additional erosion control structures/techniques deemed necessary by TVA.

Additional Conditions

- Bank stabilization would not be conducted from March through June to protect bank nesting bird species.
 - Applicants would incorporate measures into their landscape plan to address the exotic, invasive plants found in the riparian zone along the entire shoreline area in an effort to replace these species with native flora that would provide the highest level of natural habitat for the proposal.
 - Before greenway construction is complete, the applicant would coordinate with WMA personnel to determine if signage describing the strict hunting regulations is necessary and, if so, the appropriate location of such signage along the greenway.
 - During the greenway construction, personnel from the ARL would monitor the installation of pipe and headwalls in existing ditches (where excavation is necessary) to determine the existence of archaeologically significant materials.
 - During the drainage placement under greenway (where excavation is necessary), personnel from the ARL would monitor to determine the existence of archaeologically significant materials.
 - During the installation of bridge abutments for the greenway, ARL personnel would investigate the abutment footprints to determine the existence of archaeologically significant materials.
 - If archaeological features were encountered during the golf practice facility and greenway construction monitoring, UT would abide by the stipulations in the MOA.
 - If it is necessary to cut a keyway along the beach area, personnel from ARL would monitor the installation of riprap stabilization to determine the existence of archaeologically significant materials.
 - There would be no bank reshaping, and all vegetation would be removed by hand.
- A layer of non-woven 6.4 oz. per yard geotextile filter fabric would be placed along the entire shoreline proposed for stabilization prior to placing riprap.

- The applicants would place Class C, D, or D50 riprap to the top of the bank.
 - All work would be conducted during dry weather conditions.
 - If heavy equipment (trackhoe) were required for accessing areas for stabilization that a barge cannot reach or if a keyway were necessary, archaeological monitoring would be necessary. If archaeological resources were exposed during this procedure, all work would cease in the area where the resources have been encountered.
 - If this project is not completed within five years of submittal to TVA, UT would consult with the SHPO to determine if these requirements were still suitable or if additional investigations would be necessary.

Page intentionally blank

**Attachment E – Summary of Species Found
Within the Proposal Area**

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Plant Species Found Within the Stream Vegetative Buffer

Vegetation in the stream area is typical for moist site riparian zones on Fort Loudoun Reservoir and includes small trees and shrubs such as black willow, silver and red maple, and silky dogwood, and a herbaceous layer that includes exotic species such as Japanese honeysuckle, multiflora rose, and tall fescue grass, in addition to some native sedges, blackberry, pokeweed, goldenrod, ironweed, pigweed, and swamp dock.

Plant Species Found Along the Shoreline

The shoreline area along the reservoir is comprised of a “one-tree-wide” riparian zone with sycamore, silver maple, and black willow being the most common species. The understory along this shoreline area is comprised of a mix of common native and invasive exotic species including those previously mentioned with the addition of Amur honeysuckle, privet, mimosa, and a *Clematis* vine.

Plant Species Found Within the Proposed Greenway

The area proposed for the greenway trail is currently planted to winter wheat cover, which typically follows a spring/summer row crop planting of corn or other forage crop for UT. The reservoir shoreline area proposed to be stabilized with hard armor riprap is similar to the downstream portion fronting the Knox County property in that it is comprised of a very narrow, essentially one-tree-wide riparian zone. Native trees scattered along this shoreline segment include sycamore, green ash, black locust, hackberry, silver maple, black walnut, and black willow. Native herbaceous and understory plants include blackberry, pokeweed, goldenrod, poison ivy, smooth sumac, and ironweed with Carolina coralbeads being a fairly common native vine. Most of this narrow zone is seriously infested with a variety of exotic, invasive plants including multiflora rose, Amur honeysuckle, Japanese honeysuckle, privet, kudzu, tall fescue, and Bradford pear.

Plant Species Found Within the Proposed Golf Practice Facility

The dominant vegetative cover in this area is exotic tall fescue along with a substantial number of 18- to 24-inch tall Bradford pear seedlings currently scattered across the field site.

Wildlife Species Found Within the Proposal Area

Wildlife species observed, or expected to use the available habitats on the site, include resident and migratory birds such as Canada geese, eastern bluebird, eastern phoebe, song sparrow, mockingbird, northern cardinal, mourning dove, white-eyed vireo, common yellowthroat, and belted kingfisher. Mammals utilizing the site include meadow vole, white-footed mouse, muskrat, eastern cottontail, striped skunk, raccoon, coyote, and red fox. Amphibians and reptiles using the site include eastern garter snake, black rat snake, eastern box turtle, western chorus frog, and American toad.

State- and Federally Listed and Other Aquatic Species of Conservation Concern Found Near the Proposal Area

Common Name	Scientific Name	State Status	Federal Status
Fish			
Ashy Darter	<i>Etheostoma cinereum</i>	THR (S2S3)	-
Blue Sucker	<i>Cycleptus elongatus</i>	THR (S2)	-
Duskytail Darter	<i>Etheostoma percnum</i>	END (S1)	END
Flame Chub	<i>Hemitremia flammea</i>	NMGT (S3)	-
Highfin Carpsucker*	<i>Carpodes velifer</i>	NMGT (S2S3)	-
Lake Sturgeon	<i>Acipenser fulvescens</i>	END (S1)	-
Longhead Darter	<i>Percina macrocephala</i>	THR (S2)	-
Snail Darter	<i>Percina tanasi</i>	THR (S2S3)	THR
Tangerine Darter	<i>Percina aurantiaca</i>	NMGT (S3)	-
Tennessee Dace	<i>Phoxinus tennesseensis</i>	NMGT (S3)	-
Mussel			
Fine-rayed Pigtoe	<i>Fusconaia cuneolus</i>	END (S1)	END
Orange-foot Pimpleback#	<i>Plethobasus cooperianus</i>	END (S1)	END
Snails			
Spiny Riversnail#	<i>Io fluvialis</i>	NOST (S2)	-
Ornate Rocksnail#	<i>Lithasia geniculata</i>	NOST (S3)	-
Anthony's Riversnail	<i>Athearnia anthonyi</i>	END (S1)	END

*Species does not occur within the potentially affected watersheds

Historical record

Status Codes: END = Endangered; NOST= No Status but tracked by the Tennessee State Heritage Project; THR = Threatened; NMGT = In Need of Management.

State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable

Attachment F – Application, Proposal Drawings, and Maps

Page intentionally blank

OMB No. 3316-0060
Exp. Date 03/31/2007

United States - Naval Reserve Center
Tennessee Department of Transportation

List of previous DA/TVA permits/approvals DA _____ TVA _____ See attached
Permit Number Date

Is any portion of the activity for which authorization is sought now complete? Yes No (If "Yes" attach explanation)
 Month and year the activity was completed: _____ . Indicate the existing work on the drawings.

List all approvals or certifications required by other federal, interstate, state, or local agencies for any structures, construction, discharges, deposits, or other activities described in this application.

Issuing Agency	Type Approval	Identification No.	Date of Application	Date of Approval
Department of the Army	Section 404 Clean Water Act			
Department of the Army	Section 10 Rivers and Harbors Act			
TDEC	Section 401 Clean Water Act			
City of Knoxville	Various permits (floodplain, grading, stormwater, etc)			

Has any agency denied approval for the activity described herein or for any activity directly related to the activity described herein?
 Yes No (If "Yes" attach explanation)

Project plans or drawings should accompany the application. These should be on paper suitable for reproduction no larger than 11 x 17 inches or contained on a 3-1/2 inch floppy computer disc in "dxf" format, and should be submitted to the appropriate TVA and U.S. Army Corps of Engineers offices. An application that is not complete will be returned for additional information.

U.S.A.C.E. Offices		TVA Office Location
U.S. Army Corps of Engineers Eastern Regulatory Field Office Spring Cress Business Park 501 Adessa Blvd., Suite 250 Lenoir City, Tennessee 37771 (865) 986-7296	U.S. Army Corps of Engineers Savannah District The Plaza, Suite 130 1590 Adamson Parkway Morrow, Georgia 30260-1763 (678) 422-2729	Tennessee Valley Authority Little Tennessee Watershed Team 260 Interchange Park Drive, LCB 1A-LCT Lenoir City, TN 37772-5664 (865) 632-1300
U.S. Army Corps of Engineers Regulatory Branch 3701 Bell Road Nashville, Tennessee 37214 (615) 369-7500	U.S. Army Corps of Engineers Western Regulatory Field Office 2042 Beltline Road, SW, Bldg C, Suite 415 Decatur, Alabama 35602 (256) 350-5620	
U.S. Army Corps of Engineers Norfolk District P.O. Box 338 Abingdon, Virginia 24212 (276) 623-5259	U.S. Army Corps of Engineers Asheville Regulatory Field Office 151 Patton Avenue, Room 208 Asheville, North Carolina 28801-5006 (828) 271-4856	

Privacy Act Statement
 This information is being requested in accordance with Section 26a of the TVA Act as cited on the front page of this form. Disclosure of the information requested is voluntary; however, failure to provide any required information or documents may result in a delay in processing your application or in your being denied a Section 26a permit. An application that is not complete will be returned for additional information. TVA uses this information to assess the impact of the proposed project on TVA programs and the environment and to determine if the project can be approved. Information in the application is made a matter of public record through issuance of a public notice if warranted. Routine uses of this information include providing to federal, state, or local agencies, and to consultants, contractors, etc., for use in program evaluations, studies, or other matters involving support services to the program; to respond to a congressional inquiry concerning the application or Section 26a program; and for oversight or similar purposes, corrective action, litigation or law enforcement.

Burden Estimate Statement

Public reporting burden for this collection of information is estimated to average 1.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Agency Clearance Officer, Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402; and to the Office of Management and Budget, Paperwork Reduction Project (3316-0060), Washington, D.C. 20503.



TENNESSEE VALLEY AUTHORITY

LAND USE APPLICATION

Sensitive Information

Tennessee Valley Authority (TVA) Environmental Stewardship and Policy receives several hundred requests annually for use of TVA land or landrights. Please fill out this application completely. TVA has implemented a cost recovery system so that those who benefit directly from the use of public lands reimburse TVA for its total cost. The appropriate initial payment or standard fee must be included with your application. You will be billed for any additional costs for those actions that exceed the initial payment. Please see the attached sheet *TVA Land Transaction Fees* for additional information. If you have any questions, please call your local TVA Environmental Stewardship and Policy Watershed Team.

TVA OFFICIAL USE ONLY	
RLR No.: <u>182504</u>	Tract No. Assigned by Realty: <u>FL-1035</u>

1. Name and Mailing Address of Applicant:

The University of Tennessee
5723 Middlebrook Pike Ste. 120
Knoxville TN 37996

Home Telephone No.: 974-2441

Office Telephone No.: 974-2441

E-Mail Address: rstivers@tennessee.edu

SSN or Federal ID No.: _____

2. Name, Address, and Title of Authorized Agent: (i.e., builder, engineer.) Include a letter confirming your authorization.

Robbi Stivers

Home Telephone No.: _____

Office Telephone No.: _____

3. Location:

Attach a location map and a map showing boundaries of TVA land needed.

Subdivision: _____

Subdivision Plat Lot No.: _____

Tax Map & Parcel No.: 147 NW Map 450

Reservoir: Fort Loudoun

River: TENNESSEE RIVER

River Mile: 643.51

4. Type of Land Use Required:

Please call your local TVA Environmental Stewardship and Policy Team (WT) to help us determine the appropriate TVA action needed.

Approval by TVA WT:

Land Use Permit

License Agreement

Sufferance Agreement

(Complete page 1 only)

Approval by TVA Board:

Easement

Deed Modification

Lease (____ years needed)

Abandonment

Land Transfer

5. Proposed Time Schedule for your Project:

Start Date: Upon execution of license Projected Completion Date: 6/2009

6. Describe your project, its purpose and intended use:

Describe the proposed development, on or off TVA land. Include a general description of proposed structures to be erected and land disturbance including vegetation removal, fills or excavations. Attach a copy of detailed plans as appropriate.

Construction of golf practice facility and shoreline stabilization

7. Will federal assistance be used as part of this project?

Yes No If yes, describe activity and complete Applicant Information Pre-Award Form.

8. Authorization for TVA to process your application:

Application is hereby made for approval of the land use described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. By submitting this request, I understand credit checks will be performed as part of the normal business procedure. Additional financial information may be requested.

PAYMENT TERMS: Payment for Land Transaction Fees and any related costs are due Net thirty (30) days from the date of invoice. On any overdue payment, TVA shall charge interest at the rate payable by TVA under the United States Prompt Payment Act (31 U.S.C. §§3901-3906), from the date payment is due until the date TVA receives payment. Payment of interest shall be due within thirty (30) days after TVA's invoice for such interest is dated.

Failure by the Customer to pay all invoices within sixty (60) days will result in termination of the request.

Sensitive Information

8. Authorization (continued)

I understand TVA charges a standard fee for minor land actions, and that full cost recovery is required for all other actions. I understand and agree to pay all of TVA's costs associated with the processing of this application. Upon receipt of a complete application and standard fee or initial processing fee, TVA will initiate the review of the request. Upon completion of the draft instrument, a standard closing cost fee of \$800.00 will be assessed for deed execution, mailing, and filing. Payment of any fee does not guarantee TVA approval. TVA may impose terms and conditions at the time of the approval. The processing fees are in addition to any payment required for the purchase or use of the TVA land. Any unused portion of the processing fee will be refunded. I understand TVA will invoice me monthly when costs exceed the initial processing fee.

2/5/08
Date

[Signature]
Signature of Applicant

9. Anticipated Economic Impacts of your Project:

A. Projected cost estimate and funding source (if project is to be completed in phases, please include time schedule and costs for each phase):

B. Number of jobs to be created - Near - Term (including construction) _____
Long - Term _____

C. Negative socioeconomic impacts considered:

D. Expected public and investor benefits:

10. Describe Anticipated Environmental Impacts: (Include copies of reviews, assessments, or letters from federal or state agencies)

11. Alternative Site(s) Considered: (Include justification for rejecting alternate locations; attach explanation if needed)

12. List all permits, approvals, or certifications required by other federal, state, or local agencies:
(Include those required for any structure, construction activity, discharge or other activities described in this application)

Issuing Agency	Type Approval	Identification Number	Date of Application	Date of Approval

13. Has any agency denied approval for the project described herein or any activity related to the project?

No Yes (If "Yes", attach explanation)

A complete request should include:

1. This completed application form and a check or money order with Social Security Number or Federal ID Number on the check made payable to "TVA" for the appropriate land transaction fee.
2. A location map indicating the area of TVA land or landrights affected by the project.
3. Drawing(s) or plan(s) of any proposed construction activity or development which would result if land or landrights are granted.
4. Other documents as available (surveys, environmental documents, etc.).

**RECEIVED
FOR TVA USE ONLY**

FEB 05 2008

Date Application Received [Signature] Initials

Date Application Complete 2-5-2008 [Signature] Initials

[Signature]
Team Manager



TENNESSEE VALLEY AUTHORITY

Sensitive Information

LAND USE APPLICATION

Tennessee Valley Authority (TVA) Environmental Stewardship and Policy receives several hundred requests annually for use of TVA land or landrights. Please fill out this application completely. TVA has implemented a cost recovery system so that those who benefit directly from the use of public lands reimburse TVA for its total cost. The appropriate initial payment or standard fee must be included with your application. You will be billed for any additional costs for those actions that exceed the initial payment. Please see the attached sheet *TVA Land Transaction Fees* for additional information. If you have any questions, please call your local TVA Environmental Stewardship and Policy Watershed Team.

TVA OFFICIAL USE ONLY	
RLR No.: <u>182515</u>	Tract No. Assigned by Realty: <u>FL-1035</u>

<p>1. Name and Mailing Address of Applicant:</p> <p><u>Knox County</u></p> <p><u>600 Sutherland Avenue</u></p> <p><u>Knoxville, Tennessee 37920</u></p> <p>Home Telephone No.: <u>865-215-6600</u></p> <p>Office Telephone No.: _____</p> <p>E-Mail Address: _____</p> <p>SSN or Federal ID No.: _____</p>	<p>2. Name, Address, and Title of Authorized Agent: (i.e., builder, engineer.) <i>Include a letter confirming your authorization.</i></p> <p>_____</p> <p>_____</p> <p>Home Telephone No.: _____</p> <p>Office Telephone No.: _____</p>
---	--

<p>3. Location:</p> <p><i>Attach a location map and a map showing boundaries of TVA land needed.</i></p> <p>Subdivision: _____</p> <p>Subdivision Plat Lot No.: _____</p> <p>Tax Map & Parcel No.: _____</p> <p>Reservoir: <u>Fort Loudoun</u></p> <p>River: <u>Tennessee River</u></p> <p>River Mile: <u>643.5L</u></p>	<p>4. Type of Land Use Required:</p> <p><i>Please call your local TVA Environmental Stewardship and Policy Team (WT) to help us determine the appropriate TVA action needed.</i></p> <table border="0"> <tr> <td style="vertical-align: top;"> <p>Approval by TVA WT:</p> <p><input type="checkbox"/> Land Use Permit</p> <p><input checked="" type="checkbox"/> License Agreement</p> <p><input type="checkbox"/> Sufferance Agreement</p> <p><i>(Complete page 1 only)</i></p> </td> <td style="vertical-align: top;"> <p>Approval by TVA Board:</p> <p><input type="checkbox"/> Easement</p> <p><input type="checkbox"/> Deed Modification</p> <p><input type="checkbox"/> Lease (____ years needed)</p> <p><input type="checkbox"/> Abandonment</p> <p><input type="checkbox"/> Land Transfer</p> </td> </tr> </table>	<p>Approval by TVA WT:</p> <p><input type="checkbox"/> Land Use Permit</p> <p><input checked="" type="checkbox"/> License Agreement</p> <p><input type="checkbox"/> Sufferance Agreement</p> <p><i>(Complete page 1 only)</i></p>	<p>Approval by TVA Board:</p> <p><input type="checkbox"/> Easement</p> <p><input type="checkbox"/> Deed Modification</p> <p><input type="checkbox"/> Lease (____ years needed)</p> <p><input type="checkbox"/> Abandonment</p> <p><input type="checkbox"/> Land Transfer</p>
<p>Approval by TVA WT:</p> <p><input type="checkbox"/> Land Use Permit</p> <p><input checked="" type="checkbox"/> License Agreement</p> <p><input type="checkbox"/> Sufferance Agreement</p> <p><i>(Complete page 1 only)</i></p>	<p>Approval by TVA Board:</p> <p><input type="checkbox"/> Easement</p> <p><input type="checkbox"/> Deed Modification</p> <p><input type="checkbox"/> Lease (____ years needed)</p> <p><input type="checkbox"/> Abandonment</p> <p><input type="checkbox"/> Land Transfer</p>		

5. Proposed Time Schedule for your Project:

Start Date: When signed Projected Completion Date: 06-30-2009

6. Describe your project, its purpose and intended use:

Describe the proposed development, on or off TVA land. Include a general description of proposed structures to be erected and land disturbance including vegetation removal, fills or excavations. Attach a copy of detailed plans as appropriate.

Greenway and associated culverts, bridges, and other associated facilities.

7. Will federal assistance be used as part of this project?

Yes No If yes, describe activity and complete Applicant Information Pre-Award Form.

8. Authorization for TVA to process your application:

Application is hereby made for approval of the land use described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. By submitting this request, I understand credit checks will be performed as part of the normal business procedure. Additional financial information may be requested.

PAYMENT TERMS: Payment for Land Transaction Fees and any related costs are due Net thirty (30) days from the date of invoice. On any overdue payment, TVA shall charge interest at the rate payable by TVA under the United States Prompt Payment Act (31 U.S.C. §§3901-3908), from the date payment is due until the date TVA receives payment. Payment of interest shall be due within thirty (30) days after TVA's invoice for such interest is dated.

Failure by the Customer to pay all invoices within sixty (60) days will result in termination of the request.

Sensitive Information

8. Authorization (continued)

I understand TVA charges a standard fee for minor land actions, and that full cost recovery is required for all other actions. I understand and agree to pay all of TVA's costs associated with the processing of this application. Upon receipt of a complete application and standard fee or initial processing fee, TVA will initiate the review of the request. Upon completion of the draft instrument, a standard closing cost fee of \$800.00 will be assessed for deed execution, mailing, and filing. Payment of any fee does not guarantee TVA approval. TVA may impose terms and conditions at the time of the approval. The processing fees are in addition to any payment required for the purchase or use of the TVA land. Any unused portion of the processing fee will be refunded. I understand TVA will invoice me monthly when costs exceed the initial processing fee.

APPROVED BY: 08-040

South Willow 2-6-08 Date

Michael R. Kapes
Signature of Applicant
2-8-08

9. Anticipated Economic Impacts of your Project:

A. Projected cost estimate and funding source (if project is to be completed in phases, please include time schedule and costs for each phase):

B. Number of jobs to be created - Near - Term (including construction) _____
Long - Term _____

C. Negative socioeconomic impacts considered:

D. Expected public and investor benefits:

10. Describe Anticipated Environmental Impacts: (Include copies of reviews, assessments, or letters from federal or state agencies)

11. Alternative Site(s) Considered: (Include justification for rejecting alternate locations; attach explanation if needed)

12. List all permits, approvals, or certifications required by other federal, state, or local agencies: (include those required for any structure, construction activity, discharge or other activities described in this application)

Issuing Agency	Type Approval	Identification Number	Date of Application	Date of Approval

13. Has any agency denied approval for the project described herein or any activity related to the project?

No Yes (If "Yes", attach explanation)

<p>A complete request should include:</p> <ol style="list-style-type: none"> This completed application form and a check or money order with Social Security Number or Federal ID Number on the check made payable to "TVA" for the appropriate land transaction fee. A location map indicating the area of TVA land or landrights affected by the project. Drawing(s) or plan(s) of any proposed construction activity or development which would result if land or landrights are granted. Other documents as available (surveys, environmental documents, etc.). 	<p>FOR TVA USE ONLY</p> <p><u>FEB 11 2008</u> Date Application Received <u>2-12-2008</u> Date Application Complete</p> <p><u>JRD</u> Initials <u>JRD</u> Initials</p> <p><u>Rachel D. J.</u> Team Manager</p>
--	--

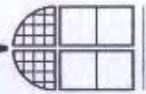
UT INTERCOLLEGIATE GOLF COMPLEX

CONCEPTUAL MASTER PLAN (REVISED)

SCALE: 1" = 100' DATE: MARCH 26, 2007

IN STATE PLANE
(NAD 83)

- DESIGNERS**
ALLEN & HAYS
1000 EAST 1000 SOUTH
SALT LAKE CITY, UT 84143
- OWNER**
UNIVERSITY OF UTAH
160 SOUTH 1400 EAST
SALT LAKE CITY, UT 84143
- ARCHITECTS**
GARDNER WHARREN ARCHITECTS
1000 EAST 1000 SOUTH
SALT LAKE CITY, UT 84143
- ENGINEERS**
CIVIL ENGINEERS
1000 EAST 1000 SOUTH
SALT LAKE CITY, UT 84143



EARTHWORK CALCULATIONS (APPROXIMATE)
VOLUME TO BE EXCAVATED: 1,200,000 CU YD
VOLUME TO BE FILLED: 1,200,000 CU YD
TOTAL VOLUME: 2,400,000 CU YD



GRASSING LEGEND

- GREENS - "Short Grass" (200)
- FIRMS - "Tall Grass" (200)
- FAIRWAYS - "Tall Grass" (200)
- ROUGH - "Tall Grass" (200)
- PLAYERS GRASSES - "Tall Grass" (200)
- TERRACE PLANTS (200)

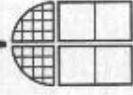
SETBACK GRADING KEY

- 10 Year Flood Elevation (Approx.)
- 50 Year Flood Elevation (Approx.)
- Area of Total Available (Net) (FT²) (Approx.)
- Area of Total Available (Gross) (FT²) (Approx.)
- Proposed Topography (Approx.)
- Proposed Ground Elevation (Gross) (ft)
- Proposed Ground Elevation (Net) (ft)

- UNIVERSITY OF UTAH**
SCHOOL OF ARCHITECTURE
160 SOUTH 1400 EAST
SALT LAKE CITY, UT 84143
- DESIGN TEAM**
ARCHITECTS
ENGINEERS
- CONCEPTUAL MASTER PLAN**
BIT GRADING
- DATE**
MARCH 26, 2007
- SCALE**
1" = 100'
- PROJECT**
UNIVERSITY OF UTAH
160 SOUTH 1400 EAST
SALT LAKE CITY, UT 84143

Allen & Hoshall
since 1915

PROJECT DESIGNER



DESIGNERS
ASSOCIATES
ARCHITECTS
12 Green Plaza South, Knoxville, TN 37926

GOLF COURSE DESIGNER



GOLF COURSE DESIGN
100 South Park Drive, Suite 100, Knoxville, TN 37923

8331 Walnut Springs, Suite 102, Knoxville, TN 37923
Phone 606.693.7881 Fax 606.693.7828
www.allenandhoshall.com

UNIVERSITY OF TENNESSEE
GOLF TEAM FACILITY (PRACTICE COURSE)
SBC NO. 540/09-06-01
CONSTRUCTION PLANS
KNOXVILLE, TENNESSEE



University of Tennessee
Division of Facilities Planning
5723 Middlebrook Pike, Suite 119
Knoxville, TN 37921-0040
www.utk.edu



JOB NUMBER 71358

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 - CE-100 PROPOSED OBSTACLE PLAN

1001 ...
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THE UNIVERSITY OF MICHIGAN
 CORD TRAIL FACILITY
 SEC. NO. 34089-05-01

UNIVERSITY OF MICHIGAN
 ...
 ...

ISOTOPIC ANALYSIS
 ...
 ...

DATE: 11/28/87
 BY: ...
 ...



CO.1

	<p>1. THE PROPERTY IS LOCATED WITHIN THE ... 2. THE PROPERTY IS ... 3. THE PROPERTY IS ... 4. THE PROPERTY IS ... 5. THE PROPERTY IS ...</p>	<p>1. THE PROPERTY IS ... 2. THE PROPERTY IS ... 3. THE PROPERTY IS ... 4. THE PROPERTY IS ... 5. THE PROPERTY IS ...</p>
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3. THE PROPERTY IS ...
4. THE PROPERTY IS ...
5. THE PROPERTY IS ...

211 (REVISED 10/1/82)

367 Peachtree Street, N.W.
Atlanta, Georgia 30308
Telephone: (404) 525-1100
FAX: (404) 525-1101

NAME: _____
ADDRESS: _____
CITY: _____
STATE: _____
ZIP: _____

THE UNIVERSITY OF TENNESSEE
SOIL TEAM FACILITY
566 NO. SHARPSBURG
KNOXVILLE

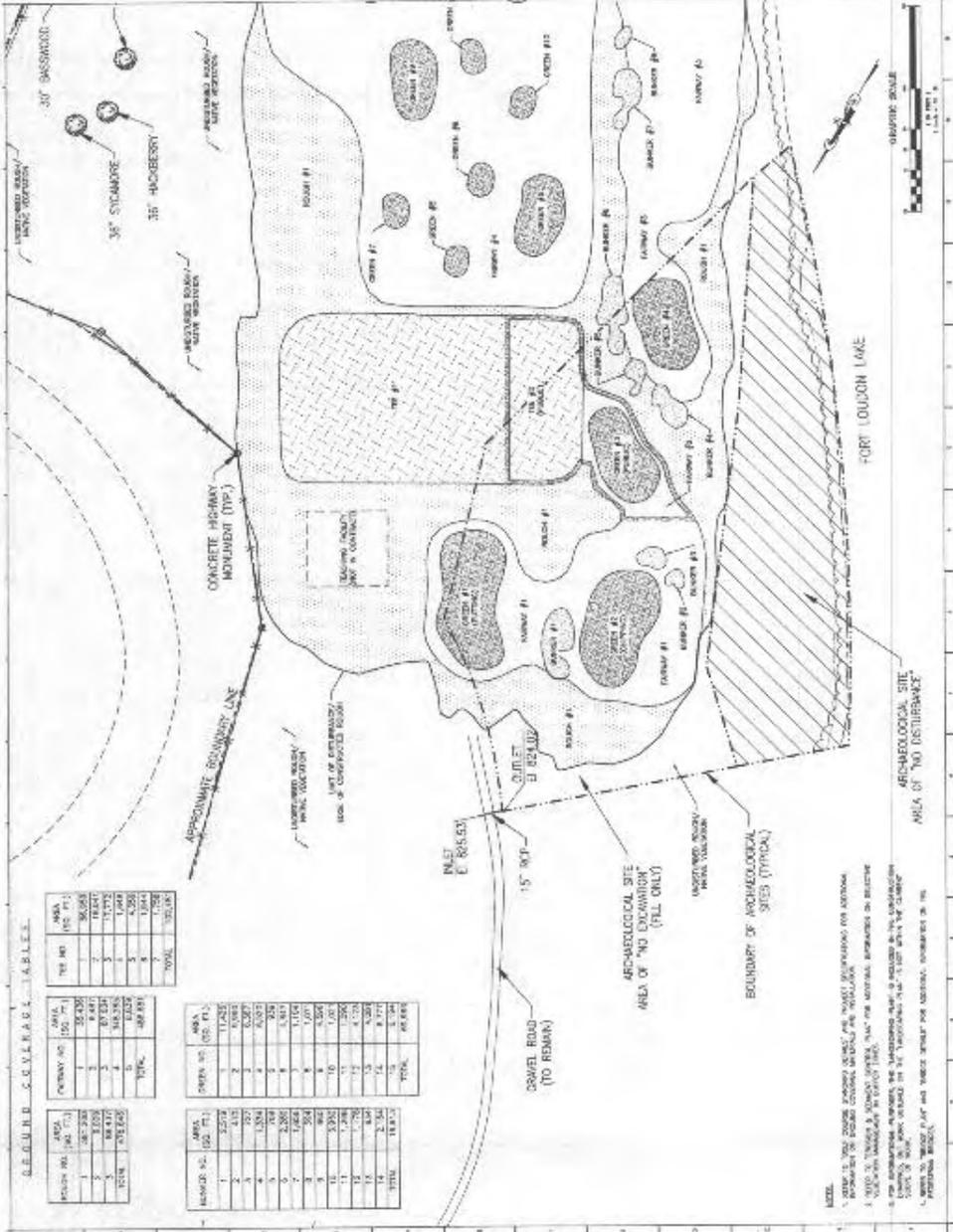
APPROVED BY: _____
DATE: _____

SITE LOCATION

DATE: 11/28
DRAWN BY: [Signature]
CHECKED BY: [Signature]
SCALE: 1" = 40'



C2.1



Q.E.D.U.H.D. S.C.V.E.A.R.S. A.B.L.E.E.

PLANT NO.	AREA (SQ. FT.)	TYPE NO.	AREA (SQ. FT.)
1	30,000	1	30,000
2	10,000	2	10,000
3	10,000	3	10,000
4	10,000	4	10,000
5	10,000	5	10,000
TOTAL	70,000	TOTAL	70,000

PLANT NO.	AREA (SQ. FT.)	TYPE NO.	AREA (SQ. FT.)
1	1,000	1	1,000
2	1,000	2	1,000
3	1,000	3	1,000
4	1,000	4	1,000
5	1,000	5	1,000
6	1,000	6	1,000
7	1,000	7	1,000
8	1,000	8	1,000
9	1,000	9	1,000
10	1,000	10	1,000
11	1,000	11	1,000
12	1,000	12	1,000
13	1,000	13	1,000
14	1,000	14	1,000
TOTAL	10,000	TOTAL	10,000

NOTE: THIS PLAN SHOWS THE RESULTS OF THE SURVEY CONDUCTED BY THE ARCHAEOLOGICAL SERVICE OF THE UNIVERSITY OF TENNESSEE. THE SURVEY WAS CONDUCTED IN ACCORDANCE WITH THE STANDARDS AND ETHICS OF THE PROFESSION. THE RESULTS OF THE SURVEY ARE SUBJECT TO CHANGE AS MORE INFORMATION IS OBTAINED. THE SURVEY WAS CONDUCTED BY THE ARCHAEOLOGICAL SERVICE OF THE UNIVERSITY OF TENNESSEE. THE SURVEY WAS CONDUCTED BY THE ARCHAEOLOGICAL SERVICE OF THE UNIVERSITY OF TENNESSEE.

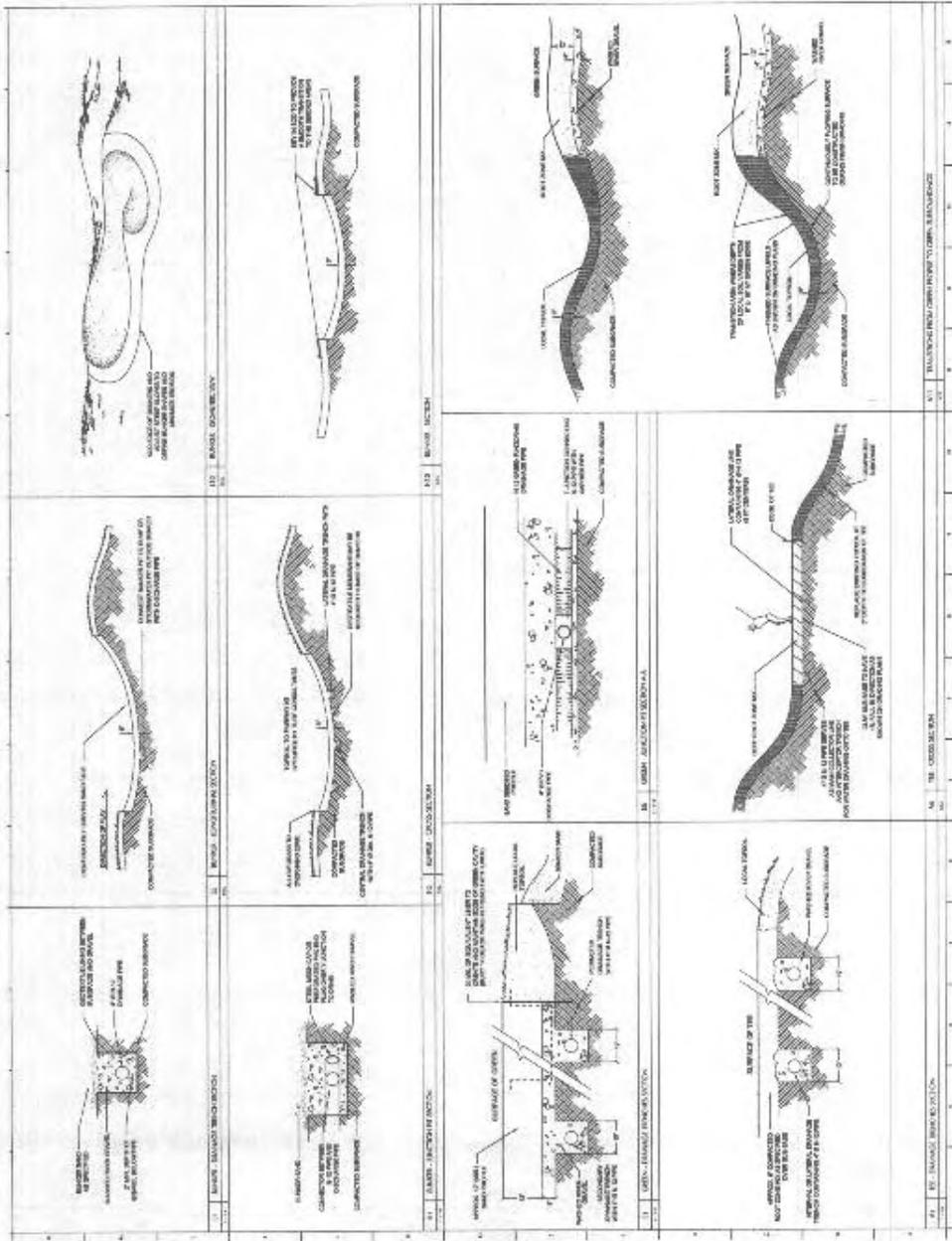
CONTOUR & DRAINAGE SYMBOLS

1/4" = 1' CONTOUR	1/4" = 1' CONTOUR
1/8" = 1' CONTOUR	1/8" = 1' CONTOUR
1/16" = 1' CONTOUR	1/16" = 1' CONTOUR
1/32" = 1' CONTOUR	1/32" = 1' CONTOUR
1/64" = 1' CONTOUR	1/64" = 1' CONTOUR
1/128" = 1' CONTOUR	1/128" = 1' CONTOUR
1/256" = 1' CONTOUR	1/256" = 1' CONTOUR
1/512" = 1' CONTOUR	1/512" = 1' CONTOUR
1/1024" = 1' CONTOUR	1/1024" = 1' CONTOUR
1/2048" = 1' CONTOUR	1/2048" = 1' CONTOUR
1/4096" = 1' CONTOUR	1/4096" = 1' CONTOUR
1/8192" = 1' CONTOUR	1/8192" = 1' CONTOUR
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1/32768" = 1' CONTOUR	1/32768" = 1' CONTOUR
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1/131072" = 1' CONTOUR	1/131072" = 1' CONTOUR
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1/524288" = 1' CONTOUR	1/524288" = 1' CONTOUR
1/1048576" = 1' CONTOUR	1/1048576" = 1' CONTOUR
1/2097152" = 1' CONTOUR	1/2097152" = 1' CONTOUR
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1000 PINE HILLS DRIVE
 MEMPHIS, TENNESSEE 38117
 (901) 525-1100
 FAX (901) 525-1101
 WWW.ALLENANDHOSHALL.COM

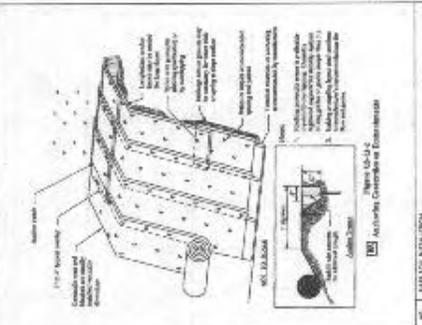
UNIVERSITY OF TENNESSEE
 COLLEGE OF BUSINESS
 400 UNIVERSITY AVENUE
 KNOXVILLE, TN 37996-0001
 TEL: 615/974-2000
 FAX: 615/974-2001
 WWW.UTK.EDU

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11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100

NOTES:
 1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC WORKS, AS APPLICABLE.
 2. THE DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC WORKS, AS APPLICABLE.
 3. THE DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC WORKS, AS APPLICABLE.
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 9. THE DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC WORKS, AS APPLICABLE.
 10. THE DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC WORKS, AS APPLICABLE.



Sheel B. Smith
Civil Engineer
1000 North 10th Street
Tulsa, Oklahoma 74103
Phone: 335-2111

THE UNIVERSITY OF OKLAHOMA
CIVIL ENGINEERING DEPARTMENT
100 EAST HEATH AVENUE
TULSA, OKLAHOMA 74103

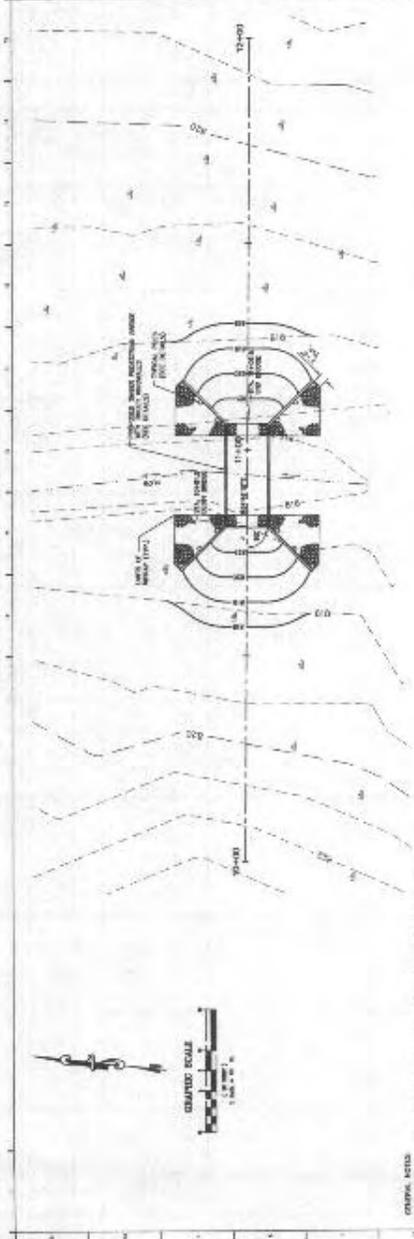
PROJECT NO. 11-000
SHEET NO. 11-000

DATE: 11-00
SCALE: AS SHOWN
DRAWN BY: C.B.

OKLAHOMA STATE UNIVERSITY
CIVIL ENGINEERING DEPARTMENT
100 EAST HEATH AVENUE
TULSA, OKLAHOMA 74103

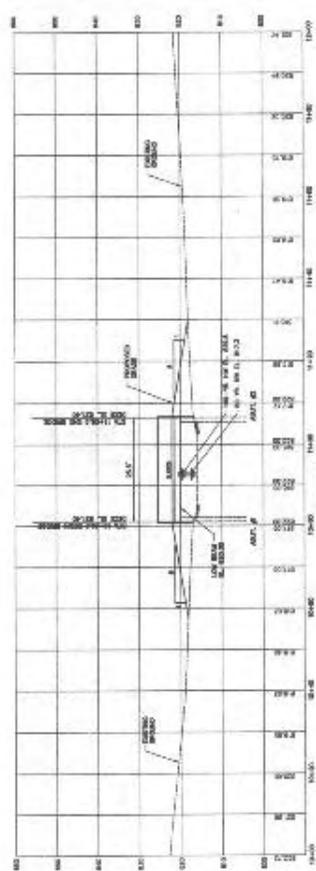
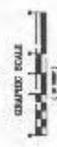
OKLAHOMA STATE UNIVERSITY
CIVIL ENGINEERING DEPARTMENT
100 EAST HEATH AVENUE
TULSA, OKLAHOMA 74103

OKLAHOMA STATE UNIVERSITY
CIVIL ENGINEERING DEPARTMENT
100 EAST HEATH AVENUE
TULSA, OKLAHOMA 74103



PLAN
SCALE: 1"=10'

- GENERAL NOTES:
1. MAINTAIN THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION BY THE LATEST EDITION, AS SHOWN.
 2. DESIGN FOR LIVE LOADS, AS SHOWN.
 3. DESIGN FOR COLLISION WITH A 100,000 LB. TRUCK, APPROX. 10 MPH IMPACT.
 4. ALL DIMENSIONS SHALL BE IN FEET AND INCHES. DIMENSIONS SHALL BE SHOWN TO THE NEAREST 1/8" UNLESS OTHERWISE NOTED.
 5. ALL DIMENSIONS SHALL BE IN FEET AND INCHES. DIMENSIONS SHALL BE SHOWN TO THE NEAREST 1/8" UNLESS OTHERWISE NOTED.
 6. ALL DIMENSIONS SHALL BE IN FEET AND INCHES. DIMENSIONS SHALL BE SHOWN TO THE NEAREST 1/8" UNLESS OTHERWISE NOTED.
 7. ALL DIMENSIONS SHALL BE IN FEET AND INCHES. DIMENSIONS SHALL BE SHOWN TO THE NEAREST 1/8" UNLESS OTHERWISE NOTED.
 8. ALL DIMENSIONS SHALL BE IN FEET AND INCHES. DIMENSIONS SHALL BE SHOWN TO THE NEAREST 1/8" UNLESS OTHERWISE NOTED.

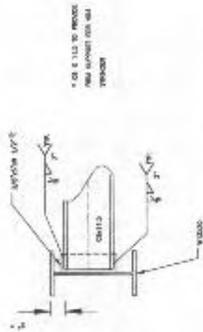


PROFILE
SCALE: 1"=10'

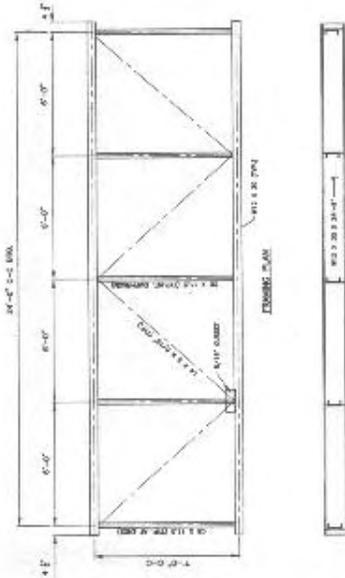
CONSTRUCTION DATA
 SPAN AREA - 40.0 SQ. FT.
 SPAN DISCHARGE (SQ. FT.) - 120.0
 OPENING - 10' 0" H. 10' 0" W. 10' 0" D.
 MAX. VELOCITY - 10.0 MPH
 EXCESS FLOW - 10.0 CFS
 - SEE SHEET 11-001

NOTE: CONTRACTOR MAY MAKE ADJUSTMENTS TO THE PROFILE FOR EARTH AND JUNCTION.

- GENERAL NOTES:**
1. RAISED LANE BEAMS HORIZONTALLY AND VERTICALLY AGAINST WALLS (FIGURE 1).
 2. RAISED POST LOAD TRUSS SHALL BE DESIGNED FOR 400 LB HORIZONTAL APPROX.
 3. 2" x 4" BEAMS SHALL BE ATTACHED TO THE WALL WITH TWO 1/2" x 1/4" ANCHORS WITH A 7" x 1/4" ANCHOR BRACKET.
 4. 4" x 4" BEAMS SHALL BE SUPPORTED AT EACH END.
 5. BEAMS SHALL BE ATTACHED TO EACH BEAM WITH TWO 3/4" x 1/4" ANCHORS AND 1/4" x 1/4" PLATE.
 6. THE CONTRACTOR MAY SUBMIT ALTERNATE DETAILS FOR REVIEW AND APPROVAL.
 7. DETAILS SHALL BE ACCORDANCE WITH SECTION 052 OF THE STANDARD SPECIFICATIONS.

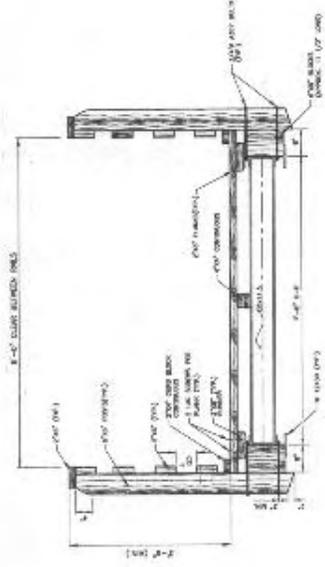


GENERAL NOTES



TRUSS SECTION

BEAM ELEVATION



VERTICAL SECTION

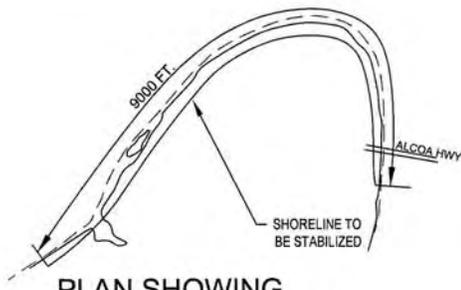
Date: 11/10/17
 Project: 17-0000
 Sheet: 05000
 Title: STRUCTURAL STEEL DETAILS

UNIVERSITY OF TORONTO
 187 HOSKING DRIVE
 TORONTO, ONTARIO
 M5S 1A5

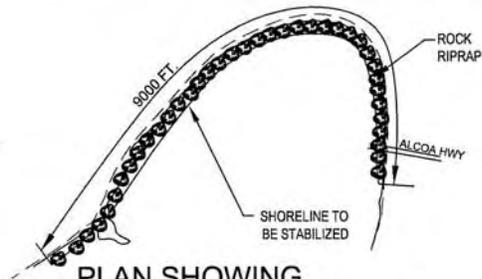
UNIVERSITY OF TORONTO
 ARCHITECTURE
 187 HOSKING DRIVE
 TORONTO, ONTARIO
 M5S 1A5

DETAILS
 UNIVERSITY OF TORONTO
 187 HOSKING DRIVE
 TORONTO, ONTARIO
 M5S 1A5

17-0000
 187 HOSKING DRIVE
 TORONTO, ONTARIO
 M5S 1A5



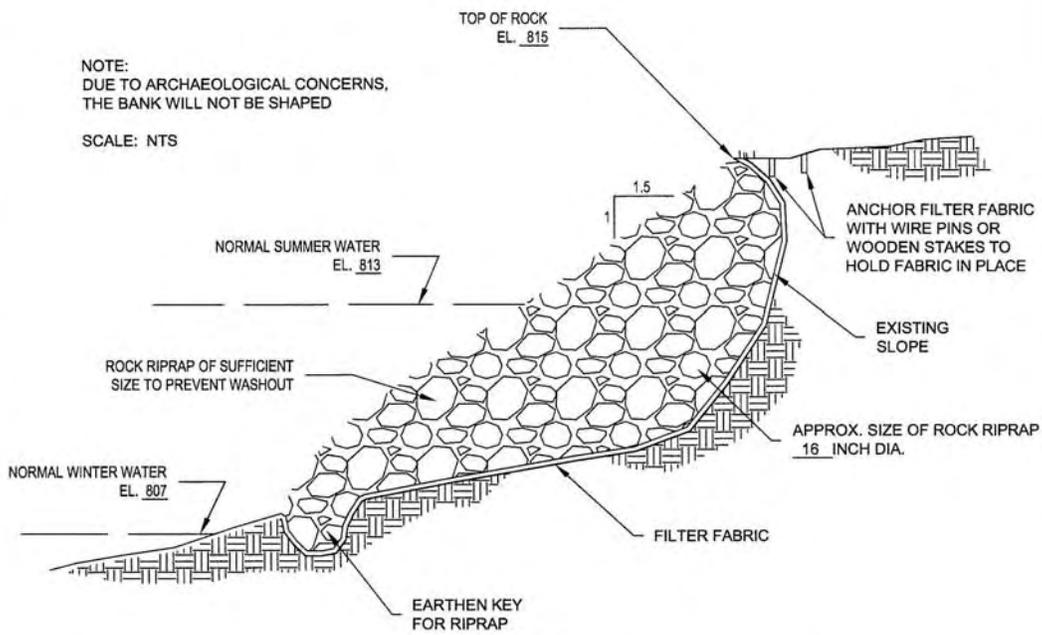
PLAN SHOWING EXISTING SHORELINE



PLAN SHOWING STABILIZED SHORELINE

NOTE:
DUE TO ARCHAEOLOGICAL CONCERNS,
THE BANK WILL NOT BE SHAPED

SCALE: NTS



SECTION SHOWING STABILIZED SHORE LINE

THE NORMAL SUMMER WATER LEVEL IS: EL. 813

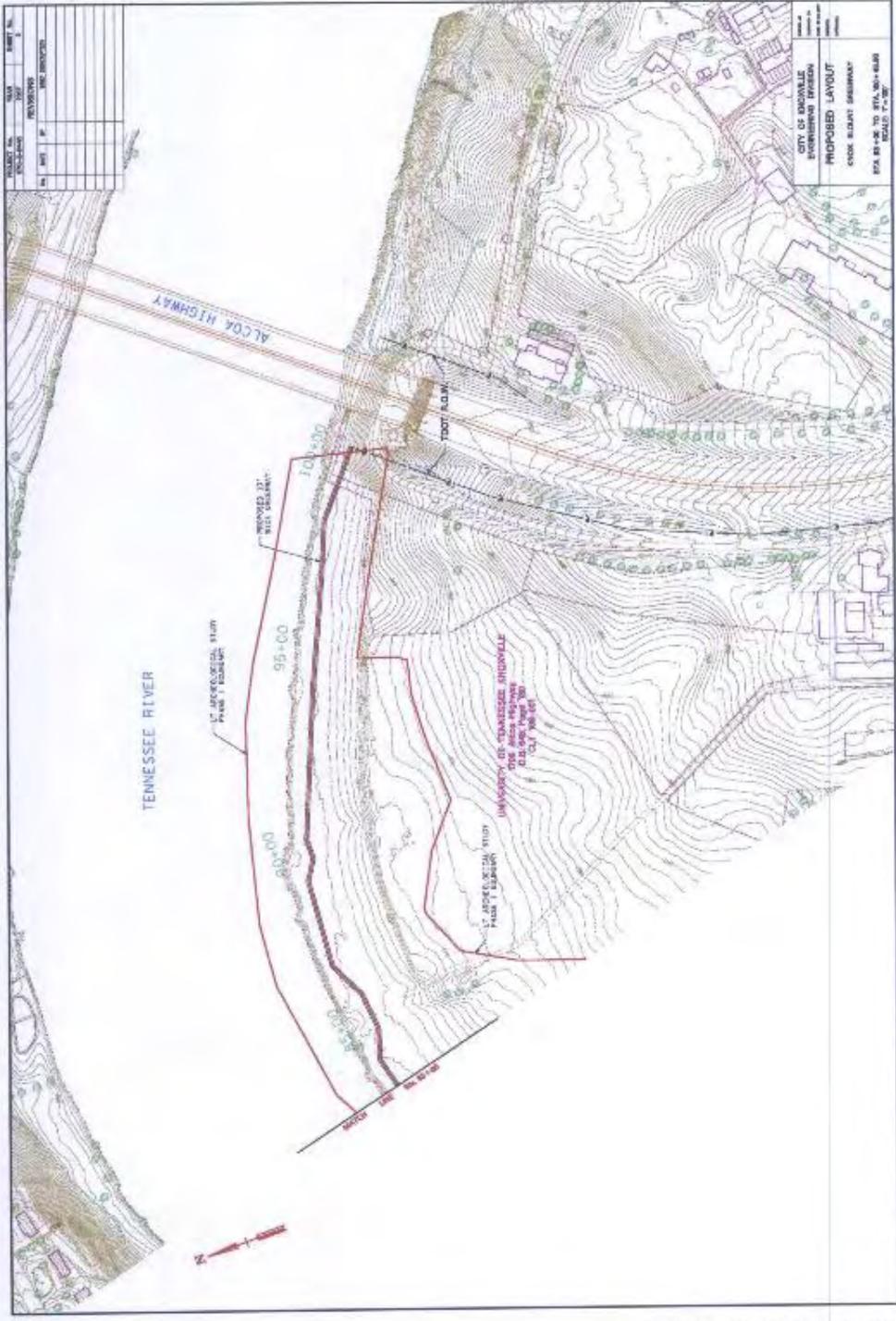
TYPICAL SHORELINE ROCK RIPRAP

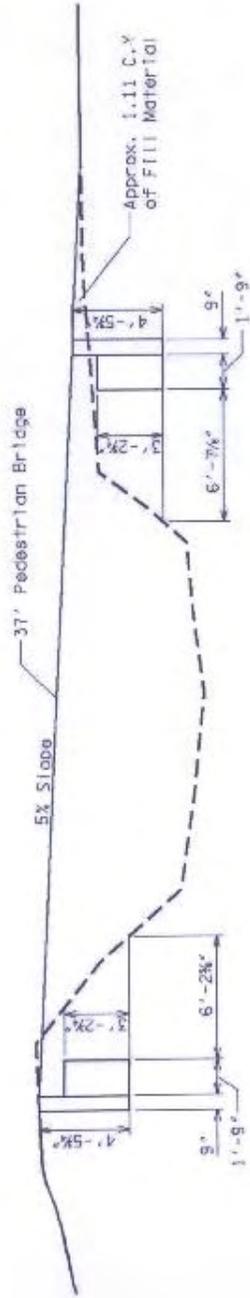
PROJECT LOCATION INFORMATION:

STREAM NAME TENNESSEE RIVER SUBDIVISION NAME N/A
 RESERVOIR NAME FORT LOUDOUN LOT NUMBER PARCEL 001
 MILE MARKER 638 MAP NO. CLT MAP 108

(APPLICANT'S NAME) GEORGE CRISS, DIRECTOR, UNIVERSITY OF TENNESSEE, DIVISION OF FACILITIES

NOTE:
INCLUDE ALL DIMENSIONS AND ELEVATIONS
WHERE INDICATED.



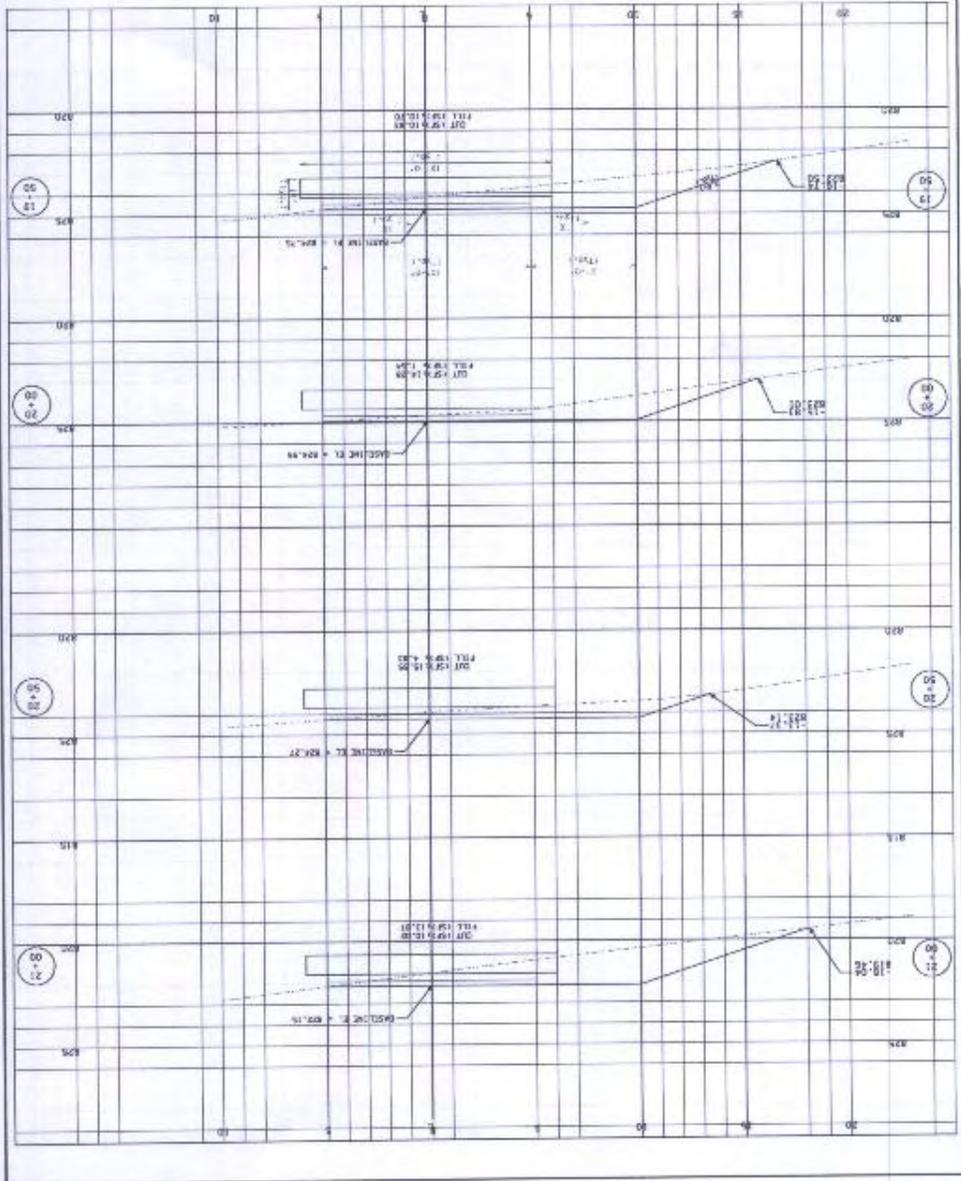


**KNOX - BLOUNT GREENWAY
37' PEDESTRIAN BRIDGE DETAILS
N.T.S.**

FIGURE 1

PROJECT NO.	DATE	BY	CHKD BY
10000000	10/10/00	J. J. J.	J. J. J.
DESCRIPTION	REVISIONS		
	NO.	DATE	DESCRIPTION
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		

CITY OF HOUSTON
 ENGINEERING DIVISION
 CROSS SECTIONS
 ROAD RIGHT OF WAY
 SCALE: 1" = 10' HORIZ. AND 1" = 10' VERT.



PROJECT NO.	DATE		
NO. 3	1997		
REVISIONS			
NO.	DATE	BY	DESCRIPTION

CITY OF KNOXVILLE
 ENGINEERING DIVISION
 CROSS SECTIONS
 8000 ALBERT BERRYWAY
 STA. 1+00 TO STA. 3+00
 SCALE 1" = 2' HORIZ. AND 1" = 4' VERT.

