

**FINDING OF NO SIGNIFICANT IMPACT
TENNESSEE VALLEY AUTHORITY**

Hallsdale-Powell Utility District

**Proposed Section 26a Approval for a
Raw Water Pipeline and Intake on
TVA Tract XMHR-80PT, Opposite Clinch River Mile 46.3,
Bull Run Creek Mile 2.0L, Melton Hill Reservoir, Anderson County,
Tennessee**

Proposed Action and Need

On February 22, 2000, Hallsdale-Powell Utility District (HPUD) submitted a joint application to TVA and U.S. Army Corps of Engineers (USACE) for approval of a new raw water intake structure and excavation at Bull Run Creek Mile (BRCM) 2.0 on the Melton Hill Reservoir in Anderson County, Tennessee. Built in the late 1960s, HPUD operates a water intake system at BRCM 3.9. HPUD presently withdraws up to 8 million gallons per day (mgd) and supplies potable water to about 23,500 residents and businesses in north Knox, Anderson, and Union Counties. Sediment loads in the upper reaches of Bull Run Creek and siltation in the vicinity of the intake and are expected to limit the amount of water available from the existing intake.

The proposed HPUD intake at BRCM 2.0 would initially withdraw approximately 8 mgd with a capacity of 14 mgd. The facility would be upgraded and eventually withdraw up to 22 mgd, as water demand dictates over the next 30 years.

Alternatives

The two alternatives assessed in this EA are the No Action Alternative and the facility approval, or Action Alternative. Under the No Action Alternative, TVA would not issue a Section 26a permit for construction and operation of the raw water intake facility. Under the Action Alternative, TVA would approve the water intake construction and operation.

Impact Assessment

Under the No Action Alternative, there would be no environmental impacts from construction of a new facility. The utility could probably still continue to operate the existing water intake for some time into the future while maintaining current withdrawal levels. HPUD would have to find another source of raw water or it may not be able to continue to supply current and growing future residential, business, and commercial development needs of the area.

If the proposed Action Alternative is implemented, the construction and operation of a new water intake structure would occur, and HPUD would be able to increase its ability to supply water to the north Knox, Anderson, and Union county areas to meet anticipated future demands. Noise, recreation (safety), transportation (watercraft navigation), water quality, property values and aesthetics impacts would be minor and temporary provided required conditions and mitigation measures are implemented. HPUD would be able to increase its water supply capability to better match increasing demand.

Intake construction and operations would temporarily interfere with fishing or other recreation activities during construction or the brief periods of routine flow-back

maintenance. Based on the design criteria, the intake will not trap or harm swimmers, boats, or aquatic organisms, including fish. The intake structures in Bull Run Creek would be marked both upstream and downstream with buoys and a sign would be placed on the shoreline fronting the pump house facility. The structures would have adequate water depth for water collection purposes yet be located in water of sufficient depth to avoid boating accidents. Water quality effects would be minimized by use of best management practices (BMP) including use of a temporary cofferdam. Noise and visual impacts would be mitigated using vegetation buffer plantings and materials, colors, and features incorporated in building, pipeline and intake construction. Neither the construction nor operation of the facility would prevent or affect the use of the nearby recreational day-use area licensed to Anderson County.

There would be no significant affect on the ambient water temperature or the operation of Bull Run Fossil Plant and its compliance with the thermal limits of its National Pollutant Discharge Elimination System permit.

Mitigation

No significant environmental effects are expected to occur from the proposed project provided protective commitments and needed mitigation measures outlined below are implemented. It has been determined that General and Standard Conditions included in TVA Section 26a and Land Use approvals, particularly those associated with shoreline modification, water intakes, and best management practices, will be required to prevent or minimize negative impacts. These are attached in Appendix H. In addition to these conditions, approval of this action will include the following additional mitigation measures.

- During construction HPUD will not remove or damage the solitary tree that exists on the shoreline fronting the proposed pump house facility.
2. HPUD will mark the intake structure with standard regulatory warning buoys both downstream of Henderson Road Bridge and upstream, over the water intake location itself. A warning sign will also be placed on the shoreline fronting the pump house facility. The word "intake" will be added to the buoy over the intake. This buoy will be attached using a 5-foot cable.
 3. Intake will be screened with openings no larger than 1/8-inch, and sized so that velocities through the screen do not exceed 0.5 feet per second.
 4. Noise abatement recommendations as described in the October 26, 2001, Bowlby & Associates, Inc., report will be incorporated into the design plans of the HPUD pump house building and associated water intake facilities. The 55 dBA DNL at the property line will be a condition of approval.
 5. Any changes to the noise abatement design from what is indicated in item #4 above and included in the Bowlby & Associates, Inc. (see Appendix G) report will require that another sound analysis be conducted to determine if the new design meets the performance criteria specified by TVA.

6. HPUD will reduce visual impacts by using light-colored stone or brick for the building and selecting darker tones of muted, natural red-brown colors for both brick and fence materials. The roof parapet will be built high enough to screen views of roof-mounted HVAC and other mechanical equipment. Along with item #1 above, HPUD will plant additional native species of trees in the building yard area and along the shoreline to provide an attractive, intermittent visual buffer as shown in the architectural rendition.

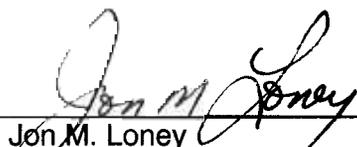
Public and Intergovernmental Review

Public participation opportunities were provided through issuance of an initial public notice, through public meetings, and through issuance of a draft EA for public review. TVA, USACE, and the state of Tennessee issued a joint public notice (01-62) on August 9, 2001. All public and agency issues were addressed in the EA. In a letter dated September 6, 2001, the U.S. Fish and Wildlife Service (USFWS) indicated that there were no threatened or endangered species in the project area and that the requirements of Section 7 of the Endangered Species Act of 1973 were fulfilled. In an October 29, 2001, letter the Tennessee Historical Commission (THC) informed TVA that it had no objection to the project since no historical properties would be affected. TDEC issued its conditional water quality certification for the project on November 4, 2002.

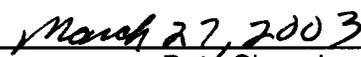
Conclusion and Findings

After review of the EA, TVA finds that the impacts of implementing the Action Alternative and issuance of a Section 26a permit to HPUD for construction of the intake on Tract XMHR-80PT, Melton Hill Reservoir, would be insignificant. In issuing these authorizations, TVA would approve HUPD's proposed construction, operation, and maintenance of underground pipelines and water intake structures in Bull Run Creek. Noise, recreation (safety), transportation (watercraft navigation), water quality, property values and aesthetic impacts would be minor and temporary provided required conditions and mitigation measures are implemented. HPUD would be able to increase its water supply capability to better match increasing demand.

In total, approval of these actions for HPUD would not have a significant impact on the quality of the environment provided the above commitments are implemented. Accordingly, an environmental impact statement is not required.



Jon M. Loney
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Date Signed

FINAL ENVIRONMENTAL ASSESSMENT

**WATER INTAKE FACILITY ON MELTON HILL RESERVOIR
FOR HALLSDALE-POWELL UTILITY DISTRICT
ANDERSON COUNTY, TENNESSEE**

TENNESSEE VALLEY AUTHORITY

In cooperation with
U. S. ARMY CORPS OF ENGINEERS

MARCH 2003

**Volume I – Final Environmental Assessment
And Appendices, Including Responses to Public Comments**

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FINAL ENVIRONMENTAL ASSESSMENT

**WATER INTAKE FACILITY ON
MELTON HILL RESERVOIR FOR
HALLSDALE-POWELL UTILITY DISTRICT
ANDERSON COUNTY, TENNESSEE**

MARCH 2003

Purpose and Need

On February 22, 2000, Hallsdale-Powell Utility District (HPUD) of Knoxville, Tennessee, submitted a joint Tennessee Valley Authority (TVA) and U.S. Army Corps of Engineers (USACE) application for approval of a new raw water intake structure and excavation at Bull Run Creek Mile (BRCM) 2.0 on the Melton Hill Reservoir in Anderson County, Tennessee (Appendix A). Currently, HPUD operates a water intake system at BRCM 3.9 about 2 miles upstream of the proposed site. Built in the late 1960s, the existing intake withdraws up to 8 million gallons per day (mgd). This utility supplies potable water to about 23,500 residents and businesses in north Knox, Anderson and Union Counties. These areas continue to increase in population and water use.

Sediment loads in the upper reaches of Bull Run Creek and siltation in the vicinity of the existing intake are expected to limit the amount of water available. The new intake would allow HPUD to meet expected potable water demands for the foreseeable future. The existing intake at BRCM 3.9 would remain available as a back-up unit and would be operated periodically to maintain its readiness.

The entire HPUD service area is anticipating residential, commercial, and business growth and the industrial water usage is expected to increase between 5 and 12 percent annually over the next 30 years. Growth in the service area is rapid now, but this rate of growth is expected to curtail in future years (see HPUD Project Water Usage from Melton Hill Source in Appendix A). In addition to Oak Ridge, Clinton, Claxton, Karns, suburban northwest Knoxville and other communities, this area includes the Sharps Chapel community and a portion of the Clinch River drainage area around Norris Reservoir in Union County.

The proposed HPUD intake at BRCM 2.0 would initially withdraw approximately 8 mgd with a capacity of 14 mgd. The facility would be upgraded and a third motor and pump would be added to the pump house to eventually withdraw up to 22 mgd, as future water demand dictates. This evaluation of potential impacts and all permits and approvals are based on the proposed maximum withdrawal capacity of 22 mgd.

The Decision

HPUD is proposing to construct and operate a new raw water intake structure at Clinch River Mile 46.3 and Bull Run Creek Mile 2.0 on the Melton Hill Reservoir in Anderson County, Tennessee. TVA must decide whether to approve the project under Section 26a of the TVA Act and USACE must decide whether to approve the project under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. HPUD wants approval for construction of intake and associated facilities capable of supporting a water withdrawal rate of up to 22 mgd.

No allocation change would be necessary for the TVA shoreline strip (Tract No. XMHR-80PT) under which the intake line would be buried. Consistent with its past practice, TVA has allowed utility crossings and water access across planned public land in residential access (Zone 7) where the proposed facilities or corridors would provide public benefits without changing allocation of the land.

Project Description

On its private land, HPUD is proposing to construct a pump house building of poured-in-place, naturally tinted concrete with a stone pattern. The pump house building would initially include two 800 horsepower motors and pumps, with capacity for a third. This building would be approximately 30 feet wide, 40 feet long and 10 feet high. It would be constructed of sound-absorbing materials and designed to minimize noise attenuation from roof-mounted heating, ventilation and air conditioning (HVAC) equipment.

The proposed new pump house building would be constructed on private land with the intake structures placed on TVA property. The buried pipelines and the intake structures would represent the extent of development on TVA property. Tract No. XMHR-80PT, which lies between the proposed pump (station) house building and Melton Hill Reservoir, is a narrow strip of land. It is designated in the Melton Hill Reservoir Land Management Plan as Zone 7, Residential Access (TVA, 1999).

On the TVA land, two buried pipelines would be trenched across Tract XMHR-80PT and into the reservoir bottom. These proposed 30-inch pipes would extend 270 feet from the pump house building to the middle of the channel of Bull Run Creek. The raw water intake structures would be equipped with screens on riser pipes at the ends. These round screens would be 4 feet in diameter, with a 1/8-inch mesh, and 6.5 feet long. They include bullet nose protectors, sized so that velocities through the screen do not exceed 0.5 feet per second, to keep debris from fouling them. The pipes would be completely trenched below the reservoir bottom to about elevation 772.5-foot mean sea level (msl). A temporary cofferdam would be constructed to facilitate the pipeline installation. The intake structures would be anchored to the bottom of Bull Run Creek channel with an 8-foot by 8-foot by 6-foot concrete block.

Operating range for Melton Hill Reservoir is between elevation 790 msl and elevation 795 msl. The reservoir bottom at the intake location is at elevation 778.5 msl. The intake screens would be placed on riser pipes some two feet above the reservoir bottom or at elevation 780.5 msl. The top of the intake screens would be at approximate elevation 784.8 msl or 5.2 feet below Melton Hill's low operating range of 790-foot msl.

The buried pipelines would be approximately 55 feet upstream of the south end of Henderson Road Bridge. The water intake structure, about mid-channel in Bull Run Creek, would be located approximately 70 feet upstream from the bridge.

All excavation for the piping and intake structures below the reservoir surface level would take place inside the temporarily dewatered cofferdam area. The shoreline would be stabilized with riprap and returned to its approximate original condition. To ensure excavated material would not erode into the reservoir, all this material would be removed to an upland disposal site above elevation 800 msl.

HPUD will place a warning sign along the shore fronting the pump house building. Buoys would also be placed both downstream of Henderson Road Bridge and upstream of the bridge, over the intakes. This sign and the two buoys would notify boaters of the intake location.

Other Permits Needed

In addition to approvals from TVA and USACE, approval would also be needed from the Tennessee Department of Environment and Conservation (TDEC) under Section 401 of the Clean Water Act of 1977, certifying that applicable water quality standards will not be violated. On November 4, 2002, TDEC issued this certification.

Issues Addressed in this Environmental Review

In accordance with the National Environmental Policy Act (NEPA), TVA implementing procedures, and Council on Environmental Quality regulations, TVA and USACE have assessed the potential impacts of the project on the environment. Additional details of this proposed federal action, including more recent project revisions, can be found in the joint permit application (see Appendix A). Because of the potential for this project to impact noise, water quality, transportation (watercraft navigation), recreation (safety), and visual resources in the vicinity of the site, as well as to better understand the nature and significance of the impacts of its decision, TVA and USACE have prepared this Environmental Assessment (EA).

Other Sites Considered for this Project

HPUD's proposed site at BRCM 2.0 is just upstream of Henderson Road Bridge on the former Duncan Property. It has good water depth and access and would require relatively low site development costs. Other sites on the Melton Hill Reservoir or elsewhere on Bull Run Creek were considered by the applicant. These other sites would not 1) fulfill the project requirements, 2) meet costs constraints, or 3) offer any environmental advantage over the proposed site. These sites include:

- (1) HPUD's Existing Raw Water Intake – As mentioned, HPUD operates a water intake at BRCM 3.9 about 2 miles upstream of the proposed site. Sediment loads in the upper reaches of Bull Run Creek and siltation in the vicinity of the intake will limit the amount of water available from the existing intake. This siltation is causing shallow water at the intake site and sediment related filtration and treatment problems. Use of the existing intake site would require construction of a new building and this site is adjacent to residential property.
- (2) Old West Knox Utility Site – This existing West Knox County Utility District intake on Melton Hill Reservoir has sufficient water depth, but this site was eliminated from further consideration because of higher energy use, the need to install larger horsepower motors, and the impracticality of laying a new pipeline near an existing one. It would also require retrofitting or building a new intake structure and pipeline construction about twice the distance compared to the proposed site.
- (3) Henderson Road Bridge Site 1,200 feet upstream – This site is privately owned property about 1,200 feet upstream of the proposed site at Henderson Road Bridge (BRCM 2.0). Less than half the pipeline length would be required, therefore, reducing its costs, but

this site has about three feet less water depth and access is difficult because of the steep terrain.

- (4) Henderson Road Bridge – TVA Reservoir Access Property – This site is on TVA property, across New Henderson Road from the proposed site and just downstream from Henderson Road Bridge. It has good access and water depth, but would be closer to downstream residences. This land, which has an existing public boat ramp and parking area, is licensed to Anderson County for recreation purposes. It is allocated for recreation (TVA, 1999) and receives moderate to heavy public use. Water intake construction on this tract would require additional costs and the pump house would be constructed on recreation land, thus negatively impacting recreation use occurring on this area.

Approvals Needed

TVA -- Section 26a of the TVA Act of 1933, as amended, requires approval by TVA for construction of facilities in, along, or across the Tennessee River and its tributaries.

USACE -- Unless authorized by USACE, Section 10 of the Rivers and Harbors Act of 1899 prohibits the alteration or obstruction of any navigable waters. Also, Section 404 of the Clean Water Act of 1977, as amended, prohibits the discharge of dredge or fill material into waters of the United States without a USACE permit.

Public Involvement

USACE, TVA, and the state of Tennessee issued a joint public notice (01-62) on August 9, 2001 (Appendix B). In a letter dated September 6, 2001, the U.S. Fish and Wildlife Service (USFWS) indicated that there were no threatened or endangered species in the project area and that the requirements of Section 7 of the Endangered Species Act of 1973 were fulfilled (see Appendix B). In an October 29, 2001, letter the Tennessee Historical Commission (THC) informed TVA that it had no objection to the project since no historical properties would be affected (see Appendix B).

Initially, TVA, USACE and HPUD received 67 letters or e-mails and several phone calls from interested individuals who opposed the project. Several of these individuals own homes in the general vicinity of the proposed water intake facility. Their concerns were the potential for noise from the intake pumps; visual impacts to the area; loss of property values; impacts to water recreation; the safety of swimmers and boaters; the apparent shallowness of water at the proposed site; the potential for an increase in the fluctuation of water levels; a potential decrease of water levels in Bull Run Creek; the use of alternative sites; and impacts to wildlife, wetlands, water temperature and water quality. In addition, many of those that commented asked for a public meeting to gain a better understanding of the project and express their views.

A notice of a public meeting appeared on the TVA external web site on January 8, 2002, and in the *Knoxville News-Sentinel* on January 20, 2002, informing the public that a meeting would be held on January 24, 2002, at Claxton Elementary School in Anderson County, Tennessee. The notice further stated that the public comment period would close February 15, 2002. At the meeting 32 people registered. A stenographer recorded the presentations of the speakers and comments of the 16 people who spoke (Appendix C and Volume II).

During the meeting and subsequent comment period 70 written comments were received from individuals about the project. TVA responses to these comments are included in Appendix D.

Following this public meeting, HPUD provided follow-up letters with project information to those individuals who registered at the meeting and provided responses to concerns by the permitting agencies and other interested individuals (Appendix E and Volume II). Furthermore, HPUD addressed comments at a March 5, 2002; meeting of the Melton Hill Lake Users Association. On March 18, 2002, the Anderson County Board of Commissioners passed a resolution opposing the construction of an intake facility at this site. The Commission resolution stated concerns about high noise levels, reduced property values, effects on recreation and water levels and suggested the project would be of no benefit to Anderson County. The newly elected Commission reaffirmed its opposition to the project in September, 2002. These issues are addressed in this EA.

Scoping

Public comments on the proposal primarily focused on the potential effects on noise, water quality, recreation, transportation, and visual effects to private property owners along the Bull Run Creek embayment. The issues and other information conveyed during the scoping process were used by TVA and USACE to identify potential environmental issues associated with the project. Because of the nature of the project, TVA determined that, other than ordinary solid construction waste, there would be no waste stream generation or alteration. Likewise, TVA determined that there would be no potential or minimal effects on streams (modification), groundwater, floodplains, property values, wetlands, historic structures or sites, archaeological resources, terrestrial ecology, or protected and sensitive plant or animal species (see TVA's Environmental Decision Record (EDR) in Appendix F). Impacts on noise, recreation (safety), transportation (watercraft navigation), property values, water quality and aesthetics, as evaluated in this EA, would be minor or temporary provided general and standard permit conditions and other required mitigation measures are implemented to minimize or offset negative environmental effects.

The proposed pipelines and intakes would be buried under TVA land allocated in the 1999 Melton Hill Land Use Plan for residential access. The change in use of the property adjoining the TVA shoreline for a non-residential use would be brought about because of the change in ownership of the back-lying property. This back-lying property, which was previously in residential use, has now been acquired by HPUD from the Duncan family. TVA has no control over the change in use of this back-lying property since it is not owned by TVA. Although the TVA strip of land (Tract No. XMHR-80PT) would be temporarily used for laying the underground water line, the surface rights over this strip would continue to remain with TVA.

Noise, aesthetics, recreation (safety), property values and water quality are substantive issues of public concern (see Appendix E) that could be affected by construction of a water intake structure at this site (BRCM 2.0). Further study of the effects of the proposed intake on these resource issues is analyzed and disclosed in this EA.

Comments on the Draft EA

TVA circulated the draft EA to 11 federal and state agencies for review and comment on August 3, 2002 (see Agencies and Other Consulted). On September 1, 2002, the DEA was

posted on the TVA web site. On September 15, 2002, a public notice for the availability of the DEA was published in the Knoxville News Sentinel and Oak Ridger newspapers.

TVA and USACE received additional letters from interested people concerning the DEA. These include a September 20, 2002 letter from Mr. Terrence J. Bobrowski of the East Tennessee Development District, an October 2, 2002 letter from Mr. Howard R. Dryer, and a September 18, 2002 form letter (representing 137 individuals) from the Concerned Residents of Melton Hill Lake. Letters from stakeholders are included in Volume II.

TDEC issued its conditional water quality certification for the project on November 4, 2002 (see Appendix B). On October 24, 2002, TVA was informed by phone and e-mail that the USFWS had no further comment.

Alternatives and Comparison

Action Alternative

The proposed actions need approvals under Section 26a of the TVA Act of 1933, Section 10 of the Rivers and Harbors Act of 1899, and Section 404 of the Clean Water Act of 1977. These authorizations, issued by TVA and USACE, respectively, would allow HPUD to construct and operate a raw water intake at Clinch River Mile 46.3 and BRCM 2.0 on Melton Hill Reservoir.

Water intake operations would temporarily interfere with fishing or other recreation activities during construction or for the brief periods of routine flow-back maintenance. Based on the design criteria, the intake will not trap or harm swimmers, boaters, or aquatic organisms, including fish. The intakes would be marked both upstream and downstream with a buoy and a single sign would be placed on the shoreline fronting the pump house facility. These warning structures would be permitted to HPUD, under Section 26a, as a part of this proposal. The intake structure in Bull Run Creek would have adequate water depth for water collection purposes yet be located in water of sufficient depth to avoid boating accidents. Potential water quality effects would be minimized by use of best management practices (BMP) including use of a temporary cofferdam. Noise and visual impacts would be mitigated using vegetation buffer plantings and materials, colors and other design features incorporated in building, pipeline and intake construction. Because the proposed intake facility would be fenced and effects on noise and aesthetics mitigated, the construction and operation of the facility would not prevent or affect the use of the boat ramp and parking areas for their intended purposes.

Water from Melton Hill Reservoir (Clinch River) would enter Bull Run embayment to replace the water withdrawn, but this would not significantly affect the ambient water temperature, water level, or the operation of Bull Run Fossil Plant and its compliance with the thermal limits of its National Pollutant Discharge Elimination System permit.

No Action Alternative

Under the No Action Alternative, TVA would not issue Section 26a approval, and USACE would not issue Section 10 or Section 404 permits to HPUD for construction and operation of the raw water intake facility.

Comparison of Alternatives

If the proposed Action Alternative is implemented, the construction and operation of a new water intake structure would occur, and HPUD would be able to increase its ability to supply water to the north Knox, Anderson and Union County areas to meet anticipated future demands. Noise, recreation (safety), transportation (watercraft navigation), water quality, property values and aesthetic impacts would be minor or temporary, provided required general and standard conditions and mitigation measures are implemented. If the No Action Alternative is adopted, the water intake would not be constructed and no environmental impacts would occur. However, HPUD would have to find another source of raw water or may not be able to continue to supply current and future water needs of residents, business and industry in the district.

Summary of Impacts under the proposed Action Alternative

- There would be minor and temporary siltation and runoff increases in the construction area and downstream.
- There would be other minor impacts to the environment as noted in the EA.
- HPUD would be able to increase its water supply capability to better match increasing residential and commercial demand.

Summary of Impacts under the No Action Alternative

- There would be no environmental impacts caused by construction of a new facility.
- The utility could probably still operate the existing water intake for some time into the future while maintaining current withdrawal levels. However, there would be less likelihood of the utility being able to supply water to meet growing future residential, business and industrial development needs.

Preferred Alternative

TVA's preferred alternative is to permit HPUD to construct and operate a raw water intake structure at Clinch River Mile 46.3 and BRCM 2.0, Melton Hill Reservoir, Anderson County, Tennessee.

USACE is prevented by regulations from being for or against an applicant's proposal during permit or approval evaluations.

Affected Environment

General Site Description and Property Setting

The site is on private property near the New Henderson Road Bridge over BRCM 2.0 on the Melton Hill Reservoir. The property has been used for agriculture (pasture/hay) for several years. Access to the site is provided via New Henderson Road just south of Henderson Road Bridge. The nearest home to the east is on the adjoining property and is estimated to be 600 feet away from the site. The next closest residence, about 750 feet away, is directly across Bull Run Creek on the right bank. Other homes are located a greater distance away. Henderson Bend Subdivision is located 0.7 of a mile south of New Henderson Road. Bull Run Fossil Plant reservation is within one mile downstream of the proposed site. The land

use in the immediate area consists of low density residential, small agricultural fields, woodlots and a wooded ridge. An area, licensed to Anderson County for recreation use purposes, is directly across New Henderson Road. The nearest communities are Oak Ridge, about three to four miles to the west across Melton Hill Reservoir, and Claxton about two miles east on Highway 170 (Edgemoor Road).

Generally, the valleys and lower ridge slopes of this province have been cleared for agricultural use. The broader valleys support the more productive farms; yet, even the narrowest valleys support subsistence farming. Lower slopes, and in some cases the ridges themselves, have been cleared for pasture or hay production. Row crops are typically restricted to the broad valley floors. Generally, the ridges are forested, although some areas have been repeatedly logged.

Water Quality

Melton Hill Dam is located on the Clinch River at river mile 23.1. The drainage area upstream of the dam is 3,343 square miles. Rainfall in the area averages about 47 inches per year. March is typically the wettest month and October the driest, with 5.1 inches and 2.8 inches of precipitation, respectively. The average monthly air temperature ranges from 36°F in January to 77°F in July, with a mean for the year of about 58°F. Stream flow varies with rainfall and reservoir operations, with an annual average of about 4,900 cubic feet per second (cfs). During the last 40 years, the mean annual flow at the dam has ranged from 2,100 cfs in the driest year to 8,100 cfs in the wettest year.

Melton Hill Reservoir is 44 miles long, with a maximum depth of 65 feet at the forebay. It has a surface area of 5,690 acres and impounds 120,000 acre-feet at the higher reservoir operating elevation of 795 feet msl. At the average flow rate and water surface elevation, the reservoir has a mean depth of 21 feet and a hydraulic residence time of 11 days.

Bull Run Creek has a drainage area of 104 square miles and a mean annual flow of about 62 cfs. The proposed water intake is located approximately 2 miles upstream of the mouth of Bull Run Creek. Stream flow records from a United States Geological Survey gauging station at BRCM 16.3, with a drainage area of 68.5 square miles, indicate a mean annual flow of 40.8 cfs and a 7-day, 10-year low flow (the minimum 7-day low flow that occurs once in 10 years) of 5.29 cfs.

TDEC classifies Melton Hill Reservoir downstream of Bull Run Creek as capable of providing for domestic and industrial water supply, fish and aquatic life, recreation, irrigation, livestock watering, wildlife and navigation. The reservoir is on the state 303(d) list of impaired waters as not supporting its designated uses due to polychlorinated biphenyls (PCBs), chlordane and siltation from contaminated sediment and industrial point sources. The state advises against eating catfish from the reservoir because of PCB contamination. There are no advisories warning about risks of swimming in Melton Hill Reservoir. Largely because of excrement from resident Canada geese, fecal coliform bacteria levels in samples collected by TVA in 2000 exceeded state water quality criteria for water contact recreation at three of the six sites sampled.

Bull Run Creek, upstream and immediately downstream of the proposed intake site, is classified by the state as capable of providing for domestic water supply, fish and aquatic life, recreation, irrigation and livestock watering and wildlife. Foster and Williams Branches, both of which are confluent to Bull Run Creek, are on the state 303(d) list as partially

supporting designated uses due to siltation from industrial runoff. The quality of the raw water, including turbidity, in the main reservoir is good and comparable to the other sites considered for this project.

Recreation (Safety)

Bull Run Creek, in the vicinity of the intake site, is fairly narrow, but provides navigable slack water under the Henderson Road Bridge. A wide variety of boats and other personal watercraft are operated in this area. The intake structure would be located in the creek embayment of Melton Hill Reservoir about 70 feet upstream of the bridge. The embayment in the vicinity of the intake is about 650 feet wide and is used by recreational vessels such as fishing boats and personal watercraft. An area, licensed to Anderson County which provides a boat ramp, courtesy dock and parking, is directly across New Henderson Road from the proposed site. People boat in the embayment and fish around the bridge. Substantial numbers of people, including swimmers, picnickers, bank fishers and sunbathers, use this reach of Bull Run Creek embayment and the nearby recreation area during the summer months.

Transportation (Watercraft Navigation)

There is no commercial navigation on Bull Run Creek. The reservoir bottom at the intake location is at elevation 778.5 msl. At low operating range for Melton Hill Reservoir, elevation 790 msl, the mid-channel depth is 11.5 feet. The top of the intake screens would be at elevation 784.8 msl or 5.2 feet below the reservoir's low operating range. At its shallowest depth, at least 5 feet of water would overtop the intake. The intake meets the requirement for adequate water depth for recreational watercraft to pass.

Henderson Road Bridge is a 5-span concrete bridge built in the early 1960s. It is about 200 feet in length with 4 support pilings in the creek. The pilings, centerline to centerline, are 47 feet apart. Boaters can maneuver their boats through three spanned openings about 20 feet wide between these pilings. At the approximate middle of the creek channel, the bridge is about 70 feet downstream of the proposed intake location. As mentioned above, a wide variety, but unknown number, of recreational boaters uses this portion of Bull Run Creek embayment. These are more typically relatively low to moderate horsepower fishing and pleasure boats. Both an upstream and a downstream warning buoy, along with a sign on the shoreline, would notify boaters of the presence of the intake. The upstream buoy would be placed over the intake.

Noise

The proposed site is a small lot located immediately adjacent to and east of New Henderson Road in Anderson County, Tennessee. A farm or pasture (the Duncan property) borders the site on the south and east with Bull Run Creek (Melton Hill Reservoir) on the north. The 1200 square-foot intake pump (station) house would contain two 800 horsepower motors and pumps, with capacity for a third. The structure will be 12 feet from the Duncan property line on the east side and 7 feet away on the south side. The nearest home to the east is on the adjoining property and is estimated to be 600 feet away from the proposed pump house building. The next closest residence, about 750 feet away, is directly across Bull Run Creek on the right bank. Other homes are located a greater distance away. Henderson Bend Subdivision is located 0.7 of a mile south of New Henderson Road. See Property Values below.

Both day and night, intermittent operations of the pump house facility would take place as dictated by district water use and some seasonal sound-level variation is expected.

Therefore, U.S. Environmental Protection Agency (USEPA) criteria for day-night equivalent sound levels (DNL) are used in the noise study for this project. Seasonal sound variation was also considered.

As illustrated below, DNL is a single number in decibels (dB) that represents the average of the sound energy represented by all of the daytime and nighttime sound levels, with 10 dB added to all nighttime levels to account for people's increased sensitivity to noise at night. Because the pumps at the proposed facility would operate year-round, time of year or seasonal sound variation was taken into account by using an annual average DNL.

The time period for the day/night equivalent sound level (DNL) is 24 hours. The calculation of the DNL is given in the equation below.

$$DNL = 10\log \{1/24[15*10^{LD/10} + 9*10^{(LN+10)/10}]\}$$

Where: LD – equivalent sound level day (0700 to 2000)
 LN – equivalent sound level night (2000 to 0700)
 (Includes 10 dBA penalty for night noise emissions)

The noise study, conducted by Bowlby & Associates, Inc. (see Appendix G), measured noise levels at the site ranging from a low of 36 dBA for nighttime in May to a high of 57 dBA during August summer evenings. Levels of 55 dBA also occur regularly during rush hour throughout the year due to traffic on New Henderson Road. The annual average DNL for the site was computed to be 54 dBA.

Visual Resources

The visual character of the surrounding area is a mix of open fields, scattered homes with other subdivisions, broad lawns and a few private docks, interwoven with a woodland background. The area slopes gently to the water and is surrounded by moderately steep, wooded hills. The Bull Run Fossil Plant stack and several transmission line towers are visible above the ridge tops. Together, these elements form a somewhat tranquil, generally harmonious, rural residential landscape. Henderson Bend Subdivision, where the more expensive homes are built, is about 0.7 miles away. See the Property Values section below about views of the proposed facility from other subdivisions.

The water intake site, located on the south side of the embayment, can be seen in the foreground from several surrounding homes, the launching area, boats in the embayment and passing motorists on New Henderson Road. Visual integrity is low, and scenic value is fair. The site is an open, grassy area that is part of a larger field, with a tree and some brush near the water. An area licensed to Anderson County, which includes a public boat launching ramp, is located across the road, west of the proposed intake location.

Property Values

The proposed pump house and intake site is located adjacent to and east of New Henderson Road. The 1200 square foot building would be located within 35 feet of the

road right-of-way. The property is identified on Anderson County tax records as parcel 102-151.04 and is zoned R-1 which is the standard single family residential zoning in Anderson County, Tennessee.

Tax records suggest that homes in the vicinity of the project are generally valued in the \$200,000 to \$450,000 range, with some exceptions. The nearest home to the east is on the adjoining property and is estimated to be 600 feet away from the proposed pump house building. This home is a modest residence estimated below \$100,000 in value. The next closest residence, about 750 feet away, is directly across Bull Run Creek on the right bank. Its value would probably fall within the above referenced range. Other homes are located a greater distance away. These residential areas, from which the building site could be observed, include Melton Hill, Meadows Lake and Spring Hill Subdivisions. Henderson Bend Subdivision, from which building could not be viewed, is located 0.7 of a mile south of New Henderson Road. Its residents would drive by the building when commuting in and out of this area.

Environmental Consequences

Water Quality

Construction activities associated with the proposed project would result in soil disturbances, with a potential for water quality impacts. Erosion and sedimentation from the intake construction would contribute to minor short-term increases in turbidity and negatively affect aquatic life. Safeguards, as indicated below, would be included in the project design, construction and maintenance to minimize these potential impacts.

BMPs, such as silt fences, staked hay bales, or sediment detention basins would be implemented to control erosion, sedimentation and turbidity associated with construction activities and installation of the intake facilities. A temporary cofferdam would also be constructed to allow dewatering of the area to facilitate pipeline trenching below the elevation of Bull Run Creek embayment water. Only a minimal amount of vegetation along the shoreline necessary to construct the facilities would be disturbed. The shoreline would be stabilized with riprap and returned to its approximate original condition.

There is also a potential that water withdrawals could affect stream flows, water levels, water temperatures and other water quality conditions. The withdrawal of 22 mgd (34 cfs) from Bull Run Creek would not be a significant concern because of the abundance of water from the Melton Hill Reservoir (34 cfs is less than one percent of the average reservoir flow). The Bull Run Creek embayment extends several miles upstream above the intake location, providing year-round water from the reservoir rather than solely from the flow in the creek. During periods of low flow in Bull Run Creek and during other times, the intake would withdraw needed amounts of reservoir water from the Bull Run Creek embayment. This movement of reservoir water into the embayment would probably benefit water quality by increasing reservoir circulation. Because the 22 mgd would be used in the Clinch River watershed and returned to the watershed through sewer and septic flows, the water balance of the area would not be negatively affected. Other than water losses through evaporation, evapotranspiration, etc., HPUD estimates that 80 percent of the water removed at this proposed new water intake location would be returned to the Clinch River (Melton Hill Reservoir) system. This would amount to some 17.6 mgd. About 44 percent of this consumption would be returned via wastewater discharge while roughly 36 percent, including that portion returned through subsurface flow or groundwater from leakage,

irrigation, etc., would be returned through sewer, septic and other forms of soil infiltration in the watershed.

Only one tree currently exists on the shoreline fronting the proposed pump house facility. HPUD would avoid this tree during construction to ensure its survival. No change in water temperature is expected as a result of tree canopy or other minor vegetation removal. Water temperatures and reservoir levels would not be altered significantly, since the net withdrawal of about 15 cfs is small relative to the average reservoir flow (4,900 cfs) and the reservoir volume (TVA, 2001). This net of 15 cfs is based on a 34 cfs withdrawal from Bull Run Creek and a 19 cfs return flow from the wastewater discharge located downstream of Bull Run Creek. TVA's analysis indicates that this downstream discharge will have no observable temperature effect on the Bull Run Creek embayment. Due to the small potential changes, the short duration of low flows and the large reservoir volume that would disperse any slightly warmer water and promote surface heat dissipation, the water temperature changes are not expected to affect reservoir water quality.

Recreation (Safety)

Water intake operations would temporarily interfere with fishing, boating, swimming and other recreation activities during construction. Recreation could also be disrupted during brief periods of routine flow-back maintenance to remove debris from the intake screens. Based on the design criteria, the intake will not trap or harm swimmers, boats, or aquatic organisms, including fish. Further, the marking of the intake structure with buoys and the placement of a sign on the shoreline would warn boaters and swimmers of the presence of the structure.

The pump house building would be located across the road from the day-use recreation and launching ramp area. Because the proposed intake facility would be fenced and effects of noise and aesthetics mitigated, the construction and operation of the facility would not prevent or affect the use of the boat ramp and parking areas for their intended purposes.

The buried intake pipelines would be approximately 55 feet upstream of the south end of Henderson Road Bridge. The water intake structure, about mid-channel in Bull Run Creek, would be located approximately 70 feet upstream from the bridge. Therefore, swimmers in the vicinity of the bridge area would not be in any danger from the intake structure 70 feet away.

Transportation (Watercraft Navigation)

The intakes would be marked both upstream and downstream with buoys and a sign would be placed on the shoreline fronting the pump house facility. The intake structure in Bull Run Creek would have adequate water depth for water collection purposes yet be located in water of sufficient depth to avoid boating accidents. Watercraft expected to use this portion of the embayment have adequate space to navigate between the pilings under the bridge and maneuver around both the buoys and the intake. Thus, no impact to recreational boat navigation is anticipated.

Noise

Without noise abatement, pumps and the air conditioner at the building would generate noise levels of 44 to 57 dBA DNL at the property line. A noise level of 57 dBA DNL would exceed background noise levels at the site during much of the year. To minimize impacts, TVA would require that the sound level at the property line generated by the facility not be

greater than 55 dBA DNL. The 55 dBA DNL is a guideline published by the USEPA in its document, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March 1974, Office of Noise Abatement and Control, USEPA.

Noise abatement methods, including use of concrete walls, sound absorbing panels, and a noise barrier for the roof-mounted air conditioners would reduce sound levels at the site. TVA has reviewed the revised building design and determined that the noise abatement measures recommended in the Bowlby & Associates study must be incorporated into the design of the pump house building. These measures would reduce noise levels from the building to a level of 48 to 50 dBA DNL, well below the average background noise measured at the site. Based on this analysis, the potential environmental noise effects of the proposed pump house building would be insignificant.

See the Bowlby & Associates, Inc., noise study in Appendix G.

Visual Resources

In the context of the existing land uses surrounding the proposed project site, the visual character of the rural landscape would not change much and the potential impact would be insignificant. Visual integrity and scenic value of the area would remain about the same. Earthwork, material stockpiles and construction activities would temporarily add visual discord until final project cleanup and landscaping are completed. The building and screen fencing would be a relatively small facility and would easily blend with the scattered rural residential scale of surrounding development. The facility would be seen from the same locations described under Visual Resources in the Affected Environment Section.

Light-colored stone and fencing materials, shown in the architectural concept, would add moderately discordant visual contrast. The contrast would be minimized by using brick for the building and selecting darker tones of muted, natural red-brown colors for both brick and fence materials as shown in the architectural concept. Use of these colors along with the proposed dark gray shingled roof would repeat the predominant materials of nearby homes for greatest visual compatibility. The roof parapet is expected to be high enough to screen views of roof-mounted HVAC (heating, ventilation, and air conditioning) units and other mechanical equipment. Planting additional trees in the building yard area and near the shoreline would provide an attractive, intermittent visual buffer (see architectural rendition of the facility exterior in (see Appendix A).

Provided these mitigative measures are implemented, there would be no significant visual impacts.

Property Values

TVA conducted a field inspection of the proposed development site and surrounding community was conducted on March 12, 2003. Additionally, a water plant in Florence, AL, with similar design features was visited on March 14. This facility, operated by the Florence Utility Department, is a concrete building that houses three pumps with a 21 mgd capacity. The building is a concrete structure with a metal roof. This site visit helped TVA staff to better understand the noise and aesthetic effects of the proposal on property values.

No noise could be heard until the observer was about 150 feet from the building. No negative aesthetic impacts were discerned as a result of the location of the Florence water plant.

Mitigation designed into development and operation of the HPUD pump house building and intake will reduce aesthetic, noise and other potentially negative effects. Based on this mitigation and also the operating experience of the similar facility in Florence, AL, TVA has determined that construction and operation of this water intake and associated facilities will not adversely affect local property values.

Cumulative Impacts

The direct physical effect of the proposed action is limited in scope and is restricted to one small grassy site. The withdrawal of 22 mgd of water from Melton Hill Reservoir would neither affect the amount of water currently available for other purposes nor the availability of water for residential, commercial, or industrial purposes for the foreseeable future. If current population and migration trends continue, the need for potable water for residential and commercial use will likewise increase. The continued expected increase in agriculture, highway, commercial, business and general rural and suburban development is likely to further reduce existing vegetation cover throughout the Clinch River and Bull Run Creek watershed area. This future development would likely continue to contribute to increasing siltation and generally decreased water quality and volume in the area's streams, regardless of which alternative is selected. Expected population increases along with these developments will also cause changes to the background noise levels, the character of the visual landscape, and likely bring increased demands for reservoir oriented recreation.

As growth occurs in the area, it is anticipated that future projects, as with past actions, will involve some impacts to aesthetics, noise levels, recreation, transportation (watercraft navigation), water quality, aquatic resources and surrounding natural resources. Secondary impacts of the proposal and anticipated future development, such as those that could occur on visual, noise, water quality and recreational use opportunities in this reach of Bull Run Creek are anticipated to be minor. Based on reasonably foreseeable water withdrawal demand for residential, commercial, industrial and other uses, TVA does not believe that water shortages would be caused by approval of this project. Therefore, with the use of standard practices, permit conditions and the additional mitigation measures proposed, the HPUD raw water intake project, in combination with past, present and reasonably foreseeable future actions, would not lead to adverse trends or degradation of these environmental resources on Melton Hill Reservoir or the surrounding area. Because of conditions and mitigation requirements that are normally placed on TVA and USACE permit actions, cumulative effects to resources in these watersheds are substantially reduced and are anticipated to be minor. Therefore, TVA has determined that cumulative impacts of this action would be insignificant.

Mitigation Measures

No significant environmental effects are expected to occur from the proposed project provided protective commitments and needed mitigation measures outlined below are implemented. It has been determined that General and Standard Conditions included in TVA Section 26a and Land Use approvals, particularly those associated with shoreline modification, water intakes and best management practices, will be required to prevent or minimize negative impacts (see conditions checked in Appendix H). In addition to these conditions, approval of this action will include the following additional mitigation measures that will also be included in HPUD's Section 26a permit.

1. During construction HPUD will not remove or damage the solitary tree that exists on the shoreline fronting the proposed pump house facility.
2. HPUD will mark the intake structure with standard regulatory warning buoys both downstream of Henderson Road Bridge and upstream, over the water intake location itself. A warning sign will also be placed on the shoreline fronting the pump house facility. The word "intake" will be added to the buoy over the intake. This buoy will be attached using a 5-foot cable.
3. Intake will be screened with openings no larger than 1/8-inch, and sized so that velocities through the screen do not exceed 0.5 feet per second.
4. Noise abatement recommendations as described in the October 26, 2001, Bowlby & Associates, Inc., report will be incorporated into the design plans of the HPUD pump house building and associated water intake facilities. The 55 dBA DNL at the property line will be a condition of the Section 26a approval.
5. Any changes to the noise abatement design from what is indicated in item #4 above and included in the Bowlby & Associates, Inc. (see Appendix G) report will require that another sound analysis be conducted to determine if the new design meets the performance criteria specified by TVA.
6. HPUD will reduce visual impacts by using light-colored stone or brick for the pump house building and selecting darker tones of muted, natural red-brown colors for both brick and fence materials. The roof parapet will be built high enough to screen views of roof-mounted HVAC and other mechanical equipment. HPUD will plant native species of trees in the building yard area and along the shoreline to provide an attractive, intermittent visual buffer as shown in the architectural concept (see Appendix A)

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Agencies and Others Consulted

- East Tennessee Development District
Tennessee Commission on Indian Affairs
Tennessee Department of Environment and Conservation
 Division of Natural Heritage
 Division of Water Pollution Control
 Environmental Policy Office
 Tennessee Historical Commission
Tennessee Department of Economic and Community Development
Tennessee Department of Transportation
Tennessee Wildlife Resources Agency
U.S. Army Corps of Engineers
U.S. Department of the Interior, Fish and Wildlife Service

References

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Appendices

- A. Joint Application and Plans
- B. External Review and Coordination
- C. Joint Public Notice
- D. Responses to Public Comments on the Proposed Hallsdale-Powell Utility District's Water Intake Facility on Bull Run Creek
- E. Public Meeting Notice, Outline, and Information
- F. Environmental Decision Record RLR 100330, Hallsdale-Powell Utility District, Water Intake Structure, TVA, Lenoir City, Tennessee, April 2002
- G. Bowlby & Associates, Inc., Noise Study
- H. General and Standard Conditions Section 26a and Land Use