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## DRAFT ENVIRONMENTAL ASSESSMENT

# SPRING CITY TO WATTS BAR NUCLEAR PLANT SEWER LINE EXTENSION Rhea County, Tennessee

TENNESSEE VALLEY AUTHORITY

MAY 2005

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### SPRING CITY TO WATTS BAR NUCLEAR PLANT SEWER LINE EXTENSION RHEA COUNTY, TENNESSEE

#### TENNESSEE VALLEY AUTHORITY

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#### **The Proposed Decision and Need**

The Tennessee Valley Authority (TVA) currently operates a sanitary sewage treatment system at the TVA Watts Bar Nuclear Plant (WBN). The existing WBN sewage treatment plant is 30 years old and is estimated to have only 8 to 10 years of life remaining. There are three potential TVA decisions/actions associated with this proposal. First, TVA needs to decide whether or not to contract with the Town of Spring City for sanitary sewage treatment services. This will require the construction of a new 7.5 mile sewer line extension to WBN. This will also support Spring City's plan to upgrade its existing wastewater treatment plant. Second, TVA needs to decide whether or not to grant an easement for construction of the sewer line along TVA property to the WBN facility. Third, based upon the final technical design features of the project, TVA approval may be needed under Section 26a of the TVA Act if the sewer line extension crosses streams in the area.

#### **Background**

The WBN Power Plant has a dedicated sewage treatment plant that currently treats an estimated 29,500 gallons of domestic sanitary sewage per day based on two years of historical data. The effluent is discharged to Chickamauga Reservoir. The existing WBN wastewater treatment plant is 30 years old and has only 8 to 10 years of remaining life. Operation of the WBN wastewater treatment plant has resulted in occasional exceedances of WBN's National Pollutant Discharge Elimination System (NPDES) permit over the past 10 years. Transfer of the WBN waste stream to the Spring City wastewater treatment plant would consolidate operation and maintenance efforts and increase the biological loading of the Spring City treatment plant. TVA would dispose of sanitary wastes in accordance with 10CFR 20.2003, *Disposal by Release into Sanitary Sewerage*.

On March 9, 2001, TVA WBN issued a Request for Proposal to replace their present wastewater treatment facility with services from a municipal facility. The Town of Spring City responded with a proposal dated April 14, 2001. On June 15, 2001, representatives from TVA, Spring City, and Environmental Systems Corporation (ESC) met with representatives of the U.S. Department of Agriculture (USDA), Rural Utility Services (RUS) to discuss the proposed project. TVA submitted a non-binding Letter of Interest to the Town of Spring City on September 25, 2001. The letter expressed interest in entering into an agreement for the Town to provide wastewater treatment services for the WBN and made provisions for granting an easement for a sewer line to be placed and maintained on TVA property, if and when, an agreement is reached between the two parties.

With this RUS funding the Town of Spring City also plans to upgrade its sewage treatment plant, as well as extend a sewer line 7.5 miles from the Spring City Wastewater Treatment

Plant to WBN. The Spring City wastewater treatment plant has a history of problems related to low biological loading and mechanical operations of the plant, as well as having design deficiencies which would also be corrected through this proposed project upgrade to provide more satisfactory treatment and to prevent releases of untreated or partially treated wastewater to Watts Bar Lake. Unrelated to the TVA sewer line, the Town of Spring City has requested and received a grant from the Tennessee Department of Environment and Conservation (TDEC) for funds to extend the discharge line from their wastewater treatment facility further in order to improve water quality in the Piney River Embayment of Watts Bar Reservoir.

The extension and upgrades of sewerage service associated with the present proposal evaluated herein, would allow the Town of Spring City to provide wastewater treatment services to a portion of Rhea County, south and east of the town, which includes WBN. Re-routing WBN domestic wastewater to the Spring City facility would enable TVA to close the existing WBN treatment plant and eliminate a NPDES discharge location, as well as the associated operation and maintenance cost from operating an onsite wastewater treatment plant. While the existing designed capacity of the Spring City wastewater treatment system is already adequate to provide the additional treatment services to locations in that area where septic system wastewater treatment is currently in use, no sewer line or lift stations are in place to provide this service. Approximately 202 county residences and 10 businesses in the area of new sewerage service currently provide their own wastewater treatment with septic systems.

Total initial funding for Spring City's sewer line extension and wastewater treatment plant upgrades would be provided by a grant and loan combination from RUS. Loan payback funding would come from sewer user fees and agreements with potential large customers such as TVA.

Because of the multiple federal agency involvement, substantive federal funding and potential contractual, financial and federal land use arrangements, TVA has prepared this environmental assessment (EA) to further evaluate the potential environmental impacts of constructing the 7.5 mile pipeline connecting WBN to the Spring City Wastewater Treatment plant, discontinuing use of an onsite WBN wastewater treatment plant, and the potential cumulative effect of the additional areas to which Spring City could now supply sewer services if it extends its lines to serve WBN.

### **Other Environmental Reviews and Documentation**

ESC of Knoxville, Tennessee, prepared for the use of the Town of Spring City and RUS, an environmental report (ER) dated February 18, 2003, and titled *Proposed Sewer Line Extension for Town of Spring City, Spring City, Tennessee*. USDA RUS reviewed the proposal for the sewer line extension and wastewater treatment plant upgrade project from the Town of Spring City and based upon the Environmental Report (ESC 2003a) and Engineering Report (ESC 2003b) prepared for them by ESC, developed and approved a Categorical Exclusion for the project (Elam, 2004).

TVA has independently reviewed the information and impact analyses identified in the referenced Environmental and Engineering Reports; and has determined that they are adequate. This TVA EA, therefore, incorporates by reference the information and analyses from the ESC reports (ESC 2003a, ESC 2003b) and additionally documents TVA's review

and consideration of the project aspects specific to TVA property and actions. A synopsis of the ESC ER and coordination with federal and state agencies follows.

The ER report was prepared for the Town of Spring City, Tennessee to request a loan (\$2,185,000) and grant (\$1,050,000) from the USDA, Rural Development, RUS to upgrade existing Spring City wastewater treatment services and extend the sewer line to additional areas in Rhea County. ESC also prepared an *Engineering Report for Spring City Sewer Line Extension* dated February 24, 2003 which discussed the project description in detail. The reports discussed the purpose and need for the proposed expansion project, alternatives to construction and the potential environmental impacts from the proposed project. The RUS ER discussed three alternatives to the proposed project, the No Action Alternative and two Action Alternatives: constructing a sewer line extension on opposite sides of Highway 68 (one alternative on the north side of Highway 68 and one alternative south of the highway). The range of alternatives identified and impacts evaluated in the ER included the extension of the sewer line all the way to the existing TVA wastewater treatment facility at WBN. The preferred construction alternative identified in the ER was south of Highway 68.

The potential effects on land use, floodplains, wetlands, cultural resources, biological resources, water quality, human population, air quality and transportation were evaluated in the ESC ER. RUS subsequently documented the agency finding that the project did not individually or cumulatively have a significant impact on the human environment, and therefore qualified as a Categorical Exclusion under 7 CFR Part 1794, Rural Utility Service's Environmental Policies and Procedures. On January 6, 2004, RUS issued their Categorical Exclusion environmental review for the Town of Spring City \$3,235,000 RUS Funding Request for the sewer line and lift station project.

During preparation of the ER and Categorical Exclusion, state and federal agencies were coordinated with during the RUS project evaluation. The project scope included in that coordination included both action alternatives, as well as the infrastructure within WBN (i.e. the in-plant sewerage lift station and sewer line to the station). This inter-agency correspondence is contained in Exhibits 3 and 4 of the ESC ER. Agency responses in correspondence are summarized below.

The USDA, Natural Resource Conservation Service (NRCS) letters dated January 17 and December 10, 2002, stated that the sewer line extension was exempt from the Farmland Protection Policy Act. The Tennessee Department of Economic and Community Development, Local Planning Assistance Office, was contacted to review compatibility with zoning and growth concerns. None were identified.

- The U.S. Fish and Wildlife Service (FWS) responded by letter dated January 15, 2002, that based on information available to them, endangered or threatened species are not located within the impact area. They also had no information which indicated any presence of wetlands. On January 8, 2003, the FWS responded that no significant adverse impacts to threatened or endangered species or wetlands were anticipated, and that requirements of section 7 of the Endangered Species Act of 1973, as amended, were fulfilled. TDEC, Division of Natural Heritage was contacted to determine the potential for impact to state listed species and none were found to be within one-mile of the proposed project. One species of concern (rare and uncommon in the state), the *Flame Chub*, was identified by the Division of Natural Heritage. In letters dated January 17 and December 10, 2002, NRCS

indicated that no hydric soils which are indicative of wetlands, were present in the proposed project locations.

The U.S. Army Corps of Engineers (USACE) provided comments to the proposed project in their letters dated February 12 and December 12, 2002, that several waterways including Long Hollow Embayment on Watts Bar Lake, Work Creek, Cracker Creek as well as several unnamed waterways through discharges of dredged fill material into these waters or adjacent wetlands would be subject to Clean Water Act (CWA), Section 404 permitting. Long Hollow Embayment is also considered a navigable waterway and therefore subject to River and Harbors Act, Section 10 permitting responsibilities. They also indicated that formal wetland review and potential mitigation must be performed during the CWA, Section 401 Certification/Aquatic Resource Alteration Permit (ARAP) by TDEC, Water Pollution Control (WPC) Division. Both the USACE and TDEC-WPC indicated that if substantial installation impacts are not associated with the project, that permitting may be accomplished under the Nationwide and General Permit programs.

- The Tennessee State Historic Preservation Officer (SHPO) responded to the proposed project by letter dated January 14, 2002, that an archeological survey would be required for the pump station located at the junction of Highway 68 and New Lake Road. Alexander Archeological Consultants (AAC, 2002) conducted a Phase 1 study and produced a report of the survey results, which was provided to the SHPO. The SHPO subsequently responded by letter dated December 9, 2002, that there were no National Register of Historic Places listed or eligible properties affected by the proposed project, and that the office had no objections to proceeding with the project.
- The Tennessee Wildlife Resources Agency (TWRA) was contacted on January 31, 2002, to identify anticipated impacts to fish and wildlife resources from the proposed project. TWRA indicated no special wildlife management concerns due to construction the sewer extension on existing developed lands and that watershed protection during sewer line installation was a most important concern for wildlife and aquatic resource protection. TDEC was also consulted and would require construction related sediment and erosion control best management practices for both traditional trenching and directional bore drilling sewer line installation. Sediment and erosion control. Best Management Practices (BMPs) would be requirements of any Section 401/ARAP Permit approval.

### **Environmental Permits and Notifications**

The Town of Spring City or their contractors would be responsible for obtaining all necessary permits, making notifications to the appropriate agencies for the proposed project, and compliance with all provisions of permits. Discharge of any dredge or fill material into the streams crossed or actions affecting wetlands would be subject to Clean Water Act, Section 404 permitting by the USACE. Depending upon the final project design, stream or wetland alternations could also require an Aquatic Resource Alteration Permit. A modification to the WBN Storm Water Pollution Prevention Plan would be required for construction activities on the WBN site.

## **Alternatives and Comparison**

TVA has considered three alternatives, the No Action and two Proposed Action Alternatives. These alternatives are the three alternatives considered and evaluated in the ESC ER prepared for the Town of Spring City and RUS.

### Alternative A - No Action

Under the No Action Alternative, TVA would continue the use of existing WBN domestic wastewater treatment system and would not tie-in to the Spring City sewage treatment system. Under the No Action Alternative, both TVA WBN domestic wastewater treatment plant and the Spring City wastewater treatment plant would continue to operate independently in their currently permitted status. The NPDES-permitted wastewater discharge to Chickamauga would continue from the WBN wastewater plant. WBN would continue to have operation and maintenance costs associated with operation of the onsite wastewater facility. This alternative would also not address the risk of additional exceedances of NPDES permit conditions. The Town of Spring City would not realize additional financial revenue from TVA and this would impede the Town's ability to fund needed improvement projects to their sewer system. TVA would neither grant an easement for construction of the proposed sewer line, nor issue a 26a permit(s) for stream crossings.

### Alternative B (Preferred Alternative) - WBN tie-in to Spring City Wastewater Treatment System, Granting of Easement and Issuance of 26a Permit(s) or Letter of No Objection

Under the Action Alternative, TVA WBN would discontinue operation of an onsite wastewater treatment plant and connect to the Spring City sewer line extension for handling of WBN domestic wastewater needs through the Spring City treatment plant. This action would involve 1) entering into contractual arrangements with the Town of Spring City for sewerage services (i, e., TVA WBN would complete a financial arrangement with Spring City for treatment of the plant's sanitary waste); 2) discontinuing use of the existing TVA wastewater treatment facility at WBN; 3) granting of an easement along TVA property for the construction of the sewer line to TVA WBN; and 4) depending upon final project design, either issuance of a Section 26a permit or a letter of no objection regarding stream crossings from TVA to the Town of Spring City regarding the proposal.

The wastewater stream from TVA is from domestic sanitary sources only and does not include any by-product wastewater from industrial or power generation sources. Use of the existing WBN wastewater treatment plant would be discontinued, and consequently operation and maintenance costs associated with the onsite wastewater plant would cease. A wastewater discharge to Chickamauga Reservoir from WBN would be discontinued. The existing wastewater treatment plant would be removed except for two tanks which may be left behind for emergency detention in event of sewer pump failure. The building currently housing the tanks would be retained. WBN staff will ensure that waste generated is handled and disposed of in accordance with applicable regulations.

The proposed RUS/Spring City project for the TVA tie-in entails constructing a 7.5-mile forced main sewer line extension, 4 lift stations as well as upgrades to the current Spring City wastewater treatment plant. The sewer line extension and lift stations would be constructed in the state/public right-of-way along Highway 302 from the Spring City wastewater plant to Highway 68 and on to the current WBN domestic wastewater treatment plant (Figure1). The area along this route is currently not serviced by a sewerage system.

The areas in this routing corridor have a previous history of being heavily disturbed, and are now either covered by roads or grass. Current vegetation along the Spring City extension route consists primarily of grasses planted after the original road construction and shrubby vegetation that has naturally succeeded into the areas. Temporary disturbance of the vegetation would be required to install the sewer line. The land and vegetation would be restored to the original contour after the line installation was complete. Any excess spoil would be handled and disposed of in accordance with all applicable federal, state, and local laws and regulations.

Project plans (Figure 1) indicate that the section of the proposed pipeline route which runs near Tennessee Highway 68 would be located on TVA-owned land. TVA granted an easement to Tennessee Department of Transportation (TDOT) for the construction of Tennessee Highway 68. In the preliminary design phases it is uncertain how much if any TVA land which has been eased to TDOT may become involved in the project. Also, the pipeline and the lift station at the WBN end of the pipeline would be located on TVA land within the WBN plant site.

During initial construction of the forced main sewer line from WBN to the Spring City Sewage Treatment Plant (STP) and following initial construction, Spring City, will be allowed to make tie-ins to the sewer line to add new customers (the line is sized to allow for 1,350 additional residences). The addition of tie-ins to the line outside the Spring City, city limits, is contingent on Spring City and the Watts Bar Utility District (WBUD), which has sewage service jurisdiction of this area of North Rhea County, reaching a commercial agreement. The tie-ins that are installed on the forced main sewer line will be located by Spring City at areas that have future growth potential and would benefit if sanitary sewer service was available. The typical configuration for the tie-ins that are planned for future customer service would be: 1) a tee connection in the forced main sewer line; 2) a run of pipe off the tee that would run under the roadway/railroad (installed using a bore and jack process) per Engineering Specifications to protect the piping and maintain the roadway/railroad design loading; 3) a valve that would be installed in the line after it has crossed the roadway/railroad; and 4) the line will have a cap install if no immediate service use is planned for the tie-in connection point. The installation of the tie-ins during the initial construction effort would allow future customers to be added to the system in these areas without major interruption of service to WBN and the environmental risk associated with cutting into the forced main sewer line to make tie-ins later.

Two improvements to the existing Spring City wastewater treatment plant would also be made to improve its performance and continuous flow monitors would be installed to identify infiltration/inflow problems. The two improvements (ESC 2003a, ESC 2003b) are: 1) the replacement of the headworks lift station pumps with grinder pumps, and 2) the removal and replacement of the existing bar screen with a shaftless auger/screen/conveyor for solids removal and compaction.

The Town of Spring City has a chartered mandate to provide utilities within Spring City. As part of the use of RUS funding, an additional forced main sewer line would be installed to further expand the collection system in residential areas (Figure 1) to provide service to approximately 202 existing residences and 10 businesses.

### Alternative C – Installing Sewer Line on the Opposite Side of the Roads

Same as Alternative B, except that this alternative involves the placement of the sewer line on the north side of Highway 68 and the east side of the WBN site entrance road for the sewer line extension to WBN; the east side of New Lake Road in one residential area; and within the public right-of-way of the remaining residential area roads. The four pump stations identified in Alternative B would also be required. The financial outlay would be greater than for Alternative B, while the technical feasibility and environmental impacts would be comparable.

### Other Alternatives Not Considered in Detail

The alternative of upgrading and enhancing the existing WBN wastewater treatment plant was briefly considered, but economic analyses indicated that the costs of upgrading the treatment plant to handle the peak flows associated with plant maintenance outages would not be cost effective. The successful closure of the waste water treatment plant at TVA's Sequoyah Nuclear Plant (SQN) in 1998 and routing of SQN sanitary sewage to Hixson Utilities for treatment has proven that the general assumptions used in previous similar economic analyses for such a decision were valid.

## **Affected Environment and Evaluation of Impacts**

### Scope of Environmental Review

The scope of environmental review encompassed all aspects of the proposals covered under the description of alternatives. Consideration of the potential for environmental impacts from the proposed actions indicated that, with incorporation by reference of the materials from the ESC ER and from the interagency correspondence included therein:

- For vegetation and wildlife, natural areas, protected or sensitive species, aquatic ecology, visual aesthetics, cultural resources, groundwater, socio-economics, and environmental justice, there was either no, or only minor, potential for even insignificant impacts from either of the proposed action alternatives. No state or federally listed threatened or endangered species are known to exist near the proposed project locations. There would be no impact to Wild and Scenic and recreation rivers, prime farmlands, wildlife refuges, state or city parks, forest lands or trails or cultural resources from the proposed sewer line extension. No disproportionately high or adverse human health or environmental effects on minority and low income populations are anticipated as a result of the proposed sewer line extension.
- Minor, insignificant, short-term effects on air quality are expected during the installation of the sewer pipes. Dust control measures would be employed during construction to minimize degradation of air quality by dust. No long term impacts are anticipated as a result of construction-related impacts. While short-term interruptions in traffic flow during construction may be realized, no long-term impacts on transportation are anticipated. Short-term insignificant impacts from noise generated during sewer line installation will also only be temporary; no long-term elevation of noise levels in the affected areas is anticipated to result from the proposed sewer line extension.

As existing plant procedures are adequate to handle the types and volume of solid waste generated by discontinuing use of the existing WBN wastewater treatment facility, impacts from disposal activities would be insignificant.

- The resource areas identified as having needed further evaluation or resolution of issues were wastewater/surface water; wetlands; floodplains as well as the consideration of the potential for indirect and cumulative effects related to land use and growth.

Those commitments proposed in the ESC reports and inter-agency correspondence, as identified as appropriate by TVA, are identified and incorporated in the Summary of Commitments section of this EA.

### **Wastewater/Surface Water**

Impacts to surface waters from the proposed actions could potentially accrue from two wastewater sources, i.e., 1) construction of the sewer lines and associate pumping stations; and 2) additional sewage loading to the existing Spring City wastewater treatment facility.

BMPS such as silt barriers would be in place when working near streams to prevent erosion and sediment runoff from trenching activities and any consequent degradation of water quality. Additional specific measures to protect water quality may be identified in the TDEC ARAP permit or USACE 404 permit. The use of such standard construction BMPs for erosion control and any additional controls identified in the ARAP permit would be adequate to avoid adverse impacts to surface waters. As appropriate and/or required by TDEC, the sewer lines would be installed through directional boring to complete stream crossings required by the proposed project, deterioration of water quality and disturbance of stream bank would be avoided. Standard work practices to prevent the accidental deposition of bentonite slurry into streams would preclude adverse water quality impacts during the boring process. With these provisions there should be no impacts from construction activities to current water uses or water quality of streams, embayments, or Watts Bar Reservoir.

The Spring City wastewater treatment plant currently operates under NPDES permit number TN0021261. The plant is rated to treat an average daily flow of 0.9 MGD with a 1.1 MGD peak flow rate, and discharges to the Piney River Embayment of Watts Bar Lake. The plant historically receives approximately 0.26 MGD during the dry hydrological season with elevated flows of 1.3 MGD resulting as a consequence of rainfall events. Peak flows of 3.5 MGD resulting from large rainfall events have been recorded at the plant, and are seldom bypassed. These peak inflows are diverted to a stormwater containment system at the plant, resulting in sustained elevated inflow rates. The Town of Spring City is presently rehabilitating portions of the collection system to alleviate sources of infiltration/inflow.

Optimal performance of the plant is inhibited by low sewage inflows during dry periods, excessive stormwater infiltration and inflows, equipment needs, and outfall location. As a result of these needs, undesirable water quality effects in the vicinity of the effluent outfall within the Piney River Embayment have been observed by local residents. TDEC has imposed a moratorium on new sewer connections until infiltration and inflow

needs are addressed. In order to address the water quality issues, TDEC is requiring extension of the outfall and has approved a grant to the Town of Spring City to move the sewer outfall to a location (Piney River Mile 5.0) where flows and water mixing are greater.

Spring City has also initiated actions to address these needs through improvements in the wastewater collection and treatment facilities. The sewer line extension project is one part of this overall effort. As mentioned earlier, the Town is presently in the process of rehabilitating portions of the collection system to alleviate the source of infiltration and inflow. The biochemical oxygen demand (BOD) of approximately 100 ppm classifies the sewage influent to the wastewater treatment plant as "low strength" wastewater. Normal influent BOD for domestic wastewater is typically approximately 200 ppm. The addition of BOD from the WBN sewage loading would also contribute to improving the operational characteristics of the Spring City Water Treatment plant.

The Environmental Report (ESC 2003a) and Engineering Report (ESC 2003b) for the sewer line extension project address potential impacts to water quality from the proposed construction activities and the subsequent discharge of treated wastewater. An exception to the TDEC moratorium is being requested and local residents want the effluent outfall moved prior to any new connections to the wastewater treatment plant. As indicated in the referenced Engineering Report, adding the WBN sewage flow to the Spring City system would have several benefits to operation of the system: 1) increased biological loading for the treatment plant; 2) increased revenues for system operation and maintenance; 3) increased development opportunities along Highway 68 due to sewer service; and 4) reduced pollution from existing septic systems that are failing. Additionally, re-routing WBN domestic wastewater to the Spring City facility would enable TVA to close the existing WBN treatment plant and eliminate a NPDES discharge location in proximity to Chickamauga Reservoir, as well as the associated operation and maintenance cost from operating an onsite wastewater treatment plant. The new sewer lines would not contribute to existing infiltration/inflow issues because they would be force mains, rather than gravity sewers. Relocating the effluent outfall is also expected to precede any new sewer connections (including TVA), based on current plans and construction periods anticipated for the Spring City projects.

The extension and upgrades associated with the present proposal evaluated herein, would allow the Town of Spring City to provide wastewater treatment services to a portion of Rhea County, south and east of the town, which includes WBN. The capacity of the Spring City wastewater treatment plant would not be exceeded by the proposed additional 202 residences, the additional 10 businesses and the domestic wastewater of WBN. As the town grows, an additional 1350 residences could be added to the sewer line without exceeding the existing capacity of the wastewater treatment plant. As noted above, the improvements addressing current, intermittent water quality issues associated with operations of the plant will also serve to lessen potential effects on water quality of the Piney River embayment.

Providing sewer services for residences and businesses dependent upon septic tank treatment systems should reduce the risk groundwater contamination from leaking septic systems and also reduce the risk of untreated sewage being released to surface waters. As described above, the margin of available capacity for the treatment system is already adequate to handle all of the potential additional sewage from the areas in which sewerage is to be extended, or in which some speculative low to moderate level

of growth may be stimulated over time. With implementation of the described actions by Spring City to address operational issues of the wastewater treatment system and addition of BOD from WBN, effluent characteristics from the treatment facility should actually improve. Therefore, either of the action alternatives should result in only insignificant impacts to wastewater management or surface waters.

### **Wetlands**

A field survey conducted by TVA staff on February 10, 2005, of the proposed sewer line tie-in route from WBN to Spring City indicated there were no wetlands present in the proposed pipeline corridor. At the probable stream crossings identified in the USACE letter cited as background in this document and those observed in the field survey, the areas are relatively steep and deeply incised with no wetlands present in the floodplain areas. Wetland impacts would be insignificant and no mitigation would be required. These stream crossings would additionally be regulated through the Tennessee ARAP and USACE 404 permitting processes. Any additional requirements placed upon the Town of Spring City would be addressed in those permits.

### **Floodplains**

The proposed project involves the construction of an underground sewer line from the existing Spring City wastewater treatment plant to WBN, pump stations and improvements to the existing wastewater treatment plant. Construction of the underground sewer line would involve work within the 100-year floodplain of various streams. Consistent with Executive Order 11988, an underground sewer line is considered to be a repetitive action in the floodplain that should result in minor floodplain impacts. As indicated in the ER (ESC (2002a) the original contours and vegetation would be restored after installation of the sewer lines to protect the flood storage capacity of any affected floodplain. Pump stations 1, 2, and 3 would not be located within the 100-year floodplain.

Based on the Spring City, Tennessee Flood Insurance Rate Map, the existing wastewater treatment plant and proposed pump station 4, would be located within the limits of the Piney River 100-year floodplain. There is no practicable alternative to locating the pump station in the 100-year floodplain and upgrading the existing wastewater treatment plant because the only other alternative would be to construct a new facility and this would be cost prohibitive. This is also something that Spring City is not planning to do. Information provided in the Engineering Report (ESC 2003b) indicates that to minimize adverse impacts, all equipment subject to flood damage would be elevated above or floodproofed to the TVA Flood Risk Profile elevation 747.0. Therefore, this portion of the project would be consistent with Executive Order 11988. If any future modifications to the sewer line extension require TVA approval, TVA will review the modifications prior to construction to ensure the flood risk is minimized.

### **Land Use**

Other than as discussed for wastewater treatment, the only area in which potential indirect or cumulative effects would occur would be to land use along the routes of the proposed new sewer lines.

The Town of Spring City has a chartered mandate to provide utilities within Spring City. In addition to the sewer line extension to the TVA WBN, as part of the use of RUS

funding and overall project scope, an additional forced main sewer line would be installed to further expand the collection system in residential areas (Figure 1) to provide service to approximately 202 residences and 10 businesses currently without sewer services.

Land uses along the proposed sewer line extensions are a mix of residential, commercial, and light industrial, both within the town and in the portions situated in Rhea County. Rhea County has not enacted zoning ordinances, however, the Town of Spring City has. Official zoning maps for the Town indicate that the areas along those portions of the sewer line, are zoned for Low, Medium and High Density Residential Uses and Industrial Use, and adjacent to Central Business District and General Commercial District zones. The proposed sewer line tie in to WBN is not anticipated to affect the current usage of the federal land constituting the WBN Plant Reservation.

It is anticipated that similar types of development would continue to occur along the sewer line routes following implementation and that the extension of the sewer line might stimulate additional growth of this kind in the area that could be served by the extended line. However, no significant amounts of land use conversion or development beyond that already occurring in the area is anticipated to result from the proposed action. Since alternative domestic sewage treatment options such as septic tanks are allowed, the availability of sewer service would not be the primary reason for a family or business to choose to relocate to Rhea County. Therefore, completion of this project is not expected to promote or increase materially population growth beyond what would be expected in the absence of this project. Any derivative socio-economic effects would therefore, also be insignificant.

### **Commitments and Mitigation Measures**

Dust control measures would be employed during construction to minimize degradation of air quality by dust.

Standard construction BMPs such as silt barriers would be in place when working near streams to prevent erosion and sediment runoff from trenching activities and any consequent degradation of water quality. Additional specific measures to protect water quality may be identified in the TDEC ARAP permit or USACE 404 permit.

As appropriate and/or required by TDEC, the sewer lines would be installed through directional boring to complete stream crossings required by the proposed project. Standard work practices to prevent the accidental deposition of bentonite slurry into streams would be conducted to preclude adverse water quality impacts during the boring process.

As indicated in the ER (ESC (2002a) the original contours and vegetation would be restored after installation of the sewer lines to protect the flood storage capacity of any affected floodplain.

To minimize adverse impacts, all equipment subject to flood damage would be elevated above or floodproofed to the TVA Flood Risk Profile elevation 747.0.

### **Preferred Alternative**

TVA's preferred alternative is Alternative B. This allows Watts Bar Nuclear Plant to be connected to the Town of Spring City's Wastewater Treatment Plant and provides TVA a cost-effective way of meeting the sewerage treatment needs of the plant. This alternative would enable TVA to discontinue use of the existing WBN Sewage Treatment plant and eliminate a wastewater discharge point on Chickamauga Reservoir. It would also provide additional revenue to Spring City and support its efforts to improve sewerage treatment capabilities.

### **TVA Contributors**

Lonnie Freeman	WBN Plant Project Management
John Higgins	Wastewater
Eric Howard	Cultural Resources
Scott Ledford	26a Permitting Issues
Roger Milstead	Floodplains
Jerri Phillips	WBN Site Permitting
Kim Pilarski	Wetlands
Tina Tomaszewski	NEPA Project Management
Bruce Yeager	NEPA Project Management (later phases)

### **Agencies and Others Consulted**

A listing of persons, agencies and organization consulted during the Spring City sewer line extension/lift station ERC ER review are included in Chapter 5 of that document and included the U.S. Fish and Wildlife Service, Natural Resources Conservation Service, Tennessee Historical Commission, Tennessee Department of Environment and Conservation, Southeast Tennessee Development District and the U.S. Army Corps of Engineers. On January 27, 2005, representatives of the Town of Spring City (attended by TVA representatives) also met in public meeting with local citizens, including the Watts Bar Lake Owners Association, to discuss existing issues related to the operation of the city sewage treatment facility and the potential extension of sewerage services to additional customers.

### **References**

- AAC. 2002. *A Phase 1 Archeological Survey of a Proposed Spring City Waste Water Pump Station at the Intersection of State Route 68 and New Lake Road in Rhea County, Tennessee*, August 2002, Alexander Archeological Consultants
- ESC. 2003a. *Proposed Sewer Line Extension for Town of Spring City, Spring City, Tennessee*, February 2003. Environmental Systems Corporation, Knoxville, Tennessee

ESC 2003b. *Engineering Report for Spring City Sewer Line Extension*, February 2003, Environmental Systems Corporation, Knoxville, Tennessee

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