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Finding of No Significant  
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**Project Name:** EnergyRight Solutions EPA  
Mitigation – Knox County, TN  
**Project Number:** 2017-9

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**ENERGYRIGHT SOLUTIONS USEPA MITIGATION  
PROJECT PROPOSAL FOR KNOXVILLE UTILITIES  
BOARD REVISED INDUSTRIAL AND  
COMBINED HEAT POWER PROJECT  
ENVIRONMENTAL ASSESSMENT AND  
FINDING OF NO SIGNIFICANT IMPACT  
Knox County, Tennessee**

**Prepared by:**  
TENNESSEE VALLEY AUTHORITY  
Knoxville, Tennessee

April 2017

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### **Proposed Action**

The Tennessee Valley Authority (TVA) proposes to provide a grant to the Knoxville Utilities Board (KUB) for the development of a 1.7 megawatt (MW) Revised Industrial Waste Heat Recovery (WHR) and Combined Heat and Power (CHP) project at the Kuwahee Wastewater Treatment Plant (KWWTP) located in Knox County, Tennessee (Figure 1). TVA funding may be used for the preliminary and final engineering design, permitting, bidding, construction, and commissioning of a new WHR/CHP system at KUB's KWWTP. The WHR/CHP system would feature two diesel engine generators that utilize biogas fuel (from anaerobic biosolids digestion) or a blend of biogas and natural gas to produce electricity, which would be used onsite. The system would also include gas safety equipment, a gas conditioning skid, hot water boilers, a hot water loop, and an electrical interconnect to KUB's onsite distribution system (see Attachment A). Hot water boilers would be placed in the existing Thickener Building and concentric tube heat exchangers would be placed within the existing Digester Building. Electricity produced using the gensets (a generator set) could be interconnected with KWWTP's main switchgear and utilized onsite to offset power usage that would otherwise have to be met through the purchase of utility power.

A new location onsite would be needed for the placement of CHP gensets, gas conditioning skid, and associated equipment. KUB has identified three potential genset locations; West of Equalization Tank, South of Aeration Basins, and South of Generator Building (Figure 2). The preferred site is Location 1, West of Equalization Tank, which is located on an existing paved lot and the least expensive option to run the necessary infrastructure (i.e., wire/conduit) from CHP to the generator building (Attachment A). An existing paved lot would also be used for the laydown area.

The KWWTP is a 44 million gallons per day (mgd) municipal wastewater treatment facility that features anaerobic digestion of biosolids. Biogas generated in the digesters is currently used to heat the biosolids to maintain optimum volatile solids reduction. Excess waste biogas is currently flared. Flaring is the burning of natural gas that cannot be processed or sold. The proposed project would beneficially use all of the biogas produced and generate up to 11,250 megawatt-hours annually. The power produced would be used by the KWWTP and supply approximately 85 percent of its electrical demand. Savings are projected to be approximately \$320,600 per year; compared to 2015 annual costs. The proposed revised industrial WHR/CHP plant in conjunction with KUB's planned operational improvements would improve energy efficiency at KWWTP.

### **Purpose and Need for Action**

In April of 2011, TVA's board of directors approved clean air agreements with the Environmental Protection Agency (USEPA), four states and three environmental groups. The agreements require implementation of 11 mitigation projects that support TVA's vision for low-cost and cleaner energy. TVA is obligated to spend no less than \$288 million on these mitigation projects as well as provide \$60 million to the states of Alabama, Kentucky, North Carolina, and Tennessee for state environmental mitigation projects. The grant provided by TVA to KUB would assist in the preliminary and final engineering design, permitting, bidding, construction, and commissioning of a new WHR/CHP system, which would constitute a mitigation project under the clean air agreements.

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Figure 1: Proposed Project Location Map





Figure 2: Proposed Site Locations

### **Decision to be Made**

The decision before TVA is whether to provide funding to KUB for the development of a 1.7 MW Revised WHR/CHP project at the KWWTP, which would constitute a mitigation project under the clean air agreements.

### **Environmental Impacts**

TVA has reviewed the proposed project and documented potential environmental impacts related to the project in the attached categorical exclusion checklist (Checklist) (Attachment B). The Checklist identifies the resources present in the project area and documents TVA's determination that the proposal would not significantly affect these resources.

The proposed WHR/CHP plant construction and laydown area would occur on existing paved surfaces at a previously developed site. Therefore, no impacts to terrestrial ecology (wildlife and vegetation), threatened and endangered species, prime farmland, and wetlands are anticipated. The proposed project would not involve construction within the 100-year floodplain, which is consistent with Executive Order 11988 (Protection of Floodplains). Based on adherence to standard erosion control BMPs, the proposed project would have no significant impact on floodplains. As stated in the Checklist, there would be minor potential impacts on aquatic resources, socioeconomic and environmental justice, waste, and transportation by implementation of the proposed action.

The KWWTP is located adjacent to the Tennessee River and Third Creek waterbodies. Per section 402 of the Clean Water Act, KUB would be required to obtain a National Pollutant Discharge Elimination System Permit, which would identify any measures needed to limit water quality impacts. Standard construction best management practices, such as erosion control measures, would also be implemented during construction to help reduce water quality and aquatic resource impacts. Temporary impacts associated with construction and erosion would be eventually eliminated as impacted areas are revegetated or otherwise stabilized. All construction debris would be managed according to all local, state, and federal requirements.

Construction activities associated with the TVA grant would generate some temporary, short-term noise. Operational noise would be controlled to a maximum of 75 decibels at 25 feet from the engine enclosure (building or container). Therefore, no significant impacts from noise are likely under the implementation of the proposed project.

As documented in the Checklist, the proposed action could potentially impact air quality, Archaeological and Historical Resources, and climate change. Impacts to these resources were evaluated in further detail. The results of those additional analyses, and TVA's determination that the proposed action would not significantly affect these resources, are summarized in this Environmental Assessment and Finding of No Significant Impact.

### **Air Quality**

Through its passage of the Clean Air Act (CAA), Congress has mandated the protection and enhancement of our nation's air quality resources. National Ambient Air Quality Standards (NAAQS; USEPA 2015) for the following criteria pollutants have been set to protect the public health and welfare:

- sulfur dioxide (SO<sub>2</sub>),
- ozone (O<sub>3</sub>),
- nitrogen dioxide (NO<sub>2</sub>),
- particulate matter whose particles are ≤ 10 micrometers (PM<sub>10</sub>),

- particulate matter whose particles are  $\leq 2.5$  micrometers ( $PM_{2.5}$ ),
- carbon monoxide (CO), and
- lead (Pb).

The primary NAAQS were promulgated to protect the public health, and the secondary NAAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air (e.g., visibility, crops, forests, soils and materials). A listing of the NAAQS is presented in Table 1.

Ambient air monitors measure concentrations of these pollutants to determine attainment with these standards. Areas in violation of the NAAQS are designated as nonattainment areas and must develop plans to improve air quality and achieve the NAAQS. New sources of air pollution in or near these areas may be subject to more stringent air permitting requirements.

Knox County, Tennessee is currently in attainment with the NAAQS for CO,  $NO_2$ ,  $PM_{10}$ , Pb, and  $SO_2$  (USEPA 2017a). The County is in non-attainment for  $O_3$  and  $PM_{2.5}$  (1997 and 2006). However, the County was redesignated “maintenance” for  $O_3$  in August 2015. Ambient air concentrations measured in Knox County for the three year period from 2013 to 2015 are below the level of the NAAQS, indicating air quality is good (USEPA 2016).

**Table 1. National Ambient Air Quality Standards**

Pollutant	Primary / Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	primary	8 hours	9 ppm	Not to be exceeded more than once per year
		1 hour	35 ppm	
Lead (Pb)	primary and secondary	Rolling 3 month average	$0.15 \mu\text{g}/\text{m}^3$ <sup>[1]</sup>	Not to be exceeded
Nitrogen Dioxide ( $NO_2$ )	primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	primary and secondary	Annual	53 ppb <sup>[2]</sup>	Annual Mean
Ozone ( $O_3$ )	primary and secondary	8 hours	$0.070 \text{ ppm}$ <sup>[3]</sup>	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter ( $PM_{2.5}$ )	primary	Annual	$12.0 \mu\text{g}/\text{m}^3$	annual mean, averaged over 3 years
	secondary	Annual	$15.0 \mu\text{g}/\text{m}^3$	annual mean, averaged over 3 years
	primary and secondary	24-hours	$35 \mu\text{g}/\text{m}^3$	98th percentile, averaged over 3 years
Particulate Matter ( $PM_{10}$ )	primary and secondary	24-hours	$150 \mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide ( $SO_2$ )	primary	1-hour	75 ppb <sup>[4]</sup>	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	secondary	3-hours	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA 2015

Notes:



## Environmental Assessment and Finding of No Significant Impact

- 1 In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m<sup>3</sup> as a calendar quarter average) also remain in effect.
- 2 The level of the annual NO<sub>2</sub> standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.
- 3 Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O<sub>3</sub> standards additionally remain in effect in some areas. Revocation of the previous (2008) O<sub>3</sub> standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
- 4 The previous SO<sub>2</sub> standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO<sub>2</sub> standards or is not meeting the requirements of a SIP call under the previous SO<sub>2</sub> standards (40 CFR 50.4(3)). A SIP call is an USEPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.

There would be transient air pollutant emissions during the construction of the proposed WHR/CHP system. Air quality impacts from construction activities would be temporary and dependent on both man-made factors (e.g., intensity of activity, control measures) and natural factors (e.g., wind speed, wind direction, soil moisture). Even under unusually adverse conditions, these emissions would have, at most, minor, temporary on- and off-site air quality impacts and would not cause exceedance of the applicable NAAQS.

KWWTP currently has a Knox County-issued permit to operate the WWTP and flare (Permit #0512-01), three digester gas boilers (Permit #0512-02), and three emergency diesel generators (Permit #0512-03). Permit #0512-02 would be replaced with a permit for the new CHP engines and hot water boilers when they are installed as part of the proposed project. The facility is not considered a “major” source<sup>1</sup>, so a Part 70 permit is not required.

The proposed WHR/CHP system is approximately 80 percent more efficient than a non-CHP power system. The WHR/CHP system requires less fuel to produce the same energy output, which increases energy efficiency, reduces air emissions and reduces electricity demand on the power grid (USEPA 2017b). After installation of the proposed WHR/CHP system, the total facility emissions are anticipated to remain below the major source thresholds. The CHP engines would be subject to the federal new source performance standards (NSPS) in 40 CFR 60 Subpart JJJJ and to any best available control technology determination by Knox County in the course of its permit review.

KUB must obtain a Knox County permit to construct and an operating permit would be required within 14 days after initial startup of the CHP engines. As part of the NSPS, initial performance tests must be conducted and for non-federally-certified engines, a performance test is required every 8760 hours of engine operation or 3 years, whichever comes first. By following the conditions in the air permit, there would be no additional impacts to air quality as a result of the proposed project.

### Climate Change and Greenhouse Gases

Climate change refers to any substantive change in measures of climate, such as temperature, precipitation, or wind. It is thought that certain substances present in the atmosphere act like the glass in a greenhouse to retain a portion of the heat that is radiated from the surface of the earth. The primary greenhouse gas (GHG) emitted by human activity is Carbon Dioxide (CO<sub>2</sub>) produced by the combustion of coal and other fossil fuels. Coal- and gas-fired electric power plants and

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<sup>1</sup> A major source has actual or potential emissions at or above the major source threshold, 100 tons/year, for any criteria air pollutant. Major source thresholds for hazardous air pollutants (HAPs) are 10 tpy for a single HAP or 25 tpy for any combination of HAPs. (USEPA 2017c)

automobiles are major sources of CO<sub>2</sub> emissions in the U.S. Other important sources include gas combustion used for heating buildings. Forests and other vegetated landforms represent sinks of CO<sub>2</sub>. GHG emissions are also affected by development activities associated with land or forest clearing and land use changes; construction activities involving use of fossil-fuel powered equipment; change in traffic flow; or incorporation of parks or recreational areas. In 2014, Tennessee's energy related CO<sub>2</sub> emissions were 100 million metric tons (U.S. Energy Information Administration 2017).

The existing biogas flaring system at the KWWTP emits volatile organic compounds (VOCs) and CO. By installing a more efficient energy producer, WHR/CHP system that replaces the existing flaring system, KUB would decrease the GHG emissions associated with flaring and purchase of grid power. Therefore, the proposed project would have minor beneficial impact on GHG emissions.

### Archaeological and Historical Resources

TVA determined the archaeological Area of Potential Effects (APE) to be the proposed footprint of the KWWTP where the ground disturbance is proposed. The architectural APE is the 0.5-mile radius surrounding the KWWTP. While no archaeological survey was completed within the proposed APE, TVA performed two archaeological surveys adjacent to the proposed APE. Both surveys consisted of the excavation of shovel test pits and deep coring to check for deeply buried deposits. No intact archaeological sites or artifacts were identified by the surveys in the areas adjacent to the proposed APE. The vast majority of the proposed APE is composed of existing facilities associated with the KWWTP and has little potential to contain intact archaeological deposits. Design drawings of Location 1 and 2010 aerial maps indicate that the proposed project area was impacted during construction activities for the existing facilities. Based on the extensive construction disturbances within the APE, TVA finds that the proposed actions would have no effect on historic properties. The Tennessee SHPO concurred with TVA's determination in a letter dated March 20, 2017 (Attachment C).

A review of the National Register of Historic Places (NRHP) database indicated that no historic properties exist within the view shed. A review of the Tennessee Historical Commission Viewer indicated three properties were identified within the viewshed. These structures are identified as late 19th to early 20th century railroad depot buildings. However, a review of aerial maps for the APE show the structures are no longer extant. Additionally, the view shed surrounding the APE is a mixture of 20th to 21st century industrial, residential, and lakefront development. Based on the results of TVA's archaeological and architectural effects assessment, it is TVA's finding that the proposed undertaking will not affect any historic properties. The Tennessee SHPO concurred with TVA's determination in a letter dated March 20, 2017 (Attachment C).

Pursuant to Section 800.3(f)(2) of the National Historic Preservation Act, TVA consulted with federally recognized Indian tribes regarding historic properties within the APE that may be of religious and cultural significance to the tribes. TVA received responses from the Shawnee and Absentee Shawnee tribes with no objections (Attachment C).

### **Mitigation Measures**

KUB would be required to obtain appropriate air and water permits prior to start of construction. No non-routine mitigation measures were identified during the environmental review process.

### **Conclusion and Findings**

Based on the findings listed above and the analyses in the attached checklist, we conclude that the proposed action to provide funding to KUB for the development of a 1.7 MW Revised WHR/CHP project would not be a major federal action significantly affecting the environment. Accordingly, an environmental impact statement is not required.



April 17, 2017

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Amy B. Henry, Manager  
NEPA Program and Valley Projects  
Tennessee Valley Authority

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Date Signed

## **Preparers**

### ***NEPA Project Management***

Dana M. Vaughn, Environmental Program Manager – Document Preparation

Loretta A. McNamee, Contract NEPA Specialist – NEPA Compliance and Document Preparation

### ***Other Contributors***

Michaelyn S. Harle, Archaeologist – Cultural Resources, National Historic Preservation Act Compliance

Craig L. Phillips, Aquatic Biologist – Aquatic Resources, Aquatic Threatened and Endangered Species

Carrie C. Williamson, P.E., CFM, Civil Engineer – Floodplains

## **References**

United States Energy Information Administration. 2017. Energy-Related Carbon Dioxide Emissions at the State Level, 2000-2014. January 17, 2017. Available at <http://www.eia.gov/environment/emissions/state/analysis/>. Accessed February 28, 2017.

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\_\_\_\_\_. 2017c. *Title V Operating Permits, Who Has to Obtain a Title V Permit?*. Last updated March 15, 2017. Available at <https://www.epa.gov/title-v-operating-permits/who-has-obtain-title-v-permit>. Accessed March 28, 2017.

## **Attachments**

Attachment A – Proposed Design Plans

Attachment B - Categorical Exclusion Checklist for Proposed TVA Actions – EnergyRight Solutions, Knox County

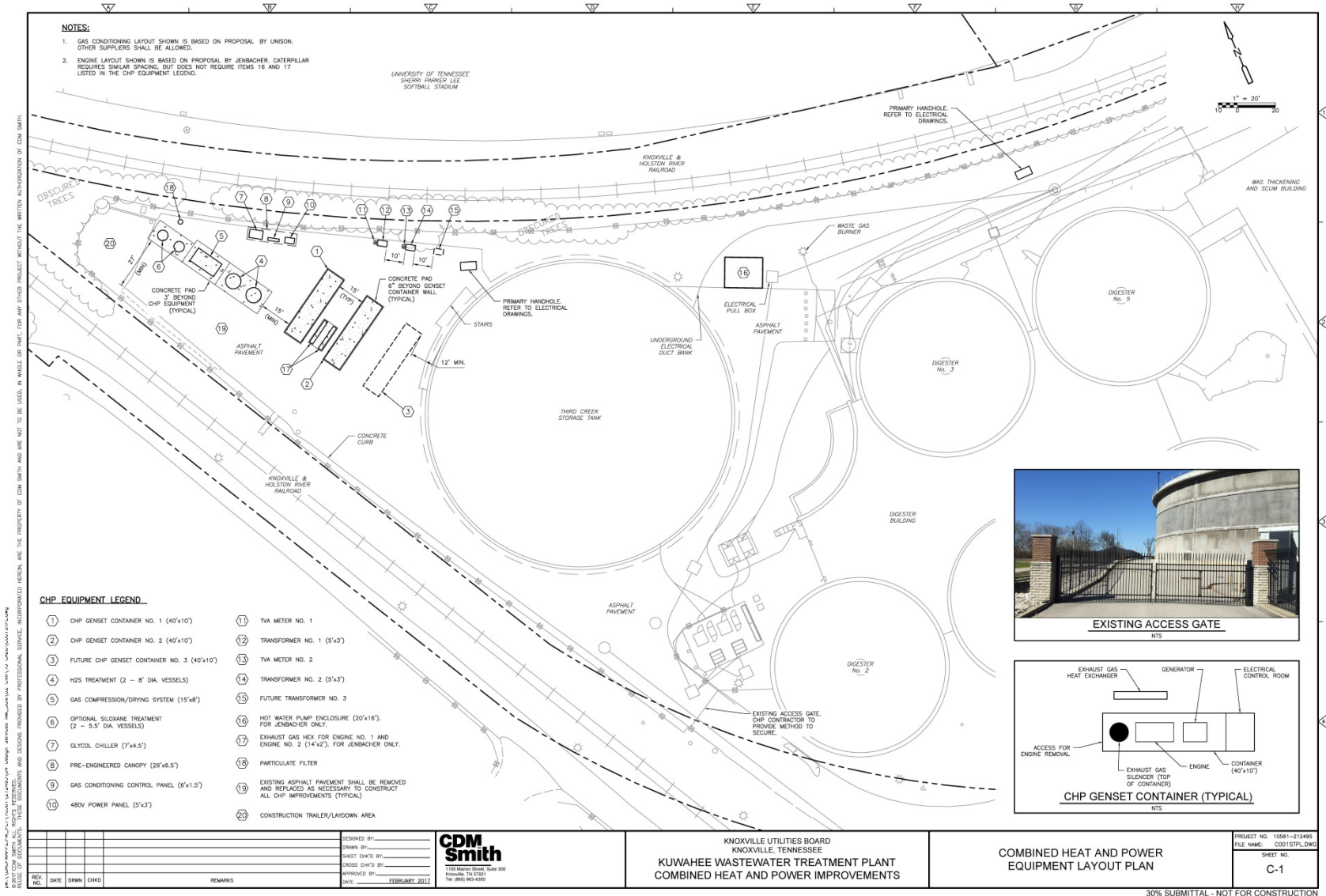
Attachment C – Tennessee State Historic Preservation Officer Correspondence

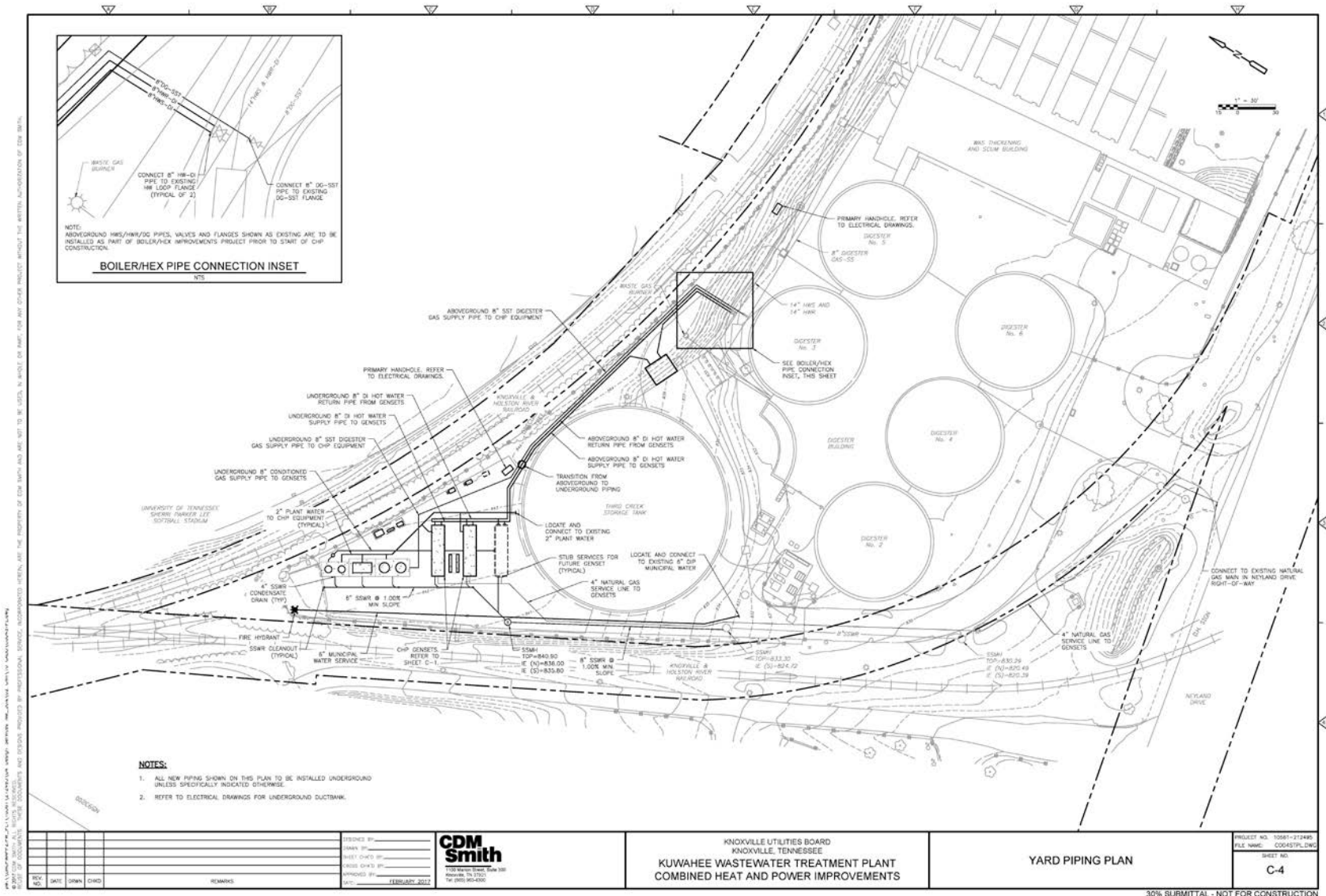
## **Attachment A – Proposed Design Plans**

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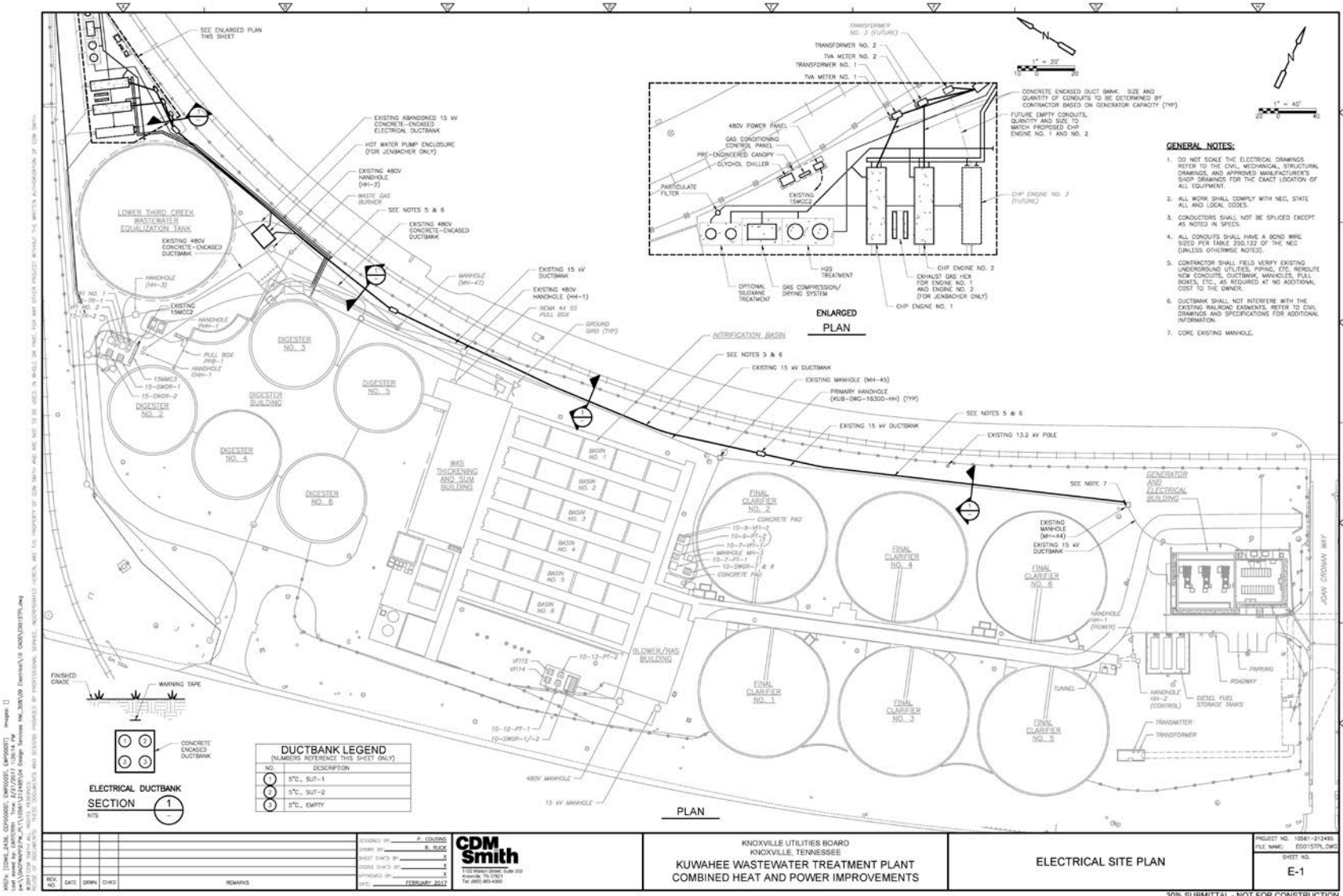


# Environmental Assessment and Finding of No Significant Impact





# Environmental Assessment and Finding of No Significant Impact



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## **Attachment B – Categorical Exclusion Checklist 36262**

### Categorical Exclusion Checklist for Proposed TVA Actions

Categorical Exclusion Number Claimed	Organization ID Number	Tracking Number (NEPA Administration Use Only) 36262
Form Preparer Dana M Vaughn	Project Initiator/Manager Dana M Vaughn	Business Unit External Rel - Energyright & Renewable Solutions
Project Title EnergyRight Solutions EPA Mitigation Grant KUB Revised Industrial WHR/CHP Project		Hydrologic Unit Code
Description of Proposed Action (Include Anticipated Dates of Implementation) For Proposed Action See Attachments and References		<input type="checkbox"/> Continued on Page 3 (if more than one line)
Initiating TVA Facility or Office		TVA Business Units Involved in Project External Rel - Energyright & Renewable Solutions
Location (City, County, State) Knox, TN, Kuwahee Wastewater Treatment Plant 2015 Neyland Drive Knoxville, TN 37916		

Parts 1 through 4 verify that there are no extraordinary circumstances associated with this action:

#### Part 1. Project Characteristics

Is there evidence that the proposed action...	No	Yes	Commitment	Information Source for Insignificance
1. Is major in scope?	X			Vaughn, Dana M. 03/01/2017
2. Is part of a larger project proposal involving other TVA actions or other federal agencies?		X		For comments see attachments
* 3. Involves non-routine mitigation to avoid adverse impacts?	X		No	Vaughn, Dana M. 03/01/2017
4. Is opposed by another federal, state, or local government agency?	X			Vaughn, Dana M. 03/01/2017
* 5. Has environmental effects which are controversial?	X			Vaughn, Dana M. 03/01/2017
* 6. Is one of many actions that will affect the same resources?	X			Vaughn, Dana M. 03/01/2017
7. Involves more than minor amount of land?	X			Vaughn, Dana M. 03/01/2017

\*If "yes" is marked for any of the above boxes, consult with NEPA Administration on the suitability of this project for a categorical exclusion.



## Environmental Assessment and Finding of No Significant Impact

### Part 2. Natural and Cultural Features Affected

Would the proposed action...	No	Yes	Permit	Commitment	Information Source for Insignificance
1.Potentially affect endangered, threatened, or special status species?		X	No	No	For comments see attachments
2.Potentially affect historic structures, historic sites, Native American religious or cultural properties, or archaeological sites?		X	No	No	For comments see attachments
3.Potentially take prime or unique farmland out of production?	X		No	No	Vaughn, Dana M. 03/01/2017
4.Potentially affect Wild and Scenic Rivers or their tributaries?	X		No	No	Vaughn, Dana M. 03/01/2017
5.Potentially affect a stream on the Nationwide Rivers Inventory?	X		No	No	Vaughn, Dana M. 03/01/2017
6.Potentially affect wetlands?	X		No	No	For comments see attachments
7.Potentially affect water flow, stream banks or stream channels?	X		No	No	For comments see attachments
8.Potentially affect the 100-year floodplain?	X		No	No	For comments see attachments
9.Potentially affect ecologically critical areas, federal, state, or local park lands, national or state forests, wilderness areas, scenic areas, wildlife management areas, recreational areas, greenways, or trails?	X		No	No	Vaughn, Dana M. 03/01/2017
10.Contribute to the spread of exotic or invasive species?	X		No	No	For comments see attachments
11.Potentially affect migratory bird populations?	X		No	No	Vaughn, Dana M. 03/01/2017
12.Involve water withdrawal of a magnitude that may affect aquatic life or involve interbasin transfer of water?	X		No	No	Vaughn, Dana M. 03/01/2017
13.Potentially affect surface water?		X	Yes	No	For comments see attachments
14.Potentially affect drinking water supply?	X		No	No	Vaughn, Dana M. 03/01/2017
15.Potentially affect groundwater?	X		No	No	Vaughn, Dana M. 03/01/2017
16.Potentially affect unique or important terrestrial habitat?	X		No	No	Vaughn, Dana M. 03/01/2017
17.Potentially affect unique or important aquatic habitat?	X		No	No	For comments see attachments

### Part 3. Potential Pollutant Generation

Would the proposed action potentially (including accidental or unplanned)...	No	Yes	Permit	Commitment	Information Source for Insignificance
1.Release air pollutants?	X		Yes	No	For comments see attachments
2.Generate water pollutants?	X		No	No	Vaughn, Dana M. 03/01/2017
3.Generate wastewater streams?	X		No	No	Vaughn, Dana M. 03/01/2017
4.Cause soil erosion?		X	Yes	No	For comments see attachments
5.Discharge dredged or fill materials?	X		No	No	Vaughn, Dana M. 03/01/2017
6.Generate large amounts of solid waste or waste not ordinarily generated?	X		No	No	Vaughn, Dana M. 03/01/2017
7.Generate or release hazardous waste (RCRA)?	X		No	No	Vaughn, Dana M. 03/01/2017
8.Generate or release universal or special waste, or used oil?	X		No	No	Vaughn, Dana M. 03/01/2017
9.Generate or release toxic substances (CERCLA, TSCA)?	X		No	No	Vaughn, Dana M. 03/01/2017
10.Involve materials such as PCBs, solvents, asbestos, sandblasting material, mercury, lead, or paints?	X		No	No	Vaughn, Dana M. 03/01/2017
11.Involve disturbance of pre-existing contamination?	X		No	No	Vaughn, Dana M. 03/01/2017
12.Generate noise levels with off-site impacts?	X		No	No	Vaughn, Dana M. 03/01/2017
13.Generate odor with off-site impacts?	X		No	No	Vaughn, Dana M. 03/01/2017
14.Produce light which causes disturbance?	X		No	No	Vaughn, Dana M. 03/01/2017
15.Release of radioactive materials?	X		No	No	Vaughn, Dana M. 03/01/2017
16.Involve underground or above-ground storage tanks or bulk storage?	X		No	No	Vaughn, Dana M. 03/01/2017
17.Involve materials that require special handling?	X		No	No	Vaughn, Dana M. 03/01/2017

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## Part 4. Social and Economic Effects

Would the proposed action...	No	Yes	Permit	Commitment	Information Source for Insignificance
1.Potentially cause public health effects?	X			No	Vaughn, Dana M. 03/01/2017
2.Increase the potential for accidents affecting the public?	X			No	Vaughn, Dana M. 03/01/2017
3.Cause the displacement or relocation of businesses, residences, cemeteries, or farms?	X			No	Vaughn, Dana M. 03/01/2017
4.Contrast with existing land use, or potentially affect resources described as unique or significant in a federal, state, or local plan?	X			No	For comments see attachments
5.Disproportionately affect minority or low-income populations?	X			No	Vaughn, Dana M. 03/01/2017
6.Involve genetically engineered organisms or materials?	X			No	Vaughn, Dana M. 03/01/2017
7.Produce visual contrast or visual discord?	X			No	Vaughn, Dana M. 03/01/2017
8.Potentially interfere with recreational or educational uses?	X			No	Vaughn, Dana M. 03/01/2017
9.Potentially interfere with river or other navigation?	X		No	No	Vaughn, Dana M. 03/01/2017
10.Potentially generate highway or railroad traffic problems?	X			No	For comments see attachments

## Part 5. Other Environmental Compliance/Reporting Issues

Would the proposed action...	No	Yes	Commitment	Information Source for Insignificance
1.Release or otherwise use substances on the Toxic Release Inventory list?	X		No	Vaughn, Dana M. 03/01/2017
2.Involve a structure taller than 200 feet above ground level?	X		No	Vaughn, Dana M. 03/01/2017
3.Involve site-specific chemical traffic control?	X		No	Vaughn, Dana M. 03/01/2017
4.Require a site-specific emergency notification process?	X		No	Vaughn, Dana M. 03/01/2017
5.Cause a modification to an existing environmental permit or to existing equipment with an environmental permit or involve the installation of new equipment/systems that will require a permit?		X	No	For comments see attachments
6.Potentially impact operation of the river system or require special water elevations or flow conditions??	X		No	Vaughn, Dana M. 03/01/2017
7.Involve construction or lease of a new building or demolition or renovation of existing building (i.e. major changes to lighting, HVAC, and/or structural elements of building of 1000 sq. ft. or more)?	X		No	For comments see attachments

Parts 1 through 4: If "yes" is checked, describe in the discussion section following this form why the effect is insignificant. Attach any conditions or commitments which will ensure insignificant impacts. Use of non-routine commitments to avoid significance is an indication that consultation with NEPA Administration is needed.

An ☒ EA or ☐ EIS Will be prepared.

Based upon my review of environmental impacts, the discussion attached, and/or consultations with NEPA Administration, I have determined that the above action does not have a significant impact on the quality of the human environment and that no extraordinary circumstances exist. Therefore, this proposal qualifies for a categorical exclusion under Section 5.2. \_\_\_\_\_ of TVA NEPA Procedures.

Project Initiator/Manager Dana M Vaughn	Date 03/29/2017
TVA Organization UNKN	E-mail dmball@tva.gov
	Telephone

### Environmental Concurrence Reviewer

Ashley Pilakowski 04/03/2017  
Signature

### Preparer Closure

Dana M Vaughn 04/14/17  
Signature

### Other Environmental Concurrence Signatures (as required by your organization)

Signature Signature

# Environmental Assessment and Finding of No Significant Impact

Signature

Signature

Other Review Signatures (as required by your organization)

## Attachments/References

Description of Proposed Action Continued from Page 1

TVA proposes to issue a grant to KUB for development of 1.7 megawatt Revised Industrial Waste Heat Recovery/Combined Heat and Power project located at Kuwahee Wastewater Treatment Plant, Knox County, TN. TVA funding would be used for construction of WHR/CHP plant system consisting of 2 diesel engine generators that use biogas fuel (from anaerobic biosolids digestion) or a blend of biogas and natural gas to produce electricity. The system will include CHP engines, gas safety equipment, gas conditioning skid, hot water boilers, hot water loop, and an electrical interconnect to KUB's onsite distribution system. Hot water boilers will be placed in Thickener Building and concentric tube heat exchangers will be placed within the Digester Building. Location 1 is the preferred location for placement of CHP gensets, gas conditioning skid, and associated equipment. An existing paved lot would be used for laydown area. The APE is outlined in the proposed project area attachment (purple boundary).

## CEC General Comment Listing

1.	TVA-KUB Contract		
	By: Dana M Vaughn	02/03/2017	
	Files: Contract 11856_KUB.pdf	02/03/2017	2,418.36 Bytes
2.	KUB Project Proposal Part 4 of 4		
	By: Dana M Vaughn	02/03/2017	
	Files: KUB Project Proposal_Part 4 of 4.pdf	02/03/2017	3,771.58 Bytes
3.	KUB Project Proposal Part 3 of 4		
	By: Dana M Vaughn	02/03/2017	
	Files: KUB Project Proposal_Part 3 of 4.pdf	02/03/2017	872.61 Bytes
4.	KUB Project Proposal Part 2 of 4		
	By: Dana M Vaughn	02/03/2017	
	Files: KUB Project Proposal_Part 2 of 4.pdf	02/03/2017	2,293.19 Bytes
5.	KUB Project Proposal Part 1 of 4		
	By: Dana M Vaughn	02/03/2017	
	Files: KUB Project Proposal_Part 1 of 4.pdf	02/03/2017	1,904.46 Bytes
6.	Proposed Project Area - The preferred location for the CHP is Location 1 behind the wastewater equalization tank.		
	By: Dana M Vaughn	03/01/2017	
	Files: Proposed Project Area_KUB Project.pdf	02/07/2017	756.28 Bytes
7.	Previous disturbance documentation for SHPO packet		
	By: Dana M Vaughn	04/04/2017	
	Files: KUB WWTP Drawings_previous disturbance_pg 1 of 2.pdf	03/01/2017	1,031.92 Bytes
	KUB WWTP Drawings_previous disturbance_pg 2 of 2.pdf	03/01/2017	2,565.04 Bytes
8.	Location 1 Photos		
	By: Dana M Vaughn	03/01/2017	
	Files: Location 1_Behind Wastewater Equalization Tank_second view.JPG	03/01/2017	123.90 Bytes
	Location 1_Behind Wastewater Equalization Tank.JPG	03/01/2017	3,047.13 Bytes
9.	Preliminary Design Drawings - February 27, 2017		
	By: Dana M Vaughn	04/04/2017	
	Files: Pages from KWWTP CHP_PRELIMINARY_DESIGN_TM 27FEB2017 C_4.pdf	04/04/2017	267.36 Bytes
	Pages from KWWTP CHP_PRELIMINARY_DESIGN_TM 27FEB2017 (004).pdf	04/04/2017	501.94 Bytes
	Pages from KWWTP CHP_PRELIMINARY_DESIGN_TM 27FEB2017 E_1.pdf	04/04/2017	515.25 Bytes

## CEC Comment Listing

### Part 1 Comments

2.	This project is a selected project for the Waste Heat Recovery Project as part of TVA's EPA Mitigation agreement (January 22, 2013).	
	By: Dana M Vaughn	03/01/2017

## EnergyRight Solutions USEPA Mitigation Project – Knoxville Utility Board

### Part 2 Comments

1. The TVA proposes to provide a grant to the Knoxville Utilities Board for the development of a 1.7 megawatt Revised Industrial Waste Heat Recovery (WHR) and Combined Heat and Power (CHP) project located at the Kuwahee Wastewater Treatment Plant in Knox County, Tennessee. TVA funding would be used for the construction of a WHR/CHP plant system consisting of two diesel engine generators that use biogas fuel (from anaerobic biosolids digestion) or a blend of biogas and natural gas to produce electricity.  
  
A query of the TVA Natural Heritage Database (03/27/2017) for records of listed aquatic animal species indicated one federally protected species (orange-foot pimpleback) historically known from the potentially affected ten digit HUC (0601020102) Tennessee River watershed. Additionally, there is two fish (blue sucker, flame chub), and two freshwater snails (ornate rocksnail, spiny riversnail) state-listed in Tennessee within the potentially affected 10-digit HUC watershed encompassing the proposed project area (Aquatics Table 1). Seven federally listed aquatic species (yellowfin madtom, Cumberland monkeyface, dromedary pearlymussel, fine-rayed pigtoe, shiny pigtoe pearlymussel, turberculated blossom pearlymussel, and Anthony's river snail) are known to be extirpated from this portion of their former ranges.  
A March 2017 field survey of the project area did not document any watercourses. With proper implementation of BMPs to prevent surface water runoff from carrying suspended solids to the adjacent Third Creek or Tennessee River, no impacts to any species listed in Aquatics Table 1 would occur.  
  
By: Craig L Phillips 03/27/2017  
Files: CEC\_AQUAT\_TABLE.docx 03/27/2017 20.75 Bytes  
EA INPUT ATTACHED
2. By: Michaelyn S Harle 04/13/2017  
Files: TVA\_KUB Kuwahee Revised Industrial Project\_Knox Co TN 04/13/2017 318.66 Bytes  
SHPO\_response 27March2017.pdf  
Shawnee Tribe\_TVA, ENERGYRIGHT SOLUTIONS EPA 04/13/2017 38.29 Bytes  
MITIGATION GRANT KUB REVISED INDUSTRIAL  
WHR\_CHP PROJECT IN KNOX CO\_response  
24March2017.pdf  
Absentee Shawnee\_TVA\_KUB Kuwahee Revised Industrial 04/13/2017 66.32 Bytes  
Project\_KnoxCo.TN\_TRIBAL\_CID68699\_response  
20March2017.pdf  
KUB EA INPUT.docx 04/13/2017 14.62 Bytes
8. The proposed project would not involve construction within the 100-year floodplain, which would be consistent with EO 11988. Based on adherence to standard BMPs, the proposed project would have no significant impact on floodplains.  
By: Carrie C Williamson 03/24/2017
10. Construction activities would not involve moving aquatic species or water from different locations, and equipment and materials used for the project would be clean and free of debris that could introduce exotic species and adversely affect aquatic habitat. Thus, the project would not contribute to the spread of exotic or invasive aquatic species.  
By: Craig L Phillips 03/27/2017
13. Standard construction BMPs, such as erosion control measures, would reduce environmental impacts to the point that no special mitigation measures would be required, and temporary impacts associated with construction and erosion would be eventually eliminated as impacted areas are revegetated or otherwise stabilized.  
By: Dana M Vaughn 03/01/2017
17. The adjacent Tennessee River provides important aquatic habitat to federal and state protected aquatic species. Ground disturbance would be minimized, and all work conducted in accordance to BMPs as outlined in state and local guidelines, to prevent runoff and sediment from reaching streams outside the project area. These BMPs are designed in part to minimize erosion and subsequent sedimentation in streams. Therefore, with proper implementation of BMPs, the project would not affect unique or important aquatic habitat.  
By: Craig L Phillips 03/27/2017
6. Per the attached NWI map, no wetlands are known to occur at the proposed site.  
By: Dana M Vaughn 03/01/2017
7. A March 2017, field survey of the project area did not document any watercourses. Therefore, no impacts to water flow, stream banks, or stream channels would occur.  
By: Craig L Phillips 03/27/2017

### Part 3 Comments

1. The project is estimated to reduce KUB's WWTP net CO2 equivalent emissions.  
  
Diesel fuel burned in heavy equipment during construction of the CHP will cause a very minimal amount of air pollutants that will be of no environmental consequence. In addition, standard construction BMPs, such as dust control, would reduce environmental impacts to the point that no special mitigation measures would be required, and temporary impacts associated with construction and erosion would be eventually eliminated as impacted areas are revegetated or otherwise stabilized.  
By: Dana M Vaughn 03/01/2017
4. Standard construction BMPs, such as erosion control measures, would reduce environmental impacts to the point that no special mitigation measures would be required, and temporary impacts associated with construction and erosion would be eventually eliminated as impacted areas are revegetated or otherwise stabilized.

## Environmental Assessment and Finding of No Significant Impact

	By: Dana M Vaughn	03/01/2017
Part 4 Comments		
4.	The CHP will be built on site of the KUB WWTP and will not contrast with existing land use.	
	By: Dana M Vaughn	03/01/2017
10.	Direct and immediate impacts from construction activities are not likely to affect local roads or traffic loads because of the short duration of the proposed actions.	
	By: Dana M Vaughn	03/01/2017
Part 5 Comments		
5.	See EA for detailed information.	
	By: Dana M Vaughn	03/28/2017
7.	A new building will be built within the KUB WWTP property.	
	By: Dana M Vaughn	03/01/2017
CEC Permit Listing		
Part 2 Permits		
13.	National Pollutant Discharge Elimination System Permit (¿ 402 Clean Water Act)	
	By: Dana M Vaughn	03/01/2017
Part 3 Permits		
1.	Air Emissions Minor Source/Construction Permits	
	By: Dana M Vaughn	03/01/2017
4.	National Pollutant Discharge Elimination System Permit (¿ 402 Clean Water Act)	
	By: Dana M Vaughn	03/01/2017
CEC Commitment Listing		

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## **Attachment C – Tennessee State Historic Preservation Officer Correspondence**

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

March 20, 2017

Mr. Clinton E. Jones  
Tennessee Valley Authority  
Biological and Cultural Compliance  
400 West Summit Hill Drive  
Knoxville, TN 37902

RE: TVA / Tennessee Valley Authority, Energyright Solutions EPA Mitigation Grant, KUB Revised  
Industrial WHR/CHP Project, Knoxville, Knox County, TN

Dear Mr. Jones:

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

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

If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. If you are applying for federal funds, license or permit, you should submit this letter as evidence of consultation under Section 106 to the appropriate federal agency, which, in turn, should contact us as required by 36 CFR 800. If you represent a federal agency, you should submit a formal determination of eligibility and effect to us for comment. You may direct questions or comments to Jennifer M. Barnett (615) 741-1588, ext. 105. This office appreciates your cooperation.

Sincerely,

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

EPM/jmb

## EnergyRight Solutions USEPA Mitigation Project – Knoxville Utility Board

**From:** [Shuler, Marianne M](#)  
**To:** [Ezzell, Patricia Bernard](#); [Harle, Michaelyn S](#); [McCampbell, Amy Boardman](#)  
**Subject:** FW: TVA\_KUB Kuwahee Revised Industrial Project\_KnoxCo.TN\_TRIBAL\_CID68699\_13Mar2017  
**Date:** Saturday, March 18, 2017 9:21:08 AM

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Comments from Absentee Shawnee.

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**From:** Erin Thompson [mailto:[ethompson@astribc.com](mailto:ethompson@astribc.com)]  
**Sent:** Friday, March 17, 2017 2:43 PM  
**To:** Shuler, Marianne M  
**Subject:** RE: TVA\_KUB Kuwahee Revised Industrial Project\_KnoxCo.TN\_TRIBAL\_CID68699\_13Mar2017

**TVA External Message. Please use caution when opening.**

RE: TVA\_KUB Kuwahee Revised Industrial Project\_KnoxCo.TN\_TRIBAL\_CID68699\_13Mar2017

To Whom It May Concern:

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470f), and implementing regulation, 36 CFR 800, "Protection of Historic Properties" the Absentee Shawnee Tribal Historic Preservation Office is responding to your request for identifying properties of significance to our Tribe in Knox County, Tennessee.

The Absentee Shawnee has historic ties within the area referenced in your letter of March 13, 2017. At this time, this office is unaware of properties of significance to inform you of that fall within the APE for this project.

There remains the possibility that unrecorded cultural resources, including archaeological artifacts or human remains, may be encountered during construction, demolition or earthmoving activities of this project. Should this occur, we require you contact this office in order that we may offer appropriate comments under 36 CFR 800.13. Email is the preferred method of communication.

Best Regards,

**Erin Thompson**  
**Tribal Historic Preservation Officer**  
**Absentee Shawnee Tribe of Oklahoma**  
**2025 Gordon Cooper Drive**  
**Shawnee, OK 74801**  
**(P) 405.275.4030 Ext. 6340**  
**[ethompson@astribc.com](mailto:ethompson@astribc.com)**

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**From:** Shuler, Marianne M [mailto:[mmshuler@tva.gov](mailto:mmshuler@tva.gov)]  
**Sent:** Monday, March 13, 2017 12:58 PM

## Environmental Assessment and Finding of No Significant Impact

**From:** [Ezzell, Patricia Bernard](#)  
**To:** [Shuler, Marianne M](#); [McCampbell, Amy Boardman](#)  
**Cc:** [Cole, Stephen C](#); [Harle, Michaelyn S](#); [Wells, Edward William III](#)  
**Subject:** FW: TVA, ENERGYRIGHT SOLUTIONS EPA MITIGATION GRANT KUB REVISED INDUSTRIAL WHR/CHP PROJECT IN KNOX COUNTY, TENNESSEE  
**Date:** Friday, March 24, 2017 9:46:52 AM

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fyi

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**From:** Tonya Tipton [mailto:[tonya@shawnee-tribe.com](mailto:tonya@shawnee-tribe.com)]  
**Sent:** Thursday, March 23, 2017 4:45 PM  
**To:** Ezzell, Patricia Bernard  
**Subject:** TVA, ENERGYRIGHT SOLUTIONS EPA MITIGATION GRANT KUB REVISED INDUSTRIAL WHR/CHP PROJECT IN KNOX COUNTY, TENNESSEE

**TVA External Message. Please use caution when opening.**

This letter is in response to the above referenced project.

The Shawnee Tribe's Tribal Historic Preservation Department concurs that no known historic properties will be negatively impacted by this project.

We have no issues or concerns at this time, but in the event that archaeological materials are encountered during construction, use, or maintenance of this location, please re-notify us at that time as we would like to resume consultation under such a circumstance.

Thank you for giving us the opportunity to comment on this project.

Sincerely,

Tonya Tipton  
Shawnee Tribe



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