Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

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10 CFR 50.4

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Units 1 and 2
Facility Operating License Nos. NPF-90 and NPF-96
NRC Docket Nos. 50-390 and 50-391

Subject: **Watts Bar Nuclear Plant - Annual Non-Radiological Environmental Operating Report - 2018**

In accordance with Section 5.4.1, "Routine Reports," of Appendix B, "Environmental Protection Plan (Non-Radiological)," to the Watts Bar Nuclear Plant (WBN) Units 1 and 2 Operating Licenses, enclosed is the 2018 Annual Non-Radiological Environmental Operating Report for WBN. This report is required to be submitted to the Nuclear Regulatory Commission (NRC) within 90 days following the anniversary of the issuance of the WBN Unit 1 operating license (i.e., February 7, 1996). This report addresses the period from February 7, 2018 through February 6, 2019.

There are no new regulatory commitments in this letter. If you have any questions concerning this matter, please contact Kim Hulvey, WBN Licensing Manager, at (423) 365-7720.

Respectfully,

Anthony L. Williams IV
Site Vice President
Watts Bar Nuclear Plant

Enclosure:

Tennessee Valley Authority Watts Bar Nuclear Plant Annual Non-Radiological Environmental Operating Report February 7, 2018 through February 6, 2019

cc (Enclosure):

NRC Regional Administrator - Region II
NRC Project Manager - Watts Bar Nuclear Plant
NRC Senior Resident Inspector - Watts Bar Nuclear Plant
U.S. Fish and Wildlife Service

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT

ANNUAL NON-RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

FEBRUARY 7, 2018 THROUGH FEBRUARY 6, 2019

TABLE OF CONTENTS

I. INTRODUCTION E-3

II. REPORTS PREVIOUSLY SUBMITTED AS SPECIFIED IN THE WBN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT E-3

III. SPECIAL BIOLOGICAL MONITORING REPORTS E-4

IV. ENVIRONMENTAL PROTECTION PLAN NONCOMPLIANCES E-5

V. CHANGES MADE TO APPLICABLE STATE AND FEDERAL PERMITS AND CERTIFICATIONS E-7

VI. CHANGES IN FACILITY DESIGN OR OPERATION E-8

VII. NON-ROUTINE REPORTS E-9

VIII. CHANGES IN APPROVED ENVIRONMENTAL PROTECTION PLAN SPECIFICATIONS E-9

I. INTRODUCTION

The Tennessee Valley Authority (TVA) Watts Bar Nuclear Plant (WBN) Annual Non-Radiological Environmental Operating Report is provided for the period of February 7, 2018 through February 6, 2019. This report was prepared in accordance with Appendix B to facility operating licenses NPF-90 and NPF-96, "Environmental Protection Plan (EPP)," Section 5.4.1, "Routine Reports." This report includes a summary of:

A. Reports previously submitted as specified in the WBN National Pollutant Discharge Elimination System (NPDES) Permit Number TN0020168.

B. All special reports submitted per EPP Section 4.1, "Environmental Monitoring."

C. All EPP noncompliances and the corrective actions taken to remedy them.

D. Changes made to applicable state and federal permits and certifications.

E. Changes in station design or operation that could involve a significant environmental impact or changes to the findings of the Final Environmental Statement (FES).

F. Non-routine reports submitted per EPP Section 4.2, "Unusual or Important Environmental Events."

G. Changes in the approved EPP.

II. REPORTS PREVIOUSLY SUBMITTED AS SPECIFIED IN THE WBN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

The following reports were submitted as specified in the WBN NPDES Permit Number TN0020168 and the Tennessee Storm Water Multi-Sector General Permit (TMSP) Numbers TNR051343 and TNR050000:

A. As required by the NPDES permit, Discharge Monitoring Reports (DMRs) were completed and submitted monthly to the Tennessee Department of Environment and Conservation (TDEC) no later than 15 days after the completion of the reporting period.

B. WBN submitted to the TDEC the "Compliance Survey for Watts Bar Nuclear Plant Outfall 113 Passive Mixing Zone" for "Winter 2017". As summarized in the reports, the compliance surveys confirm the adequacy of the passive mixing zone and the adequacy of the thermal model to evaluate the operation of Outfall 113.

C. The annual Biocide/Corrosion Treatment Report was completed and submitted to TDEC prior to the February 15, 2019 deadline.

D. The annual sampling and analysis required by the 2018 TMSP for storm water was performed and the annual reports were submitted to the TDEC within 30 days after the sample results were obtained.

II. REPORTS PREVIOUSLY SUBMITTED AS SPECIFIED IN THE WBN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT (continued)

E. DMR Quality Assurance (QA) Laboratory Performance Evaluation Study 38 was completed by and submitted to Environmental Resource Associates, the TDEC, and the Environmental Protection Agency (EPA) prior to the August 31, 2018 deadline. The analysis performed and reported by our contract analytical laboratories were "Acceptable".

III. SPECIAL BIOLOGICAL MONITORING REPORTS

A. EPP Section 4.1.1, "Aquatic Monitoring"

1. Routine semi-annual Whole Effluent Toxicity (WET), a.k.a. chronic biotoxicity tests, were conducted on plant effluents and the appropriate reports were submitted as part of the DMR for Outfall Serial Numbers (OSNs) 101 and 113, in April and November 2018 as required by the NPDES permit. All TVA test results were valid for all sampling outfalls and dates and for both IC25 tests (*P. promelas* and *C. dubia*).

2. A report on the "Biological Monitoring of the Tennessee River near the Watts Bar Nuclear Plant 2012" is not required in accordance with Part III, Section I of the WBN NPDES Permit, but was a recommendation in the "Watts Bar Nuclear Plant Supplemental Condenser Cooling Water System Fish Monitoring Program, 2001" report to be consistent with other required annual reporting programs at Tennessee and Alabama nuclear plants. TVA determined in January 2013 that these reports, or an equivalent, would be submitted with the permit renewals versus the historical annual basis (last submitted December 29, 2015 as a component of the NPDES permit renewal application).

3. In accordance with the provisions of Tennessee Code Annotated Section 69-7-301 et seq., the Water Resources Information Act, WBN submitted the Water Withdrawal Registration Form for Calendar Year (CY) 2018 to the TDEC prior to the February 15, 2019 deadline. Although federal agencies are not subject to laws and regulations promulgated by state governments unless Congress has clearly waived the federal government's sovereign immunity, in 2003 TVA voluntarily agreed as a matter of policy to provide the registration information in order to assist both TVA and TDEC in carrying out their water management responsibilities.

4. On July 27, 2017, the Tennessee Department of Environment and Conservation (TDEC) performed a Compliance Evaluation Inspection (CEI). The purpose of the inspection was to evaluate the site's compliance with the terms and conditions of the site's National Pollutant Discharge Elimination System (NPDES) permit, NPDES Permit TN0020168 and its Tennessee Multi-sector Permit (TMSP), NPDES Permit Tracking Number TNR051343. No violations were noted; the Division requested prior notification of the next calibration of the flow

III. SPECIAL BIOLOGICAL MONITORING REPORTS (continued)

meter at OSN 113 for the opportunity to observe. The flow calibration has been scheduled for May 28 through 30, 2019.

5. On November 8, 2018, TVA submitted a waiver of the Section (§) 122.21(R)(9) through (13) information requirements of the § 316(b) rule for WBN. TVA believes, that should the Director (TDEC) grant TVA's waiver request, that the information previously submitted for Unit 1, along with the supplemental information included for U2, are sufficient for the Director to make a decision with regard to entrainment and impingement requirements for WBN in the subsequent NPDES permit.

B. EPP Section 4.1.2, "Maintenance of Transmission Line Corridors"

Listed below are the 500 kV transmission lines associated with WBN and information regarding the maintenance that was performed on each line:

500 kV Line Identifier	Maintenance Performed
Bull Run - Watts Bar (Note Below)	The following methods were used to treat the 46.1 acres: Backpack, Aquatic, 245 gallons total or 5.32 gallons per acre Arsenal (imazapyr) at 0.5% Rodeo (glyphosate) at 4% EP-990 of Liberate at 1%
Watts Bar - Roane	No chemical or herbicide was utilized on these lines within the period.
Watts Bar - Volunteer	No chemical or herbicide was utilized on these lines within the period.
Watts Bar - Sequoyah 1 (Note Below)	No chemical or herbicide utilized on these lines within the period.
Watts Bar - Sequoyah 2 (Note Below)	No chemical or herbicide utilized on these lines within the period.
Note: The transmission line designated as Bull Run - Sequoyah in previous versions of this report has been split into the following transmission lines: 1) Watts Bar - Sequoyah 1, and 2) Bull Run - Watts Bar.	

IV. ENVIRONMENTAL PROTECTION PLAN NONCOMPLIANCES

WBN received zero Notice of Violations (NOVs) from February 2018 to February 2019.

In accordance with the NPDES permit, the following noncompliances were reported to the TDEC.

IV. ENVIRONMENTAL PROTECTION PLAN NONCOMPLIANCES (continued)

A. Permit for Industrial Activities Permit number TNR051343 Sector O annual benchmark monitoring requirement for total recoverable iron at Storm Water Outfall No. 9. The likely cause of the exceedance of the benchmark monitoring requirement for total recoverable iron is elevated background iron concentration in the soil around the storm water outfall, a high run off velocity during a heavy rainfall in a short time duration, and the need for more effective Best Management Practices (BMPs). WBN installed three additional iron sock check dams upstream of the SW-9 monitoring point; one near Yard 2 (upstream of the Horseshoe Pond) and two in front of the SW-9 monitoring point (downstream of the Horseshoe Pond). Storm water analytical monitoring will be conducted during 2019 to determine if this modification has been effective and if additional measures should be taken. All corrective actions were documented in CR # 1404482.

B. For the month of April 2018, WBN exceeded the NPDES Permit Monthly Average for Total Suspended Solids (TSS) limit at the Low Volume Waste Treatment Pond (LVWTP) IMP 103. The TSS limits are Daily Maximum of 100 mg/L and Monthly Average of 30 mg/L. The sample collected on April 19, 2018 yielded 42.5 mg/L. In attempt to bring down the monthly average, a water filtration system was mobilized and placed in service on April 27, 2018 and daily TSS samples collections were obtained through the end of the month in parallel with turbidity samples. The likely cause of the exceedance of the NPDES permit monthly TSS limit is elevated algal growth. All corrective actions were documented in CR #1412363.

C. For the month of June 2018, WBN exceeded the NPDES Permit pH Monthly Maximum at the Low Volume Waste Treatment Pond (LVWTP) Outfall 103. The NPDES Permit limit for pH is 6.0 SU – 9.0 SU. The analytical result of the sample June 6, 2018 was 9.58 SU, therefore the site did not meet the permit requirement. The cause of the exceedance of the NPDES permit pH limit is believed to be equipment malfunction of the CO2 sparging system. In attempt to bring down the pH, the current CO2 sparging system was inspected and two of the spargers were replaced. All corrective actions were documented in CR # 1421308.

D. On January 30 through February 2, 2019, WBN discharged chlorine-treated raw water to the Tennessee River via the TMSP outfalls SW-1 and SW-6 at the Intake Pumping Station (IPS). In accordance with the WBN Biocide Corrosion Treatment Plan, the IPS pit is treated with sodium hypochlorite for macro-invertebrate control. Chemistry Staff verified that the IPS pit was continuously treated with chlorine until Saturday, February 2, 2019, at 1530. Chlorine-treated raw water is not listed as an allowable non-stormwater discharge under the TMSP general permit and was therefore considered an unpermitted discharge under the NPDES permit. Immediate steps were take to terminate the unpermitted discharge on February 2, 2019. All corrective actions were documented in CR #1488277.

V. CHANGES MADE TO APPLICABLE STATE AND FEDERAL PERMITS AND CERTIFICATIONS

A. NPDES Permit Number TN 0020168

1. In accordance with 40 CFR 122.22, TVA updated the NPDES signatory authority authorizing the positions of WBN Site Vice President, Plant Manager, and Senior Chemistry/Environmental Manager as the duly authorized persons for signing reports required under the permit as well as other WBN compliance reports.

2. TVA submitted a request for a waiver of the Section (§) 122.21 (r)(9) through (13) of the § 316(b) rule on November 9, 2018. TVA first requested its waiver on September 5, 2017. Since that time, dual reactor/unit operations have become the prominent operating configuration, and the actual facility cooling water intake flows have changed in a reduced direction. TVA believes that provided information to date is sufficient for the Director to make a decisions with regard to entrainment and impingement requirements for WBN in the subsequent NPDES permit.

B. Air Permit Number 463822

1. In accordance with 1200-03-09-.02(11)(b)21(i) of the Tennessee Air Pollution Control Regulations, TVA updated the Air signatory authority authorizing the position of WBN Site Vice President and Plant Manager as the duly authorized persons for signing reports required under the permit as well as other WBN compliance reports.

2. TVA submitted a request for the Air permit to remove the Diesel Generator DG-11 in July, 2018. The TDEC finalized the approval in January 2019.

VI. CHANGES IN FACILITY DESIGN OR OPERATION

In accordance with EPP Section 3.1, "Plant Design and Operation," facility design and operational changes were reviewed for potential effect on the environment as described below. A review of facility design and operational changes proposed from February 7, 2018, through February 6, 2019, was performed. Projects considered as having potential impact on the environment included those that:

- Could have caused waste stream generation/alteration.
- Required the acquisition/modification of permits.
- Involved the use of hazardous material.
- Required physical construction.

The review, performed in accordance with the guidelines of TVA's National Environmental Policy Act (NEPA) Program, documented that design and operational changes did not involve an unreviewed environmental question. The following criteria were used to identify those projects with a potential for environmental effects:

A. Waste stream generation/alteration:
Air, Hazardous Waste, Solid Waste, Polychlorinated Biphenyls, Asbestos, or Wastewater.

B. Permit Acquisition/Modification:
NPDES, Air, Inert Landfill, or Other.

C. Hazardous Materials:
Hazardous Materials that are environmentally unfriendly and are likely to generate a Resource Conservation and Recovery Act (RCRA) hazardous or Toxic Substances Control Act (TSCA) waste.

D. Physical Construction Involved:
Erosion/Sedimentation Effects, Transportation Effects, Noise Effects, Groundwater Effects, Surface Water Effects, Floodplain Effects, Wetland Effects, Prime Farmland Effects, Unique Natural Features Effects, Aquatic Ecology Effects, Terrestrial Ecology Effects, Protected Species Effects, Sensitive Habitat Effects, Visual Effects, Historical, Cultural and Archeological Effects, Changes in Site Land Use, or Controversy.

E. Temporary Alterations:
There were no temporary alterations conducted during this period that met the environmental impact criteria.

<u>Design and Operational Changes</u>

Most of the design and operational changes conducted during this period did not meet the environmental impact criteria. There were 15 facility design and operational changes made during this reporting period with a potential impact on the environment. The appropriate environmental reviews were completed and all changes were found to be within the scope of existing environmental permits and in compliance with NEPA regulations.

VI. CHANGES IN FACILITY DESIGN OR OPERATION (continued)

The following Environmental Assessments (EAs) written to document the review of site changes are as follows:

No EAs were issued during this reporting period.

Those Categorical Exclusion Checklists (CECs) written to document the review of site changes are as follows:

(1)	38241	Replace A-Train and B-Train Main Control Room (MCR) and Shut Down Board Room (SDBR) Chillers
(2)	38656	Temporary Power for Outage Use
(3)	38660	CO2 Condenser Unit Replacement Project
(4)	38666	Node Building back up generator replacement
(5)	38789	WBN Low Level Dry Active Waste Storage Area Expansion
(6)	38920	WBN Meteorological Tower Exclusion Area Tree Removal
(7)	39291	Five (5) WBN building demolition/removal - Old Farm House, Metal Buildings A,B,C and E
(8)	39806	FP610007, WBN U2 Feedwater Heater/Heater Drain Tank Level controls, Single Point Vulnerability (SPV) elimination.
(9)	39824	WBN Road Paving Projects
(10)	40230	WBN Decontamination (DECON) Building Replacement

All other facility design and operational changes made during this reporting period with a potential impact on the environment were found to be within the scope of existing environmental permits and in compliance with regulations.

In summary, there were no facility designs or operational changes from February 7, 2018 to February 6, 2019, which resulted in an unreviewed environmental question.

VII. NON-ROUTINE REPORTS

No non-routine reports for EPP Section 4.2 were issued during this reporting period.

VIII. CHANGES IN APPROVED ENVIRONMENTAL PROTECTION PLAN SPECIFICATIONS

No changes were made to the WBN operating license, Appendix B, EPP during the reporting period.