



Tennessee Valley Authority, Post Office Box 2000, Soddy Daisy, Tennessee 37384-2000

January 30, 2017

State of Tennessee  
Department of Environment and Conservation  
Division of Water Pollution Control  
Enforcement & Compliance Section  
William R. Snodgrass Tennessee Tower  
312 Rosa L. Parks Avenue, 11th Floor  
Nashville, Tennessee 37243

Dear Ms. Angela Hall:

TENNESSEE VALLEY AUTHORITY (TVA) – SEQUOYAH NUCLEAR PLANT (SQN) - NPDES  
PERMIT NO. TN0026450 – 2016 BIOCIDES/CORROSION TREATMENT PLAN (B/CTP) ANNUAL  
REPORT

Enclosed is a copy of the 2016 B/CTP annual report for SQN. Biodetergent 73551 was not added during CY 2016. Flogard MS 6237 was approved by your agency on December 5, 2016 for use at SQN and has been added to the B/CTP. The use of Flogard MS 6237 will commence in 2017. All other treatments in 2016 were conducted in accordance with the approved B/CTP.

If you have any questions or need additional information, please contact Millicent Garland at (423) 843-6714 or by e-mail at [mrmoore@tva.gov](mailto:mrmoore@tva.gov) of Sequoyah's Environmental staff.

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

Sincerely,

Gregory A. Boerschig  
Site Vice President (Interim)  
Sequoyah Nuclear Plant

D030  
C001  
NRR

Enclosures  
cc (Enclosures):

Mr. Vojin Janjić  
State of Tennessee  
Dept. of Environment and Conservation  
Division of Water Pollution Control  
6<sup>th</sup> Floor, L & C Annex  
401 Church Street  
Nashville, Tennessee 37243-1534

Chattanooga Environmental Field Office  
Division of Water Pollution Control  
State Office Building, Suite 550  
540 McCallie Avenue  
Chattanooga, Tennessee 37402-2013

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk

## 2016 Biocide/Corrosion Treatment Plan Annual Report

## Flogard MS6236

| Month       | Quantity in Pounds<br>(lbs/day) |         |       | Duration<br>in Hours<br>(hrs/day) | Analytical Results<br>mass balance calculations<br>(mg/L) |         |       | # of<br>samples | Days in<br>Service |
|-------------|---------------------------------|---------|-------|-----------------------------------|---|---------|-------|-----------------|--------------------|
|             | Maximum                         | Average | Limit |                                   | Maximum   | Average | Limit |                 |                    |
| January     | 418                             | 282     | 2275  | 24.00                             | 0.030   | 0.030   | 0.2   | 16              | 16                 |
| February    | 418                             | 272     | 2275  | 24.00                             | 0.030   | 0.030   | 0.2   | 17              | 17                 |
| March       | 418                             | 295     | 2275  | 24.00                             | 0.030   | 0.030   | 0.2   | 23              | 23                 |
| April       | 296                             | 229     | 2275  | 16.00                             | 0.030   | 0.030   | 0.2   | 13              | 13                 |
| May         | 418                             | 269     | 2275  | 24.00                             | 0.030   | 0.030   | 0.2   | 9               | 9                  |
| June        | 773                             | 482     | 2275  | 24.00                             | 0.060   | 0.056   | 0.2   | 14              | 14                 |
| July        | 748                             | 473     | 2275  | 24.00                             | 0.058   | 0.052   | 0.2   | 18              | 18                 |
| August      | 418                             | 274     | 2275  | 24.00                             | 0.030   | 0.030   | 0.2   | 13              | 13                 |
| September   | 418                             | 242     | 2275  | 24.00                             | 0.030   | 0.030   | 0.2   | 17              | 17                 |
| October     | -                               | -       | 2275  | -                                 | -   | -       | 0.2   | -               | -                  |
| November    | 418                             | 291     | 2275  | 24.00                             | 0.030   | 0.030   | 0.2   | 20              | 20                 |
| December    | 313                             | 191     | 2275  | 18.00                             | 0.050   | 0.040   | 0.2   | 7               | 7                  |
| Jan. - Dec. |                                 |         |       |                                   |   |         |       | 167             | 167                |

Per the B/CTP approval: "Flogard MS6236 is injected into the RCW system continuously, except during periods of other chemical injection due to common injection lines. Flogard MS6236 is injected into the ERCW Train A & B system intermittently."

## 2016 Biocide/Corrosion Treatment Plan Annual Report

## Towerbrom 960

| Month       | Quantity in Pounds<br>(lbs/day) |   |       | Duration<br>in Hours<br>(hrs/day) | Analytical Results<br>mass balance calculation<br>(mg/L) |         |       | # of<br>samples | Days in Service |
|-------------|---------------------------------|---|-------|-----------------------------------|--|---------|-------|-----------------|-----------------|
|             | Maximum                         | Average<br>(based on<br>days in<br>service) | Limit |                                   | Maximum  | Average | Limit |                 |                 |
| January     | 200                             | 170   | 1425  | 4.00                              | 0.037  | 0.022   | 0.10  | 21              | 21              |
| February    | 200                             | 181   | 1425  | 4.00                              | 0.043  | 0.025   | 0.10  | 8               | 8               |
| March       | 200                             | 183   | 1425  | 4.00                              | 0.022  | 0.017   | 0.10  | 13              | 13              |
| April       | 200                             | 183   | 1425  | 4.00                              | 0.028  | 0.018   | 0.10  | 26              | 23              |
| May         | 450                             | 320   | 1425  | 23.98                             | 0.036  | 0.019   | 0.10  | 22              | 22              |
| June        | 350                             | 200   | 1425  | 23.98                             | 0.034  | 0.020   | 0.10  | 24              | 24              |
| July        | 250                             | 195   | 1425  | 4.00                              | 0.030  | 0.021   | 0.10  | 21              | 21              |
| August      | 300                             | 200   | 1425  | 4.00                              | 0.038  | 0.022   | 0.10  | 24              | 24              |
| September   | 275                             | 236   | 1425  | 4.00                              | 0.038  | 0.019   | 0.10  | 22              | 22              |
| October     | 400                             | 390   | 1425  | 23.98                             | 0.044  | 0.026   | 0.10  | 25              | 25              |
| November    | 200                             | 200   | 1425  | 4.00                              | 0.035  | 0.026   | 0.10  | 13              | 12              |
| December    | 200                             | 191   | 1425  | 4.00                              | 0.038  | 0.025   | 0.10  | 10              | 7               |
| Jan. - Dec. |                                 |   |       |                                   |  |         |       | 229             | 222             |

Per the B/CTP approval: "Whole Effluent toxicity testing (biomonitoring) of Outfall 101 and Outfall 110 shall be undertaken once per year when oxidizing biocides are being used."

Outfall 101: Toxicity was sampled May 15 - 20, 2016.

Test Results: *Pimephales promelas*: IC25 >100%

*Ceriodaphnia dubia*: IC25 > 100%

Outfall 110: There has been no discharge from Outfall 110 January - December 2016.

## 2016 Biocide/Corrosion Treatment Plan Annual Report

## Spectrus CT1300

| Month       | Quantity in Pounds<br>(lbs/day) |         |       | Duration<br>in Hours<br>(hrs/day) | Analytical Results<br>mass balance calculations<br>(mg/L) |         |       | # of<br>Samples | Days in<br>Service |
|-------------|---------------------------------|---------|-------|-----------------------------------|---|---------|-------|-----------------|--------------------|
|             | Maximum                         | Average | Limit |                                   | Maximum   | Average | Limit |                 |                    |
| January     |                                 |         |       |                                   |   |         |       |                 |                    |
| February    |                                 |         |       |                                   |   |         |       |                 |                    |
| March       |                                 |         |       |                                   |   |         |       |                 |                    |
| April       |                                 |         |       |                                   |   |         |       |                 |                    |
| May         |                                 |         |       |                                   |   |         |       |                 |                    |
| June        | 487                             | 264     | 855   | 24.00                             | 0.036   | 0.032   | 0.05  | 10              | 10                 |
| July        | 483                             | 362     | 855   | 24.00                             | 0.030   | 0.030   | 0.05  | 2               | 2                  |
| August      | 483                             | 219     | 855   | 24.00                             | 0.030   | 0.024   | 0.05  | 7               | 7                  |
| September   |                                 |         |       |                                   |   |         |       |                 |                    |
| October     |                                 |         |       |                                   |   |         |       |                 |                    |
| November    |                                 |         |       |                                   |   |         |       |                 |                    |
| December    |                                 |         |       |                                   |   |         |       |                 |                    |
| Jan. - Dec. |                                 |         |       |                                   |   |         |       | 19              | 19                 |

Per the B/CTP approval: "Whole Effluent toxicity testing (biomonitoring) of Outfall 101 and Outfall 110 shall be undertaken once per year when non-oxidizing biocides are being used."

Outfall 101: Toxicity was sampled July 31 - August 5, 2016 during the Spectrus CT1300 treatment.

Test Results: *Pimephales promelas*: IC25 >100%

*Ceriodaphnia dubia*: IC25 > 100%

Outfall 110: There has been no discharge from Outfall 110 January - December 2016.

## 2016 Biocide/Corrosion Treatment Plan Annual Report

## Biodetergent 73551

| Month       | Quantity in Pounds<br>(lbs/day) |         |       | Duration in Hours<br>(hrs/day)* |       | Analytical Results<br>mass balance calculations<br>(mg/L) |         |       | # of<br>samples | Days in<br>Service |
|-------------|---------------------------------|---------|-------|---------------------------------|-------|---|---------|-------|-----------------|--------------------|
|             | Maximum                         | Average | Limit | Maximum                         | Limit | Maximum   | Average | Limit |                 |                    |
| January     | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| February    | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| March       | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| April       | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| May         | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| June        | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| July        | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| August      | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| September   | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| October     | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| November    | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| December    | -                               | -       | -     | -                               | -     | -   | -       | -     | -               | -                  |
| Jan. - Dec. |                                 |         |       |                                 |       |   |         |       | 0               | 0                  |

\*Treatment durations shall not exceed 30 minutes at 2-3 times per week into ERCW Train A, ERCW Train B, and RCW systems.

Per the B/CTP approval: "Frequency of use would be approximately 208 days per year and duration of use would be about 0.5 hours per day with a maximum daily usage of 50 lbs/day for all three-injection points."

## 2016 Biocide/Corrosion Treatment Plan Annual Report

## Spectrus BD 1500

| Month       | Quantity in Pounds<br>(lbs/day) |         |       | Duration<br>in Hours<br>(hrs/day) | Analytical Results<br>mass balance calculations<br>(mg/L) |         |       | # of<br>Samples | Days in<br>Service |
|-------------|---------------------------------|---------|-------|-----------------------------------|---|---------|-------|-----------------|--------------------|
|             | Maximum                         | Average | Limit |                                   | Maximum   | Average | Limit |                 |                    |
| January     | 0                               | 0       | 50    | 0.50                              | 0.000   | 0.000   | 2.00  | 0               | 0                  |
| February    | 0                               | 0       | 50    | 0.50                              | 0.000   | 0.000   | 2.00  | 0               | 0                  |
| March       | 14.22                           | 14.22   | 50    | 0.50                              | 0.016   | 0.016   | 2.00  | 2               | 2                  |
| April       | 24                              | 24      | 50    | 0.50                              | 0.030   | 0.030   | 2.00  | 6               | 6                  |
| May         | 14                              | 14      | 50    | 0.50                              | 0.016   | 0.016   | 2.00  | 4               | 4                  |
| June        | 5                               | 5       | 50    | 0.50                              | 0.020   | 0.020   | 2.00  | 6               | 6                  |
| July        | 5                               | 5       | 50    | 0.50                              | 0.015   | 0.015   | 2.00  | 10              | 10                 |
| August      | 14                              | 14      | 50    | 0.50                              | 0.015   | 0.015   | 2.00  | 4               | 4                  |
| September   | 14                              | 14      | 50    | 0.50                              | 0.015   | 0.015   | 2.00  | 5               | 5                  |
| October     | 0                               | 0       | 50    | 0.00                              | 0.000   | 0.000   | 2.00  | 0               | 0                  |
| November    | 28                              | 28      | 50    | 0.50                              | 0.030   | 0.030   | 2.00  | 8               | 8                  |
| December    | 28                              | 26      | 50    | 0.50                              | 0.050   | 0.050   | 2.00  | 6               | 6                  |
| Jan. - Dec. |                                 |         |       |                                   |   |         |       | 51              | 51                 |

Per the B/CTP approval: "Whole Effluent toxicity testing (biomonitoring) of Outfall 101 and Outfall 110 shall be

Outfall 101: Toxicity was sampled July 31 - August 5, 2016 during the Spectrus CT1300 treatment.

Test Results: *Pimephales promelas*: IC25 > 100%

*Ceriodaphnia dubia*: IC25 > 100%

Outfall 110: There has been no discharge from Outfall 110 January - December 2016.