Stantec Consulting Services Inc.
1409 North Forbes Road, Lexington KY 40511-2024

October 5, 2016
File: rpt_004_let_175565009
Revision 0

Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402

RE: Initial Hazard Potential Classification Assessment
Stilling Pond (including Retention Pond)
EPA Final Coal Combustion Residuals (CCR) Rule
TVA Cumberland Fossil Plant
Cumberland City, Tennessee

1.0 PURPOSE

This letter documents Stantec's certification of the initial hazard potential classification assessment for the TVA Cumberland Fossil Plant's Stilling Pond (including Retention Pond), herein referred to as the Stilling Pond. The EPA Final CCR Rule requires owners or operators of CCR surface impoundments to conduct initial and periodic hazard potential classification assessments of the unit, assign one of three potential hazard classification ratings to it, and provide the basis for the rating, as per 40 CFR 257.73(a)(2). Hazard potential classification ratings define the consequences in the event of a failure – *the ratings have nothing to do with the likelihood of failure or the structural stability of the impoundment*. Based on this assessment, the Stilling Pond has been assigned a significant hazard potential classification rating.

2.0 BASIS FOR CLASSIFICATION RATING

As described in the attached assessment report, the hazard potential classification rating of "significant" was assigned to the Stilling Pond because a failure or mis-operation would result in no probable loss of human life, but could cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. In 2013, a breach inundation study was completed that modeled breaches on the northern and eastern dikes of the Stilling Pond. Eight areas of interest were identified in the path of the analyzed breach scenarios including roadways, staging areas, a cooling facility, parking areas, electrical utility areas, and a switch yard. Loss of life was considered improbable due to the intermittent and transient nature of persons within these areas. However, a breach would likely result in release of CCRs to Wells Creek and Cumberland River. Review of the analysis and current conditions at the Stilling Pond concluded that the existing hazard classification was applicable.

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3.0 SUMMARY OF FINDINGS

The attached report presents the analysis for the initial hazard potential classification assessment. The results demonstrate that the impoundment meets the hazard potential classification of "significant."

4.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

I, John S. Montgomery, being a Professional Engineer in good standing in the State of Tennessee, do hereby certify, to the best of my knowledge, information, and belief:

1. that the information contained in this certification is prepared in accordance with the accepted practice of engineering;

2. that the information contained herein is accurate as of the date of my signature below; and

3. that the initial hazard potential classification assessment for the TVA Cumberland Fossil Plant's Stilling Pond (including Retention Pond) meets the requirements specified in 40 CFR 257.73(a)(2).

SIGNATURE John S. Montgomery DATE October 5, 2016

ADDRESS: Stantec Consulting Services Inc.
1409 North Forbes Road
Lexington, Kentucky 40511-2024

TELEPHONE: (859) 422-3000

ATTACHMENTS: Initial Hazard Potential Classification Assessment

Initial Hazard Potential Classification Assessment

Cumberland Fossil Plant – Stilling Pond
Cumberland City, Tennessee

Prepared for:
Tennessee Valley Authority
Chattanooga, Tennessee

Prepared by:
Stantec Consulting Services Inc.
Lexington, Kentucky

October 5, 2016
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Table of Contents

1.0 RATING

This report documents the Hazard Potential Classification Assessment for the Stilling Pond (including Retention Pond), herein referred to as the Stilling Pond, at Cumberland Fossil Plant (CUF) as required per the Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities [RIN-2050-AE81; FRL-9149-4] (EPA Final CCR Rule) § 257.73 (a)(2). Hazard potential classifications are based on the consequences of failure or mis-operation and are not a measure of the condition of the unit. The applicable hazard potential classifications are defined in the EPA Final CCR Rule § 257.53 as follows:

> (1) High hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation will probably cause loss of human life.
>
> (2) Significant hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.
>
> (3) Low hazard potential CCR surface impoundment means a diked surface impoundment where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the surface impoundment owner's property.

Based on these definitions the Stilling Pond is classified as a significant hazard potential CCR surface impoundment.

This report contains supporting documentation for the Hazard Potential Classification Assessment. The hazard potential classification for this structure was determined by review of a previous assessment conducted by Stantec in September, 2013.

2.0 BASIS OF RATING

2.1 INTRODUCTION

The Tennessee Valley Authority (TVA) has contracted Stantec Consulting Services Inc. (Stantec) to review and update previous Hazard Potential Classification Assessments as needed and to prepare the accompanying certification for selected impoundments at various TVA Plants.

CUF is located in Stewart County Tennessee approximately 60 miles northwest from Nashville. The plant is located on the southern bank of the Cumberland River at Cumberland River Mile 103. The Stilling Pond is located northwest of the power plant. A site overview figure is included in the appendix.

2.2 SOURCE DATA

For the CUF Stilling Pond, an assessment was previously conducted in 2013. Based on the findings, it was recommended that the hazard classification be listed as a significant hazard.

2.3 POTENTIAL FAILURE SCENARIOS

As part of the 2013 study, three breach locations were considered including two along the eastern dike and one along the northern dike. A probable maximum precipitation (PMP) scenario was modeled using the dam break capabilities of HEC-HMS. The resulting breach hydrograph was routed downstream using a 2D model developed in FLO-2D. Eight areas of interest were identified in the path of the analyzed breach scenarios including roadways, staging areas, a cooling facility, parking areas, electrical utility areas, and a switch yard. Due to the limited expected impacts and/or transient nature of the potential at-risk populations, probable loss of human life due to a breach was not envisioned.

The Stilling Pond is adjacent to Wells Creek which drains to Lake Barkley and the Cumberland River. It is likely that a breach would result in the off-site release of CCRs into the waters of the United States.

As part of this initial hazard classification assessment, site conditions were reviewed to determine if changes have occurred to the impoundment or to downstream areas that would affect the conclusions of the 2013 study. No significant changes have been identified and it is concluded that the hazard classification determination is appropriate.

2.4 HAZARD CLASSIFICATION

Findings of this review and assessment demonstrate that a breach of the Stilling Pond would result in no probable loss of human life, but could cause economic loss or environmental damage. It is Stantec's opinion the impoundment fits the definition for a significant hazard potential CCR surface impoundment (as defined in the EPA Final CCR Rule §257.53).

3.0 REFERENCES

1. Stantec, September 30, 2013. Dam Safety Hazard Classification Projects Summary Report.

2. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities [RIN-2050-AE81; FRL-9149-4]. April, 2015.

APPENDIX
SITE OVERVIEW FIGURE

Stantec

1509183 1512464

731626 731626

1509183 1512464

Figure No.
1

Title
Site Overview
CUF - Stilling Pond

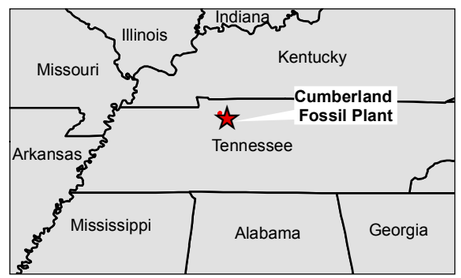
Client/Project
Tennessee Valley Authority
Cumberland Fossil Plant (CUF)
Hazard Potential Classification Assessment

Project Location:
Stewart County, TN

Prepared by BSJ on 2015-06-29
Technical Review by MMM on 2016-09-30
Independent Review by AWG on 2016-09-30

0 150 300
Feet

1:3,600 (At Original document size of 11x17)



Notes
1. Coordinate System: NAD 1927 StatePlane Tennessee FIPS 4100
2. TVA Aerial Imagery Dated 2014.
3. State boundaries produced by ESRI, U.S. Department of Commerce, U.S. Census Bureau.

Stantec

TVA

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