

CLOSURE PLAN

CFR 257.102(b)

Waste Water and Sludge Pond

Oklahoma Power Station
Vernon, Texas

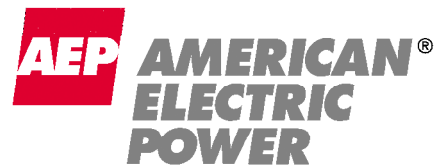
October, 2016

Prepared for : Public Service Company of Oklahoma

Prepared by: American Electric Power Service Corporation

1 Riverside Plaza

Columbus, OH 43215



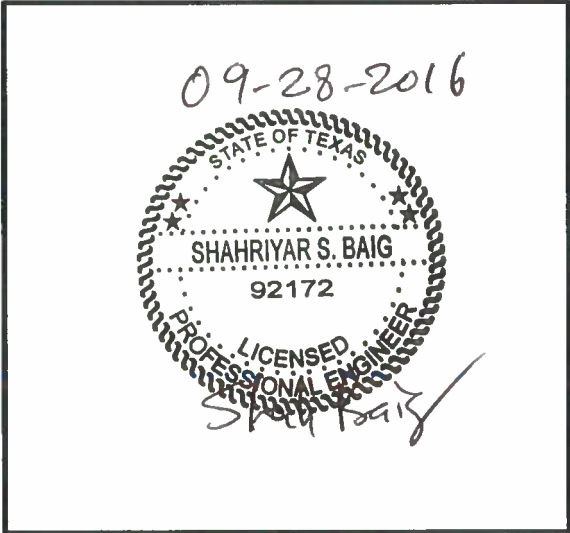
Document ID: GERS-16-083

CLOSURE PLAN
CFR 257.102(b)
OKLAUNION POWER STATION
WASTE WATER AND SLUDGE POND

PREPARED BY M. Leilah Saadi **DATE** 9/27/16
M. Leilah Saadi, E.I.T.

REVIEWED BY Shahriyar S. Baig **DATE** 9-28-2016
Shahriyar S. Baig, P.E.

APPROVED BY Gary F. Zych **DATE** 9/28/2016
Gary F. Zych, P.E.
Manager – AEP Geotechnical Engineering



I certify to the best of my knowledge, information, and belief that the information contained in this closure plan meets the requirements of 40 CFR § 257.102

I certify to the best of my knowledge, information and belief that design of the final cover system as described in this closure plan meets the requirements of 40 CFR § 257.102.

Table of CONTENTS

1.0 OBJECTIVE.....	4
2.0 DESCRIPTION OF THE CCR UNIT.....	4
3.0 DESCRIPTION OF CLOSURE PLAN 257.102(b)(1)(i)	4
4.0 CLOSURE IN PLACE 257.102 (b)(1)(iii).....	4
4.1 CLOSURE PERFORMANCE STANDARDS 257.102 (d)(1).....	4
4.2 DRAINING AND STABILIZING OF THE SURFACE IMPOUNDMENT 257.102(d)(2).....	5
4.3 FINAL COVER SYSTEM 257.102 (d)(3)	6
5.0 ESTIMATE OF MAXIMUM CCR VOLUME 257.102 (b)(1)(iv)	6
6.0 ESTIMATE OF LARGEST AREA OF CCR REQUIRING COVER 257.102 (b)(1)(v).....	6
7.0 CLOSURE SCHEDULE 257.102(b)(1)(vi).....	6

1.0 OBJECTIVE

This report was prepared by AEP- Geotechnical Engineering Services (GES) section to fulfill requirements of CFR 257.102(b) for Closure Plans of Existing CCR Surface Impoundments.

2.0 DESCRIPTION OF THE CCR UNIT

The Oklaunion Power Station is located near the City of Vernon, Texas. It is operated by Public Service Company of Oklahoma (PSO). The Waste Water and Sludge Pond (WWSP) is one of five surface impoundments used for disposal of CCR. The WWSP is located within the main evaporation pond complex of the generating station. It is a side hill embankment and is approximately 25 feet in height. The pond was constructed as a continuous upground earthen embankment with 3H:1V inboard and outboard slopes and crest width of 20 feet. The WWSP does not have any outlet structures or spillways and relies on evaporation to remove water from the impoundment. The impoundment retains the wastes until it is sufficiently dry to be hauled away and landfilled.

3.0 DESCRIPTION OF CLOSURE PLAN 257.102(b)(1)(i)

[A narrative description of how the CCR unit will be closed in accordance with this section]

WWSP will be closed by closure in place. The closure will consist of re-grading the existing onsite materials and the installation of an impermeable cap with vegetative cover. The existing surface will be graded to achieve a gently sloping surface to promote surface water runoff. The regraded surface will be covered with a flexible geomembrane system and 2-feet of soil fill consisting of an 18" soil infiltration layer and 6" of earthen material that is capable of sustaining native plant growth. The surface soil will be seeded and mulched to promote the growth of a vegetative cover.

4.0 CLOSURE IN PLACE 257.102 (b)(1)(iii)

[If closure of the CCR unit will be accomplished by leaving the CCR in place, a description of the final cover system, designed in accordance with paragraph(d) of this section, and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this section.]

The final cover system will consist of a flexible geomembrane that will have a permeability that is less than or equal to the permeability of the natural subsoils and is no greater than 1×10^{-5} cm/sec. The geomembrane will be installed directly over the graded CCR material. Over the geomembrane will be installed an infiltration layer consisting of 18" of earthen material and an erosion layer consisting of 6" of earthen material that is capable of sustaining native plant growth. The final cover will be seeded and mulched to promote growth of a vegetative cover. The final cover slope will be a minimum of 2% and will convey water to a NPDES permitted outfall.

Prior to installation of the final cover system the impoundment will be drained of the free water within the ash and soil material will be regraded to provide a stable subgrade.

4.1 CLOSURE PERFORMANCE STANDARDS 257.102 (d)(1)

4.1.1 SECTION 257.102(d)(1)(i)

[Control, minimize or eliminate, the maximum extent possible extent feasible, post-closure

infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere.]

The final cover system will cover the CCR material and will have a permeability that is less than or equal to the permeability of the natural subsoils and is no greater than 1×10^{-5} cm/sec.

4.1.2 SECTION 257.102(d)(1)(ii)

[Preclude the probability of future impoundment of water, sediment, or slurry.]

The impoundment will be gently graded to a minimum slope of 2% to prevent the ponding of water sediment or slurry.

4.1.3 SECTION 257.102(d)(1)(iii)

[Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period.]

The final cover system will be gently graded with a minimum 2% slope. The final configuration of the impoundment will meet the stability requirements to prevent the sloughing or movement of the final cover system during the closure and post-closure care period.

4.1.4 SECTION 257.102(d)(1)(iv)

[Minimize the need for further maintenance of the CCR unit.]

The impoundment will be vegetated to prevent erosion. Maintenance of the final cover system will include mowing.

4.1.5 SECTION 257.102(d)(1)(v)

[Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.]

The CCR unit will be closed in a timeframe consistent with recognized and generally accepted good engineering practices. There is currently no schedule for closure of this CCR unit.

4.2 DRAINING AND STABILIZING OF THE SURFACE IMPOUNDMENT

257.102(d)(2)

[The owner or operator of a CCR surface impoundment of any lateral expansion of a CCR surface impoundment must meet the requirements of paragraph (d)(2)(i) and (ii) of this section prior to installing the final cover system required under paragraph (d)(3) of this section.]

4.2.1 SECTION 257.102(d)(2)(i)

[Free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residue.]

As part of closure of the CCR unit, all free water will be removed.

4.2.2 SECTION 257.102(d)(2)(ii)

[Remaining waste must be stabilized sufficient to support the final cover system.]

The remaining waste that make up the subgrade of the final cover system will be stabilized by removal of free liquids and providing bridging as necessary.

4.3 FINAL COVER SYSTEM 257.102 (d)(3)

[If a CCR unit is closed by leaving CCR in place, the owner or operator must install a final cover system that is desgined to minimize infiltration and erosion , and at a minimum, meets the requirements of paragraph (d)(3)(i) of this section, or the requirements of the alternative final cover system specified in paragraph (d)(3)(ii) of this section.

The final cover system must be designed and constructed to meet the criteria in paragraphs (d)(3)(i)(A) through (D) of this section. The design of the final cover system must be included in the written closure plan.]

The final cover system will consist of an flexible geomembrane that will have a permeability that is less than or equal to the permeability of the natural subsoils and is no greater than 1×10^{-5} cm/sec. The geomembrane will be installed directly over the graded CCR material. Over the geomembrane will be installed an infiltration layer consisting of 18" of earthen material and an erosion layer consisting of 6" of earthen material that is capable of sustaining native plant growth. The final cover will be seeded and mulched to promote growth of a vegetative cover. The final cover slope will be a minimum of 2% and will convey water to a NPDES permitted outfall. The final cover slope will be a minimum of 2% to accommodate settling and subsidence.

5.0 ESTIMATE OF MAXIMUM CCR VOLUME 257.102 (b)(1)(iv)

[An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.]

The estimated maximum CCR volume ever on-site is 477 acre-feet.

6.0 ESTIMATE OF LARGEST AREA OF CCR REQUIRING COVER 257.102 (b)(1)(v)

[An estimate of the largest area of CCR unit ever requiring a final cover

The largest area of the CCR unit ever requiring a final cover is 22.6 acres.

7.0 CLOSURE SCHEDULE 257.102(b)(1)(vi)

[A schedule for completing all activities necessary to satisfy the closure criteria in the section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of the CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of the CCR unit closure.

At this time there are currently no plans to close this CCR unit. Once the CCR unit requires closure a schedule to satisfy this section will be prepared.