



Submitted to
San Miguel Electric
Cooperative, Inc.
6200 FM 3387
Christine, Texas 78012

Submitted by
AECOM
9400 Amberglen Boulevard
Austin, Texas 78729

January 10, 2018

CCR Annual Inspection
§257.83 (b)
for the
Ash Pond
at the
San Miguel Plant
Revision 0

Table of Contents

Executive Summary..... ES-1

1 Introduction..... 1-1

 1.1 Purpose of this Report 1-1

 1.2 Brief Description of Impoundment..... 1-1

2 Annual Inspection Description..... 2-1

 2.1 Annual Inspection 2-1

 2.1.1 Review of Available Information 2-1

 2.1.2 Visual Inspection 2-1

 2.2 Content of the Inspection Report 2-2

 2.3 Frequency of Inspections 2-3

 2.4 Deficiency Identified..... 2-4

 2.4.1 Previous Inspection 2-4

 2.4.2 Current Inspection 2-4

3 Limitations..... 3-1

Tables

Table ES-1 Summary

Table 1-1 CCR Rule Cross Reference Table

Table 1-1 Depth and Elevation of Impounded Water

Table 2-2 Areas of Concern (Inspected: January 4, 2017)

Table 2-3 Areas of Concern (Inspected: December 26, 2017)

Appendices

Appendix A Figures

 Figure 1 – Site Map

Executive Summary

This Coal Combustion Residuals (CCR) Annual Inspection for the Ash Pond at the San Miguel Electric Plant (the San Miguel Plant) owned by the San Miguel Electric Cooperative, Inc. (SMECI) has been prepared in accordance with the requirements specified in the USEPA CCR Rule under 40 Code of Federal Regulations §257.83 (b). These regulations require that the specified documentation and assessments for an existing CCR surface impoundment be prepared based on the timeframe of the initial annual inspection. That inspection was submitted on January 13, 2017; therefore, this annual inspection is due on January 13, 2018.

This Inspection for the Ash Pond meets the regulatory requirements as summarized in **Table ES-1**.

Table ES-1 –Summary				
Report Section	CCR Rule Reference	Requirement Summary	Requirement Met?	Comments
2.1	§257.83 (b)(1)	<i>Annual Inspection</i>	Yes	The CCR Unit has met the annual inspection requirements
2.2	§257.83 (b)(2)	<i>Inspection Report</i>	Yes	The CCR Unit has met the inspection report requirements
2.3	§257.83 (b)(4)	<i>Frequency of Inspections</i>	Yes	The CCR Unit has met the required frequency of inspections
2.4	§257.83 (b)(5)	<i>Deficiency Identified</i>	Yes	Remedial actions and measures have been identified for all noted deficiencies

The San Miguel Ash Pond is currently an active surface impoundment. All inspection requirements were evaluated, and the surface impoundment was found to meet all requirements as required within the individual assessment in §257.83 (b).

1 Introduction

1.1 Purpose of this Report

The purpose of the Annual Inspection presented in this report is to document that the requirements specified in 40 Code of Federal Regulations (CFR) §257.83 (b) have been met to support the requirement under each of the applicable regulatory provisions for the San Miguel Ash Pond. The San Miguel Ash Pond is an existing coal combustion residual (CCR) surface impoundment as defined by 40 CFR §257.53. The CCR Rule requires that the inspection for an existing CCR surface impoundment be prepared in a timeframe based on the previous inspection report date of January 13, 2017.

Table 1-1 summarizes the documentation required within the CCR Rule and the sections that specifically respond to those requirements of this assessment.

Table 2-1 – CCR Rule Cross Reference Table		
Report Section	Title	CCR Rule Reference
2.1	Annual Inspection	§257.83 (b)(1)
2.2	Inspection Report	§257.83 (b)(2)
2.3	Frequency of Inspections	§257.83 (b)(4)
2.4	Deficiency Identified	§257.83 (b)(5)

1.2 Brief Description of Impoundment

The San Miguel Plant is located in south central Atascosa County in Christine, Texas. The plant is surrounded by open grassy areas, a majority of which are used as pastureland for livestock.

The Plant has three CCR units which include two surface impoundments (the Ash Pond and Equalization Pond) and one landfill (the Ash Pile). This report will focus on the inspection of the Ash Pond. The Ash Pond was constructed as a side-hill impoundment with the northern embankment at or near natural grade and includes a center embankment that separates the pond into north and south sections with a connecting weir. The Ash Pond is generally only closed to isolate the north or south pond for cleaning. According to a San Miguel representative, the Ash Pond was last dredged in 2016.

The total perimeter of the Ash Pond is approximately 5,750 feet, and the approximate surface area is 26 acres. The maximum pond depth is approximately 16.5 feet which ranges from 2.5 to 1 (horizontal to vertical) to 3.0 to 1 (horizontal to vertical) side slopes on the downstream face and an average crest width of 10 feet. The elevation of the embankment crest is 315 feet¹ with a normal pool water surface elevation of 313.5 feet (18-inches (") below crest). **Figure 1** in **Appendix A** presents the San Miguel Plant Site Map.

¹ Unless otherwise noted, all elevations in this report are in the NAVD88 datum.

2 Annual Inspection Description

Regulatory Citation: 40 CFR §257.83 Inspection requirements for CCR surface impoundments

The Annual Inspection for the Ash Pond is described in this section. Information about operational and maintenance procedures was provided by San Miguel plant personnel. The San Miguel station follows an established maintenance program that quickly identifies and resolves issues of concern.

2.1 Annual Inspection

Regulatory Citation: 40 CFR §257.83 (b) Annual inspections by a qualified professional engineer;

- *(1) If the existing or new CCR surface impoundment or any lateral expansion of the CCR surface impoundment is subject to the periodic structural stability assessment requirements under §257.73 (d) or §257.74 (d), the CCR unit must additionally be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.*

The Ash Pond is subject to the annual inspection requirement as mentioned. Thus, the following items were performed to comply with the CCR Rule.

2.1.1 Review of Available Information

Regulatory Citation: 40 CFR §257.83 (b)(1);

- *(i) A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., CCR unit design and construction information required by §257.73 (c)(1) and §257.74 (c)(1), previous periodic structural stability assessments required under §257.73 (d) and §257.74 (d), the results of inspections by a qualified person, and results of previous annual inspections).*

The available information was reviewed for the Ash Pond, including the weekly inspections performed by the plant personnel, the site assessment performed by CDM Smith for the United States Environmental Protection Agency (USEPA) on August 30, 2012, and the previous annual inspection performed by AECOM on January 4, 2017.

2.1.2 Visual Inspection

Regulatory Citation: 40 CFR §257.83 (b)(1);

- *(ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures.*

The Ash Pond was visually inspected on December 26, 2017. No signs of distress or malfunction of the CCR unit and appurtenant structures were identified. A few minor maintenance issues are listed under section 2.4.2.

Regulatory Citation: 40 CFR §257.83 (b)(1);

- *(iii) A visual inspection of any hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.*

There are no hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit.

2.2 Content of the Inspection Report

Regulatory Citation: 40 CFR §257.83 (b)(2) Inspection report. The qualified professional engineer must prepare a report following each inspection that addresses the following:

- *(i) Any changes in geometry of the impounding structure since the previous annual inspection.*

The geometry of the impounding structure has not significantly changed since the previous site assessment.

- *(ii) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection.*

The instrumentation includes a gage rod located near the weir on the southeast corner of Pond A. The top of berm elevation is El. 315 feet (') and the gage reading of 18 inches (") is equivalent to an elevation of 315'. The gage rod reads from -2' to 2'. The gage reading at the time of this annual inspection was 0'. This indicates that the pond was being maintained at the design freeboard elevation.

- *(iii) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection.*

The approximate minimum, maximum, and present depths and elevations of the impounded water and CCR since the previous annual inspection varies across the ponds are shown in the table below. Depth and elevation of impounded water data was provided by the SMECI weekly CCR and pond inspection reports.

Table 3-1 – Depth and Elevation of Impounded Water

	Minimum		Maximum		Present	
	Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)
Impounded Water	0	313.5	1.08	314.58	0.0	313.5

- *(iv) The storage capacity of the impounding structure at the time of the inspection.*

Ash Pond A and Ash Pond B have a storage capacity of 216 acre-feet each for a total storage capacity of 432 acre-feet across the two ponds, as provided by SMECI. The approximate percentage volumes of CCR material and impounded water at the time of this annual inspection is as mentioned below:

- o Pond A – 78% CCR, 22% Water
- o Pond B – 10% CCR, 90% Water

- (v) *The approximate volume of the impounded water and CCR at the time of the inspection.*

The volume of impounded water and CCR material within the Ash Pond at the time of inspection is approximately 240 acre-feet.

- (vi) *Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.*

The visual inspection performed on December 26, 2017 did not reveal any actual or potential structural weaknesses.

- (vii) *Any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.*

There were no changes which might have affected the stability or operation of the impounding structure since the previous annual inspection.

2.3 Frequency of Inspections

Regulatory Citation: 40 CFR §257.83 (b)(4);

- (i) *Except as provided for in paragraph (b)(4)(ii) of this section, the owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the initial inspection report is the basis for establishing the deadline to complete the first subsequent inspection. Any required inspection may be conducted prior to the required deadline provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. For purposes of this section, the owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record as required by §257.105 (g)(6).*

The previous annual inspection report was submitted to SMECI on January 13, 2017. The current annual inspection report was submitted to SMECI on January 10, 2018.

- (ii) *In any calendar year in which both the periodic inspection by a qualified professional engineer and the quinquennial (occurring every five years) structural stability assessment by a qualified professional engineer required by §257.73 (d) and §257.74 (d) are required to be completed, the annual inspection is not required, provided the structural stability assessment is completed during the calendar year. If the annual inspection is not conducted in a year as provided by this paragraph (b)(4)(ii), the deadline for completing the next annual inspection is one year from the date of completing the quinquennial structural stability assessment.*

The quinquennial structural stability assessment was not performed in 2017. The previous quinquennial structural stability was submitted on October 17, 2016. Thus, an annual inspection report was submitted to SMECI as stipulated in §257.83 (b)(4)(i).

2.4 Deficiency Identified

Regulatory Citation: 40 CFR §257.83 (b)(5);

- *If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken.*

Areas of concern from previous site assessment were reviewed and described below in section 2.4.1. Areas of concern from this year's inspection are described in section 2.4.2.

2.4.1 Previous Inspection

Seven (7) areas of concern were noted during the site assessment performed on January 4, 2017. The Corrective measures completed to meet the requirements of §257.83 (b)(5) for each deficiency or observation identified are shown in **Table 2-2** below.

Table 4-2 – Areas of Concern (Inspected: January 4, 2017)	
Deficiency/Observation	Proposed Corrective Measure
Dense vegetation/ tall grasses were observed along the southern exterior slope.	Mow vegetation on a periodic basis.
Crest has minor desiccation cracks on south side.	Proof roll the crest area and install a 3 to 4-inches thick flex base layer as cover. Alternative, the crest can be vegetated to prevent further deepening of the cracks.
Major rutting observed along southeast and northwest of the crest.	Repair damaged areas and regrade.
Drainage channel along east side at toe has ponding.	Grade drainage channel along east side.
Vegetation growth in pond area.	Remove vegetation. Apply herbicide to vegetation and monitor.
Minor slope failure observed on south side.	Minor slope failure could be due to lack of grass growth in this area. Periodically check and maintain southern embankment slopes to maintain required slopes.
Accuracy of measuring water depth and volume of ash within unit	Install new staff gages for water level readings and obtain a current bathymetric survey to determine an accurate volume for the existing quantity of ash

2.4.2 Current Inspection

Eleven (11) areas of concern were noted during the annual inspection performed on December 26, 2017. Corrective measures have been proposed to meet the requirements of §257.83 (b)(5) for each deficiency or

observation identified as shown in **Table 2-3** below. **Figure 1** shows the location of the listed deficiencies observed during the most recent annual inspection conducted on December 26, 2017.

Table 5-3 – Areas of Concern (Inspected: December 26, 2017)

Deficiency/Observation	Proposed Corrective Measure
Dense vegetation/ tall grasses were observed along slopes.	<p>Mow vegetation on a periodic basis. At the time of this inspection (December 26, 2017), it was difficult to visually inspect the condition of the downstream slopes for cracks, seepage or shallow slides.</p> <p>AECOM recommends SMECI to mow the downstream slopes on the east, south and west sides prior to performing additional inspections around the Ash ponds.</p> <p>Slopes did not show any signs of failure at the time of this inspection.</p>
Vegetation growth along the downstream toes	AECOM recommends mowing to be performed along the downstream toes on the east, south and west sides prior to performing additional inspections around the Ash ponds.
Vegetation growth in pond area along the inner slopes	<p>Remove vegetation along inner slopes as necessary. Alternatively, grade the inner slopes of the Ash Ponds (A&B) to avoid vertical faces and minimize wave action.</p> <p>As was the case during the time of this inspection, AECOM suggests SMECI to maintain the Ash ponds at or below the freeboard elevation in order to properly inspect the inner slopes.</p>
Lack of vegetation on west side.	Provide seeding on west slope near pump station.
Crest has minor desiccation cracks on south side.	<p>Proof roll the crest area and install a 3 to 4-inches thick flex base layer as cover.</p> <p>AECOM understands that SMECI intends to raise the crest of the Ash Pond by approximately 4-inches using flex base material in order to address the concerns related to the desiccation cracks and rutting along the crest of the pond. This will increase the freeboard of the pond as well as add necessary protection against wave action.</p> <p>AECOM also recommends SMECI to give consideration to installing a concrete lined spillway for emergency pond relief.</p>

Table 5-3 – Areas of Concern (Inspected: December 26, 2017)

Deficiency/Observation	Proposed Corrective Measure
Major rutting observed along southeast and northwest of the crest.	Repair damaged areas and regrade.
Pond A boundary/limits needs to be reestablished.	The exact extent of Pond A is not clearly defined along the northwest corner of the pond. AECOM recommends extending the access road all along the northern boundary of Pond A. This action can be performed when SMECI raises the crest of the Ash Pond as discussed earlier.
Drainage channel along east side needs to be vegetated	Grade drainage channel along east side and vegetate as necessary.
Accuracy of measuring water depth and volume of ash within unit	<p>AECOM understands that the Ash ponds were primarily designed as evaporation ponds without any outlet. A pump station on the west side of the ponds is used to recycle water back to the plant as service water.</p> <p>Majority of the sediment is contained in Pond A (approximately 78% at the time of inspection) and the water is separated and channeled into Pond B by using a weir on the East side of the pond. Pond B was approximately 90% full at the time of inspection (with less than 10% sediment).</p> <p>AECOM recommends installing additional instrumentation on the West side of Pond A to properly assess the quantity of Ash being deposited in the pond.</p> <p>Other considerations could include performing a bathymetric survey of the pond on a regular basis (every year) in order to determine the quantity of Ash deposited or removed from the ponds.</p>
Scour/erosion around weir structures/pipes.	Add flex base or riprap near the weir structure/pipes to prevent scour/erosion around foundations. Grade separator berm for access and inspection.
Maintain the pump station area.	Perform necessary maintenance along the pump station area.

3 Limitations

Background information, design basis, and other data which AECOM has used in preparation of this report have been furnished to AECOM by SMECI. AECOM has relied on this information as furnished, and is not responsible for the accuracy of this information. Our recommendations are based on available information from previous and current inspections. These recommendations may be updated as future inspections are performed.

The conclusions presented in this report are intended only for the purpose, site location, and project indicated. The recommendations presented in this report should not be used for other projects or purposes. Conclusions or recommendations made from these data by others are their responsibility. The conclusions and recommendations are based on AECOM's understanding of current plant operations, maintenance, stormwater handling, and ash handling procedures at the station, as provided by SMECI. Changes in any of these operations or procedures may invalidate the findings in this report until AECOM has had the opportunity to review the findings, and revise the report if necessary.

This development of the Annual Inspection was performed in accordance with the standard of care commonly used as state-of-practice in our profession. Specifically, our services have been performed in accordance with accepted principles and practices of the engineering profession. The conclusions presented in this report are professional opinions based on the indicated project criteria and data available at the time this report was prepared. Our services were provided in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representation is intended.

Appendix A Figures

Figure 1 – Site Map

DAVIS, ALYSSA (ST. LOUIS), 1/5/2018 2:43 PM

AECOM DRAWING PATH: P:\Projects\Environmental\60530067_SanMiguel\60530067_CAD\GIS\910_CAD\20-SHEETS\SM-SITE PLAN.dwg



AECOM

1001 Highlands Plaza
Drive West, Suite 300
St. Louis, Mo. 63110-1337
314 429-0100 (phone)
314 429-0462 (fax)

**SAN MIGUEL ELECTRIC
COOPERATIVE, INC.**
6200 FM 3387
Christine, TX 78012

**SAN MIGUEL PLANT
CHRISTINE, TEXAS**

**ANNUAL CCR
INSPECTION**

**PRELIMINARY
NOT FOR
CONSTRUCTION**

ISSUED FOR BIDDING _____ DATE _____

ISSUED FOR CONSTRUCTION _____ DATE _____

REVISIONS

NO.	DESCRIPTION	DATE
△		
△		
△		
△		
△		

AECOM PROJECT NO:	60530067
DRAWN BY:	TYL
DESIGNED BY:	TYL
CHECKED BY:	MJC
DATE CREATED:	01/09/2017
PLOT DATE:	1/5/2018
SCALE:	1" = 200'
ACAD VER:	2017

SHEET TITLE

ASH POND SITE MAP

FIGURE 1
SHEET 1 OF 1

9400 Amberglen Boulevard
Austin, Texas 78729
1-512-454-4797

About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of \$6 billion.