



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

Submitted by
AECOM
9400 Amberglen Boulevard
Austin, Texas 78729

January 13, 2017

CCR Annual Inspection

§257.83 (b)

for the

Equalization Pond

at the

San Miguel Plant

Revision 0



AECOM
9398 Amberglen Boulevard
Austin, TX, 78729
512-454-4797
www.aecom.com

January 13, 2017

Ms. Mari Willis
San Miguel Electric Cooperative, Inc
6200 FM 3387
Christine, TX 78012

RE: CCR Annual Inspection Report for San Miguel Plant: Equalization Pond CCR Unit

Dear Ms. Mari Willis:

AECOM is pleased to provide this CCR Annual Inspection Report for the Equalization Pond of the San Miguel Coal Combustion Residuals (CCR) units at the San Miguel Plant located near Christine, Texas.

The CCR Annual Inspection Report has been prepared in accordance with the requirements specified in the USEPA CCR Rule under 40 Code of Federal Regulations §257.83 (b) by a professional engineer licensed in the state of Texas. 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. The previous annual inspection was submitted on January 15, 2016, therefore, this annual inspection should be placed in the plant operating record within one year of that date.

AECOM looks forward to providing continued support to San Miguel and working together on this important program. Please do not hesitate to call Terry Entwistle at 314-503-0128 (cell), if you have any questions or comments on this CCR Annual Inspection Report.

Sincerely,



Teresa L. Entwistle, PE, CFM
Senior Project Manager
Terry.entwistle@aecom.com



Ananth Bukkapatnam, PE
Project Manager
ananth.bukkapatnam@aecom.com

cc: Ty Cloud
Mark Rokoff

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 Description2-1

 2.1 Annual Inspection2-1

 2.1.1 Review of Available Information2-1

 2.1.2 Visual Inspection.....2-1

 2.2 Content of the Inspection Report2-2

 2.3 Frequency of Inspections.....2-3

 2.4 Deficiency Identified.....2-4

 2.4.1 Previous Inspection2-4

 2.4.2 Current Inspection2-5

3 Limitations.....3-1

Tables

Table ES-1 Summary

Table 1-1 CCR Rule Cross Reference Table

Table 2-1 Depth and Elevation of Impounded Water

Table 2-2 Areas of Concern (Inspected: December 17, 2015)

Table 2-3 Areas of Concern (Inspected: January 4, 2017)

Appendices

Appendix A Figures

 Figure 1 – Site Map

Executive Summary

This Coal Combustion Residuals (CCR) Annual Inspection for the Equalization 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 15, 2016, therefore, this annual inspection is due on January 15, 2017.

This Inspection for the Equalization 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 Equalization 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 each 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 Equalization Pond. The San Miguel Equalization 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 15, 2016.

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

Table 1-1 – 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 is 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 Equalization Pond. The Equalization Pond is a diked impoundment that shares its western embankment with a water well storage pond. The perimeter length around the Equalization Pond is approximately 4,800 feet, and the surface area is approximately 25 acres. The maximum dam height is approximately 20 feet with 3 to 1 (horizontal to vertical) side slopes and an average crest width of 10 feet. The elevation of the embankment crest is 296 feet¹ with a normal pool level gage elevation of 294.5 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 Equalization 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 Equalization 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 Equalization Pond, including the weekly inspections 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 HDR Engineering, Inc. on December 17, 2015.

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 Equalization Pond was visually inspected on January 4, 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 annual inspection.

- *(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. This gage is correlated to the top of berm elevation. The top of berm elevation at the gage is 296 feet (') and the gage reading of 31 inches (") is equivalent to an elevation of 296'. The gage rod reads from +31" (elevation 296') to 0" (elevation 293.4'). The maximum gage reading since the previous annual inspection is 24".

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

The required information is presented in **Table 2-1** below. The minimum water depth actually occurs where the CCR material reaches the top of the impoundment area and the corresponding water depth would be zero, near the area the CCR material enters the CCR unit. The maximum water depth would occur where there is a minimum of CCR material and would be located the furthest from the inlet point within the unit. The minimum and maximum water depths were calculated based on the yearly minimum and maximum water gage readings provided by San Miguel plant personnel and adjusted for where the corresponding water would be the shallowest and the deepest. The minimum and maximum water depths were calculated based on the yearly minimum and maximum water elevation readings provided by San Miguel plant personnel.

Table 2-1 – Depth and Elevation of Impounded Water

	Minimum		Maximum		Present	
	Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)	Depth (ft)	Elev (ft)
Impounded Water	0.6	295.4	16.5	278.9	0.6	295.4

CCR depths range from 0.6 feet to 16.5 feet. The minimum CCR depth occurs at the southeast corner of the unit. The maximum CCR depth occurs at the base of the impoundment embankment in the northwest corner.

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

The storage capacity of the impounding structure is approximately 410 acre-feet, as provided by others.

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

Based on information provided by SMECI personnel, approximately 51,000 cy of CCR material was dredged from the Equalization Pond in 2016. The approximate volume of impounded water and CCR material for the Equalization Pond at the time of inspection are 400,000 cy (cubic yards) and 251,000 cy (assumed approximately based on the amount of material dredged in 2016), respectively, at the time of inspection.

- (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 January 4, 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 15, 2016. The current annual inspection report was submitted to SMECI on January 13, 2017.

- (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 is not required for this year as it was recently 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

Five areas of concern were noted during the initial annual inspection performed on December 17, 2015. 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 3-2 – Areas of Concern (Inspected: December 17, 2015)	
Deficiency/Observation	Corrective Measure Used
The crest of the impoundment had areas with moderate rutting from vehicular traffic in localized areas around the pond.	Some minor rutting was still noted along the curves and along isolated locations on the crest as of the inspection January 4, 2017.
Moderate wind/wave erosion occurring at the water line of the pond.	Monitored the erosion of protective cover. Erosion is still visible but likely due to the day-to-day usage and wind exposure of the pond. No visible signs of the liner (clay layer) were noted as of the inspection January 4, 2017.
Bushes and trees growing around the interior of the pond.	Periodically removed undesirable vegetation (bushes) from upstream embankment. Repaired surface areas disturbed during removals. Applied herbicide to vegetation within pond and monitored for impacts to liner. Slight vegetation growth still occurs inside the pond area and along the upstream crest of the pond as of the inspection January 4, 2017.
Small trees/bushes growing on the downstream embankment.	Periodically removed woody vegetation and repaired surface in areas disturbed by removals. Tall grass and trees were noted along the southern downstream slope of the embankment and along isolated spots on the eastern side as of the inspection January 4, 2017.
Water ponding around the toe of the downstream embankment (potentially from storm activities prior to inspection).	Ponding water was observed at the southwestern toe and about 10 feet from the toe from approximately the middle section of the southern slope to the south-eastern corner. Isolated ponding water areas were also found on the east side as of the inspection January 4, 2017.

2.4.2 Current Inspection

Five areas of concern were noted during the annual inspection performed on January 4, 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 January 4, 2017.

Table 4-3 – Areas of Concern (Inspected: January 4, 2017)

Deficiency/Observation	Proposed Corrective Measure
Slight slope softening on northwest levee face.	Slight slope failures were possibly due to the recent dredging activities. The entire area needs to be monitored and if conditions worsen, the area should be scarified and backfilled with cohesive material to adjust to necessary grades. Revegetate as necessary.
Sparse vegetation observed on west side face.	Revegetation recommended.
Rutting observed along turns and at various locations along the crest.	Repair damaged areas and regrade.
Dense vegetation observed on the south and east sides. Ponding and moist/soft spots appear along south and east sides.	Remove/Mow vegetation along embankment slopes and check for visual signs of seepage. Continued groundwater monitoring and sampling is recommended to determine source of ponding.
Vegetation growth in pond area along the inner face of the embankment/dike.	Remove vegetation and maintain freeboard with a minimum of 18". Remove vegetation and maintain.
Water ponding around the toe of the downstream embankment (potentially from storm activities prior to inspection).	Ponding water was observed at the localized areas near the toe from approximately the middle section of the southern slope to the south-eastern corner. Sampling of this ponded water is recommended to confirm the water is from surface drainage and not seepage from the CCR unit.
Accuracy of measuring water depth and volume of CCR material 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 CCR material.

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 investigations. These recommendations may be updated as future investigations 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

LIU_TINA_1/10/2017 5:25 PM

AECOM DRAWING PATH: p:\Projects\environmental\60530067_sammiguel\910-cad-ga\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:	1/10/2017
SCALE:	1" = 200'
ACAD VER:	2014

SHEET TITLE
**EQUALIZATION 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.