



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
Ash Pond
at the
San Miguel Plant
Revision 0

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: Ash Pond CCR Unit

Dear Ms. Mari Willis:

AECOM is pleased to provide this CCR Annual Inspection Report for the Ash 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,

AECOM

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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 15, 2016, therefore, this annual inspection is due on January 15, 2017.

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 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 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 6,000 feet, and the approximate surface area is 26 acres. The maximum dam height is approximately 20 feet which ranges from 2.5 to 1 (horizontal to vertical) to 3.0 to 1 (horizontal to vertical) side slopes and an average crest width of 10 feet. The elevation of the embankment crest is 316 feet¹ with a normal pool water surface elevation of 314 feet. **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 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 Ash 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 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 east side. The maximum gage reading since the previous annual inspection is 24 inches. This gage is correlated to the top of berm elevation. The top of berm elevation at the gage is 316 and the gage reading of 0 is equivalent to an elevation of 314. The gage rod reads from +24" (elevation 316) to a -24" (elevation 312").

- *(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. 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.

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 | 316.0 | 20 | 296.0 | 1.5 | 314.5 |

CCR depths range from 0 feet to 20 feet. The minimum CCR depth occurs in the southwest corner of Ash Pond B. The maximum CCR depth occurs at the base of the western portion of Ash Pond A where the ash enters the CCR unit. The minimum CCR elevation is 296 and the maximum elevation of the CCR material is 316.

- (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 others.

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

The approximate volume of impounded water and CCR material within the Ash Pond at the time of inspection is 500,000 cy and 130,000 cy (assumed to be left in the pond after dredging in 2016), respectively

- (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

Eight areas of concern were noted during the site assessment performed on December 17, 2015. 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 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. | Repairs were performed on the worst areas of rutting. |
| 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. |
| 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 on January 4, 2017. |
| Erosion gullies were found on the embankment in isolated areas around the perimeter of the disposal area. | Scarified and re-graded areas impacted by erosion gullies. No signs of rip rap or any other visible signs of slope armoring were used 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 Cat tails were still observed on the Southern and Western embankment slopes. |

| | |
|--|---|
| Water ponding around the toe of the downstream embankment (potentially from storm activities prior to inspection). | The area was monitored, especially during dry periods. No ponding water was observed on the South side. Slight wet areas were noted near the toe of the embankment on the western side North of the existing pump station as of the inspection January 4, 2017. |
| Water appeared to be seeping from the toe of the downstream embankment of Pond A along the western edge. | Continued monitoring. No visible signs of seepage were observed during the January 4, 2017 inspection. |
| An erosion gully was found on the embankment at the northwest corner of Pond A. | Erosion gullies are still present as of the inspection January 4, 2017. Proper grading is necessary to prevent continued occurrence and possible worsening. |

2.4.2 Current Inspection

Six 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 |
|---|---|
| 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 |
|---|---|

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
DRAWING PATH: p:\Projects\environmental\60530067_sanmiguel\900-cad-gis\910-CAD\20-SHEETS\SM-SITE PLAN.dwg



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6200 FM 3387
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**SAN MIGUEL PLANT
CHRISTINE, TEXAS**

**ANNUAL CCR
INSPECTION**

**PRELIMINARY
NOT FOR
CONSTRUCTION**

ISSUED FOR BIDDING _____ DATE _____

ISSUED FOR CONSTRUCTION _____ DATE _____

REVISIONS

| NO. | DESCRIPTION | DATE |
|-----|-------------|------|
| △ | | |
| △ | | |
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| △ | | |
| △ | | |

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

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.