

**Maintenance and Corrective Measures
San Miguel Electric Cooperative Inc.
(as of October 2018)**

Equalization Pond

Summary of Prior Deficiency/Observation*	Maintenance and Corrective Measures
The crest of the impoundment had areas with moderate rutting from vehicular traffic in localized areas around the pond.	This is a routine operations maintenance matter. Where needed, the crest of the Equalization Pond is being adjusted to an elevation of 296 feet above mean sea level and these areas are being reconditioned. See Photo No. 1
Moderate wind/wave erosion occurring at the water line of the pond.	This is a routine operations maintenance matter. The water level has been lowered and only minor erosion is present, the liner was not exposed. Maintenance and repair of the inner pond berm is performed by SMECI's Maintenance Contractor. Additionally, the inner berm is being adjusted during the heightening of the berm. See Photo No. 2
Vegetation growth in pond area along the inner face of the embankment/dike.	This is a routine operations maintenance matter. Vegetation has been removed. See Photo No. 3
Dense vegetation observed on the south and east sides. Ponding and moist/soft spots appear along south and east sides.	This is a routine operations maintenance matter. The berms and other areas were mowed. Soft spots were not observed. No evidence of seeps, cracks, or slope failures were observed. Mowing and vegetation clearing is performed on a routine and as-needed basis by the SMECI Maintenance Contractor. See Photo Nos. 4 (after rain) and 5 (dry period)
Sparse vegetation observed on the inner slopes on the north west side and along the downstream toe on the north east side.	This is a routine operations maintenance matter. The areas of sparse vegetation are related to recent machinery operation near the northwestern corner of the Equalization Pond. The equipment was used to stack ash within the pond for drying and eventual removal. The area along the toe of the embankment was cleared of vegetation and is scheduled for reseeding. See Photo Nos. 6 and 7
Small trees/bushes growing on the downstream embankment.	This is a routine operations maintenance matter. Trees and bushes have been removed, a very minor amount of brush remains. See Photo No. 8

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<p>Water ponding around the toe of the downstream embankment (potentially from storm activities prior to inspection).</p>	<p>This area has had the vegetation removed to help alleviate the ponded water. A streambed is located in this area and flows around the base of the Equalization Pond. Based on visual observations, the surface water is related to the adjacent streambed flowing to the northeast.</p> <p>Recent rain water was pooled in small ruts formed as a result of recent vegetation removal and relatively minor ponding was observed along the streambed. There is no indication of Pond seepage.</p> <p style="text-align: center;">See Photo Nos. 9 (dry) and 10 (after rain)</p>
<p>Slight slope softening on northwest levee face.</p>	<p>No slope softening or slope failure areas were observed.</p> <p style="text-align: center;">See Photo No. 11</p>
<p>Accuracy of measuring water depth and volume of CCR material within unit.</p>	<p>SMECI utilizes operational knowledge and, as needed, drone surveys, to appropriately estimate ash volume at any given time.</p> <p>SMECI replaced the staff gage on the pier in 2016.</p> <p>In July 2018, SMECI dropped the water level and flew the pond with a drone to perform bathymetric survey. At the time the total ash volume was estimated at 90,000 cy.</p> <p style="text-align: center;">See Photo No. 12</p>
<p>Riprap needs realignment.</p>	<p>Riprap was realigned during maintenance activities that removed vegetation near the toe of the Equalization pond.</p> <p style="text-align: center;">See Photo No. 13</p>

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Ash Pond

Summary of Prior Deficiency/Observation*	Maintenance and Corrective Measures
<p>The crest of the impoundment had areas with moderate rutting from vehicular traffic in localized areas around the pond.</p> <p>Major rutting observed along southeast and northwest of the crest.</p>	<p>This is a routine operations maintenance matter. The crest of the Ash Pond is being raised to the prescribed elevation of 316 feet above mean sea level and the rutted areas are being reconditioned.</p> <p>See Photo Nos. 14 (minor rutting and cracking when dry prior to crest adjustment) and 15 (SE corner prior to crest adjustment)</p>
<p>Moderate wind/wave erosion occurring at the water line of the pond.</p>	<p>This is a routine operations maintenance matter. Some minor erosion was observed, but it did not expose the liner.</p> <p>See Photo No. 16 (prior to ongoing crest adjustments)</p>
<p>Bushes and trees growing around the interior of the pond.</p>	<p>This is a routine operations maintenance matter. The vegetation has been removed. Mowing and vegetation clearing is performed on a routine and as-needed basis by the SMECI Maintenance Contractor.</p> <p>See Photo No. 17</p>
<p>Small trees/bushes growing on the downstream embankment.</p>	<p>This is a routine operations maintenance matter. Vegetation has been removed. Mowing and vegetation clearing is performed on a routine and as-needed basis by SMECI's Maintenance Contractor.</p> <p>See Photo No. 18</p>
<p>Dense vegetation/ tall grasses were observed along the southern exterior slope.</p>	<p>This is a routine operations maintenance matter. This area has been mowed. Mowing and vegetation clearing is performed on a routine and as-needed basis by SMECI's Maintenance Contractor.</p> <p>See Photo No. 19</p>
<p>Lack of vegetation on west side.</p>	<p>This is a routine operations maintenance matter. This area is scheduled for reseeding following the ongoing installation of a toe drain and a top soil cover.</p> <p>See Photo No. 20 (prior to removing vegetation) and 21 (after removing vegetation)</p>
<p>Drainage channel along east side needs to be vegetated</p>	<p>This is a routine operations maintenance matter. The drainage channel was recently cleaned out and vegetation has not been completely reestablished.</p> <p>See Photo No. 22</p>
<p>Erosion gullies were found on the embankment in isolated areas around the perimeter of the disposal area.</p> <p>Minor slope failure observed on south side.</p>	<p>This is a routine operations maintenance matter. These minor erosional rills and slumps are scheduled to be addressed as part of the ongoing crest elevation adjustments.</p> <p>The minor slope failure is associated with an erosional rill.</p> <p>See Photo No. 23 (rills located along the south slope with minor amounts of material washed downslope)</p>
<p>An erosion gully was found on the embankment at the northwest corner of Pond A.</p>	<p>This is an area of active ash removal. The erosional gully is on a temporary roadway constructed specifically for the ash removal activities, not on the Pond A embankment. The temporary road will be removed upon completion of ash removal. See Photo No. 24</p>

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Water ponding around the toe of the downstream embankment (potentially from storm activities prior to inspection).	No ponded water was observed at the toe of the berm at the time of the site visit. See Photo No. 25
Water appeared to be seeping from the toe of the downstream embankment of Pond A along the western edge.	This area was assessed as part of the berm repairs and it was determined the seepage was related to surface water drainage into a large buried lens of gravel that had washed down from the crest. Upon removal of the gravel, the area quickly dried up. The pond is not seeping. See Photo Nos. 26 (small patch of cattails) and 27 (gravel lens that held storm water runoff). See Photo. No. 26 and 27
Crest has minor desiccation cracks on south side.	This is a routine operations maintenance matter. Very minor desiccation cracks were observed at the time of the site visit, but they were only surficial. See Photo No. 14
Accuracy of measuring water depth and volume of ash within unit. Pond A boundary/limits needs to be reestablished.	The existing gage works well to obtain water levels. For bathymetric surveys, SMECI utilizes operational knowledge, periodically lowers the water level for drone surveys, and/or performs depth to ash measurements from a jon boat. At the time of this inspection, it is estimated Pond A is 65% filled with ash. Pond A is scheduled for removal of 158,000 cy of material. It is estimated Pond B is 20% filled with ash. The Pond A boundary will be reestablished as part of the Ash removal process. See Photo No. 28
Scour/erosion around weir structures/pipes.	This is a routine operations maintenance matter. Material has been added to this area and along the central berm. See Photo No. 28
Maintain the pump station area.	This is a routine operations maintenance matter. Ash material has been recently removed from this area to improve drainage to the sump. See Photo No. 29

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Ash Pile

Summary of Prior Deficiency/Observation*	Maintenance and Corrective Measures
Corrosion and structural cracks on the concrete wall.	The concrete wall serves to contain ash and scrubber sludge where it is blended together to be hauled to the mine. The crack does not impede the function of the wall and was repaired during the October 22-26 facility outage. See Photo No. 30
Concrete retaining wall present only on east side and a steel retaining wall/ baffle wall is used on the south side to contain the Sludge/Ash Pile.	Walls are currently functioning as designed. SMECI repaired the southern steel wall during the October 22-26 facility outage. Inspections will continue to be performed and repairs will be conducted as applicable. See Photo No. 31
Erosion gullies observed along the drainage channel.	This is a routine maintenance matter. SMECI excavated the ditch as part of their routine maintenance in August 2018. See Photo No.32
Sludge pile is exposed resulting in minor erosion.	This is a routine maintenance matter. See Photo No. 33
Storm water runoff not draining properly. Storm water runoff ditches are present on west/north side. Run on drainage behind the concrete wall has no contact with the sludge waste.	This is a routine operations maintenance matter. SMECI excavated the ditches/drainageway as part of their routine maintenance in August 2018. See Photo No. 34
Rutting along haul roads.	This is a routine operations maintenance matter. Rutting was not observed at the time of the site visit. See Photo No. 35
Storm water structures need repair.	This is a routine operations maintenance matter. General repairs were made to storm water structures in August 2018 and are routinely maintained and repaired on an as-needed basis. See Photo No. 36

*Prior deficiencies/observations are summarized from San Miguel's 2015, 2016, and 2017 Annual Engineering Inspection reports.



PHOTO 1:

This is the first lift of clay soils being added to the eastern crest of the Equalization Pond to bring it to a 296 foot elevation. The view of the crest is to the south along the crest. The crest was leveled and wet rutted materials were removed and replaced with clay soils.



PHOTO 2:

Clay soils were added to the crest of the berm behind the temporary berm previously installed. Wave erosion was minimal along the shoreline and the underlying clay liner was not exposed. This view is to the west-southwest.



PHOTO 3:

Vegetation along the interior of the berm crest has been removed. This view is to the east-southeast during the installation of the first lift of clay soils on the berm crest.



PHOTO 4:

This photograph is looking to the south along the eastern flank of the Equalization Pond and shows the vegetative cover following recent precipitation events. No trees or brush were observed along the slope.



PHOTO 5:

Looking to the southeast from the southern crest of the Equalization Pond toward a recently disturbed area associated with brush and vegetation removal. This picture is from a drier period showing the brown vegetation. This area is a streambed that parallels the southern and eastern sides of the Equalization Pond.



PHOTO 6:

Looking to the south-southeast from near the northwestern corner of the Equalization Pond. There was sparse vegetation near the shoreline. This area was disturbed by heavy equipment during the piling of ash within the pond. This area will be reseeded following the completion of the crest work at the pond.



PHOTO 7:

This photograph is looking to the northeast down the slope of the Equalization Pond berm. The area on the southern side of the small drainageway was recently scraped and leveled near the toe of the embankment.



PHOTO 8:

Two small bushes remain on the southern slope of the Equalization Pond embankment, all other brush has been removed. The area in the background is the streambed after recent rainfall events. Small amounts of ponded rain water were observed in shallow depressions.



PHOTO 9:

This photograph is looking to the southeast from the crest of the berm near the southwestern corner of the Equalization pond berm. This shows the streambed along the toe of the berm to be nearly dry after a period of no rainfall and the vegetation to be brown. No water was observed at the toe of the berm.



PHOTO 10:

This photograph shows ponded water near the toe of the berm after a heavy rainfall event. No seeps were observed along the toe of the berm during a walking inspection of the toe of the berm.



PHOTO 11:

Looking to the west along the northern slope of the Equalization Pond embankment. A crossing with a culvert is visible near the right side of the photograph. Water tends to pond upstream of the culvert which is partially responsible for the cattail growth. Slope softening was not observed.



PHOTO 12:

The Equalization Pond gauge is readily visible on the north side of the pier near the end of the pier.



PHOTO 13:

Rip rap was realigned during the removal of brush near the toe of the Equalization Pond embankment. Rip rap was observed to be grass covered for several feet up the embankment. This picture was taken after a rainfall event which is the source of the pooled water.



PHOTO 14:

This is a view to the east along the southern crest of the Ash Pond B embankment. This was a relatively dry period and negligible rutting was observed on the crest of the berm. Rutting on the southeastern and northwestern corners of the Ash Ponds had been addressed by applying clay soils to the effected areas.



PHOTO 15:

The southeastern corner of Ash Pond B looking to the south. This area was not rutted and has clay soils placed in this area.



PHOTO 16:

Looking to the west along the crest of the Ash Pond B. A temporary berm had been placed along the crest and will be incorporated into the ongoing crest repairs. Only minor erosion of the interior embankment was observed and the clay liner was not exposed.



PHOTO 17:

This view is to the west along the crest of Ash Pond B embankment. All brush and vegetation was removed from the embankment. The shoreline showed only minor erosion.



PHOTO 18:

Looking to the west along the toe of the Ash Pond's southern side. All brush has been removed from the slope. No seeps or erosion were observed in this area and the berm is well vegetated.



PHOTO 19:

Looking to the west from near the midpoint of the southern side of the Ash Ponds. No seeps were observed in this area. Only minor erosional rills were observed along the southern edge of the embankment in this area. These erosional rills are scheduled to be addressed as part of the ongoing crest repairs.



PHOTO 20:

This view is to the north along the western slope of the Ash Ponds embankment. This was a dry period and vegetation was sparse.



PHOTO 21:

This photograph is looking to the east and shows the western slope of the Ash Ponds embankment during ongoing repairs. The slope was leveled and a key was installed in the foreground beyond the piping in preparation for the installation of the toe drain. Rain events have postponed this work.



PHOTO 22:

This photograph is looking to the north along the drainageway east of the Ash Ponds. The drainageway was recently cleaned out and channelized to enhance drainage.



PHOTO 23:

Looking to the west at the southern side of the Ash Ponds southern embankment. This is the area of small erosion rills near the crest of the embankment. This area will be addressed as part of the ongoing crest repairs. The photograph was taken after recent rain events.



PHOTO 24:

This photograph is looking to the south at the northwestern corner of Ash Pond A. The erosional gully in the foreground is on a temporary road constructed specifically for ash removal activities. The road will be removed upon completion of the ash removal.



PHOTO 25:

This photograph is looking to the north along the western side of the Ash Pond area. Some ponding of storm water was observed along the access road to the pump area and along the piping leading to the pump area. No ponding was observed at the toe of the berm.



PHOTO 26:

A small area of dead cattails was observed along the western slope of the Ash Ponds. This is the same area depicted in earlier reports (Arias). There was no seepage at the time the photograph was taken. There was some small gravel present on the surface of the ground along the slope.



PHOTO 27:

View of the excavation completed at the location of the dead cattails. The excavation revealed a buried lens of small gravel. This gravel lens was holding stormwater runoff and slowly allowing it to seep to the surface. The material underlying the gravel was a fat clay. After exposing and removing the gravel lens, the excavation quickly dried up confirming there is no pond seepage.



PHOTO 28:

The gauge located at the weir between Ash Pod A and B. New clay soils had recently been added to the berm on both side of the weir bridge.



PHOTO 29:

The view is to the southwest toward the pump area, on the west side of the Ash Pond. This photograph was taken during a dry period. Erosional areas at this location are being corrected as part of the slope repair work.



PHOTO 30:

This view is of the repaired crack in the concrete retaining wall at the Ash Pile area. The diagonal crack in the concrete was repaired during the outage week of October 22-26, 2018. Drainage is to the north and west on the northern and western sides of the concrete wall.



PHOTO 31:

This view of the southern side of the metal retaining wall at the Ash Pile shows the addition of steel plate onto the existing wall. The steel plate was welded onto the existing I-beams to cover any leakage from the interior steel wall. The wall was repaired during the plant outage of October 22-26, 2018.



PHOTO 32:

Drainage along the western edge of the Ash Pile area. Minor erosion was observed along the edges of the drainageway.



PHOTO 33:

View to the southeast of the Ash Pile area. Ash is removed with a front-end loader and then placed onto large haul trucks.



PHOTO 34:

In this area of the Ash Pile, drainage is to the west. This view is to the northeast.



PHOTO 35:

This view is to the north-northwest of the northern portion of the ash loadout area. The haul road is in the background. It was not rutted at the time of the observations.



PHOTO 36:

This is the drainage to the south along the eastern side of the haul road. This drainageway is scheduled to be cleaned out during the facility outage, to allow better storm water drainage.