

January 10, 2018

Xcel Energy, Inc.
Sherburne County Generating Station
13999 Industrial Blvd.
Becker, MN, 55308

Re: 2017 Annual Inspection of Bottom Ash Pond

The Bottom Ash Pond (BAP) inspection was conducted on November 8th, 2017 by Daniel J. Riggs, a professional engineer licensed in the State of Minnesota. Prior inspections were conducted in 1996, 2008, 2009, 2013 by the Minnesota Department of Natural Resources (DNR); in August 2009 by the EPA; annually from 2010 to 2014 by Qualified Professional Engineers in accordance with the DNR and Minnesota Pollution Control Agency (MPCA) inspection requirements; and annually since 2015 by a Qualified Professional Engineer in accordance with Coal Combustion Residual (CCR) Rules.

The following items were evaluated as a part of the section 257.83 inspection:

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

Periodic topographic surveys, most recently in August 2015, have been conducted on the BAP since the final phase of construction was completed in 1982. During that time, no changes in pond geometry or embankment alignment have been observed.

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

There is no instrumentation for water level or dike stability, however water level elevation in the BAP is controlled by stop-logs as described in section iii.

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

The BAP discharges to the Recycle Basin over concrete stop-logs located in the discharge structure. These stop-logs are added or removed to raise or lower the impounded water level in the BAP. In 2017, the maximum water level was maintained at an elevation of 978 Mean Sea Level (MSL) until September to promote bottom ash material deposition, then lowered to a minimum and current elevation of 966 MSL allowing access to deposited material by excavation equipment. The liner at the bottom of the BAP is at elevation 946 MSL, therefore the minimum and maximum impounded water depths are 20 and 32 feet, respectively.

The lowest elevation of deposited CCR in the BAP since the last inspection was approximately 954 MSL. The maximum elevation of deposited CCR in the BAP was at approximately 980 MSL prior to excavation. The minimum and maximum CCR depths equate to 8 and 34 feet, respectively.

iv) The storage capacity of the impounding structure at the time of the inspection

The remaining capacity of the BAP from the surface of CCR to elevation 998 (top of clay liner) at the time of the inspection was approximately 484,000 Cubic Yards. The remaining capacity of the BAP from the present water level (elevation 966 MSL) to top of clay liner (elevation 998 MSL) was approximately 429,000 Cubic Yards.

v) The approximate volume of the impounded water and CCR at the time of the inspection

There was approximately 55,000 Cubic Yards of impounded water and 540,000 Cubic Yards of CCR in the BAP at the time of the 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 exterior of the BAP was inspected for structural weakness in the form of seepage by walking a traverse at the base, mid-slope, and top of the embankment. Signs of seepage would include moss or marshy vegetation at the toe-drain along the base, soft or saturated areas, patches of grass more lush than the surrounding area, or flowing "springs". There were no signs that seepage had previously or is presently occurring on the BAP.

The discharge pipe corridor was inspected for signs of a leakage, such as saturated areas or sinkholes. No signs of leakage were observed along the pipe corridor between the BAP and the Recycle Basin.

The water level in the BAP is controlled by concrete stop-logs in the discharge. All decreases in water level are attributed to the removal of stop logs.

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

There have not been any changes that have affected the stability of the pond. I have reviewed the CCR Unit Design and Construction information and have observed no deviations from those documents.

Sincerely,
Daniel J. Riggs, PE
License No. 49559
Senior Engineer
Carlson McCain, Inc.





FIGURE 1
BOTTOM ASH POND
2017 ANNUAL INSPECTION
POND LAYOUT



FIGURE 2
BOTTOM ASH POND
2017 ANNUAL INSPECTION
PHOTO LOCATIONS

Bottom Ash Pond Annual Inspection - November 2017



Photo 1	Bottom ash and scrubber pipes, looking south.
11/8/2017	



Photo 2	North embankment and perimeter ditch, looking west.
11/8/2017	

Bottom Ash Pond Annual Inspection - November 2017



Photo 3	North embankment and riprap toe drain, looking west.
11/8/2017	



Photo 4	North embankment and riprap toe drain, looking east.
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Photo 5	Bottom Ash Pond secondary outlet to Recycle Basin (Primary outlet is below the water level of the Recycle Basin).
11/8/2017	



Photo 6	Northwest embankment riprap toe drain, looking southwest.
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Photo 7	Northwest embankment, looking northeast.
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Photo 8	Pond interior, looking northeast.
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Photo 9	Photo from inside the discharge structure. Shows stop-log metal channels and water flowing over concrete stop-log at the bottom of the channel.
11/8/2017	



Photo 10	Mid slope of northwest embankment, looking southwest.
11/8/2017	

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Photo 11	Pond interior, looking southwest.
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Photo 12	Pond interior, looking southeast.
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Photo 13	Upper slope of north embankment, looking east.
11/8/2017	



Photo 14	Interior of east embankment, looking south.
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Photo 15	East embankment, looking north.
11/8/2017	



Photo 16	CCR Unit identification marker placed in accordance with Section 257.73.
11/8/2017	