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January 18, 2017

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

Re: 2016 Annual Inspection of Scrubber Solids Pond No. 3

The Scrubber Solids Pond No. 3 (Pond 3) inspection was conducted on November 8th, 2016 by Daniel J. Riggs, a professional engineer licensed in the State of Minnesota. This was the second inspection done in accordance with the EPA's published Coal Combustion Residual (CCR) Rules under section 257.83. Prior inspections were conducted in 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 in 2015 by a Qualified Professional Engineer in accordance with EPA 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

Annual topographic surveys have been conducted on the Pond since initial construction in 2004. 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

The only instrumentation on Pond 3 is a staff gauge used to determine water surface elevation, located on the west side of the discharge structures. The minimum elevation measured since the last inspection was 993.2 mean sea level (MSL), the maximum elevation was 996 MSL. The top of clay liner elevation is 1004 MSL. No instrumentation is needed for dike stability.

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

The minimum depth of water impounded since the previous annual inspection was 55.2 feet (measured from the lowest elevation of the Pond liner), and is 58 at the maximum/present.

Two forms of CCR are deposited or placed in Pond 3. Solid bottom ash is excavated and hauled from the Bottom Ash Pond (see figure 1) and used above the water level in Pond 3 and compacted as a structural fill, or deposited in the pond, and not compacted. The highest elevation of bottom ash is elevation 1004. This equates to a depth of 66 feet. The scrubber solids are sluiced to the Pond and

create a delta that is approximately 2 feet above the water level, therefore the minimum and maximum depths 57.2 and 60 feet, respectively.

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

The remaining capacity of Pond 3 to elevation 1004 (top of currently-constructed clay liner) is:

- 3.79 Million Cubic Yards (from the surface of CCR)
- 1.05 Million Cubic Yards (from top of water, elevation 996 to 1004)

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

There was approximately 2.57 Million Cubic Yards of impounded water and 3.6 Million Cubic Yards of CCR in the Pond 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 exterior of the Pond 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 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 Pond 3.

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 or in the vault located north of Pond 3.

The water level in Pond 3 has remained static or increased throughout the past year. Increases can be attributed to scrubber solid deposition and water accumulation from storm events.

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.

The Pond was designed for long-term stability and there are no observed deviations from the design. I have reviewed the CCR Unit Design, Construction information and weekly/monthly inspections performed by qualified personnel and concur with their conclusions.

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

1/20/2017

RECYCLE BASIN
(INCISED AND DOES
NOT RECEIVE DIRECT
CCR DEPOSITS)

BOTTOM ASH POND

POND 3 DISCHARGE PIPE
(UNDERGROUND)

EDGE OF FINAL COVER
(APPROXIMATE)

POND 3 DISCHARGE STRUCTURE

POND 1 (CLOSED)

POND 2 (CLOSED)

SCRUBBER PIPES

POND 3

PROPERTY BOUNDARY

F-COV

MEQB

N

0 500 1000

SCALE IN FEET

NOTE: AERIAL PHOTO FROM NOVEMBER, 2014
LIDAR SURVEY

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FIGURE 1
POND 3 ANNUAL
2016 INSPECTION
POND LAYOUT

P:\Projects\XCEL\3404-13 Sherco Dam Safety Inspection\Oct 2016 CCR inspection\figures\Figure 1 - Pond 3 inspection.dgn

POND 3 DISCHARGE PIPE (UNDERGROUND)

SOIL BORROW AREA

POND 3 DISCHARGE STRUCTURE

POND 2 (CLOSED)

POND 3

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SCRUBBER PIPES

1 2 3 4 5 6 7 8 9 10 11 12 13 14 26 27 28 29

0 200 400

SCALE IN FEET

N

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FIGURE 2

POND 3 ANNUAL
2016 INSPECTION

PHOTO LOCATIONS - NORTH HALF

1/20/2017

P:\Projects\XCEL\3404-13 Sherco Dam Safety Inspection\Oct 2016 CCR inspection\figures\Figure 2 - Pond 3 photos - north.dgn

1/20/2017

P:\Projects\XCEL\3404-13 Sherco Dam Safety Inspection\Oct 2016 CCR Inspection\figures\Figure 3 - Pond 3 photos - south.dgn

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SCRUBBER PIPES

POND 2 (CLOSED)

POND 3

SOIL BORROW AREA

PROPERTY BOUNDARY

P

MEQB

X

15

16

17

18

19

20

21

22

23

24

25

30

N

0 200 400

SCALE IN FEET

NOTE: AERIAL PHOTO FROM NOVEMBER, 2014
LIDAR SURVEY
ONLY NEWLY INSTALLED CCR WELLS SHOWN

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FIGURE 3

POND 3 ANNUAL
2016 INSPECTION

PHOTO LOCATIONS - SOUTH HALF

Pond 3 Annual Inspection – November 2016

Photo 1 11/8	Outer east slope of north embankment, looking north

Photo 2	Small eroded channel near pond east embankment.

Photo 3	Pond east embankment, looking south

Photo 4	Outer slope of north embankment, looking west

Photo 5	North embankment ramp, looking east

Photo 6	Pond north embankment and infiltration pond

Photo 7	Pond north embankment mid slope, looking east

Photo 8	Underground discharge pipe corridor, looking northwest

Photo 9	Pond north embankment mid-slope, looking west

Photo 10	Pond north embankment mid-slope, looking east

Photo 11	CCR Unit identification marker placed in accordance with Section 257.73

Photo 12	North end of pond east embankment, looking northwest

Photo 13	South end of pond east embankment, looking southwest

Photo 14	Pond east embankment and borrow area, looking south

Photo 15	Pond east embankment, looking north

Photo 16	Pond east embankment, looking north

Photo 17	Pond south embankment, looking west

Photo 18	Pond south embankment, looking east. Middle right: Newly installed Pond 3 CCR monitoring well (between yellow bollards)

Photo 19	Pond interior west embankment, looking north

Photo 20	Top of pond south embankment, looking east

Photo 21	Mid-slope of south embankment, looking west

Photo 22	Pond southeast ramp and embankment, looking south

Photo 23	Mid-slope of east embankment, looking north

Photo 24	Top of east embankment, looking south

Photo 25	Top of east embankment, looking north

Photo 26	Top of north embankment, looking east

Photo 27	Pond water level staff gauge (shown at approximately 996 feet of elevation mean sea level)

Photo 28	Pond interior west slope, looking south

Photo 29	Newly installed pond CCR angled well, looking east

Photo 30	Foreground: Pond stainless steel scrubber solid pipes. Middle-right: newly installed CCR angled well