

US EPA ARCHIVE DOCUMENT



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January 12, 2010

Mr. Stephen Hoffman  
US Environmental Protection Agency (5304P)  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

Re: Response to December 14, 2009 Letter related to the USEPA Final Report for the "Assessment of Dam Safety: Northern States Power Company, Sherburne County Generating Plant, Coal Combustion Surface Impoundments", dated December 9, 2009

Dear Mr. Hoffman:

On December 14, 2009 Xcel Energy received the US Environmental Protection Agency (EPA) "Assessment of Dam Safety, Coal Combustion Surface Impoundments (Task 3), Final Report". The USEPA included a cover letter with the final report requesting Xcel Energy's acceptance of the final report's recommendations and our implementation plans/schedules of those recommendations.

Xcel Energy has carefully reviewed the findings and the recommendations detailed in the final report. Based on our review, we have responded to the applicability of the final report's recommendations and Xcel Energy's plans for implementation in Attachment 1.

Please direct any questions concerning this submittal to my attention at the address listed below.

Sincerely,

Terry E. Coss, PE  
Environmental Director  
Xcel Energy  
414 Nicollet Mall, Minneapolis, MN 55401

1-12-2010

Date

Attachment 1: Implementation of USEPA Inspection Recommendations for Northern States Power Company, Sherburne County Generating Plant

## Attachment 1

### EPA Request for Information regarding Implementation of EPA Inspection Recommendations January 8, 2010

#### **4.2 Animal Control and Filling of Existing Animal Burrows**

##### ***EPA Observation/ Recommendation:***

*Evidence of animal burrows was observed on the embankment slopes of the Bottom Ash Pond, Pond No. 1, Pond No. 2 and Pond No. 3 dams. A 4.5-foot deep animal burrow was observed on the South Dam embankment approximately two-thirds the distance along the dam that needs to be repaired. At approximately three-quarter distance from southwest corner of the Pond No. 1 West Dam a 6-foot wide, 2-foot deep gulley formed in surface of slope in area of surface undulation that also needs to be repaired. CHA recommends vigilance by Northern States Power Company to make note of areas disturbed by animal activity, trapping of the animals, and repair to the areas to protect the integrity of the dams. In addition, noting the locations that have been repaired will provide a record which can be used to more easily identify active versus inactive animal burrows (i.e. stable versus potentially changing conditions).*

##### **Northern States Power (NSP) Response:**

NSP acknowledges that there are a significant number of animal burrows on the downstream slope of all of the embankments. Some of these burrows have caused minor erosion, but the vast majority caused no significant erosion.

The design of the embankments at Sherco is such that animal burrows can not affect the structural integrity of the impoundments. All of the containment embankments are constructed with a center clay core or an upstream clay liner, with a granular (sand) embankment. The original Ponds also have a coarse aggregate toe drain. The minimum lateral distance from the downstream surface of any of the pond's embankments to the clay core/liner is 10 ft, and this occurs at the top of the dike. As you travel down the slope, the lateral distance to the clay increases, such that at the toe of the dike it is well over 100 ft. The burrowing animals in residence on the impoundments typically have burrow depths less than 6 ft. Consequently, the seepage path through the embankments and the structural integrity of the impoundments would not be affected in any way from the animal burrows observed during the EPA inspection.

For these reasons, NSP does not plan to fill all existing animal burrows. However, if there are excessively deep burrows or burrows that result in significant surface erosion, NSP will fill these burrows, repair the erosion, and re-establish vegetative cover as discussed in the sections 4.3 and 4.4.

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#### **4.3 Maintaining Vegetation Growth**

*Appropriate grass covered most of the dams. However, there were areas of sparse vegetation where reseeding maintenance should be performed. Northern States Power Company should perform reseeding as required yearly to maintain a good grass cover on the dams.*

#### **Northern States Power (NSP) Response:**

NSP concurs that there are areas on the recently constructed embankments where vegetation has not been fully established, especially the Pond 3 dikes which had to be reseeded for the 2008 vertical expansion project. However, immediately after construction those areas were seeded and mulched so significant surface erosion was not observed. NSP will implement a Preventive Maintenance (PM) program to re-grade and/or re-seed areas where vegetation is observed to be sparse or surface erosion is prevalent. The need for this work will be identified under the inspection program discussed in Section 4.7.

#### **4.4 Erosion Protection and Repair**

*Erosion rills, sinkholes and subsequent loss of grass cover were observed on embankment slopes. Thinning and loss of grass cover due to concentrated flow from the access roads was noted. On the South Dam of Pond No. 1 a 48-inch wide by 3-foot deep sinkhole was observed that needs to be repaired. CHA recommends filling all rills and sinkholes and reseeding these areas.*

#### **Northern States Power (NSP) Response:**

NSP believes that surface erosion should be evaluated on a case by case basis. Surficial erosion may not be immediately filled if it is determined that the erosion does not materially affect the structural integrity of the impoundment. However, when an erosion feature progresses to a point where, if not repaired, it could impact structural integrity of the embankment, the erosion feature will be filled and stabilized with vegetation and mulch. The need for this work will be identified under the inspection program discussed in Section 4.7.

The "sinkhole" referenced by the EPA is an inaccurate description of surface erosion feature observed on the Pond No. 1 embankment. The term sinkhole suggests that there is internal embankment erosion resulting in loss of support from below. If the feature is a sinkhole, this is a serious condition that would require investigation to determine if uncontrolled seepage is present. Since the feature is above the water level in the impoundment, it is highly unlikely that seepage is the cause of the feature. NSP believes that the erosion feature in question is the result of surface erosion that is similar in visual appearance to a sinkhole, but not of same structural significance.

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#### **4.5 Drainage Swale Maintenance**

*Vegetation was evident in some of the rip rap drainage swales to the toe of the downstream embankment slopes. Northern States Power Company should monitor the condition of these drainage swales and if the vegetation appears to be clogging the rip rap and impeding surface runoff from being adequately conveyed away from the earthen embankments, the vegetation should be removed from rip rap.*

#### **Northern States Power (NSP) Response:**

NSP agrees with this recommendation and will take appropriate action to ensure there is no ponding or blockage in the drainage swales that route storm water off the embankments, or at the swale at the toe of the embankment that maintains the free drainage of the controlled seepage from the toe drain. The need for this work will be identified under the inspection program discussed in Section 4.7.

#### **4.6 Tree and Root Removal**

*Tree roots were observed on the Pond No. 1 South Dam. CHA recommends that Northern States Power Company, monitor the areas where tree roots are left in place following the cutting of trees for signs of tree roots sprouting and instability in the embankment slope surface due to root ball decay. Similarly, trees have established themselves in Pond No. 2 East Dam slope in the area of future Pond No. 3S. CHA recommends these trees be removed under the direction of a professional engineer.*

#### **Northern States Power (NSP) Response:**

Fugitive trees have periodically been observed to grow on the embankments. When a tree is observed to be growing on the embankment, NSP will remove the tree. The root ball may be left in place since removing the roots substantially disturbs the embankment soil and could create a condition that would result in surface erosion.

NSP is planning to implement a Preventive Maintenance (PM) program to remove volunteer vegetation that develops on the embankments. The need for this work will be identified under the inspection program discussed in Section 4.7.

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#### **4.7 Inspection Recommendations**

*CHA recommends that Northern States Power Company implement procedures for routine inspections of the Bottom Ash, Pond No. 1, Pond No. 2 and Pond No. 3. The Operations and Maintenance Plan for Pond No. 2 prepared by Barr Engineering Company and submitted to MN DNR as part of the Application for Amendment of NPDES Permit No. 0002186 in January 1995 is a good document for the facility to refer to for performing these inspections. The manual outlines monthly or semiannual (twice a year) visual observations that should be performed. Table 3 in the manual lists items which should be inspected monthly (i.e. adequate slope maintenance, adequate liner protection/erosion control, adequate freeboard, adequate surface water drainage, vector/rodent control, dust control, dam integrity, adequate vegetation on cover, adequate erosion control on cover, signs of seepage on perimeter dams, sudden drops in pond level) and Table 4 lists items which should be inspected semiannually and after severe rainfall events (i.e., groundwater monitoring points, final cover integrity, surface water drainage system, dewatering system, survey monuments, perimeter dams and haul roads, sedimentation basin build up). The results of the routine inspections should be documented in an inspection log and maintained at the facility.*

#### **Northern States Power (NSP) Response:**

NSP agrees that implementation of a formal periodic inspection program with enhanced documentation would be beneficial. NSP will use Barr Engineering's inspection template (Table 4) as a starting point for semiannual (twice annually) visual inspections. Note that the Barr Engineering inspection procedure may need to be revised somewhat since it was written for Pond 2, and in its current form may not completely address the Pond 3 design. The semiannual inspections will be documented and the inspection reports will be retained as part of the pond facility records. NSP will revise the O&M plan to reflect this process improvement and re-submit the plan to the MPCA and MDNR.

NSP personnel regularly observe all of the impoundments as part of their routine operations and construction responsibilities. Plant staff will continue to make informal visual observations coinciding to Barr Engineering's inspection template (Table 3) relevant to the structural integrity of the impoundments as part of these routine pond checks. These routine inspections will not be documented unless a condition is observed that requires follow-up or corrective action.



**RE: Follow-up Up to Xcel NSP Sherburne Response**

**Coss, Terry E** to: James Kohler  
Cc: "Carney, Kristen S", Stephen Hoffman

04/01/2010 11:47 AM

History: This message has been replied to.

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Jim,

We have considered the questions and comments in your email and offer the following responses.

Our response to the need to fill animal burrows reflects our position that the pond's embankment design minimizes the risk of normal animal burrowing activity causing an unsafe condition. We agree there will be instances where the burrowing is severe enough to require repair by eradicating the animals and filling the burrows. However, in many cases small or shallow burrows are benign and pose no significant technical concern. We feel that CHA did not distinguish between minor inconsequential burrowing, and the more significant or harmful burrowing that must to be addressed to maintain embankment integrity. NSP will monitor for burrowing activity during our monthly and our bi-annual inspections. We will use the guidance of a registered Professional Engineer, who will conduct our bi-annual inspections, to determine when burrowing activity needs to be halted and burrows filled. If it is determined by the engineer that burrowing activity is not causing a potential unsafe condition, the burrows will typically be left as-is.

We fully agree that the so-called "sinkhole" needs repair, and NSP will be taking action to make those repairs this spring. Our concern is that Minnesota has karst terrain and the term "sinkhole" implies internal erosion as the cause vs. a more appropriate term in this case, such as "surface depression" or "surface erosion feature". We believe one of these terms should be used instead of "sinkhole" to portray a more accurate description of the cause of the ground loss. While this may seem simply a matter of semantics or terminology, given the intense focus on these types of facilities we do not want the issue to be misconstrued by anyone to suggest that the Sherco ponds were constructed over unstable geology.

I hope that the above clarifications adequately answer your questions. If you have other questions or require additional follow-up, please feel free to contact me.

Terry Coss, PE  
Xcel Energy  
Environmental Director  
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-----Original Message-----

From: Kohler.James@epamail.epa.gov [mailto:Kohler.James@epamail.epa.gov]  
Sent: Monday, March 08, 2010 10:09 AM  
To: Coss, Terry E  
Cc: Hoffman.Stephen@epamail.epa.gov  
Subject: Follow-up Up to Xcel NSP Sherburne Response

Dear Terry,

We have reviewed NSP's action plan for the Sherburne facility and have consulted with CHA. Thank you for your responsiveness to the recommendations in the final report. We find the implementation strategy for all recommendations adequate, however we have some concerns over NSP's responses to recommendations 4.2 and 4.4. On 4.2, we understand that NSP will be filling in the excessively deep borrows; EPA would like to stress the importance of addressing these burrows early to ensure they don't become worse; filling them will also make it easier to monitor degradation over time. On 4.4, we feel that the sinkhole should be repaired whether it's caused by surface or internal embankment erosion to ensure structural integrity. Additionally, if it is not fixed at all, this will make it more difficult to differentiate between surface and internal embankment erosion if conditions worsen in the future.

Please consider making slight amendments the implementation strategy to make it clear that these issues will be addressed. Let me or Steve know if you have any questions or concerns. Again, thank you for NSP's continued support.

Respectfully,

\*\*\*\*\*  
Jim Kohler, P.E.  
Environmental Engineer  
LT, U.S. Public Health Service  
U.S. Environmental Protection Agency  
Office of Resource Conservation and Recovery  
Phone: 703-347-8953  
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