



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

October 17, 2016

Mr. Scott D. Northard  
Acting Vice President  
Northern States Power Company - Minnesota  
Prairie Island Nuclear Generating Plant  
1717 Wakonade Drive East  
Welch, MN 55089-9642

**SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2 –  
CORRECTION TO INTERIM STAFF RESPONSE TO REEVALUATED FLOOD  
HAZARDS SUBMITTED IN RESPONSE TO 10 CFR 50.54(f) INFORMATION  
REQUEST – FLOOD-CAUSING MECHANISM REEVALUATION (CAC  
NOS. MF7710 AND MF7711)**

Dear Mr. Northard:

By letter dated September 16, 2016 (Agencywide Document Access and Management System (ADAMS) Accession No. ML16248A005), the U.S. Nuclear Regulatory Commission transmitted to you the Interim Staff Response to the reevaluated flood hazards for Prairie Island Nuclear Generating Plant, Units 1 and 2 (Prairie Island). In that letter, the second page was inadvertently omitted from the electronic version. This letter supersedes the September 16, 2016, letter with the only change being the inclusion of the second page of the cover letter.

The purpose of this letter is to provide a summary of the NRC's staff's assessment of the reevaluated flood-causing mechanisms described in the May 9, 2016 (ADAMS Accession No. ML16133A041), flood hazard reevaluation report (FHRR) submitted by Northern States Power Company, a Minnesota corporation (the licensee), doing business as Xcel Energy, for Prairie Island, as well as supplemental information resulting from the NRC's audit of the FHRR.

By letter dated March 12, 2012, the NRC issued a request for information pursuant to Title 10 of the *Code of Federal Regulations*, Section 50.54(f) (hereafter referred to as the 50.54(f) letter) (ADAMS Accession No. ML12053A340). The request was issued as part of implementing lessons-learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 2 to the 50.54(f) letter requested licensees to reevaluate flood-causing mechanisms using present-day methodologies and guidance. Concurrent with the reevaluation of flooding hazards, licensees were required to develop and implement mitigating strategies in accordance with NRC Order EA-12-049, "Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735). On March 30, 2015, the Commission provided the staff requirements memoranda (SRM) (ADAMS Accession No. ML15089A236) to COMSECY-14-0037, "Integration of Mitigating Strategies for Beyond-Design-Basis External Events and the Reevaluation of Flooding Hazards," dated November 21, 2014 (ADAMS

Accession No. ML14309A256), affirming that licensees need to address the reevaluated flooding hazards within their mitigating strategies for beyond-design-basis external events.

The NRC staff has reviewed the information submitted by the licensee and has summarized the results of the NRC's review in the tables provided as an enclosure to this letter.

Table 1 provides the current design-basis flood hazard mechanisms. Table 2 provides reevaluated flood hazard mechanisms; however, reevaluated hazard mechanisms bounded by the current design-basis (Table 1) are not included.

The NRC staff has concluded that the licensee's reevaluated flood hazards information, as summarized in the enclosure, is suitable for the assessment of mitigating strategies developed in response to Order EA-12-049 (i.e., defines the mitigating strategies flood hazard information described in guidance documents currently being finalized by the industry and NRC staff) for Prairie Island. Further, the NRC staff has concluded that the licensee's reevaluated flood hazard information is a suitable input for other assessments associated with Near-Term Task Force Recommendation 2.1 "Flooding." The NRC staff plans to issue a staff assessment documenting the basis for these conclusions at a later time.

Revision 2 of Nuclear Energy Institute (NEI) 12-06 includes a methodology to perform a mitigating strategies assessment (MSA) with respect to the reevaluated flood hazards. On February 29, 2016, the NRC staff published Japan Lessons-Learned Division (JLD) Interim Staff Guidance (ISG) JLD-ISG-2012-01, Revision 1, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML15357A142) in the *Federal Register* (81 FR 10283). This ISG endorses Revision 2 of NEI 12-06 (ADAMS Accession No. ML16005A625), dated December 2015. Based on the guidance provided in Revision 2 of NEI 12-06, flood event duration parameters and applicable flood associated effects should be considered as part of the MSA. The NRC staff will evaluate the flood event duration parameters (including warning time and period of inundation) and flood-related associated effects developed by the licensee during the NRC's review of the MSA.

As stated above, Table 2 of the enclosure to this letter describes the reevaluated flood hazards that exceed the current design-basis. In order to complete its response to the information requested by Enclosure 2 to the 50.54(f) letter, the licensee is expected to submit an integrated assessment or a focused evaluation, as appropriate, to address these reevaluated flood hazards, as described in the NRC letter, "Coordination of Request for Information Regarding Flooding Hazard Reevaluation and Mitigating Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML15174A257). This letter describes the changes in the NRC's approach to the flood hazard reevaluations that were approved by the Commission in its SRM to COMSECY-15-0019, "Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants" (ADAMS Accession No. ML15209A682).

S. Northard

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If you have any questions, please contact me at (301) 415-1056 or e-mail at [Lauren.Gibson@nrc.gov](mailto:Lauren.Gibson@nrc.gov).

Sincerely,

A handwritten signature in black ink that reads "Lauren K. Gibson". The signature is written in a cursive, flowing style.

Lauren K. Gibson, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosure:  
Summary of Results of Flooding  
Hazard Re-Evaluation Report

cc w/encl: Distribution via Listserv

ENCLOSURE:

SUMMARY TABLES OF  
REEVALUATED FLOOD HAZARD LEVELS

**Table 1. Current Design Basis Flood Hazards for Use in the MSA**

<b>Mechanism</b>	<b>Stillwater Elevation</b>	<b>Waves/ Runup</b>	<b>Design Basis Hazard Elevation</b>	<b>Reference</b>
<b>Local Intense Precipitation</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Sections 1.5, 2.1.3 & Table 4
<b>Streams and Rivers</b> Mississippi River Probable Maximum Precipitation	703.6 ft NGVD29	3.1 ft	706.7 ft NGVD29	FHRR Section 1.5.1 & Table 4
<b>Failure of Dams and Onsite Water Control/Storage Structures</b>	676.5 ft NGVD29	Not applicable	676.5 ft NGVD29	FHRR Section 1.5.2 & Table 4
<b>Storm Surge</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Section 1.5 & Table 4
<b>Seiche</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Section 1.5 & Table 4
<b>Tsunami</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Section 1.5 & Table 4
<b>Ice-Induced Flooding</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Section 1.5 & Table 4
<b>Channel Migrations/Diversions</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Section 1.5 & Table 4

Note 1: Reported values are rounded to the nearest one-tenth of a foot.

**Table 2. Reevaluated Flood Hazards for Flood-Causing Mechanisms for Use in the MSA**

Mechanism	Stillwater Elevation	Waves/ Runup	Reevaluated Hazard Elevation	Reference
Local Intense Precipitation	695.4 ft NGVD29	Minimal	695.4 ft NGVD29	FHRR Section 2.1.2 & Tables 4 and 5

Note 1: The licensee is expected to develop flood event duration parameters and applicable flood associated effects to conduct the MSA. The staff will evaluate the flood event duration parameters (including warning time and period of inundation) and flood associated effects during its review of the MSA.

Note 2: Reevaluated hazard mechanisms bounded by the current design basis (see Table 1) are not included in this table

Note 3: Reported values are rounded to the nearest one-tenth of a foot.

S. Northard

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If you have any questions, please contact me at (301) 415-1056 or e-mail at [Lauren.Gibson@nrc.gov](mailto:Lauren.Gibson@nrc.gov).

Sincerely,

*/RA/*

Lauren K. Gibson, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosure:  
Summary of Results of Flooding  
Hazard Re-Evaluation Report

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ADAMS Accession Nos.: PKG ML16248A005; LTR: ML16248A006; ENCL: ML16245A763 (Correction ML16286A161)  
\*via email

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<b>NAME</b>	LKGibson	SLent	PChaput	ARiveraVarona
<b>DATE</b>	10/17/16	10/14/16	09/1 /2016	09/ 1 /2016
<b>OFFICE</b>	NRR/JLD/JHMB/BC (A)	NRR/JLD/JHMB/PM		
<b>NAME</b>	GBowman	LKGibson		
<b>DATE</b>	10/17/16	10/17/16		

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