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OFFICE OF FEDERAL AND STATE MATERIALS AND ENVIRONMENTAL
MANAGEMENT PROGRAMS
DIVISION OF WASTE MANAGEMENT AND ENVIRONMENTAL PROTECTION

DRAFT ENVIRONMENTAL ASSESSMENT
FOR THE PROPOSED RENEWAL OF
U.S. NUCLEAR REGULATORY COMMISSION LICENSE NO. SNM-2506
FOR PRAIRIE ISLAND INDEPENDENT SPENT FUEL STORAGE INSTALLATION

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EXECUTIVE SUMMARY

On October 20, 2011, Northern States Power Company, a Minnesota corporation (NSPM) (doing business as Xcel Energy), submitted an application to the U.S. Nuclear Regulatory Commission (NRC) requesting renewal of Special Nuclear Materials (SNM) license number SNM-2506 for the Prairie Island Nuclear Generating Plant (PINGP) site-specific independent spent fuel storage installation (ISFSI) located within the city limits of Red Wing in Goodhue County, Minnesota. NSPM is requesting authorization to continue the currently licensed activities at the Prairie Island (PI) ISFSI for an additional 40 years. The purpose and need for the proposed action (issuance of a renewed license) are to provide an option that allows for continued temporary dry storage of spent nuclear fuel from PINGP Units 1 and 2.

NRC's federal action is the decision whether to renew the license for up to an additional 40 years. If approved, NSPM would continue to possess and store the PINGP spent fuel at the PI ISFSI in accordance with the requirements in Title 10 of the Code of Federal Regulations (CFR) Part 72, "Licensing Requirements for the Independent Storage of Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste." This draft environmental assessment (EA) assesses the potential environmental impacts of the proposed license renewal and of reasonable alternatives on the following environmental resources: land use; historical and cultural resources; visual and scenic resources; climatology, meteorology and air quality; geology and soils; water resources; ecological resources; socioeconomic; environmental justice; noise; transportation; public and occupational health and safety; and waste management. Chapter 2 of this draft EA discusses the alternatives to the proposed action, Chapter 3 discusses the affected environment, and Chapter 4 discusses the impacts to the environmental resource areas.

The NRC staff prepared this draft EA in accordance with NRC regulations at 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," that implement the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. §4321), and NRC staff guidance in NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs." The NRC staff reviewed previous EAs and environmental impact statements (EISs) conducted for PINGP and PI ISFSI; consulted with other federal agencies, federally recognized Indian tribes, and state and local government agencies; conducted site visits; and reviewed responses to NRC requests for additional information.

Generally, in its NEPA evaluations, the NRC staff categorizes the potential environmental impacts of a proposed action as follows:

SMALL—environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE—environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.

LARGE—environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

The NRC staff preliminarily finds that the impacts from the proposed action would be small for all environmental resource areas. In addition, the NRC staff preliminarily concludes that there would be no disproportionately high and adverse impacts to minority and low-income

populations and that federally listed threatened and endangered species would not be affected by the continued operation of PI ISFSI during the proposed license renewal period.

The NRC staff also evaluated the potential environmental impacts from decommissioning, taking into consideration an additional 40 years of PI ISFSI operation. Additionally, this draft EA analyzes cumulative impacts from past, present, and reasonably foreseeable future actions when combined with the environmental impacts from the proposed action.

Based on its review of the proposed action relative to the requirements set forth in 10 CFR Part 51, the NRC staff has preliminarily determined that renewal of NRC license SNM-2506, which would authorize continued operation of the PI ISFSI in Goodhue County, Minnesota for a period of up to 40 years will not significantly affect the quality of the human environment. Therefore, based on this preliminary assessment, an EIS is not warranted, and pursuant to 10 CFR Part 51.31, a draft Finding of No Significant Impact (FONSI) is appropriate.

Pursuant to 10 CFR 51.33, the NRC staff is making this draft EA and draft FONSI available for public review and comment. In doing so, the NRC staff determined that preparation of the draft EA and draft FONSI furthers the purposes of NEPA. Based on the public comments received, the NRC staff may determine that a final FONSI is appropriate or may instead find that preparation of an EIS is warranted should NRC staff identify significant impacts resulting from the proposed action. The NRC staff's final determination will be published in the *Federal Register*.

On June 8, 2012, the United States Court of Appeals for the District of Columbia Circuit [New York v. NRC, 681 F.3d 471 (D.C. Cir. 2012)], in response to a legal challenge to NRC's Waste Confidence (WC) Decision and Rule Update vacated the NRC's WC Decision and Rule Update (75 FR 81032 and 75 FR 81037). The Court held that the WC Decision and Rule Update is a major federal action necessitating either an EIS or a FONSI, and the Commission's evaluation of the risks associated with the storage of spent nuclear fuel for at least 60 years beyond the licensed life of a reactor is deficient. In response to the Court's ruling, the Commission, in CLI-12-16, determined that it would not issue licenses dependent upon the WC Decision and Rule until the issues identified in the Court's decision are appropriately addressed. In CLI-12-16, the Commission also noted that this determination extends only to final license issuance; all current licensing reviews and proceedings should continue to move forward. The Commission directed the NRC staff to proceed with a rulemaking that includes the development of an EIS to support an updated WC Decision and Rule within 24 months (by September 2014).

The updated rule and supporting Generic EIS (GEIS) will provide the necessary NEPA analyses of waste-confidence-related environmental issues. As directed by the Commission, NRC will not issue a renewed license for the PI ISFSI before waste-confidence-related issues are resolved. If the results of the WCD GEIS identify information that requires a supplement to this draft EA, the NRC staff will perform any appropriate additional NEPA review for those issues before NRC makes a final licensing decision.

LIST OF ACRONYMS

AADT	average annual daily traffic
ACHP	Advisory Council on Historic Preservation
ADAMS	Agencywide Documents Access and Management System
AEA	Atomic Energy Act
APE	area of potential effect
BIA	Bureau of Indian Affairs
AEC	Atomic Energy Commission
ALARA	as low as is reasonably achievable
AMSL	above mean sea level
CFR	Code of Federal Regulations
CON	Certificate of Need
CRMP	Cultural Resource Management Plan
dB(A)	decibel(s) (acoustic)
DNR	Department of Natural Resources
EA	environmental assessment
EIS	environmental impact statement
ER	environmental report
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impact
FR	<i>Federal Register</i>
FWS	U.S. Fish and Wildlife Service
GEIS	Generic Environmental Impact Statement
GWd/MTU	gigawatt-days/metric tons of uranium
HCAADT	heavy commercial average annual daily traffic count
IMAP	Inspection and Monitoring Activities Program
ISFSI	independent spent fuel storage installation
kPA	kilopascals
kph	kilometers per hour
kW	kilowatt
mph	miles per hour
MOU	Memorandum of Understanding
MPCA	Minnesota Pollution Control Agency
MPUC	Minnesota Public Utilities Commission
mR	milliroentgen
mrem	millirem
mSv	miliSievert
MWD/MTU	megawatt days per metric ton of uranium
NAAQS	National Ambient Air Quality Standards
NAS	National Academy of Sciences
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMC	Nuclear Management Company, LLC.
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
NRHP	National Register of Historic Places
NSPM	Northern States Power Company-Minnesota (doing business as Xcel Energy)
PI	Prairie Island
PIIC	Prairie Island Indian Community

LIST OF ACRONYMS (continued)

PINGP	Prairie Island Nuclear Generating Plant
PIPD	Prairie Island Indian Community Police Department
psi	pounds per square inch
PUC	Public Utilities Commission
RAI	request for additional information
REMP	Radiological Environmental Monitoring Program
ROI	region of influence
SAR	safety analysis report
SEIS	supplemental environmental impact statement
SER	safety evaluation report
SHPO	State Historic Preservation Officer
SNM	Special Nuclear Materials
TLD	thermoluminescent dosimeter
TN-40	Transnuclear 40 cask
TN-40HT	Transnuclear 40 high thermal cask
U-235	uranium-235
USACE	U.S. Army Corp of Engineers
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
WC	waste confidence
WCD	Waste Confidence Decision

1.0 INTRODUCTION

1.1 Background

In 1993, U.S. Nuclear Regulatory Commission (NRC) issued NSPM a 20-year license to receive, possess, store, and transfer the Prairie Island Nuclear Generating Plant (PINGP) spent fuel in the Prairie Island (PI) Independent Spent Fuel Storage Installation (ISFSI). Under the conditions of Special Nuclear Materials (SNM) license number SNM-2506, Northern States Power Company, a Minnesota Corporation (NSPM) (doing business as Xcel Energy), can store 40 fuel assemblies per cask in up to 48 transnuclear-40 casks (TN-40) and TN-40 high thermal (TN-40HT) casks. The maximum average burnup is 45 gigawatt-days per metric ton uranium (GWd/MTU) for fuel stored in a TN-40 cask and 60 GWd/MTU for fuel stored in a TN-40HT cask (NSPM, 2011a, Section 2.3.2). In support of the license request, NRC staff also completed an environmental assessment (EA) and determined a finding of no significant impact (FONSI) was appropriate (NRC, 1992). In 2009, NRC amended license SNM-2506 at the request of the licensee, to allow NSPM to use a modified storage cask design, the TN-40HT, to accommodate the dry storage of fuel with higher enrichment and higher burnup fuel. The NRC staff also completed an EA in support of this amendment and determined a FONSI was appropriate (NRC, 2009).

NRC's regulations at Title 10 of the Code of Federal Regulations (10 CFR) Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste," specifically 10 CFR 72.42 authorize the renewal of independent spent fuel storage installation- (ISFSI)-specific licenses for a period not to exceed 40 years. NRC issued this provision allowing for renewals of up to 40 years in a final rule published in the *Federal Register* (FR) on February 16, 2011 (76 FR 8890).

On October 20, 2011, NSPM submitted an application (NSPM, 2011a) to NRC requesting renewal of license SNM-2506 for the PINGP site-specific ISFSI for an additional 40 years. NSPM supplemented its application on February 29, 2012 (NSPM, 2012a) and April 26, 2012 (2012b). On March 30, 2012, the NRC staff accepted NSPM's application for a detailed technical review (NRC, 2012a). NRC issued a notice in the *Federal Register* (77 FR 37937) providing an opportunity to request a hearing and petition for leave to intervene. NSPM provided responses to the NRC staff request for additional information (RAI) (NRC, 2013a) regarding the environmental review on March 13, 2013 (NSPM, 2013a).

1.2 Purpose and Need for the Proposed Action

The purpose and need for the proposed action (license renewal) is to provide an option that allows for continued temporary dry storage of spent nuclear fuel generated by PINGP Units 1 and 2. NRC issued the operating licenses for PINGP Unit 1 on August 9, 1973, and for Unit 2 on October 29, 1974. PINGP Units 1 and 2 operate under separate NRC licenses (DPR-42 and DPR-60) that will expire in 2033 and 2034, respectively (NRC, 2011a). Spent fuel assemblies from PINGP Units 1 and 2 not already stored at the Prairie Island (PI) ISFSI are currently stored onsite in a spent fuel pool. Spent fuel assemblies are moved from the spent fuel pool to a storage cask that is then transported to the PI ISFSI for temporary storage. This dry storage option is needed until a permanent facility (or facilities) is available for offsite disposition of the spent fuel.

1.3 The Proposed Action

NSPM initiated the proposed federal action by submitting an application for renewal of its PINGP site-specific ISFSI for a 40-year period. The current license will expire on October 31, 2013. NRC's Federal action is the decision whether to renew the license for up to an additional 40 years. If approved, NSPM would be able to continue to possess and store only PINGP spent fuel at the PI ISFSI in accordance with the requirements in 10 CFR Part 72.

As described in Section 1.1, the PI ISFSI is licensed to store spent fuel in up to 48 casks (a total of up to 1,920 spent fuel assemblies) on two seismically qualified concrete pads. Currently there are 29 TN-40 casks (NSPM, 2011a) and 6 TN-40HT casks onsite. Operations include storage of and periodic transfer of filled casks to the PI ISFSI pad and routine inspections and monitoring of the ISFSI site. NSPM has indicated that there will be no change in routine operations, and no new construction or land disturbance is being requested as part of this license renewal application.

1.3.1 Site Location and Description

The PI ISFSI is located within the city limits of Red Wing in Goodhue County, Minnesota (Section 5, T113N, R15W), approximately 45 kilometers (km) [28 miles (mi)] southeast of the Minneapolis–St. Paul metropolitan area (Figure 1.3-1). The PI ISFSI is approximately 2.2 hectare (ha) [5.5 acres (ac)] in size and located within PINGP site boundary and exclusion area of approximately 230 ha [578 ac] (Figure 1.3-2). The ISFSI is located approximately 274.3 meters (m) [900 feet (ft)] southwest from the PINGP Units 1 and 2 (Figures 1.3-3 and 1.3-4) (NSPM, 2011a). The nearest resident, a Prairie Island Indian Community (PIIC) tribe member, is approximately 0.72 km [0.45 mi] northwest of the PI ISFSI (NSPM, 2011a). The PINGP site boundary is located adjacent to the PIIC reservation and the PI ISFSI is located within 548 m [1,798 ft] of the PIIC reservation (Figure 1.3-2).

Prairie Island is bordered by the Vermillion and Mississippi Rivers. The PI ISFSI is located in a low island terrace associated with the Mississippi River floodplain. The ground surface near the PINGP site is fairly level to slightly rolling, ranging in elevation from 205.7 to 215.2 m [675 to 706 ft] above mean sea level (AMSL) (NSPM, 2011a). The PI ISFSI pad elevation is 211.7 m [694.5 ft] AMSL (NSPM, 2011a). The surface slopes gradually toward the Mississippi River to the northeast and Vermillion River on the southwest. Normal water level is 205.6 m [674.5 ft] AMSL. Ground cover consists of prairie grass and brush (NSPM, 2011a).

The PI ISFSI site is covered with concrete and gravel. The protected area fence surrounding the ISFSI is within the PINGP site boundary and exclusion area. The PI ISFSI is surrounded by a 2.4-m [8-ft]-high security fence and a 2.4-m [8-ft]-high nuisance fence. An earthen berm {5.2 m [17 ft] high}, located outside the security and nuisance fences, surrounds the ISFSI and provides radiological shielding (NSPM, 2011a). An equipment storage building and a security building are located on the northeast corner of the PI ISFSI within the security and nuisance fences. The equipment storage building houses the cask transport vehicle. The alarm monitoring equipment is housed in a building outside of the earthen berm north of the access road (Figure 1.3-5) (NSPM, 2011a).

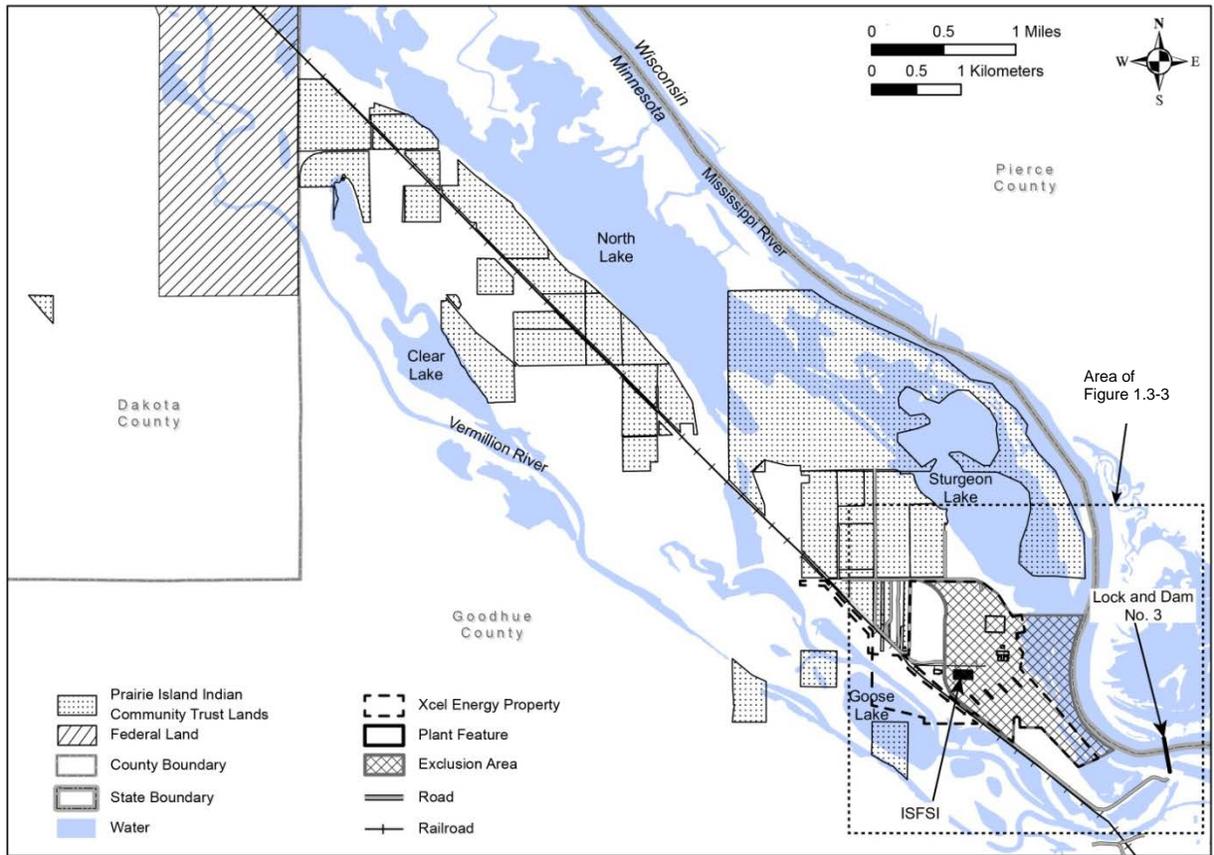


Figure 1.3-2. Prairie Island General Site Drawing (NMC, 2008; PIIC, 2013a; USCB, 2012)

1.3.2 Current Independent Spent Fuel Storage Installation and Dry Cask Storage System Description

The PI ISFSI is licensed to store the TN-40 and TN-40HT bolted cask design systems. Each TN-40 cask is designed to hold 40 fuel assemblies with initial enrichment less than or equal to 3.85 weight percent uranium-235 (U-235), average burnup less than or equal to 45,000 megawatt days per metric ton of uranium (MWD/MTU), minimum cooling time of 10 years, and maximum heat load of 27 kilowatt (kW) (NSPM, 2011a). The TN-40HT cask is designed to hold 40 fuel assemblies with initial enrichment less than or equal to 5.0 percent weight U-235, assembly average burnup less than or equal to 60,000 MWD/MTU, minimum cooling time of 12 years, and maximum heat load of 32 kW (NSPM, 2011a).

Currently 35 vertically positioned casks are located on two seismically qualified reinforced concrete pads. Each pad consists of two parallel rows that can hold 12 casks per row for a total design capacity of 48 casks (NSPM, 2011a). The concrete pads are 91 centimeters (cm) [36 inches (in)] thick and provide structural support for the casks; thus, the pads are classified as safety related. The PI ISFSI pad elevation is 211.7 m [694.5 ft] AMSL (NSPM, 2011a).

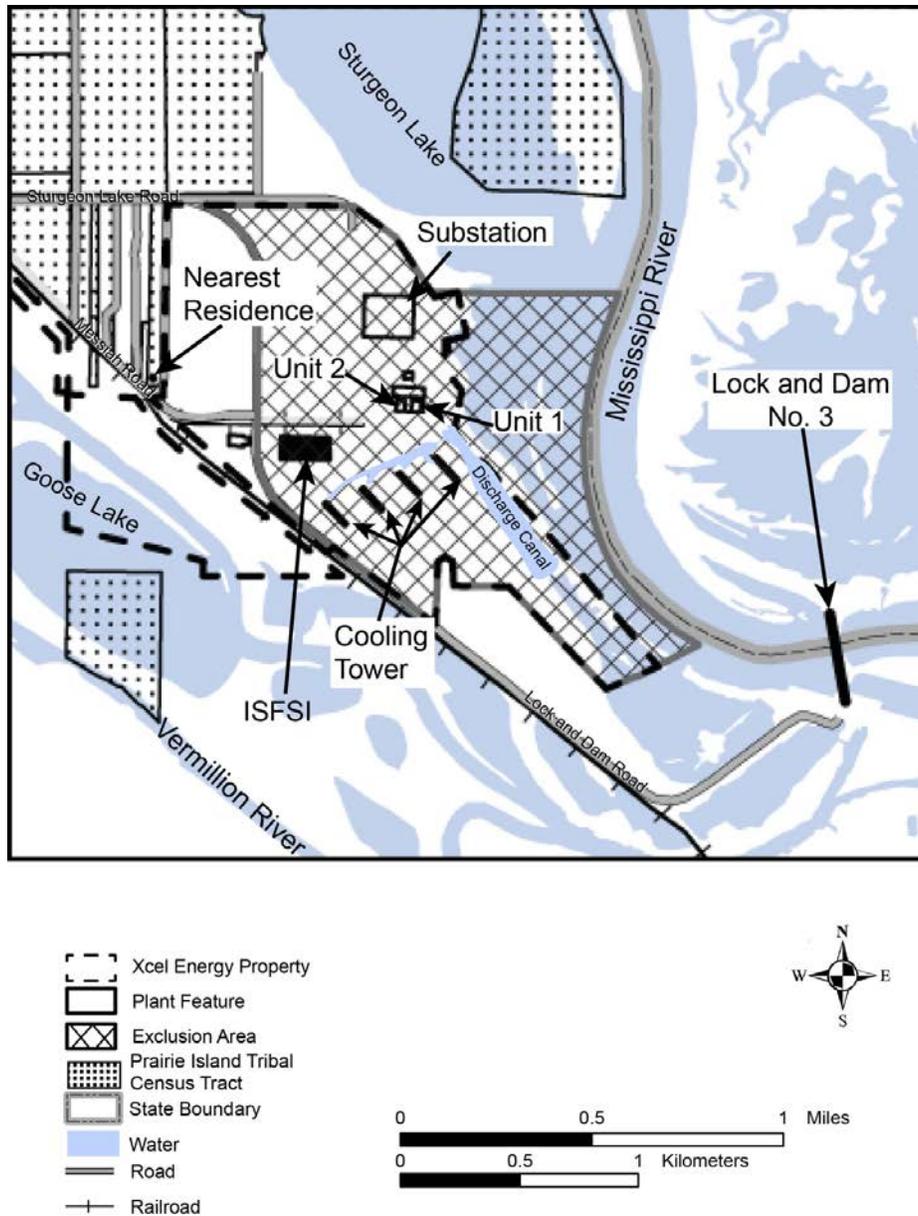


Figure 1.3-3. Prairie Island Nuclear Generating Plant (NMC, 2008; PIIC, 2013a, USCB, 2012)

Each storage cask consists of the following components:

- Basket assembly for support of the fuel assemblies
- Containment vessel enclosing basket assembly and fuel
- Gamma shield
- Neutron shield
- Top neutron shield
- Pressure monitoring system
- Weather cover

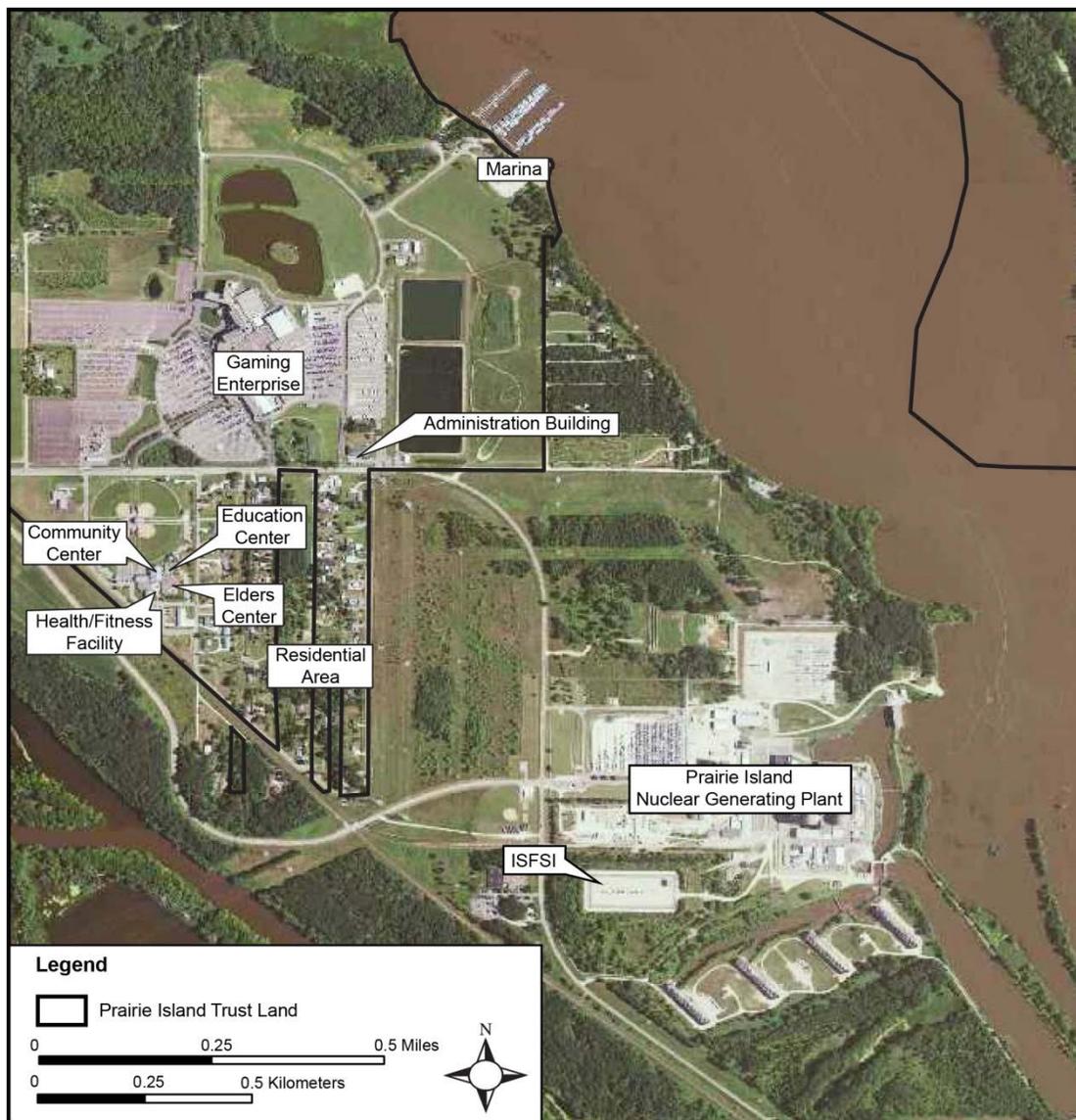


Figure 1.3-4. Prairie Island Indian Community and Prairie Island Nuclear Generating Plant Layout (Minnesota Geospatial Information Office, 2010; PIIC, 2013a)

The earthen berm is constructed of fill material reinforced with geofabric. Erosion control material and natural vegetation give the berm a natural appearance (NSPM, 2011a).

Handling of the fuel, cask loading, and decontamination of the casks take place within the PINGP auxiliary building; thus, there are no fuel handling facilities exclusively for the PI ISFSI (NSPM, 2011a).

1.3.3 Waste Management

Operation of the PI ISFSI generates no gaseous wastes, and there are no ventilation or off-gas systems. Additionally, no sanitary sewage is produced (NSPM, 2011a). Maintenance of the

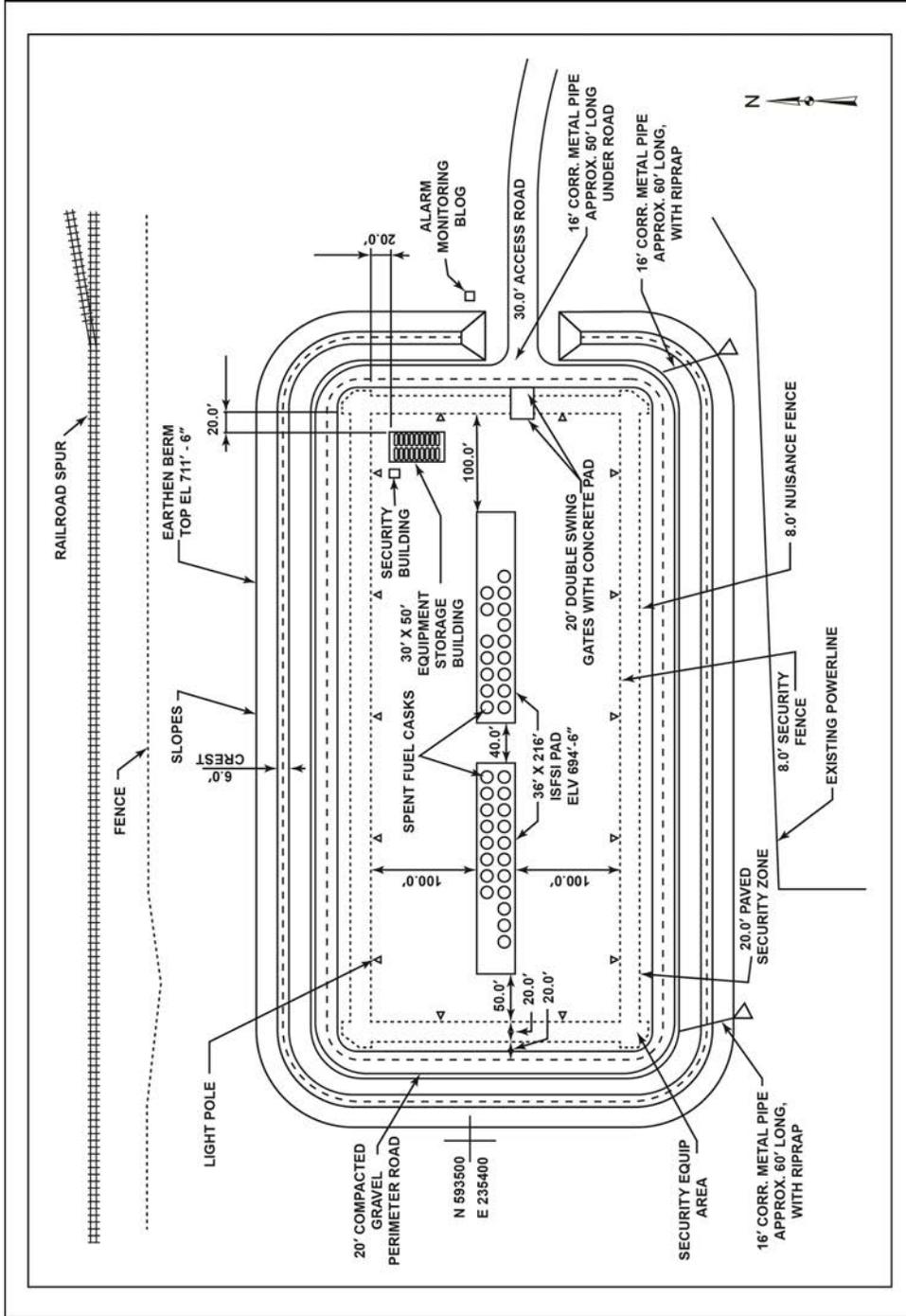


Figure 1.3-5. Prairie Island Dry Cask Storage Facility (Modified From MPUC, 2009a; NSPM, 2013b, 2012c, 2008a)

cask transport vehicle is performed in the equipment storage building within the PI ISFSI controlled area. These maintenance activities produce small amounts of wastes, such as ethylene glycol (antifreeze) or drips of lubricating fluid which are cleaned up and disposed of at appropriate facilities. Other wastes generated include small amounts of cleaning and maintenance waste products involved with occasional replacement and recalibration of monitoring instrumentation and applying corrosion-inhibiting coatings on some casks (NSPM, 2011a).

1.3.4 Monitoring Programs

NSPM performs routine monitoring activities. These activities include the Radiological Environmental Monitoring Program (REMP) for PINGP Units 1 and 2 and the PI ISFSI. The REMP for the PI ISFSI is conducted in accordance with the PI ISFSI license SNM-2506, ISFSI Technical Specification 5.2, Appendix A. Ambient gamma radiation is monitored at the PI ISFSI through 20 thermoluminescent dosimeters (TLDs) (NSPM, 2012c). TLDs are instruments that measure the ambient or total gamma radiation levels attributed to nuclear facilities and naturally occurring radiation fields emitted from the atmosphere (cosmic radiation) and the Earth (terrestrial radiation). Twelve TLDs are located inside of the PI ISFSI earthen berm, 8 TLDs are located outside of the earthen berm, and 15 additional TLDs are located between 6 and 8 km [4 and 5 mi] from the PINGP. The TLDs are measured and replaced quarterly (NSPM, 2012c). The results of the quarterly surveys are documented in the REMP annual report to NRC (NSPM, 2012c). Figure 1.3-5 shows where the TLDs closest to the PI ISFSI are located. The REMP for the PI ISFSI does not include any other physical, chemical, or ecological monitoring (NSPM, 2011a). Results from the ISFSI environmental monitoring program over the last 6 years are further discussed in Section 3.11 of this draft EA. The REMP for the PI ISFSI will continue throughout the extended period of operation, if the proposed license renewal is approved.

The application also describes the ISFSI Aging Management Program (AMP). Ten elements identified for the PI ISFSI that are part of the ISFSI Inspection and Monitoring Activities Program (IMAP) account for managing each aging effect listed in the ISFSI IMAP:

- Visual inspection of the exterior of the in-service casks
- Monitoring of the interseal pressure of the in-service casks
- Radiation monitoring and associated surveillance activities of the in-service casks
- Visual inspection of the concrete pads
- Visual inspection of the earthen berm
- Visual inspection of an in-service cask bottom prior to the end of the current ISFSI license period
- Visual inspection under an in-service cask protective cover (surfaces normally not visible or accessible with the cover in-place) prior to the end of the current ISFSI license period

- Visual inspection of the cask bottom in the event an in-service cask is lifted in preparation for movement (inspections of opportunity)
- Visual inspection under the protective cover (surfaces normally not visible or accessible with the cover in-place) of an in-service cask in the event the cover is removed for maintenance (inspections of opportunity)
- Visual inspection of the bottom and under the protective cover of the lead cask at least every 20 years

The applicant asserts that operating experience and inspection and monitoring programs provide reasonable assurance that the casks will perform as intended during the 40-year license renewal period (NSPM, 2011a). The NRC staff's safety analysis will be documented in a separate SER.

1.3.5 Decommissioning

Prior to license termination, NSPM will need to decontaminate and decommission the ISFSI. The decommissioning plan would be developed consistent with applicable regulations and submitted for NRC review and approval. Criteria addressing the decommissioning of site-specific ISFSIs and the submittal of a final decommissioning plan for an ISFSI are provided under 10 CFR 72.54(d), (g), and (i). The NRC would conduct a separate environmental review associated with the review of the decommissioning plan. Potential environmental impacts associated with decommissioning, taking into consideration an additional 40 years of PI ISFSI operation if the license is renewed, are described in Chapter 4 of this draft EA following the potential impacts from the proposed action for each resource area.

In its application (NSPM, 2011a), NSPM discussed two options for decommissioning. The storage casks, including the spent fuel assemblies, could be shipped to a suitable repository for storage. Alternatively, the spent fuel could be removed from casks and shipped in a licensed shipping container to a suitable repository for storage. NRC has certified the TN-40 cask for transportation of the spent nuclear fuel from the PINGP (NRC, 2011b). The TN-40HT cask has not been certified for transportation of the spent nuclear fuel from the PINGP.

1.4 Federal, State, and Local Agencies

NSPM is responsible for complying with all NRC regulations and other applicable federal, state, and local requirements. A summary of the regulatory requirements and permits, in addition to requirements of an NRC licensee, for activities at the PI ISFSI follows.

NSPM applied for a Certificate of Need (CON) from the Minnesota Public Utilities Commission (MPUC) to store up to 16 additional casks for a total of 64 casks to store additional spent fuel that will be generated during PINGP Units 1 and 2 extended period of operation (NSPM, 2011a). In July 2009, MPUC completed an environmental impact statement pursuant to Minnesota law to evaluate the PI ISFSI expansion and granted NSPM a CON for additional onsite dry cask storage (MPUC, 2009a,b).

NSPM is authorized to discharge to the Mississippi River under National Pollutant Discharge Elimination System (NPDES) Permit MN0004006. The permit regulates the amount of river water the PINGP Units 1 and 2 can use for cooling and limits effluents NSPM discharges

associated with the PINGP. No storm water samples are collected and analyzed at locations where surface water runoff leaves the PI ISFSI area. The current requirements of the NPDES permit in place are summarized in the NRC's Supplemental EIS (SEIS) for the PINGP license renewal in Section 2.1.6.3 (NRC, 2011c).

1.5 Cooperating Agencies

Trust Responsibility

The Federal Government has a trust responsibility, which establishes fiduciary obligations to federally recognized Indian tribes. An independent regulatory agency, such as NRC, discharges its obligations under the trust responsibility by complying with regulations and statutes designed to protect the public at large—in this case, the Atomic Energy Act (AEA), National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA) of 1966, as amended.

Memorandum of Understanding with the Prairie Island Indian Community

In October 2012, NRC and the PIIC entered into a Memorandum of Understanding (MOU). The MOU acknowledges the PIIC's special expertise in the areas of historic and cultural resources, socioeconomics, land use, and environmental justice as they relate to license renewal for the PI ISFSI. The MOU establishes a cooperating agency relationship between NRC and the PIIC and defines the roles and responsibilities of both entities and the process they will use to prepare an EA that incorporates and reflects the PIIC's views in the areas of special expertise. The MOU can be found under the Agencywide Documents Access and Management System (ADAMS) Accession No. ML12284A456 (NRC, 2012b).

In preparing this draft EA, the PIIC and NRC worked together to develop a comprehensive evaluation of the areas covered by the MOU. NRC considered all input the PIIC provided and incorporated information where appropriate. Statements the PIIC wrote are included to present their viewpoint on the areas covered by the MOU in relevant sections of this draft EA. These written statements are indented to distinguish them from NRC text.

The Prairie Island Indian Community Tribal Government

The PIIC is a federally recognized Indian tribe organized under the Indian Reorganization Act of 1934 (25 U.S.C. § 476). Members of the PIIC are descendants of the Mdewakanton Band of Eastern Dakota, also known as the Mississippi or Minnesota Sioux, who were parties to various treaties with the United States from 1805 to 1863 (PIIC, 2012a). The PIIC members elect the PIIC Tribal Government.

The U.S. Government does not determine who is or is not eligible to be enrolled in a federally recognized Indian tribe; it is up to the individual tribe to establish its own criteria for enrollment. Many tribes determine a blood quantum (or degree of full-blood, such as 25 percent) or will establish enrollment by lineal descendency from a common group of ancestors. In the case of the PIIC, enrollment is determined by lineal descendency (PIIC, 2012a).

1.6 Consultations

The NHPA was enacted to create a national historic preservation program, including the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation (ACHP). Section 106 requires federal agencies to consider the effects of their undertakings on historic properties. Regulations define an undertaking as “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval.” [see 36 CFR 800.16(y)]. License renewal is a federal undertaking that requires compliance with the NHPA. The ACHP regulations implementing Section 106 of the Act are found in 36 CFR Part 800, “Protection of Historic Properties.” NRC is coordinating compliance with Section 106 in parallel with the NEPA process and has notified the ACHP consistent with 36 CFR 800.8(c) (NRC, 2013b).

The Endangered Species Act of 1973 was enacted to prevent the further decline of endangered and threatened species and to restore those species and their critical habitats. Section 7 of the Act requires consultation with the U.S. Fish and Wildlife Service (FWS) of the U.S. Department of the Interior or the National Marine Fisheries Service of the U.S. Department of Commerce to determine whether (i) endangered and threatened species or their critical habitats are known to be in the vicinity of the proposed action and (ii) the proposed Federal action may affect listed species or critical habitat.

NRC also requested input from the Minnesota Department of Natural Resources (DNR) (NRC, 2012c), the City of Red Wing (NRC, 2012d), and Wisconsin DNR (NRC, 2013c) to facilitate the identification of local resource areas that may be affected by a renewal of the PI ISFSI license, if approved.

Table 5.5-1 in this draft EA lists consultation documents.

1.7 Basis for Review

The NRC staff has addressed the potential environmental impacts associated with the proposed renewal of License SNM–2506 and has documented the preliminary results of the assessment in this document. The staff performed this review in accordance with the requirements of 10 CFR Part 51 and staff guidance found in NUREG–1748 (NRC, 2003).

The NRC staff reviewed and considered the following documents in the development of this draft EA:

- NSPM license renewal application dated October 20, 2011 (NSPM, 2011a,b), supplemental information submitted on February 29, 2012 (NSPM, 2012a), and April 26, 2012 (2012b)
- NSPM responses to NRC environmental RAIs (NSPM, 2013a)
- Previous NRC environmental and safety review documents for the PI ISFSI (NRC, 2009, 1992, 1993)

- NRC's Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 39, Regarding Prairie Island Nuclear Generating Plant, Units 1 and 2, Final Report (NUREG-1437) (NRC, 2011c)
- NRC's consultation with Federal agencies, Indian tribes, and state and local government agencies (see Table 5.5-1)

In addition, the development of this draft EA was closely coordinated with the safety evaluation report (SER) development. Additional references may be found in Section 8.0 of this draft EA.

This draft EA documents the NRC staff's review and evaluation of the potential environmental impacts of the proposed license renewal and of reasonable alternatives. The NRC staff is focusing on new and significant information, including changes as a result of the proposed action, changes in the affected environment, and the operating history.

To limit redundancy and to focus this draft EA on issues that have not been previously evaluated, the NRC staff refers to previous environmental review documents for more detailed descriptions of those aspects of analysis that remain unchanged.

2.0 ALTERNATIVES

2.1 Alternatives to the Proposed Action

2.1.1 No-Action Alternative

The no-action alternative would consist of denial of NSPM's request to renew the PI ISFSI license. The license, however, would continue in effect with respect to possession of licensed material per 10 CFR 72.54(c) until the Commission notifies the licensee in writing that the license is terminated. NSPM would continue to maintain the stored spent fuel on the ISFSI in a safe and secure condition. Although the license would continue in effect, in accordance with 10 CFR Part 72.54(c), NSPM would not be able to place additional casks on the ISFSI storage pad. NSPM would continue to control entry and restrict access to the area until they are suitable for release. If NSPM does not pursue other alternatives such as those described in this section, reactor operations would cease once the spent fuel pool reaches its licensed capacity.

The NRC staff addressed the impacts that arise directly as a result of the PINGP Units 1 and 2 shut down as part of the no-action alternative evaluation in the license renewal SEIS (NRC, 2011c, Section 8.6). The NRC staff concluded that the impacts to air quality, groundwater, surface water, ecology, human health, and waste management would be small, and impacts to socioeconomics would be small to moderate (NRC, 2011c).

After the reactors cease operations, decommissioning of PINGP Units 1 and 2 would begin in accordance with 10 CFR 50.82. The environmental impacts from decommissioning nuclear power plants have previously been evaluated in the "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," NUREG-0586, Supplement 1 (NRC, 2002). The environmental impacts of reactor license renewal on decommissioning were addressed in the in the SEIS for PINGP Units 1 and 2 (NRC, 2011c). The NRC staff did not identify any new and significant information during the reactor license renewal review. Therefore, the NRC concluded that there are no decommissioning impacts beyond those discussed in the NUREG-1437 Generic EIS (GEIS), "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants"¹ (NRC 1996, 1999).

Decommissioning of the PI ISFSI would commence upon NRC approval of the final decommissioning plan in accordance with 10 CFR 72.54(d), 72.54(g)(1)-(6), and 72.54(i). NRC approval of a final decommissioning plan would constitute a federal action under NEPA and would be subject to a site-specific environmental review. Potential environmental impacts associated with decommissioning the PI ISFSI would be similar to those described for decommissioning following the proposed action in Chapter 4 of this draft EA.

2.1.2 General License

NSPM could use its general license under 10 CFR Part 72 to store the spent fuel in dry casks. Under Subpart K of 10 CFR Part 72, "General License for Storage of Spent Fuel at Power Reactor Sites," a general license authorizes storage of spent fuel in NRC-approved dry casks at a site already licensed to possess fuel to operate a nuclear power reactor. Exercising

¹The NRC originally issued the NUREG-1437 GEIS in 1996 and issued Addendum 1 to the GEIS in 1999. In addition, in June 2013, the NRC issued Revision 1 to the NUREG-1437 GEIS (NRC, 2013d).

a general license under 10 CFR Part 72 would require NSPM to either repackage its existing inventory at the PI ISFSI and the spent fuel pool into a cask design that has received a certificate of compliance from the NRC under 10 CFR Part 72, or apply (through the cask vendor) for NRC certification under the general license provisions for the dry casks currently used at the PI ISFSI to store spent fuel from PINGP Units 1 and 2. Impacts from repackaging the spent fuel would include additional occupational doses. Impacts associated with storing spent fuel under a general license would be similar to the environmental impacts from continued operation of the site-specific ISFSI as discussed in Chapter 4 of this draft EA. If a new ISFSI were built under the general license provisions instead of transitioning the existing ISFSI from a specific to a general license, there would be impacts associated with construction and operation of the new ISFSI. Construction and operation impacts would be dependent on site-specific conditions within the owner controlled area, and likely be similar to those discussed in NRC's 1992 EA (NRC, 1992).

2.1.3 License Renewal for an Additional 20-Year Term Alternative

The PI ISFSI was originally licensed for a 20-year period of operation. For this alternative, the ISFSI license would be renewed for an additional 20-year period consistent with the current license term. The NRC staff considered as an alternative the continued operation of the PI ISFSI for an additional 20 years to understand whether the environmental impacts of continued operations for 20 years would differ from those of continued operation for 40 years (proposed action).

For the 20-year alternative, only the potential radiological impacts to public and occupational health are discussed in this draft EA in Sections 4.11.2.1 and 4.11.2.2. The NRC staff did not separately address the 20-year alternative for the other resource areas, because the staff determined that, for those resource areas, the site operations and the types of potential environmental impacts associated with operation activities during the 20-year interval would be the same as those activities for the proposed action (i.e., the 40-year license renewal).

2.1.4 Increase the Storage Capacity of the Onsite Existing Spent Fuel Pool or Construct Additional Onsite Spent Fuel Pool Storage Space

As an alternative to the proposed action, NSPM could increase the storage capacity of the existing spent fuel pool or construct a new spent fuel pool.

To increase the storage capacity of existing spent fuel pool, NSPM would need to modify the spent fuel storage configuration. As discussed in NRC's EA for the construction and operation of the ISFSI (NRC, 1992), NSPM could use a rack design with a more compact array of cells (reracking), consolidate the spent fuel rods (the fuel rods from two spent fuel assemblies are removed, reconfigured and then placed in a canister), or use two-tiered racks (a second tier of filled storage racks is placed on top of the existing storage racks). In the 1992 EA, the NRC staff concluded that (1) reracking would not provide a means to store spent fuel for the balance of the plant's licensed operational lifetime, (2) spent fuel rod consolidation would not meet life-of-plant needs and would interfere with normal plant operations, and (3) the use of two-tiered racks would require considerable support of the fuel pool walls and there are technical and licensing uncertainties associated with installed two-tiered racks. In addition, these alternatives would result in higher occupational exposure. Further, in its license renewal application, NSPM stated that structural analysis conducted demonstrated that the capacity could be increased no more than 30–35 percent in weight. NSPM further stated that these

methods to increase the capacity of the spent pool would not provide the storage necessary for the PINGP's operational life (NSPM, 2011a).

Construction and operation of a new spent fuel pool at the PINGP site would require support facilities separate from the existing spent fuel pool. In addition to requiring the same support facilities, maintenance, and surveillance as the existing spent fuel pool, a new storage pool would require new fuel handling equipment, a large capacity cask crane, building ventilation, and a water quality system. There would be environmental impacts associated with construction of the new spent fuel pool. This alternative would also result in higher occupational exposure for the additional maintenance and surveillance activities associated with operating a new storage pool.

Therefore, the NRC staff concludes that increasing the capacity of the PINGP spent fuel pool or constructing an additional onsite spent fuel pool are not reasonable alternatives to renewing the PI ISFSI license.

2.1.5 Shipment of Spent Fuel to an Offsite Facility

As an alternative to the proposed action, NSPM could ship its spent fuel to the Monticello Nuclear Generating Plant in Monticello, Minnesota. However, Minnesota statute 116c.83 requires that storage of spent fuel to be at the site where it is generated. NSPM could also ship its spent fuel to an out of state nuclear power plant with sufficient storage capacity. In order for this option to be viable, the receiving nuclear power plant would have to be licensed to accept the PINGP spent fuel and would have to be willing to accept the fuel. The NRC staff expects that nuclear power plants would consider their own spent fuel storage capacity needs before accepting spent fuel from other sources. Therefore, the NRC staff concludes that this alternative is not reasonable.

NSPM could also construct an ISFSI at an offsite location. In addition to the impacts from activities such as packaging and transferring of the spent fuel, impacts from construction and operation of a new ISFSI at an offsite location would occur. Therefore, the NRC staff concludes that this alternative is not reasonable because of the additional environmental impacts associated with construction of an ISFSI offsite.

Shipment of the spent fuel to a commercial reprocessing facility, a federal repository, or an interim storage facility, is not a reasonable alternative because these facilities are currently not available in the United States.

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3.0 AFFECTED ENVIRONMENT

PINGP Units 1 and 2 and the PI ISFSI are located on the west bank of the Mississippi River in Goodhue County within the city limits of Red Wing, Minnesota (Figure 1.3-1). The City of Hastings is located approximately 21 km [13 mi] northwest (upstream) of the plant. Minneapolis and St. Paul are located approximately 63 and 51 km [39 and 32 mi], respectively, northwest of the plant. For purposes of the evaluation in this report, the “affected environment” is the environment that currently exists at and around the PI ISFSI. The existing conditions that have shaped the environment are at least partially the result of past construction and operation of PINGP 1 and 2 and the PI ISFSI. Section 1.3 of this draft EA describes the ISFSI facility and its operation.

The affected environment discussion provided in this section is summarized from NUREG–1437, “Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 39, Regarding Prairie Island Nuclear Generating Plant, Units 1 and 2, Final Report” (NRC, 2011c); “Environmental Assessment for the Amendment of U.S. Nuclear Regulatory Commission License No. SNM–2506 for the Independent Spent Fuel Storage Installation, Docket 72-0010” (NRC, 2009); “Environmental Assessment Related to Construction and Operation of the Prairie Island Independent Spent Fuel Storage Installation, Docket No. 72-10, Northern States Power Company” (NRC, 1992); and updates from independent sources as referenced. Some of the supporting information the PIIC provided to the NRC staff for the development of this draft EA is not publicly available and is cited as such.

3.1 Land Use

Onsite

As discussed in Sections 1.2 and 1.3.1, NSPM owns and operates the PINGP Units 1 and 2 and associated facilities, on approximately 234 ha [578 ac] of land on Prairie Island. The land is currently zoned for industrial use. The developed portion of the PINGP industrial site occupies approximately 24 ha [60 ac] of the 234 ha [578 ac] of land and consists of the ISFSI, power plant structures and associated buildings, maintenance facilities, and parking lots (AEC, 1973).

Approximately 97 ha [240 ac] of the PINGP property were disturbed and modified during the construction of PINGP Units 1 and 2, of which approximately 73 ha [180 ac] were returned to grassland after PINGP Unit 1 and 2 construction was completed (NRC, 2011c, Section 2.2.1). The remaining 137 ha [338 ac] of the PINGP property is primarily undisturbed and wooded. The U.S. Army Corps of Engineers (USACE) owns a small strip of land within the PINGP exclusion zone on the banks of the Mississippi River northeast of Units 1 and 2, which NSPM leases (NRC, 1992, 2011c).

Prior to construction, the land at PINGP and the PI ISFSI site was used for agriculture. During the construction of PINGP Units 1 and 2, portions of the PI ISFSI area were used for the concrete batch plant and disposal of dredge material collected from the excavation of the PINGP discharge canal (NRC, 2011c; NSPM, 2013a). After the construction of PINGP Units 1 and 2 and prior to the installation of the ISFSI, the land remained undeveloped and was covered in prairie grass, weeds, and trees (NRC, 1992).

Based on NRC review of construction photographs and NSPM responses to the NRC’s environmental RAIs, excavation activities that occurred during construction of the PI ISFSI

extended to a depth of about 1.8 m [6 ft] below the center line of the concrete ISFSI pads for the installation of foundation and electrical conduit housing (duct bank) (NRC, 2012e; NSPM, 2013a). The vertically-central trench beneath the concrete pads is approximately 1.2-m [4-ft] wide and accommodates a 0.9-m [3-ft]-wide concrete duct bank (NSPM, 2008a, pp. 7–49). Construction of this trench caused the deepest disturbances during PI ISFSI construction activities. The land area within the ISFSI security fence is approximately 2.3 ha [5.5 ac] and includes the dry storage pad, equipment storage building, and security building. The alarm monitoring building is located outside the earthen berm and north of the access road. Figure 1.3-3 depicts the general PINGP layout and exclusion zone boundary. Figure 1.3-5 depicts the PI ISFSI layout.

Offsite

Current land use within 8 km [5 mi] around the PINGP is a mixture of commercial, light industrial, residential, municipal, and agricultural land. Land beyond the Red Wing, Minnesota, city limits is used mostly for agriculture (Goodhue County, 2004). The area across the Mississippi River in Pierce County, Wisconsin, is primarily agricultural land with some rural residential areas along the Interstate 35 corridor and near Hagar City (Pierce County, 2013). Open water areas in the vicinity receive seasonal heavy recreational use. Points of access to water areas within an 8-km [5-mi] radius include the PIIC marina (and other private marinas, Red Wing or other community facilities/boat ramps, and campgrounds).

Prairie Island Indian Community

The PI ISFSI is located immediately adjacent (south and southeast) to the PIIC Reservation (see Section 3.10.1 for additional cultural background of Prairie Island and the PIIC). The PIIC owns and operates the Treasure Island Resort and Casino, located approximately 1.6 km [1 mi] northwest of the PI ISFSI. Treasure Island began as a one-room bingo hall in 1984 and has since grown to include a 480-room hotel, 9 restaurants and bars, 24-lane bowling alley and arcade, 3,000-seat entertainment and convention center, 137-slip marina, and 95-site recreation vehicle park. The PIIC also owns and operates Dakota Station, a gas station and convenience store. The PI ISFSI is located approximately 1.6 km [1 mi] southeast of the Dakota Station. (PIIC, 2013b)

The closest occupied offsite residence is approximately 0.72 km [0.45 mi] northwest of the PI ISFSI (NSPM, 2011a) (Figure 3.1-1). The PIIC's Lower Island residential area, church, clinic, community center, education building, elder center, fitness center, pow-wow grounds, public safety building, softball diamonds, tribal court, tribal government administration building, water treatment facility, and wastewater treatment facility are located within a 1.6-km [1-mi] radius northwest of the PI ISFSI (PIIC, 2013b). Certain portions of the undeveloped areas of Prairie Island (both on and off reservation) are used for traditional ceremonies, medicinal plant gathering, prairie restoration, wild rice restoration, hunting, fishing and other recreational activities (PIIC, 2013b).

The PIIC currently has approximately 900 enrolled members (437 adults and 450 children) with approximately 325 members residing on the tribal lands within a 1.6 to 8-km [1 to 5-mi] radius of the PINGP (PIIC, 2012a, 2013b). The annual rate of population growth is estimated to be approximately 4 percent. Each enrolled adult member is eligible for a 0.4-ha [1-ac] land assignment, although there are only a limited number of land assignments currently available outside of the Mississippi River floodplain. It costs the PIIC approximately \$35,000 to develop the infrastructure for each land assignment (roads, water, and sewer) (PIIC, 2012a).

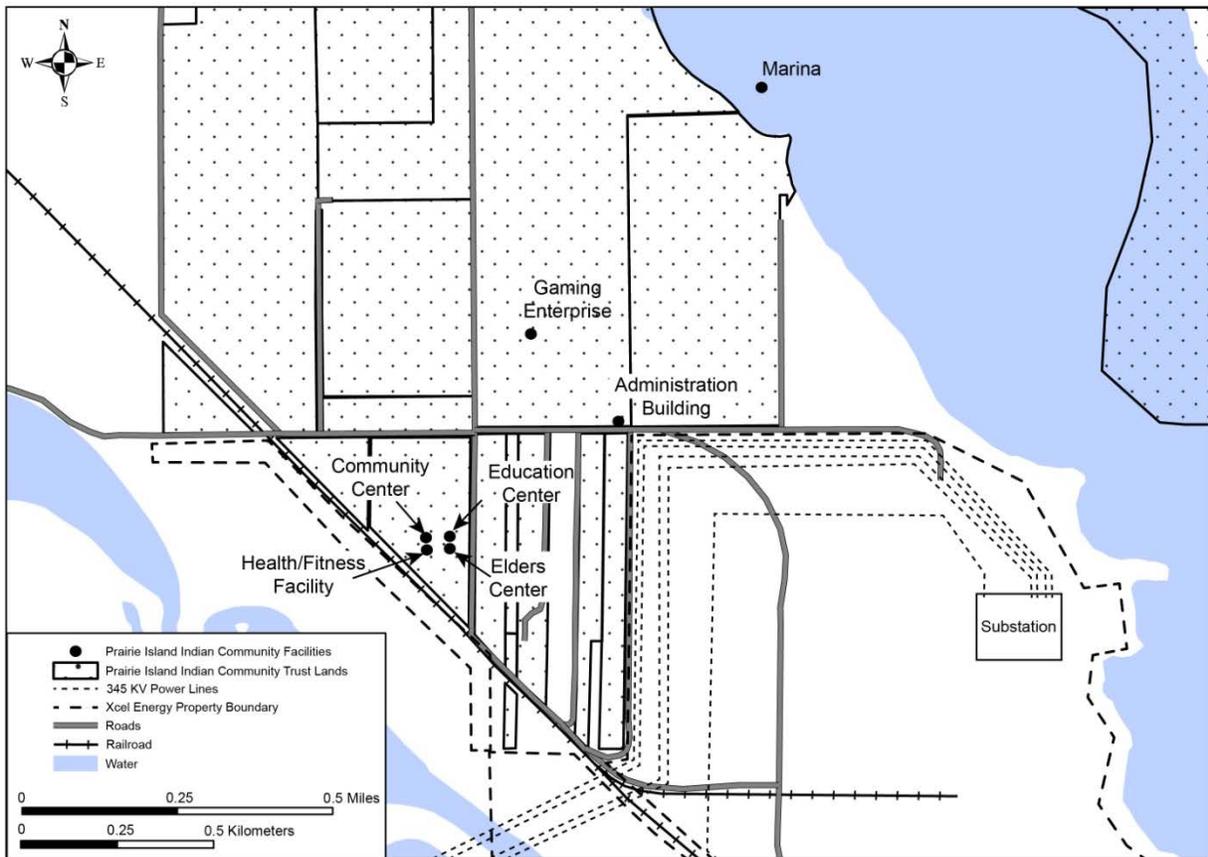


Figure 3.1-1. Prairie Island Indian Community Facilities (Source: PIIC, 2013a)

The Tribal Council issues a land assignment certificate to each assignee, who is granted lifetime use of the land. Assignees of new land assignments (i.e., newly developed with no existing dwellings) have 1 year to make improvements (i.e., construct or place a home on the assignment) (PIIC, 2012a).

The PIIC's land holdings total more than 1,200 ha [3,000 ac] (including both land and water) including the most recent acquisition known as "Parcel D." This new parcel was transferred on April 4, 2013, from USACE to the Bureau of Indian Affairs (BIA) and accepted into trust for the benefit of the PIIC (PIIC, 2012a; USACE, 2013). As explained in the PINGP license renewal SEIS, federally recognized Indian tribes are not subject to state or local land use jurisdiction and are free to develop independent land-use policies and management plans for the lands held in trust (NRC, 2011c). In addition to its trust land, the PIIC also owns approximately 280 ha [686 ac] of land that are not in trust and are therefore subject to state and local jurisdiction. Lands not currently in trust include the Mount Frontenac Golf Course {170 ha [426 ac]} located about 26 km [16 mi] southeast of the PIIC Reservation and a 105 ha [260 ac] parcel of land located about 8 km [5 mi] southwest of the PIIC Reservation that is used as agricultural land. The PIIC does not plan to request that the Mount Frontenac parcel be placed into trust, but it has filed an application with the BIA to place the 105 ha [260 ac] parcel into trust for potential future residential expansion (PIIC, 2013b).

A number of projects on Prairie Island summarized in the PINGP license renewal SEIS have been conducted to provide the PIIC with information that supports land management, restoration, and enhancement efforts. Among the projects described is a medicinal and culturally important plant study conducted in 2008 and 2009 within the PINGP property boundary. The study identified yarrow, ragweed, big milkweed, lamb's quarter, wild strawberry, sunflower, sweet clover, sand primrose, Virginia creeper, goldenrod, and pennyroyal within the PINGP property boundary, which are all medicinal and culturally important plant species to the PIIC (AEC, 1973; NRC, 2011c).

3.2 Transportation

The PINGP license renewal SEIS (NRC, 2011c) states that the primary routes workers within the region of influence (ROI) [i.e., the three-county area (Goodhue and Dakota Counties in Minnesota and Pierce County in Wisconsin)] use to commute to the PINGP are U.S. Highway 61, County Road 19, County Road 31, and County Road 18.

Because Sturgeon Lake Road is the only access road from U.S. Highway 61 to the PINGP and the PIIC property, the PIIC members have concerns regarding traffic on land that comprises the tribe's residential area, the casino, and tribal government offices (NRC, 2011c). In addition to pedestrian, bicycle, and motorized carts, daily traffic on Sturgeon Lake Road includes approximately 102 tribal government employees and as many as 16,000 Treasure Island guests and 1,500 Treasure Island employees (NRC, 2011c). Table 3-2.1 provides 2011 traffic counts and indicates that average annual daily traffic counts (AADTs) are below maximum capacities for the roads leading to PINGP and the PIIC Reservation.

Table 3.2-1. Major Commuting Routes Leading to the Prairie Island Nuclear Generating Plant and 2011 Average Annual Daily Traffic Counts

Roadway and Location	Road/Highway Capacity (Vehicles Per Day) (NRC, 2011c)	Annual Average Daily Traffic (AADT)* (Minnesota Department of Transportation, 2011)
County Road 18 (just north of intersection with Sturgeon Lake Road)	12,000	6,300
County Road 18 Segment (south of intersection with Sturgeon Lake Road and north of County Road 19)	12,000	7,300
County Road 18 (between County Road 19 and County Road 46, Mt. Carmel Road)	12,000+	7,200
Sturgeon Lake Road	20,000	12,600
County Road 19 (between County Road 18 and U.S. Highway 61)	5,000	310
County Road 31 (between County Road 18 and U.S. Highway 61)	10,000	580
County Road 7 (just south of intersection with U.S. Highway 61)	Not Available	640
U.S. Highway 61 (between County Road 18 and MN 316)	40,000	10,000†
U.S. Highway 61 (between County Road 18 and County Road 19)	40,000	17,400‡

*All AADTs represent traffic volume during the average 24-hour day during 2011.

†Heavy commercial annual average daily traffic (HCAADT) count is 360 for this segment.

‡HCAADT is 1,100 for this segment.

Sources: NRC, 2011c; Minnesota Department of Transportation, 2011.

The Mississippi River is a major shipping channel that is used for PINGP transportation needs. Barges pass through Lock and Dam 3 to the PINGP barge landing. This mode of transportation was used for the Unit 1 steam generator replacement in 2004 and is expected to be used for the Unit 2 steam generator replacement project (NRC, 2011c).

3.3 Demography and Socioeconomics

The socioeconomic ROI is defined as the area in which PINGP Units 1 and 2 and PI ISFSI employees and their families reside, spend their income, and use their benefits, thereby affecting economic conditions in the region. The socioeconomic ROI includes Goodhue and Dakota Counties, Minnesota, and Pierce County, Wisconsin. Approximately 83 percent of PINGP employees including ISFSI workers reside in the three-county ROI (NRC, 2011c).

The communities around the PI ISFSI are predominantly rural and include the city of Red Wing (population 16,459), and smaller population centers such as Miesville (population 125) and Welch township (population 754), Minnesota, and Hager City (population 338) and Diamond Bluff (population 194), Wisconsin (USCB, 2013). The center of the PI ISFSI is located approximately 0.72 km [0.45 mi] southeast of the nearest resident on the PIIC Reservation. The PIIC has approximately 900 members enrolled of which approximately 325 members reside on tribal land (PIIC, 2013b).

Demographics

Using 2010 census block group data, an estimated 50,308 people live within 16 km [10 mi] of PI ISFSI, which equates to a population density of 63 people per km² [160 people per mi²]. An estimated 3,066,565 people live within 80 km [50 mi] of the PI ISFSI, which equates to a population density of 152 people per km² [390 people per mi²] (NSPM, 2011a). NRC staff use census block groups because the U.S. Census Bureau (USCB) does not report information on income for blocks, the smaller geographic area, and census tracts are too large to identify minority or low-income communities (NRC, 2003).

Population changes and projections for the ROI are shown in Table 3.3-1. Between 2000 and 2010, the populations in all three counties grew by 4.7 percent in Goodhue County and 11.5 and 12 percent in Pierce and Dakota Counties, respectively. County populations are projected to grow at similar rates over the next decade followed by lower growth rates over the next several decades.

Table 3.3-1. Total Population and Percentage Growth in Goodhue and Dakota Counties, Minnesota, and Pierce County, Wisconsin, 2000 to 2040

County	Population (Percentage Growth)*				
	2000	2010	2020	2030	2040
Goodhue	44,127	46,183 (4.7)	48,424 (4.6)	49,739 (2.6)	50,175 (0.86)
Dakota	355,904	398,552 (12.0)	453,621 (12.1)	493,195 (8.0)	520,068 (5.2)
Pierce	36,804	41,019 (11.5)	47,008 (12.7)	51,963 (9.5)	ND

Sources: USCB, 2013; Minnesota State Demographic Center, 2012; Wisconsin Department of Administration, 2008
 *Percentage growth rate is calculated over the previous decade
 ND = no data

The population of the PIIC is growing at an estimated rate of 4 percent per year. If this rate continues, it is estimated that the PIIC could grow by 1,200 people over the next 40 years (NRC, 2011c).

The demographic profile for the ROI is presented in Table 3.3-2. All three counties have predominantly white populations. With the exception of American Indian, all minority and ethnic populations are proportionately concentrated in Dakota County. Hispanic or Latino is the main minority group; approximately half of the total minority population in all three counties is Hispanic or Latino in ethnicity. Minorities (race and ethnicity combined) comprise 12.9 percent of the total population in the ROI.

Recreational, leisure, and employment opportunities attract daily and seasonal visitors to the ROI. The PIIC's Treasure Island Resort and Casino may have as many as 16,000 guests at any given time. During the PIIC's annual Pow-Wow, 500 to 2,000 additional visitors may be in

Table 3.3-2. Demographic Profile of the 2010 Population in the Region of Influence

	Goodhue, Minnesota	Dakota, Minnesota	Pierce, Wisconsin	Region of Influence
Total Population	46,183	398,552	41,019	485,754
Race -Total Population, not Hispanic or Latino- (Percent of total population)				
White	43,684 (94.6)	339,499 (85.2)	39,614 (96.6)	422,797 (87.0)
Black or African American	445 (0.96)	18,709 (4.7)	232 (0.57)	19,386 (4.0)
American Indian and Native Alaskan	533 (1.15)	1,647 (0.41)	151 (0.37)	2,331 (0.48)
Asian	274 (0.59)	17,451 (4.4)	301 (0.73)	18,026 (3.7)
Native Hawaiian and Other Pacific Islander	17 (0.04)	216 (0.05)	7 (0.017)	240 (0.05)
Some other race	511 (1.1)	9,556 (2.4)	201 (0.49)	10,268 (2.1)
Two or more races	719 (1.6)	11,474 (2.9)	513 (1.25)	12,706 (2.6)
Ethnicity*				
Hispanic or Latino	1,342	23,966	623	25,931
Percent of total population	2.9	6.0	1.5	5.3
Minority Population (Including Hispanic and Latino Ethnicity)				
Total minority population	2,494	58,986	1,395	62,875
Percent minority	5.4	14.8	3.4	12.9
2010 Population Density (Persons per km²/mi²)				
	24/61	277/709	28/71.5	100/256.7
Source: USCB, 2013				
*Minority population includes persons of Hispanic/Latino origin who are considered an ethnic minority and may be of any race (USCB, 2001)				

and around the PIIC grounds. The U.S. Census of Agriculture provides the most recent information on migrant farm and temporary labor (less than 150 days) at the county level. In Minnesota, 970 temporary farm workers were employed on 338 farms in Goodhue County and 1,012 temporary farm workers were employed on 218 farms in Dakota County (USDA, 2009a). In Pierce County, Wisconsin, 720 temporary farm workers were employed on 298 farms (USDA, 2009b).

Income

Income and poverty information for the ROI based on USCB 2006–2010 American Community Survey 5-year estimates is presented in Table 3.3-3. These estimates show that median household income and per capita income were highest in Dakota County, Minnesota, and that the median household income in both Dakota and Pierce Counties was higher than the statewide averages. The percentage of residents living below the poverty level, for all three counties, is less than the respective state averages.

Housing

USCB housing data from 2000 and 2010 for the ROI are presented in Table 3.3-4. Goodhue County had an estimated 20,337 housing units in 2010, an increase of about 12 percent from 2000. Dakota and Pierce Counties had an estimated 159,598 and 16,132 housing units, respectively, an increase of about 16 percent from 2000 (USCB, 2013). Of the more than 196,000 housing units in the ROI, which include single family homes, multifamily housing, mobile homes, and rental units, approximately 185,800 or 95 percent are occupied. Average annual vacancy rates in 2010 were 8.2 percent in Goodhue County, 4.7 percent in Dakota County, and 7.0 percent in Pierce County, up from 5.0, 1.9, and 3.5 percent in 2000 for Goodhue, Dakota, and Pierce Counties, respectively. The median value of owner-occupied housing units in 2010 was \$192,900 in Goodhue County, \$243,700 in Dakota County, and \$200,200 in Pierce County.

Employment

Based on 2008–2010 American Community Survey 3-Year Estimates, the Goodhue County labor force was estimated to be 25,825 and the Pierce County labor force was estimated to be

Table 3.3-3. 2010 Income Information for the Region of Influence

	Goodhue County, Minnesota	Dakota County, Minnesota	Minnesota	Pierce County, Wisconsin	Wisconsin
Median Household Income (Annual Dollars)	\$56,366	\$72,850	\$57,243	\$60,181	\$51,598
Per Capita Income (Annual Dollars)	\$27,472	\$34,142	\$29,582	\$26,313	\$26,624
Families Living Below the Poverty Level (Percent)	5.2	3.7	6.8	4.3	7.7
Persons Below the Poverty Level (Percent)	8.2	5.6	10.6	10.3	11.6
Source: USCB, 2013					

Table 3.3-4. Housing Information for the Region of Influence

Goodhue County, Minnesota			
	2000	2010	Percent Change
Total	17,879	20,337	+12.1
Occupied Housing Units	16,983	18,730	+9.3
Vacant Units	896	1,670	+46.3
Vacancy Rate (Percent)	5.0	8.2	+39.0
Median Value (Dollars)	\$119,300	\$192,900	+38.2
Dakota County, Minnesota			
Total	133,750	159,598	+16.2
Occupied Housing Units	131,151	152,060	+13.7
Vacant Units	2,599	7,538	+65.5
Vacancy Rate (Percent)	1.9	4.7	+59.6
Median Value (Dollars)	\$148,500	\$243,700	+39.1
Pierce County, Wisconsin			
Total	13,493	16,132	+16.4
Occupied Housing Units	13,015	15,002	+13.2
Vacant Units	478	1,130	+57.7
Vacancy Rate (Percent)	3.5	7.0	+50.0
Median Value (Dollars)	\$125,500	\$200,200	+37.3

Source: USCB, 2013

24,650 (USCB, 2013). The Dakota County labor force was estimated to be 232,714 based on 2011 American Community Survey 1-Year Estimates (USCB, 2013). Unemployment rates for Goodhue, Dakota, and Pierce Counties were 5.5, 6.9, and 5.6 percent, respectively, which were lower than the statewide Minnesota and Wisconsin unemployment rates of 7.7 and 8.2 percent, respectively (USCB, 2013).

The largest employer in Goodhue County is the PIIC with more than 1,500 employees in its Treasure Island Resort and Casino and government offices (NRC, 2011a). Educational services, health care, and social services represented the largest sector of employment within the ROI, followed by manufacturing and retail trade sectors.

Local Finance

Property taxes are the primary source of revenue for Minnesota and Wisconsin counties. In addition to funding county government, property taxes fund municipal government, school districts, vocational technical colleges, and special taxing districts. Property taxes levied in Goodhue and Dakota Counties in 2012 totaled \$26.7 and \$129 million, respectively (Minnesota Department of Revenue, 2012). Property taxes levied in Pierce County in 2010 totaled \$15.2 million (Wisconsin Department of Revenue, 2012).

In 2010, NSPM paid \$10.7 million in property taxes. The majority of NSPM's annual property taxes are assessed by Goodhue County, the City of Red Wing, and Red Wing School District 256. In 2010, NSPM paid \$3.1, \$4.1, and \$2.2 million in property taxes to Goodhue County, the City of Red Wing, and School District 256, respectively. NSPM also makes annual payments to other taxing jurisdictions, including the Minnesota State General Tax, Red Wing Housing and Development Authority, Red Wing Port Authority, and to Goodhue County under a Revenue Stabilization Agreement (NSPM, 2011a).

Education

The PI ISFSI is located in Red Wing School District 256 in Goodhue County. In 2012–2013, Red Wing School District 256 enrolled approximately 2,834 students in pre-kindergarten through grade 12 (Minnesota Department of Education, 2013). Goodhue County has 4 public school districts, including Red Wing School District 256, with a total enrollment of 6,758 students in 2012–2013 (Minnesota Department of Education, 2013).

Utilities and Services

Local private residents and most public water systems in the ROI use groundwater for their water source (NRC, 2011c). The PIIC's water is primarily supplied by the PIIC's central water system, with the exception of some individual wells for newer homes on the PIIC's Upper Island land (NRC, 2011c).

The City of Red Wing indicated, during the PINGP Unit 1 and 2 license renewal process, that city revenues do not provide sufficient resources to meet its obligations under NSPM's Emergency Response Plan (NRC, 2011c, Appendix A). In a letter to the NRC, the City of Red Wing stated that it receives inadequate revenue to fund the necessary equipment and personnel required to respond to any incidents at the PINGP or the PI ISFSI (Harlan, 2013a). Because of the proximity of the PI ISFSI to the PIIC, the tribe considers itself to be a *de facto* host community. In 2003, the PIIC established the Prairie Island Indian Community Police Department (PIPD), which has been maintained and operated since that time as a law enforcement agency, providing police protection and emergency assistance on the PIIC Reservation (PIIC, 2013b). PIPD is staffed by duly appointed peace officers pursuant to Minnesota Statutes, Section 626.93 (PIIC, 2013b). On August 23, 2004, the PIIC and the City of Red Wing entered into their first Mutual Aid Assistance Agreement pursuant to which the PIIC and City of Red Wing mutually agreed to render "such assistance as they are reasonably able in the event of an emergency situation" (PIIC, 2013b). The Mutual Aid Assistance Agreement further provides that "a [PI Indian] Community Officer acting pursuant to this agreement has the full and complete authority of a City Officer as though appointed by the City." The PIIC has communicated to NRC staff that, since that time, PIPD has also been a primary responder to emergencies at the PINGP and is often the first primary responder to an incident. The PIIC is responsible for the costs associated with any PIPD-furnished assistance and does not receive any tax revenues from the City of Red Wing (PIIC, 2013b). The PIIC stated that the PIPD will continue to be a primary responder, and most likely the first primary responder, to any incident at the PI ISFSI.

Prairie Island Indian Community Housing

There are 60 housing units on the original reservation core (referred to as the Lower Island) and 29 housing units on the Phase I residential development on subsequently acquired lands (referred to as the Upper Island) (PIIC, 2012a). A Phase II Upper Island residential development with 26 housing units is currently underway (dwellings will be placed or constructed in 2013) with another 21 units planned once the original 26 are filled. The Tribal Council assigns all housing units on the reservation. It is not possible to assign a median value to these housing units, because the homes cannot be sold to nontribal members. The land (which is typically a large percentage of a home's value) can never be sold, as it is in trust for the common benefit of the PIIC (PIIC, 2012a).

Prairie Island Indian Community Local Finances

The PIIC receives no tax revenue from NSPM. In 2003, however, the PIIC entered into a settlement agreement with NSPM to allocate funds to the PIIC that includes certain provisions that relate to the PIIC's health and safety to address its concerns about the PINGP and PI ISFSI (Minn. Stat. § 216B.1645, Subd. 4; Laws 2003, First Special Session Chapter 11) (NRC, 2011c). This agreement was approved by the MPUC and the Minnesota Legislature. Through the agreement, funds are allocated to the PIIC to address a variety of issues: health concerns, emergency management, land acquisition, construction of community infrastructure, or other community purposes. The agreement is in place as long as PINGP Units 1 and 2 are operational and the ISFSI continues to be used for dry cask storage, although certain provisions of the agreement end when the current operating licenses expire. The PIIC also receives an annual payment from NSPM for radiological emergency preparedness activities and supplies (NRC, 2011c).

Prairie Island Indian Community Education

There is no school on Prairie Island; children from the PIIC can either attend Red Wing public schools or the Tribal Council will provide tuition for private elementary or secondary school. The PIIC has established the PI Learning Center, which offers tutoring services, Dakota language classes, summer school, General Equivalency Diploma preparation, and assistance with college applications. The PIIC provides 100-percent tuition assistance to any tribal member accepted into college (PIIC, 2012a).

Prairie Island Indian Community Utilities and Services

The PIIC established centralized water and sewer systems, a water treatment facility, a health care facility, a community and government center, a buffalo farm, and a police department. The PIIC also provides health insurance to each member, various services for community elders, education benefits and tuition assistance (elementary, secondary, and post-secondary) to tribal members, and other social services and benefits. In addition, enrolled PIIC tribal members are eligible to receive a share of the net revenues from the casino and other economic enterprises (PIIC, 2012a).

3.4 Climate, Meteorology, and Air Quality

Prairie Island is located in southeast Minnesota on the border of Minnesota and Wisconsin. The island's climate is mostly influenced by the eastward storm systems that move across the northern United States, which can cause extreme seasonal temperature changes. However, because the island is located in the Upper Mississippi River system, the site experiences a more moderate climate than other areas at the same latitude. Monthly temperatures in the local area can range from $-11\text{ }^{\circ}\text{C}$ [$12.0\text{ }^{\circ}\text{F}$] in January to $22.2\text{ }^{\circ}\text{C}$ [$72.1\text{ }^{\circ}\text{F}$] in July (NRC, 2011c). The local mean annual precipitation of 76.07 cm [29.95 in] occurs mainly from June through August (NRC, 2011c). Snowfall contributes to annual precipitation at about 112 cm [44 in] per year. Tornadoes generally occur from March through November. Although air sampling systems are not required at the PI ISFSI, data for the PINGP Meteorological Monitoring Program are gathered once per hour and reviewed daily. The data are stored in a database and then compiled into monthly, quarterly, and annual reports.

Under the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: nitrogen dioxide,

sulfur dioxide, carbon monoxide, lead, ozone, and particulate matter (PM₁₀ and PM_{2.5}). Under the NAAQS, areas are designated as being in “attainment” or “nonattainment” for the standards established for each criteria pollutant. Goodhue County is in attainment (meets the minimum standards established for each air quality criteria pollutant) within the Southeast Minnesota–La Crosse (Wisconsin) Interstate Air Quality Control Region (40 CFR 81.66). No airborne contaminants are emitted during ISFSI operations, and no ventilation or off-gas systems are used (NSPM, 2011a).

3.5 Geology and Soils

The PINGP property is bounded by rocky bluffs and heavily forested slopes that rise to a height of about 91 m [300 ft] above Prairie Island. The plant is located on a low island terrace within the Mississippi River floodplain. Sediment in the area consists of sandy alluvial soils and gravel deposited by glacial outwash and river processes. At the site, the uppermost bedrock is a sandstone and part of the Franconia formation (Figure 3.5-1). Underneath the Franconia formation are several hundred meters [feet] of lower Cambrian and Precambrian sandstone with minor shale horizons. The dominant structural feature in the area is the Precambrian Keweenaw Basin. This basin is separated from a smaller basin in the Twin Cities area by the Afton-Hudson anticline. The site is located on the west limb of the Red Wing anticline (Figure 3.5-2). (NRC, 2011c)

To avoid any potential problems with soils associated with frost, the footings and slabs that support the concrete ISFSI pads are below the anticipated frost depth or on fill below the frost depth. Previous liquefaction analysis using seismicity data found the subsurface materials to be stable and adequate for the proposed foundation loading (NRC, 1992).

There are several major faults in the Minnesota–Wisconsin region, although there is no evidence of recent activity along any of the known fault zones in the region (NRC, 1992). The Douglas fault and the Lake Owen fault penetrated Precambrian rocks along the north and south sides of the Keweenaw Basin, respectively. The southern portion of the Lake Owen fault, known as the Hastings fault, trends southwest (Figure 3.5-2). Movements along these faults appear to have been restricted to Precambrian timeframes.

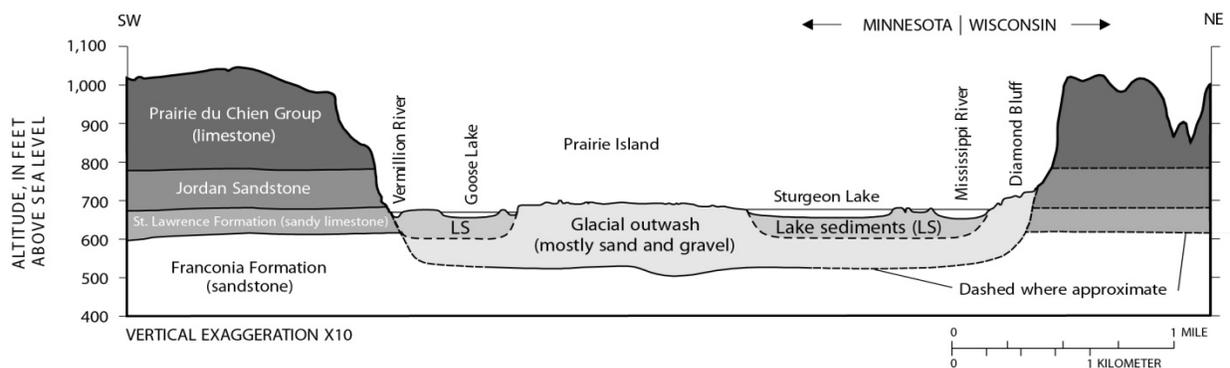


Figure 3.5-1. General Lithology Geologic Cross Section for the Prairie Island Terrace (Cowdery, 1999)

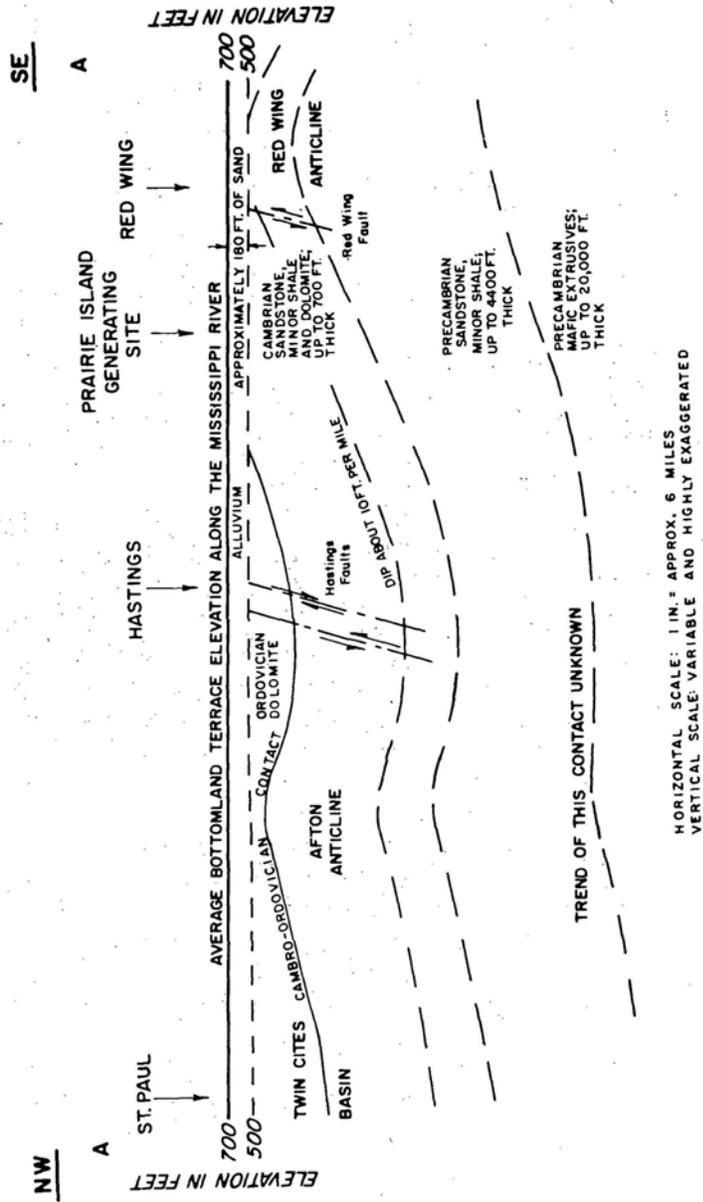


Figure 3.5-2. Regional Geologic Cross Section (Modified From NSPM, 2011b)

3.6 Water Resources

3.6.1 Surface Water Hydrology

The primary surface water bodies near the PI ISFSI are the Mississippi River, Vermillion River, the Cannon River, and Sturgeon Lake (NMC, 2008; NSPM, 2011b). Prairie Island is a low-lying island with the majority of the island less than 7.6 m [25 ft] above the Mississippi River. The Vermillion River borders the southwest portion of the site.

The Mississippi and Vermillion Rivers converge at the downstream end of Prairie Island (NRC, 2011b). Sturgeon Lake was created by a rise in water elevation by Lock and Dam 3 and the subsequent flooding of sections of the floodplain. The Vermillion and Cannon Rivers enter the main stream of the Mississippi River below Lock and Dam 3 (NMC, 2008). The water and flow in the stretch of the Mississippi near the PI ISFSI and Sturgeon Lake are identified as Pool 3 and are controlled by Lock and Dam 3, located 2.4 km [1.5 mi] downstream of the PINGP property (NRC, 2011c; NSPM, 2011a). Typically, the Mississippi is kept at a water level higher than that of the Vermillion River and discharge from Lock and Dam 3 tends to be at its peak in the spring and summer.

3.6.2 Groundwater Hydrology

The ISFSI site is located on an island terrace within the Mississippi River floodplain. The primary aquifers in the surrounding areas are generally composed of limestone and sandstone (NRC, 2011b). The surficial aquifer directly underneath the PI ISFSI is composed of sands, gravels, and other finer grained lake sediments resulting from glacial outwash that are 39.6 to 60.9 m [130 to 200 ft] thick. The water level fluctuations in the surrounding surficial water sources (mainly the Mississippi River) influence the groundwater levels in the alluvial aquifer. There are no groundwater wells at the ISFSI site. The six wells located at the PINGP site draw water from the surficial aquifer.

The Franconia sandstone formation is directly beneath the surficial aquifer under the PI ISFSI. The Mount Simon formation (part of the Dresbach formation), located below the Franconia Formation, is the primary water-producing aquifer for the nearby community of Red Wing and the PIIC. Cowdery (1999) notes that despite a high hydraulic head gradient between aquifers, the exchange of water between the alluvial aquifer and the bedrock aquifer below is small because of a boundary of clay-rich materials between the two strata.

3.7 Ecological Resources

The principal terrestrial and aquatic ecological habitat on Prairie Island, a low island terrace between the Mississippi and Vermillion Rivers, is characterized by prairie land, bluffs, and stream valleys. Sections 2.2.5 and 2.2.6 of the PINGP license renewal SEIS (NRC, 2011c) describe the aquatic and terrestrial resources located on and in the vicinity of the PINGP site.

3.7.1 Terrestrial Resources

Section 2.2.6 of the PINGP license renewal SEIS (NRC, 2011c) describes a variety of wildlife present in the forested and grassland communities on and in the vicinity of the PINGP site that could be present at or adjacent to the ISFSI. The area of the site where the ISFSI is located is dominated by the landscaping and developed cover (concrete and other impermeable surfaces)

and surrounded by mixed deciduous and regenerated mixed deciduous forest cover types and grassland. The application and a NRC staff site visit to the PI ISFSI revealed that the ISFSI is located in a dry, upland portion of the PINGP property and does not use, touch, or otherwise interact with the wetland or riparian habitats that are found on the banks of the Mississippi and Vermillion Rivers (NSPM, 2011a; NRC, 2012e). As described in the PINGP license renewal SEIS, invasive plant species purple loosestrife (*Lythrum salicaria*) and common buckthorn (*Rhamnus cathartica*) have been documented on the PINGP property. NSPM does not actively eradicate invasive plant species at the PINGP.

Because the ISFSI is located within a principal route of the Mississippi Flyway for approximately 40 percent of the U.S. migratory birds and waterfowl, a number of birds are commonly observed on and in the PINGP property boundary. A detailed listing of migratory bird species and nesting bird species, as well as trees, insects, and reptiles characteristic of the PINGP area, is incorporated by reference and can be found in the PINGP final environmental statement (AEC, 1973, Appendix A).

3.7.2 Aquatic Resources

The Mississippi River is the largest and most important aquatic resource in the vicinity of the PI ISFSI. Other aquatic resources in the area include St. Leonard Creek and the Vermillion River that border the PINGP property to the southwest and Sturgeon Lake that borders the PINGP property to the east. As described in draft EA Section 3.6.1, the PINGP property is located on the shore of the Mississippi River's Pool 3. To support the PINGP license renewal request, the applicant provided NRC with monitoring events in Pool 3 from 1981 to 2007 using an electrofisher that revealed the relative abundance of eight species (carp, white bass, freshwater drum, sauger, black crappie, shorthead redhorse, walleye, and gizzard shad); these ranged from 69 to 89 percent of all fish caught each year (Environmental Services, Inc., 2007). The status of eight species (carp, white bass, freshwater drum, sauger, shorthead redhorse, walleye, gizzard shad, smallmouth bass, and largemouth bass) is discussed in each PINGP annual environmental monitoring report submitted to NRC. Each of these eight species was considered "relatively stable" in the last available annual report.

The Minnesota Department of Health publishes fish consumption guidelines for the general public and for sensitive groups, defined as women who are or may become pregnant and children under the age of 15, due to the presence of mercury, polychlorinated biphenyls, and perfluorooctanesulfonic acid. Guidelines are intended to provide consumption advice regarding species, recommended consumption frequency, and contaminants of concern. The Minnesota Department of Health guidelines/advisories for the Mississippi River from Hastings Dam to Red Wing (Pool 3) and all of the 95.9 km [59.6 mi] Vermillion River are available on the Minnesota Department of Health website (Minnesota Department of Health, 2012a,b).

3.7.3 Threatened, Endangered, and Special Status Species

Minnesota DNR (2012), provided information from the Natural Heritage Information System database for rare species or other noteworthy natural features within 0.6 km [1 mi] of the PINGP property. The NRC staff and NSPM consulted with FWS regarding federal records for rare, threatened, or endangered species or critical habitat in the vicinity of the PI ISFSI (NRC, 2012f; NSPM, 2011a). The NRC received a response from FWS on April 11, 2013, which identified that the Higgins eye (*Lampsilis higinisii*), a federally listed endangered mussel, was present in the Mississippi near the PINGP and nesting pairs of bald eagles (*Haliaeetus leucocephalus*) are known to occur in the area (FWS, 2013a). The Higgins eye is the only federally listed species

FWS identified in its letter, and no designated critical habitat is identified in the area. The FWS formally removed the bald eagles from the Federal List of Endangered and Threatened Wildlife effective August 8, 2007, though the species continues to be protected under the Bald and Gold Eagle Protection Act and the Migratory Bird Treaty Act (72 FR 37346).

A plant survey conducted at the PINGP in 2008 and 2009 revealed that the state-listed plant species of special concern—beach heather (*Hudsonia tomentosa*)—occurred within the PINGP property on a steep bank adjoining lowland floodplain habitat, which was reportedly northeast of the plant substation about 0.8 km [0.5 mi] northeast of the northeast corner of the ISFSI berm (NSPM, 2011a). The NRC staff reviewed FWS's most recent online occurrence data report for Goodhue County, Minnesota (FWS, 2013b). The Minnesota trout lily (*Erythronium propullans*), a Federal and State endangered plant, and the prairie bush clover (*Lygodium palmatum*), a federal and state listed threatened plant, are identified as being present in Goodhue County. Neither FWS nor Minnesota DNR listed these species as present on or in the vicinity of the PINGP in their 2008 correspondence with NRC regarding the proposed PINGP license renewal (NRC, 2011c).

Appendix A of this draft EA outlines terrestrial species that are federally listed, state listed, or both, as threatened, endangered, or candidate species found in Goodhue County, Minnesota, and could be potentially affected by the proposed PI ISFSI license renewal. Appendix A also includes native plant communities Minnesota DNR identified within 0.6 km [1 mi] of the PINGP property. The NRC staff did not include listed aquatic species in Appendix A because the PI ISFSI operation does not have to the potential to affect aquatic species.

3.8 Visual and Scenic

The major natural landscape feature near the affected area of the PI ISFSI is the Mississippi River. The turbine building and reactor containment structures dominate the manmade industrial landscape of the PINGP site. Because the ISFSI is located inside the protected area boundary at an elevation above the river level, recreational visitors are unable to see the ISFSI from the water (NSPM, 2011a). In addition, the NRC staff observed that the view of the ISFSI from the PIIC Reservation roadways outside of the PINGP property is obstructed by the earthen berm and forested areas immediately north, west, and south of the ISFSI.

3.9 Noise

The PI ISFSI generates no noise other than the occasional vehicle traffic to and from the site during routine maintenance activities and cask transfers (NSPM, 2011a). No noise other than that from a vehicle used for routine maintenance activities and cask transfers would be attributable to this proposed action. The major sources of noise from the PINGP site are operation of Units 1 and 2, including the mechanical-draft cooling towers, turbines, large pumps, and cooling water system motors (NRC, 2011c). In rural or low-population areas, background noise levels typically range from 35 to 45 decibels [dB(A)] (NRC, 1996, 1999). Minnesota noise standards (Minnesota Rule 7030.0040, Subpart 2) stipulate that the daytime sound levels are not to exceed 60 dB(A) for more than 50 percent of the time (MPUC, 2009a). Noise measurements collected on Sturgeon Lake Road, just north of the PINGP property boundary, indicated noise levels ranging from 43 to 46 dB(A) (as measured in the casino parking lot) and from 32 to 36 dB(A) at the east end of Sturgeon Lake Road (MPUC, 2009a).

3.10 Historic and Cultural Resources

This section discusses the cultural background and the known historic and cultural resources at the PINGP site and in the surrounding area.

Section 106 of the NHPA requires the NRC to take into account the effects of the proposed licensing action on historic properties. The NRC staff contacted the Minnesota State Historic Preservation Officer (SHPO) and Indian tribes and gathered and reviewed documentation regarding previous efforts to locate and evaluate historic properties located within the PINGP site. A record of these consultations can be found in Section 5 of this draft EA.

3.10.1 Cultural Background

The Red Wing area and Prairie Island contain prehistoric and historic Native American and Euro-American cultural resources. The Mississippi River and its tributaries served as a major means of transportation of people and goods during the settlement of the region as early as 12,000 years ago. The region's prehistoric and historic periods are described in NRC's PINGP license renewal SEIS (NRC, 2011c, Section 2.2.9). The PIIC members are descendants of the Mdewakanton Band of Eastern Dakota, who are also known as the Mississippi or Minnesota Sioux. The Dakota have lived in the region and on Prairie Island for countless generations (PIIC, 2012a). As stated in Section 1.5 of this draft EA, the PIIC is a federally recognized Indian tribe organized under the Indian Reorganization Act of 1934 (25 U.S.C. § 476). Pursuant to that Act, the Reservation was established and the PIIC's Constitution and Bylaws were approved on June 20, 1936. Section 3.1 provides additional information about the PIIC and its reservation.

A number of archaeological surveys and other resource investigations have been performed within and near the PINGP property on Prairie Island during the past 125 years. A summary of archaeological investigations along with a list of the known and reported historic and cultural resources through 2009 are provided in the PINGP license renewal SEIS (NRC, 2011c, Section 2.2.9). Although no sites have been identified within the PI ISFSI boundary or the area of potential effect (APE) for this proposed action, a list of the 11 recorded archaeological sites known to exist within the PINGP property is provided in Table 3.10-1 for reference. Two additional unconfirmed sites are also included in the list.

Table 3.10-1. Archaeological Sites Recorded Within the Prairie Island Nuclear Generating Plant Property Boundary

Site Number	Site Name	Description	National Register of Historic Places	Site Condition Per State Site File	Type of Site Alteration*
21GD002	Bartron Site	Artifact Scatter—Base Camp	Listed 1970	Within PINGP property boundary—70% moderate; 20% heavily disturbed; 10% completely destroyed	Agricultural activity; historic and modern use; archaeological excavation for PINGP construction; borrow pit; road

**Table 3.10-1. Archaeological Sites Recorded Within the Prairie Island Nuclear
Generating Plant Property Boundary**

Site Number	Site Name	Description	National Register of Historic Places	Site Condition Per State Site File	Type of Site Alteration*
					construction
21GD058/ 601	Birch Lake Mound Group	Earthwork. Cemetery-Mortuary (Eight mounds)	Undetermined	90% heavily disturbed	Railroad construction; cultivation; archaeological excavation for PINGP construction
21GD059	NSP II Mound Group	Earthwork (Six mounds) Mississippian affiliation	Undetermined	1981 last update Disturbed/destroyed	Cultivation; construction of PINGP cooling towers; spoil deposits
21GD062	Birch Lake Mound	Earthwork (One mound) Probably Woodland affiliation	Undetermined	Completely destroyed	Archaeological excavation for PINGP construction
21GD148	Cooling Tower Site	Artifact scatter, Woodland and probable Mississippian affiliation	Undetermined Nominated in 1980; not listed	Unassessed condition	Development of PINGP cooling tower
21GD149	Substation Site	Artifact scatter, possible Woodland and probably Oneota affiliation	Undetermined	Unassessed condition	Erosion; development of PINGP substation
21GD207	Dike Site	Artifact scatter, Woodland affiliation	Undetermined	Unknown—No evidence of site in 2009	Development of dike
21GD277	Indian Slough Mound	Earthwork	Undetermined	Minimally disturbed	No known threats
21GD278	Otto Phlika Farmstead	Farm	Undetermined	Moderately disturbed (no known threats)	No known threats
21GD279	Kuhns Farm	Farm	Undetermined	Moderately disturbed	Development
21GD280	Reliance Stove Door Site	Artifact scatter, possible homestead	Undetermined	Unassessed condition	Erosion
21GDI	Vergil Larson Mounds II	Earthwork (Reported 3 mounds)	Unevaluated	Not field verified	No known threats

Table 3.10-1. Archaeological Sites Recorded Within the Prairie Island Nuclear Generating Plant Property Boundary

Site Number	Site Name	Description	National Register of Historic Places	Site Condition Per State Site File	Type of Site Alteration*
No site number	Prairie Island District 132 Schoolhouse Site	Subsurface remains of District Schoolhouse (1873–1953)	Unevaluated	No form	No known threats
PS0002	Spot Find: historic refuse dump	European American	Unassessed	Unevaluated	No known threats
PS0003	Spot Find: cellar depression	European American	Unassessed	Unevaluated	No known threats
PS0006	Spot Find: historic refuse dump	European American	Unassessed	Unevaluated	No known threats
PS0007	Spot Find: historic refuse scatter	European American	Unassessed	Unevaluated	No known threats
PS0008	Spot Find: historic refuse scatter	European American	Unassessed	Unevaluated	No known threats
PS0018	Spot Find: architectural debris	European American	Unassessed	Unevaluated	No known threats
PS0019	Spot Find: architectural debris	European American	Unassessed	Unevaluated	No known threats
Source: NRC, 2011c					
*Site condition information updated by PIIC – May 2013					

During the license renewal review for PINGP Units 1 and 2, NSPM entered into a Settlement Agreement with the PIIC (Boden, 2009). As a result of this agreement, NSPM committed to revise existing procedures, establish a training program for site personnel, conduct a Phase I reconnaissance field survey of previously disturbed areas and Phase I field study of areas of known archaeological sites to delineate site boundaries, develop and implement a cultural resources management plan (CRMP), conduct botanical surveys to identify culturally and medicinally important species on the PINGP site, and consult with a qualified archaeologist prior to conducting any ground-disturbing activity in any areas designated as undisturbed or an area described as potentially containing archaeological resources. NSPM sought comments on its revised procedures from the Minnesota Historical Society, BIA, Office of the State Architect, and the PIIC (NRC, 2011c). NSPM completed the CRMP in September 2010.

Cultural resource studies conducted as a result of this agreement was executed include: (i) an archaeological reconnaissance survey for planned expansion of a dredge holding area (Boden, 2009), (ii) a geomorphological study to assess the potential for deeply buried archaeological sites within the expanded dredge holding area (Hudak, 2009), and (iii) an archaeological reconnaissance survey of the entire PINGP site designed to relocate and assess the condition

of known archaeological sites and identify additional resources where possible (Boden, et al., 2010). In addition, a literature review of previous archaeological investigations within the PINGP boundary was conducted to assess the impact of facility construction on archaeological resources (Iffert, 2010). With the exception of the 2009 reconnaissance report for the dredge holding area, each of these studies has been incorporated into the CRMP.

Several recent studies indicate potential for additional unrecorded archaeological resources within the PINGP boundary. First, the results of the 2009 geomorphological study indicate that the island–terrace landform that encompasses the PINGP site has moderate to high potential to contain buried archaeological sites (Hudak, 2009). This assessment is based on confirmation of an ancient (approximately 1,400 years old) buried soil or paleosol representing an earlier land surface that would have been stable and suitable for human use. Any evidence of past human activity that might have occurred on that former surface now lies buried beneath the current surface. Therefore, these buried archaeological deposits would not have been recognized by those surveyors who only searched the ground surface for evidence of archaeological sites. Two other recent archaeological investigations (Boden et al., 2010; Schirmer, 2013) have reported previously unknown burial sites within and near the PINGP. A 2010 limited archaeological reconnaissance survey recorded a previously unrecorded mound site, 21GD277 (Boden, et al., 2010). In 2012, a group of 15 previously unreported burial mounds were also identified on Prairie Island near the PINGP through the use of light detection and ranging remote sensing technology (Schirmer, 2013). Based on the number, type and density of known archaeological sites identified, there is a high probability that additional unrecorded resources may exist within the PINGP property.

Traditional Cultural Properties

Traditional cultural properties are cultural resources that are historically important for a community to maintain its cultural heritage. Examples of traditional cultural properties include places where important resources such as medicinal plants are gathered, a sacred mountain and/or landscape that is crucial to a community's identity, or burial locations that, for example, connect American Indians with their ancestors. The PIIC conducted an inventory of medicinal and culturally important plant species on tribal lands. The inventory, which was conducted in the fall of 2008 and spring/summer of 2009, is a follow-up to an inventory conducted in 1998 (NRC, 2011c). Mound sites on Prairie Island may qualify as places of religious and cultural importance to the PIIC. Although the PIIC has not evaluated or documented sites within the PINGP boundary as traditional cultural properties, members of the PIIC consider all archaeological sites, burial mounds or habitation sites to be important to Dakota culture.

Since the license renewal of PINGP Units 1 and 2, the Minnesota State Archaeologist has authenticated Site 21GD058/061 as a Native American burial site. The Minnesota Indian Affairs Council asked the state archaeologist to authenticate the mound site in support of the October 2011 repatriation of human remains removed from the site in the late 1960s.

While the state archaeologist has not yet authenticated other mound locations within the PINGP as proven burial sites, the NRC staff recognizes that the PIIC and other tribes may view Sites 21GD059, 21GD062, and 21GD277 as burial sites. The Office of the State Archaeologist presumes that Indian mounds are burial sites. Because these sites contained the human remains of their ancestors, they are considered sacred sites by the PIIC regardless of whether the state archaeologist has authenticated them as burial sites. The potential for unreported human burials or human remains is also acknowledged for the Bartron Site (21GD002) and the vicinity of the unconfirmed mound site (21GDI). Other noncemetery locations within the PINGP

associated with traditional cultural activities may also have the potential to be considered important to tribes.

3.10.2 Historic and Cultural Resources within the Area of Potential Effect

The APE for this proposed action is limited to the PI ISFSI site and access road from the PINGP auxiliary building to the ISFSI. As discussed in Section 3.1, during the construction of PINGP Units 1 and 2, portions of the PI ISFSI area were the locations for the concrete batch plant and disposal site for dredge material collected from the excavation of the PINGP discharge canal (NRC, 2011c; NSPM, 2013a). After the construction of PINGP Units 1 and 2 and prior to the installation of the ISFSI, the land remained undeveloped and was covered in prairie grass, weeds, and trees (NRC, 1992).

To identify historic and cultural resources within the APE, NSPM hired Westwood Professional Services, Inc. to conduct a Phase I archaeological survey (Sather, 2010; NRC, 2011c, pp. 4–39). The survey was specifically designed to evaluate the depth of previous ground disturbance within the ISFSI facility and determine whether any archaeological deposits were present within potentially undisturbed buried soil. Eight test pits were excavated to an average depth of 1.8 m [6 ft] below the surface between the PI ISFSI security fence and the earthen berm (NSPM, 2011a). All eight tests were positioned outside the perimeter fence for the cask storage area. No cultural materials were recovered from any of the eight test excavations, and the consulting archaeologists interpreted all but one of the eight exposed soil profiles as significantly disturbed by past construction activities (Sather, 2010, p. 5; NSPM, 2011a).

Archaeological investigations completed to date have confirmed the locations of 11 archaeological sites within the PINGP property (NRC, 2011c, Section 2.2.9.2). Nine additional locations have been identified as potential archaeological resources based on unconfirmed reports of possible burial mounds (21GDI—Vergil Larson II Mound Group), a former schoolhouse (Prairie Island District 132), and seven historic artifact concentrations. Additional testing or evaluation is required for the seven historic artifact concentrations to confirm the presence of archaeological deposits before a state site number is assigned.

To date, one site (21GD002—Bartron) has been determined eligible for listing in the NRHP under Criterion D for its potential to yield important information about the region’s history. A second site (21GD148—Cooling Tower Site) has been recommended eligible for listing in the NRHP but is not yet listed. The remaining 18 archaeological resources identified within the PINGP property boundary remain unevaluated with regard to NRHP eligibility. No archeological sites, potential archaeological resources, or sites determined eligible for listing in the NRHP are within the APE for this ISFSI license renewal.

3.11 Public and Occupational Health and Safety

Risks to occupational health and safety include exposure to industrial hazards (i.e., moving heavy objects, working outside, and working with heavy equipment during cask transfer operations), hazardous materials, and radioactive materials. Industrial hazards for the PI ISFSI are typical for similar industrial facilities and include accidents ranging from minor cuts to industrial machinery accidents.

The AEA requires NRC to promulgate, inspect, and enforce standards that provide an adequate level of protection for public health and safety and the environment. NRC continuously evaluates the latest radiation protection recommendations from international and national

scientific bodies to establish the requirements for nuclear power plant licensees. NRC has established multiple layers of radiation protection limits to protect the public against potential health risks from exposure to effluent discharges from nuclear facility operations. ISFSIs in the United States are licensed by NRC and must comply with NRC regulations and conditions specified in the license in order to operate. The licensees are required to comply with 10 CFR Part 20, Subpart C, "Occupational Dose Limits for Adults;" 10 CFR Part 20, Subpart D, "Radiation Dose Limits for Individual Members of the Public;" and 10 CFR 72.104, "Criteria for Radioactive Materials in Effluents and Direct Radiation from an ISFSI or MRS."

For a U.S. resident, the average annual estimated total effective dose equivalent from natural background and anthropogenic (man-made) radiation sources is about 6.2 mSv [620 mrem] (NRC, 2011d). The source of this dose includes cosmic radiation, background radiation (radon and thoron), radiation sources in the Earth (terrestrial sources), naturally occurring radionuclides that exist in the body, medical and occupational sources, industrial sources, and radionuclides present in consumer products. U.S. population is exposed to two primary sources: naturally occurring background radiation and medical exposure to patients.

As explained in Section 1.3.4 of this draft EA, 20 TLDs are located both inside and outside of the PI ISFSI berm at approximate locations shown on Figure 1.3-5. Fifteen TLDs are also located between 6 and 8 km [4 and 5 mi] from the PINGP and are intended to record an ambient radiation level (meaning the radiation that could be coming from any source natural or manmade, including accidents at a nuclear facility). TLDs measure accumulated exposure to gamma radiation in milliroentgen (mR) at all of these locations over a period of time. At the PINGP and PI ISFSI, TLDs are replaced every quarter (or approximately every 91 days). The exposed TLDs are collected and the data analyzed. In the U.S. doses are most commonly reported in mrem. For the purposes of comparing the TLD readings to other radiation described in this draft EA as mrem, the NRC staff accepts the Health Physics Society conversion that 1 mR of gamma radiation equals approximately 1 mrem. Table 3.11-1 compares the average of

Table 3.11-1. Quarterly Average Ambient Gamma Radiation Levels Reported for Years 2006 to 2012

Year	Annual Mean Dose Rates Averaged (mR/91 days*)		Cumulative Annual Average of Two TLDs at PIIC (mR/91 days)		Control (Gamma Radiation) (mR/91 days)
	Inside the Berm†	Outside the Berm	Sample Locations P-07S and P-08S		15 Locations Between 6 km [4 mi] and 8 km [5 mi] from the PINGP
2012	100.7	19.9	14.9	14.3	16.5
2011	103.1	19.7	14.8	13.9	15.7
2010	102.0	20.5	15.2	14.7	16.0
2009	99.5	20.4	15.1	15.0	16.3
2008	107.0	21.1	16.2	15.8	17.1
2007	105.0	21.5	16.4	16.3	17.7
2006	90.2	21.1	15.4	15.1	16.6

Source: NSPM, 2013c, 2012c, 2011c, 2010, 2009, 2008b, 2007
TLD = thermoluminescent dosimeter; PINGP = Prairie Island Nuclear Generating Plant; mR = milliroentgen;
PIIC = Prairie Island Indian Community
*1 mR = approximately 1 mrem. Multiply mR/91 days measurement by 4 to obtain approximate average annual mrem.
†All TLD sample locations are provided in the annual Radiological Environmental Monitoring Programs.

the ambient gamma radiation levels from the TLDs located inside and outside the ISFSI berm, and from two TLD locations on the PIIC property, collected during each quarter of the years between 2006 and 2012. Table 3.11-1 also provides the average levels from the TLDs located between 6 and 8 km [4 and 5 mi] from the PINGP (“Control” column) (NSPM, 2012c).

As explained in Section 4.11.2 of this draft EA, the dry casks are heavily shielded and decontaminated prior to being transferred to the ISFSI pad. There is no significant radioactive effluent from the surfaces of the casks. Thus, the dominating radiation is gamma radiation emitted from the casks to the sky and then scattered back to the ground (known as “skyshine”) outside of the earthen berm. Note that ambient radiation levels reported in Table 3.11-1 outside of the berm are significantly lower than the radiation levels inside the berm because the berm provides radiological shielding. Table 3.11-1 shows that the two TLD locations on the PIIC property measure ambient radiation levels similar to the TLDs located 6 and 8 km [4 and 5 mi] from the PINGP. The radiation levels recorded at the PIIC and 6 and 8 km [4 and 5 mi] from the PINGP are similar to the range of ambient radiation levels expected for this region of the country (Kathren, 1984; Moeller, 2005).

In April 2010, the NRC staff asked the National Academy of Sciences (NAS) to perform a study on cancer mortality and incidence risks for populations living near NRC-licensed nuclear facilities. In this NRC-sponsored study, NAS will use its expertise to update a 1990 study, the National Cancer Institute conducted, “Cancer in Populations Living Near Nuclear Facilities” (Jablon, et al., 1991). The objective of the new NAS study is to provide the NRC with an analysis of the latest cancer mortality and incidence data for populations living near NRC-licensed nuclear power and fuel cycle facilities. NAS will study nuclear power plants that generate electricity, as well as facilities that create the nuclear fuel used in the power plants, and will conduct its study in two phases. In the Phase 1 report, “Analysis of Cancer Risk in Populations near Nuclear Facilities—Phase 1,” (NAS, 2012), NAS performed a feasibility study that developed approaches to evaluate cancer risks in populations living near NRC-licensed nuclear power and fuel cycle facilities. The Phase 1 results are to be used to inform the design of the cancer risk assessment that would be carried out in the NAS study’s second phase. In Phase 2, NAS would perform the cancer risk assessment using the methods developed in Phase 1 at all NRC-licensed facilities; however, NAS recommended that an interim step be conducted. This step is for NAS to perform pilot studies at seven sites to evaluate the feasibility of the Phase 1 methods before the NRC staff decides to proceed with Phase 2 for the balance of the operating nuclear power plants and fuel cycle facilities. In the Commission paper SECY-12-0136, “Next Steps for the Analysis of the Cancer Risks in Populations Near Nuclear Facilities Study,” dated October 5, 2012 (NRC, 2012g), the NRC staff informed the Commission of its plans to proceed with the pilot studies. Additional information can be found on the following NAS Web site <http://dels.nas.edu/global/nrsb/CancerRisk>.

In response to the March 11, 2011, 9.0-magnitude earthquake and tsunami that resulted in extensive damage to the six nuclear power reactors at the Fukushima Dai-ichi site, the NRC established a task force of senior agency experts to analyze lessons learned from the accident and to begin reviewing NRC regulations to determine whether additional measures needed to be taken immediately to ensure the safety of U.S. plants. The task force’s report concluded that the continued operation and licensing activities of nuclear power plants in the United States do not pose an imminent risk to public health and safety (NRC, 2011e). The task force also made a dozen recommendations for Commission consideration in SECY-11-0137, “Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned” (NRC, 2011f), and the NRC staff prioritized the recommendations into three tiers. On March 12, 2012, the NRC staff issued orders (i.e., mitigation strategies for beyond-design-basis external events,

provisions for mitigation strategies for beyond-design-basis external events, and enhancements to spent fuel pool instrumentation) and a request for information (regarding seismic and flooding reevaluations and walkdowns, and reevaluations of emergency communications systems and staffing levels) to nuclear power plant licensees. Regarding ISFSIs, the robustness of these dry cask storage systems have been tested by significant challenges (e.g., the August 23, 2011 Mineral, Virginia earthquake that affected the North Anna Nuclear power plant and the March 11, 2011, earthquake and subsequent tsunami that damaged the Fukushima Dai-ichi nuclear power plant). Neither event resulted in significant damage to or the release of radionuclides from the dry cask storage containers (Virginia Electric Power Company, 2011; Institute of Nuclear Power Operations, 2011). It should be noted that casks at Fukushima were stored inside a building.

3.12 Environmental Justice

Under Executive Order 12898 (59 FR 7629), federal agencies are responsible for identifying and addressing potential disproportionately high and adverse human health and environmental impacts on minority and low-income populations. Environmental justice refers to a federal policy implemented to ensure that minority, low-income, and tribal communities historically excluded from environmental decision-making are given equal opportunities to participate in decision-making processes. In 2004, the Commission issued a Policy Statement on the Treatment of Environmental Justice Matters in NRC Regulatory and Licensing Actions (69 FR 52040), which states, “The Commission is committed to the general goals set forth in Executive Order 12898, and strives to meet those goals as part of its National Environmental Policy Act (NEPA) review process”.

The environmental justice analysis assesses the potential for disproportionately high and adverse human health or environmental effects on minority and low-income populations that could result from license renewal of the PI ISFSI. Consistent with the NRC’s Policy Statement (69 FR 52040) and guidance within NUREG–1748 (NRC, 2003), affected populations are defined as minority and low-income populations who reside within a 6.4 km [4 mi] radius of PI ISFSI. Data on low-income and minority individuals are usually collected and analyzed at the census tract or census block group level (NRC, 2003).

3.12.1 Minority and Low-Income Populations

In Section 3.3, the NRC staff reviewed the population, demographic, and economic data within Goodhue and Dakota Counties in Minnesota and Pierce County in Wisconsin (Tables 3.3-2 and 3.3-3). Tables 3.3-2 and 3.3-3 show that the percentages of minority or low-income populations in the ROI do not significantly exceed the corresponding percentages for their respective states. However, census block groups and census tract data from the same reports within 6.4 km [4 mi] of the facility show minority and low-income population percentages that do significantly exceed comparable percentages in other block groups and census tracts (USCB, 2013).

Five census block groups are located within a 6.4-km [4-mi] radius of the PI ISFSI; two are located in Pierce County, Wisconsin, and three are in Goodhue County, Minnesota. Table 3.12-1 provides a summary of the demographic information for these five block groups. Census tract 802, block group 6 contains the PINGP and the PIIC Reservation. About 26 percent of the population in that census tract is a minority populations, of which about 62 percent are American Indian and Native Alaskan. When compared to Goodhue County’s 5.4 percent minority population (see Table 3.3-2), the minority population in block group 6 (26 percent) is at least 20 percent higher than Goodhue County (5.4 percent). NRC guidance

Table 3.12-1. 2010 Census Demographic Profile of Block Groups Within 6.4 km [4 mi] of the Prairie Island Independent Spent Fuel Storage Installation

	Census Tract 802, Block Group 5 (Goodhue County, Minnesota)	Census Tract 802, Block Group 6 (Goodhue County, Minnesota) (Prairie Island Indian Community and PINGP)	Census Tract 804, Block Group 1 (Goodhue County, Minnesota)	Census Tract 9606, Block Group 2 (Pierce County, Wisconsin)	Census Tract 9606, Block Group 3 (Pierce County, Wisconsin)
Total Population	1,524	1,155	1,088	1,634	1,590
Race (not Hispanic or Latino)					
White (not Hispanic or Latino)	1,425	852	1,049	1,583	1,550
Black or African American	13	8	1	0	5
American Indian and Native Alaskan	20	187	11	6	15
Asian	11	10	7	5	3
Native Hawaiian and Other Pacific Islander	0	1	0	0	0
Some other race	0	0	0	0	0
Two or more races	27	41	16	12	14
Ethnicity					
Hispanic or Latino (of any race)	28	56	4	23	3
Percent Hispanic or Latino	1.8	4.8	0.4	1.4	0.2
Minority Population (Including Hispanic and Latino Ethnicity)*					
Total minority population	99	303	39	51	40
Percent minority	6.5	26.2	3.6	3.1	2.5
Source: USCB, 2013					
*Minority population includes persons of Hispanic/Latino origin who are considered an ethnic minority and may be of any race (USCB, 2001).					

states that staff may consider differences greater than 20 percentage points, or minority and low-income populations that exceed 50 percent of the block group, to be significant (NRC, 2003). Following this NRC guidance, the minority population in block group 6 is considered to be a significant environmental justice population (NRC, 2003). The block group boundaries are provided in Figure 3.12-1.

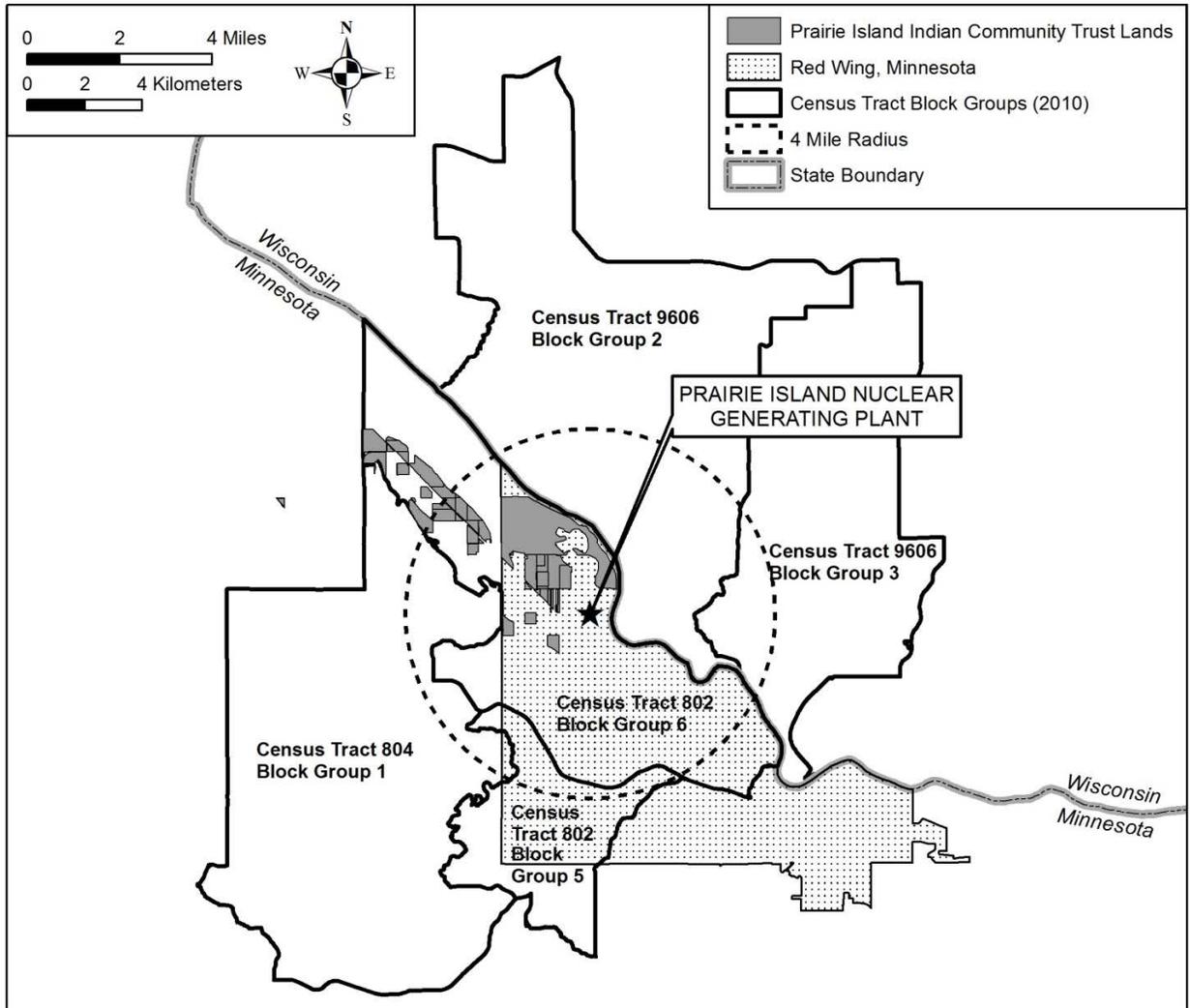


Figure 3.12-1. Block Groups Within 6.4 km [4 mi] of the Prairie Island Nuclear Generating Plant (Source: USCB, 2012)

Table 3.12-2 provides the 2007 to 2011 5-Year American Community Survey income estimates for the five block groups within 6.4 km [4 mi] of the PI ISFSI. Based on the USCB data, census tract 802, block group 6 has the lowest per capita income and the highest percentage of families and individuals living below the poverty level. These poverty levels are neither 50 percent greater than the other block groups within 6.4 km [4 mi] of the PI ISFSI nor more than 20 percentage points of the state and county percentages for low-income categories provided in Table 3.3-2. The other block groups' per capita incomes and poverty levels are not appreciably different from their respective states and counties.

Adjacent Communities

The NRC staff met with Prairie Island community members, elected tribal officials, and officials from the City of Red Wing, and conducted field observations to investigate whether there were high-density communities within the vicinity of the PI ISFSI. As described in Section 3.1 of this draft EA, the PINGP property boundary is located immediately south-southeast of the PIIC

Table 3.12-2. 2007–2011 5-Year American Community Survey Income Estimate of Block Groups Within 6.4 km [4 mi] of the Prairie Island Independent Spent Fuel Storage Installation

	Census Tract 802, Block Group 5 (Goodhue County, Minnesota)	Census Tract 802, Block Group 6 (Goodhue County, Minnesota) (Prairie Island Indian Community and PINGP)	Census Tract 804, Block Group 1 (Goodhue County, Minnesota)	Census Tract 9606, Block Group 2 (Pierce County, Wisconsin)	Census Tract 9606, Block Group 3 (Pierce County, Wisconsin)
Median Household Income (Annual Dollars)	\$59,490	\$44,444	\$69,583	\$34,484	\$27,335
Per Capita Income (Annual Dollars)	\$28,667	\$24,643	\$30,459	\$34,484	\$27,335
Families Living Below the Poverty Level (Percent)	3.0	17.2	4.3	2.2	4.5
Persons Below the Poverty Level (Percent)	2.8	24.8	7.5	2.8	3.9
Source: USCB, 2013					

Reservation boundary. The PIIC Reservation and housing areas described in Section 3.3 of this draft EA are located within census tract 802, block group 6. The PINGP and PI ISFSI are also located within census tract 802, block group 6. Based on significant differences between local minority populations in the States of Minnesota and Wisconsin, the NRC staff identifies census tract 802, block group 6 as a minority population block group for this assessment. NRC staff has designated the PIIC as a minority population within a 6.4-km [4-mi] radius of the PI ISFSI. The income and racial characteristics of other block groups within 6.4 km [4 mi] of the PI ISFSI do not indicate that 50 percent of the population is minority or low-income, and do not significantly exceed those of the state or county percentage for either minority or low-income categories.

3.12.2 Subsistence Consumption of Fish and Wildlife

Section 4-4 of Executive Order 12898 (59 FR 7629) directs federal agencies, whenever practical and appropriate, to collect and analyze information on the consumption patterns of populations that rely principally on fish and/or wildlife for subsistence and to communicate the risks of these consumption patterns to the public.

The following input on subsistence consumption of fish, wildlife, and plants was provided by the PIIC (2013d):

Although tribal members have concerns regarding radiological contamination of the medicinal plants found on Prairie Island, they nevertheless gather and use these plants, albeit at suppressed levels due to

contamination concerns. As well, most members of the Community do not consume fish from the Mississippi River (Sturgeon Lake) because of pollution concerns (either from PINGP Units 1 and 2 or from other upstream dischargers). There are tribal members who hunt on tribal lands, but they would not be considered subsistence-level consumers.

The Radiological Environmental Monitoring Program (REMP), implemented by Xcel collects samples of various media around the PINGP and ISFSI—fish, invertebrates, milk, cabbage and water (surface and ground). With the exception of ground water, no samples are collected on tribal lands. The State of Minnesota also has a monitoring program, which evaluates radiological impacts on surface and ground water, milk, and air. The State's program does not include sample locations on tribal lands (aside from drinking water, from the community water supply).

Although the data from both programs show little or no impacts, the fact that no samples (other than water) are collected on tribal lands is a source of ongoing concern to tribal members. If additional samples (i.e., other media) were collected on tribal lands, tribal members might consume more plants, fish, and wildlife.

In this draft EA, NRC considered whether there were any means for minority or low-income populations to be disproportionately affected by examining impacts to American Indian, Hispanic, and other traditional lifestyle special pathway receptors. Special pathways that took into account the levels of radiological and nonradiological contaminants in native vegetation, crops, soils and sediments, surface water, fish, and game animals on or near the PINGP or PI ISFSI were considered (see Sections 4.13 and 4.14 of this draft EA).

The special-pathway-receptors analysis is an important part of the environmental justice analysis because consumption patterns may reflect the traditional or cultural practices of minority and low-income populations in an area, such as migrant workers or Native Americans. Traditional use of an area can be indicative of properties or resources that are historically significant for a living community to maintain its cultural heritage. For example, in the PINGP Units 1 and 2 license renewal review, the PIIC provided NRC information about the traditional use of Prairie Island as a summer encampment for fishing, hunting, gathering medicines and foods, and raising crops. During the review, the PIIC also expressed concern about native plants on Prairie Island being displaced by invasive species and human health impacts associated with the use of plants that are culturally significant to the PIIC (NRC, 2011c).

Operating nuclear power plants must have a comprehensive radiological environmental monitoring program to assess the impact of site operations (including the ISFSI) on the environment. During plant operations, nuclear power plant operators collect samples from aquatic pathways (e.g., fish, surface water, and sediment) and terrestrial pathways (e.g., airborne particulates, radioiodine, milk, food products, crops, and direct radiation). Contaminant concentrations found in native vegetation, crops, soils, sediment, surface water, fish, and game animals in areas surrounding nuclear power plants are usually quite low (i.e., at or near the threshold of detection) and are seldom above background levels (NRC, 2013d, Section 3.10).

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4.0 ENVIRONMENTAL IMPACTS

The NRC staff reviewed the applicant's environmental report (ER); collected information from federal, state, and local government agencies; and evaluated the environmental impacts to the various resources of the affected environment from the proposed action.

The NRC staff used the guidance outlined in NUREG-1748 (NRC, 2003) in its evaluation. In accordance with this guidance, the staff evaluated the direct effects, indirect effects, and cumulative impacts that each resource area may encounter from the proposed action. The NRC staff categorizes the impacts in terms of small, moderate, or large, defined as follows:

- **SMALL**—environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
- **MODERATE**—environmental effects are sufficient to alter noticeably, but not to destabilize important attributes of the resource.
- **LARGE**—environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

As described in Section 2.1.3 of this draft EA, only the potential impacts to public and occupational health are discussed in this draft EA for the 20-year alternative because the NRC staff determined that, for all other resource areas, the site operations and the types of potential environmental impacts associated with those operations during the 20-year interval would be similar to those for the proposed action (i.e., the 40-year license renewal).

The 2010 Waste Confidence (WC) Decision and Temporary Storage Rule represented the NRC's generic determination that spent nuclear fuel can be stored safely and without significant environmental impacts for at least 60 years beyond the licensed life for operation of a reactor. This generic analysis is codified in 10 CFR 51.23. The WC Decision and Rule is a part of the environmental analysis for agency decisions on the licensing and relicensing of nuclear reactors and ISFSIs.

On June 8, 2012, the United States Court of Appeals for the District of Columbia Circuit [New York v. NRC, 681 F.3d 471 (D.C. Cir. 2012)], in response to a legal challenge to NRC's WC Decision and Rule Update, vacated the NRC's WC Decision and Rule Update (75 FR 81032 and 75 FR 81037). The Court held that the WC Decision and Rule Update is a major federal action necessitating either an EIS or a FONSI, and the Commission's evaluation of the risks associated with the storage of spent nuclear fuel for at least 60 years beyond the licensed life of a reactor is deficient. In response to the Court's ruling, the Commission, in CLI-12-16 (NRC, 2012h), determined that it would not issue licenses dependent upon the WC Rule until the issues identified in the Court's decision are appropriately addressed. In CLI-12-16, the Commission also noted that this determination extends only to final license issuance; all current licensing reviews and proceedings should continue to move forward.

In addition, the Commission directed the NRC staff to proceed with a rulemaking that includes the development of an EIS to support an updated WC Decision and Rule within 24 months (by September 2014) (NRC, 2012i). The Commission indicated that the EIS used to support the revised rule should build on the information already documented in various NRC studies and reports on the impacts associated with the storage of spent nuclear fuel that were developed as

part of the 2010 WC Decision and Rule Update, and should primarily focus additional analyses on the deficiencies identified in the D.C. Circuit's decision.

The updated rule and supporting GEIS will provide the necessary NEPA analyses of waste-confidence-related environmental issues. As directed by the Commission, NRC will not issue a renewed license for the PI ISFSI before waste-confidence-related issues are resolved. This will ensure that there would be no irretrievable or irreversible resource commitments or potential harm to the environment before WC Decision (WCD) impacts have been addressed. If the results of the WC GEIS identify information that requires a supplement to this draft EA, the NRC staff will perform any appropriate additional NEPA review for those issues before NRC makes a final licensing decision.

4.1 Land Use

Approval of the proposed action will not result in any construction or expansion of the existing ISFSI footprint or operations. Activities related to continued operation of the PI ISFSI include transferring dry storage casks to the ISFSI pad and routine maintenance activities. All activities would occur within the industrial footprint of the site involving existing structures and roads.

The environmental impacts on land use from the construction and operation of up to 48 casks were assessed in the NRC PI ISFSI licensing EA and were determined to be minimal because operation of the ISFSI would not require the use of any land surface beyond that which was cleared and graded during PINGP construction (NRC, 1992). Continued storage of spent fuel in the ISFSI for the proposed 40-year license renewal period would not change the ISFSI's industrial land use. Since land use conditions would not change, and because any ongoing land disturbance would occur within previously disturbed industrial areas at PINGP and the PI ISFSI, impacts from the proposed action on land use would be SMALL and, thus, not significant.

After taking into consideration an additional 40 years of ISFSI operation if the license is renewed, land disturbance due to decommissioning would be limited to previously disturbed portions of the PINGP site and would not require additional land beyond the land previously disturbed during ISFSI construction activities. Decommissioning activities would include concrete pad and berm removal and site restoration to preconstruction conditions (backfilling, grading, and landscaping). Since land use conditions would not change, and because any decommissioning-related activities would occur within previously disturbed industrial areas at PINGP and the PI ISFSI, there would be no significant land use impacts from decommissioning.

The following input on land use impacts was provided by the PIIC (2013c):

The presence of the PINGP and ISFSI has had a negative effect on the PIIC, its people and lands. Most tribal members do not believe that the spent nuclear fuel stored at the ISFSI will ever leave Prairie Island. As a result, many tribal members do not want to raise their families so close to such a facility. Prairie Island is the homeland of the Prairie Island Indian Community. This land was acquired by the United States government for the common benefit of all tribal members in perpetuity. This land was to allow the PIIC to continue to maintain its traditions and culture. Tribal members are integral to traditions and culture. If tribal members refuse to reside on Prairie Island, how can the tribe's culture survive?

The NRC recognizes that Prairie Island has been a place of historic and cultural significance to the tribe for thousands of years. Because of the PIIC's special expertise and information

relating to land use, NRC worked with the PIIC through the MOU described in Section 1.5 of this draft EA to incorporate important information into this draft EA. Several meetings were held between the PIIC and NRC to fully understand land use concerns, especially subsurface land uses. The PIIC remains concerned that because no archaeological survey work was conducted in the immediate vicinity of the PI ISFSI prior to its construction, the full extent of past subsurface land uses (and archaeological resources) impacts are unknown. The NRC staff considered these concerns in the evaluation of impacts to historic and cultural resources in this draft EA. Section 3.10 of this draft EA documents the cultural background of the area and historic and cultural resources at the PINGP and PI ISFSI. Section 4.10 of this draft EA discusses the PIIC's concerns in more detail, as well as NRC's evaluation of impacts to historic and cultural resources as a result of the proposed PI ISFSI license renewal.

4.2 Transportation

There would be no change or increase in traffic volume within the ROI (i.e., Goodhue and Dakota Counties, Minnesota and Pierce County, Wisconsin) as a result of the proposed action. Additionally, approval of the proposed action would not result in construction or expansion of the existing ISFSI footprint or change in operations. In its ER, NSPM stated that no additional employees are needed to maintain and/or monitor the PI ISFSI (NSPM, 2011a); thus there would be no change in traffic volume and levels of service on roadways in the vicinity of the PINGP site. NSPM will continue to transfer new, empty casks from the supplier to the PINGP auxiliary building, and transfer loaded casks from the PINGP auxiliary building to the ISFSI pad, approximately 0 to 6 casks each year through 2031 (NSPM, 2013a). There would be no noticeable environmental impact beyond what is currently being experienced. Therefore, the NRC staff concludes that the potential impacts from the proposed action on transportation would be SMALL and, thus, not significant.

After taking into consideration an additional 40 years of ISFSI operation if the license is renewed, decommissioning could increase the number of trucks entering and leaving the PINGP from dismantling and demolishing ISFSI structures and transporting materials offsite. NSPM states that about 20 additional construction workers were used in addition to onsite personnel during initial ISFSI construction activities (NSPM, 2013a, p. 15). NRC finds it reasonable to expect that 20 additional workers would be needed during ISFSI decommissioning. NRC's SEIS for the PINGP relicensing concluded that AADT volumes are below maximum capacities for the roads leading to the PINGP (NRC, 2011c, Section 2.2.8.2). NRC's PINGP license renewal SEIS also concluded that County Road 18 and Sturgeon Lake Road currently have the capacity to handle the additional volume of traffic associated with refueling operations or large construction projects when numerous additional workers (as many as 925 additional workers during refueling outages that occur every 20 months for a duration of 45 to 90 days) are added to normal traffic flows in the vicinity of PINGP and the PIIC (NRC, 2011c, Section 3.2.7). Although NRC concluded that transportation impacts would mostly occur during shift changes, NSPM could stagger work schedules and use NSPM employees and/or local law enforcement officials to direct traffic entering and leaving the PINGP site to minimize the service impacts on Sturgeon Lake Road (NRC, 2011c). Therefore, an increase in traffic flow from ISFSI decommissioning activities would not be noticeable and thus potential transportation impacts from decommissioning would be SMALL and, thus, would not be significant.

4.3 Socioeconomics

In the PI ISFSI license renewal application and responses to NRC's environmental RAIs, NSPM indicated that the proposed action will not require any additional employees to maintain and/or monitor the site-specific ISFSI (NSPM, 2011a, 2013a). With no new employment expected and no additional burden on the community to provide housing and public services, an increase to the tax base is not anticipated. Based on this information, no change (direct or indirect) to the local economy would result from the proposed action and thus potential socioeconomic impacts would be SMALL and, thus, would not be significant.

The following input was provided by the PIIC (2012a):

Although the ISFSI is located immediately adjacent to our Community (and we are the *de facto* host community), the PIIC receives a very limited financial benefit from these facilities. The City of Red Wing and Goodhue County receive millions of dollars annually from the PINGP and ISFSI via taxes. The ISFSI and its dry casks (35 currently, expected future total of 98—and associated risk—are right next to our homes, our government center, our church, our recreational areas, and our tribal gaming enterprise. Our community members bear the greatest risk, yet we receive virtually no benefit.

The PIIC also expends considerable financial resources participating in state and federal regulatory proceedings for the PINGP Units 1 and 2 and the ISFSI (federal only). There is no other governmental entity (e.g., City of Red Wing, Goodhue County, or the State of Minnesota) participating in these proceedings at the same level as the PIIC. Were it not for the existence of the PINGP ISFSI, the funds used by the PIIC to participate in regulatory proceedings are funds that could be used for other community purposes; this socioeconomic impact must be considered.

The NRC recognizes that the PIIC is concentrated closer to the PINGP and PI ISFSI than any other population group and has invested financial resources to ensure the safety and security of its members. As discussed, direct employment, taxes, and services would not be expected to change as a result of the proposed action. Financial burdens, such as expenses associated with participation in PINGP-related actions, emergency planning, and steps required in the event of an accident [e.g., educating the public on risks and procedures; maintaining special medical supplies (iodine tablets), equipment, and trained professionals], would also not change and would continue to impact, in the same manner, communities within the ROI. According to the PIIC, by virtue of their proximity to the PINGP, the PIIC police department (PIPD) is often the first local government law enforcement agency to respond to calls occurring on both reservation and non-reservation land adjacent to the PINGP as well as calls originating from or occurring on the PINGP site, which lies within Goodhue County or the City of Red Wing. PIPD officers are Minnesota licensed peace officers recognized as a responding party authorized to provide assistance to a requesting party from the county or city pursuant to a 2004 Cooperative Agreement Regarding Law Enforcement with Goodhue County and the City of Red Wing and the South East Region Counties Mutual aid Agreement.

After taking into consideration an additional 40 years of ISFSI operation if the license is renewed, about 20 additional workers would be needed to support ISFSI decommissioning as discussed in Section 4.2 of this draft EA. Although the nature of impacts from decommissioning depend on local economic activity, which the NRC staff cannot project with certainty, the additional workers needed to decommission the PI ISFSI would not appreciably affect the

overall socioeconomic characteristics of the area (i.e., expenditures, tax revenues, demand for housing, public utilities, and public services). Therefore, NRC staff concludes that potential socioeconomic impacts within the ROI from decommissioning the ISFSI would be SMALL and, thus, would not be significant.

4.4 Climatology, Meteorology, and Air Quality

Under the proposed action, newly filled dry casks would be periodically transferred to the PI ISFSI, approximately 0 to 6 casks each year through 2031 (NSPM, 2013a). By design, the dry spent fuel storage casks emit no gaseous effluents subject to the terms and conditions of a Title V air pollution control operation permit issued by the Minnesota Pollution Control Agency (MPCA). In addition, no diesel generators are located at the PI ISFSI. The transport vehicle that moves the casks from the spent fuel pool to the ISFSI generates some exhaust from burning diesel fuel. Such emissions are not likely to be detectable during the infrequent transfer activities, approximately 0 to 6 times per year. As such, the potential impact to climate and air quality due to the proposed action would be SMALL and thus would have no significant environmental impact.

After taking into consideration an additional 40 years of PI ISFSI operation if the license is renewed, decommissioning activities could have intermittent, local air quality impacts. Fugitive dust generated during intermittent earthmoving activities and exhaust emissions from vehicles and equipment involved in ISFSI demolition and decommissioning activities could impact the local air quality. In the 1992 EA, similar activities were considered as part of the ISFSI construction-related impacts (NRC, 1992) and were determined to be insignificant if best management practices were followed. In addition, NSPM expects the installation of new pads to take 4 weeks (see draft EA, Section 4.14). Although the attainment status of the region for the standards that EPA has established under the NAAQS for each criteria pollutant would be reviewed as part of the decommissioning plan licensing review, the NRC staff expects that air quality would not be significantly affected because decommissioning activities would be regulated under federal, state, and local air permits during this time, and dust and exhausts would be dissipated by local weather conditions and the demolition-related activities would be intermittent. For these reasons, the NRC staff concludes that air quality impacts during ISFSI decommissioning to be similar to air quality impacts during construction. Therefore, the NRC staff determines that any potential impact to air quality from decommissioning of the PI ISFSI would be SMALL and, thus, would not be significant.

4.5 Geology and Soils

Continued ISFSI operation would not affect the underlying geology because ISFSIs have no moving parts to affect the subsurface. The only liquid spills or leaks that could occur at the PI ISFSI are grease, oil drips, and spills from the maintenance and operation of the cask transfer vehicle. NSPM performs regular maintenance on the cask transfer vehicle in the equipment storage building located within the PI ISFSI (Figure 1.3-5) (NSPM, 2011a, Section E2.1.2.1). In its application, NSPM states that drips of lubricating fluid from the transport vehicle would be cleaned up and disposed of at appropriate facilities (NSPM, 2011a, Section E2.1.2.1). Monitoring the pressure of all in-service casks is a continual process (NSPM, 2011a). Visual inspections of the dry casks are conducted quarterly, and spills or leaks observed at the ISFSI are addressed during inspections (NSPM, 2011a). According to MPUC, eight low-pressure alarms have gone off at the ISFSI since the first cask was emplaced at the ISFSI in 1995. All the alarms were caused by gaseous leaks in the monitoring system tubing or pressure

transmitter, and none of the alarms were due to a cask seal leak (MPUC, 2009a). In June 2011, NSPM conducted a visual inspection of the bottoms of two casks including the cask that has been in service the longest amount of time (NSPM, 2011a). Inspection results identified no issues that would affect the intended function of the casks. For these reasons, the NRC staff concludes that the potential impacts to geology and soils from the proposed action would be SMALL and, thus, would not significantly affect such resources.

After taking into consideration an additional 40 years of PI ISFSI operation if the license is renewed, decommissioning could produce short-term impacts to soils from pad removal activities and contribute to soil erosion. The NRC staff expects that disturbance to the soil horizons if the ISFSI foundation is removed and from leveling and regrading of the ISFSI would not impact subsurface geology, because decommissioning activities would not extend to a depth beyond the unconsolidated soil deposits. Additionally, soils found to be contaminated above NRC release levels would be shipped offsite to an authorized disposal facility. Under 10 CFR Part 20, Subpart E (“Radiological Criteria for License Termination”), soils at the site would have to meet applicable radiological soil concentration limits before those areas could be released for restricted or unrestricted use. Following ISFSI decommissioning, the NRC staff expects the area would be regraded consistent with the local topography, and that NSPM would reseed the soils to reduce soil erosion. NSPM would manage storm water runoff and provide sediment control in accordance with local construction codes. For these reasons, the NRC staff concludes that potential impacts on geology and soils from decommissioning the PI ISFSI would be SMALL and, thus, would not be significant.

4.6 Water Resources

Water consumption at the PI ISFSI is not anticipated to change because existing operational and maintenance procedures would continue. The ISFSI does not use, consume, or otherwise generate liquid effluents during normal operation. During spent fuel loading, water for cask decontamination is used within the confines of the PINGP power plant and would fall within the scope of potential water impacts NRC has previously assessed for reactor operations. The NRC staff concluded in the PINGP Units 1 and 2 license renewal SEIS that the impacts on surface water and groundwater from consumptive water use during PINGP operations would be SMALL (NRC, 2011c). The NRC staff determined that overall surface water and groundwater impacts associated with continued PINGP operations would be SMALL (NRC, 2011c). Handling of the fuel, cask loading, and decontamination of the casks takes place within the PINGP auxiliary building. The license applicant asserts that no credible mechanisms could contaminate the outside surfaces of the casks, other PI ISFSI components, or operating personnel after the casks leave the decontamination area (NSPM, 2011a, Section E2.1.2.1). After a certified cask is loaded, removed from the pool, decontaminated, and leaves the auxiliary building, there is no mechanism to contaminate the outside surfaces unless the cask/canister is breached. Therefore, the proposed action would cause no significant environmental impact to water quality or local water use.

As described earlier in this paragraph, only spent fuel loading operations and cask decontamination require the use of water resources, which was included in the SEIS evaluation for surface water and groundwater impacts. Because there are no changes in water consumption or impacts to water quality as a result of the proposed action, the NRC staff concludes that the potential direct impacts on surface water and groundwater resources from the proposed action would also be SMALL and, thus, would not be significant.

The primary surface water bodies in the PINGP site vicinity are the Vermillion River to the west and the Mississippi River to the east. Indirect impacts to water quality can result from storm water runoff incorporating grease, oil drips, and spills from the maintenance and operation of the cask transfer vehicle. NSPM performs regular maintenance on the cask transfer vehicle in the equipment storage building located within the PI ISFSI (Figure 1.3-5) (NSPM, 2011a, Section E2.1.2.1). In its application, NSPM states that drips of lubricating fluid from the transport vehicle would be cleaned up and disposed of at appropriate facilities (NSPM, 2011a, Section E2.1.2.1). NSPM provided NRC with a copy of the 2012 Storm Water Pollution Prevention Plan (NSPM, 2013a), which shows that storm water runoff from the ISFSI area is collected by a surface drain in the southeast corner of the ISFSI that discharges the storm water to the landlocked area south of the ISFSI. Therefore, water quality impacts to surface water and groundwater resulting from ISFSI storm water and sediment runoff would be minimal. No increase in discharge or runoff is anticipated for the PI ISFSI in the license renewal period (NSPM, 2011a, Section E3.6.1). NSPM would manage storm water runoff in accordance with the 2012 Storm Water Pollution Prevention Plan and provide sediment control in accordance with their MPCA NPDES permit. For these reasons, the NRC staff concludes that the potential indirect environmental impacts from the proposed action on water resources would be SMALL and would not significantly affect water resources.

After taking into consideration an additional 40 years of PI ISFSI operation if the license is renewed, decommissioning could result in local, short-term impacts to water quality due to ISFSI concrete pad demolition, removal of the fencing and berm, restoration of the site to preconstruction conditions, and relocating the spent fuel casks to an alternate location. The license applicant would be required to manage storm water runoff and provide sediment control in accordance with federal, state and local requirements to limit erosion and prevent contaminants from entering surface water bodies and sensitive areas. As previously stated in this section, storm water runoff from the ISFSI area is collected by a surface drain in the southeast corner of the ISFSI that discharges the storm water to the landlocked area south of the ISFSI. Storm events would direct any loose soil, grease, oil drips, and spills from operating equipment to this landlocked area before reaching surface water bodies. For these reasons, the NRC staff concludes that potential impacts to water resources from decommissioning the PI ISFSI would be SMALL and, thus, would not be significant.

4.7 Ecology and Threatened and Endangered Species

The PI ISFSI proposed action does not involve activities that would disturb any new land beyond the disturbances already assessed in the 1992 licensing EA for construction and operation of the ISFSI. There would be no changes to the ISFSI footprint and operations. Loaded casks would continue to be transferred to the ISFSI pad, although at an infrequent manner. In addition, the PI ISFSI is cooled by a passive cooling system with no moving parts. Thus, the NRC staff expects that animals and birds would have either grown accustomed to the ISFSI or would have relocated away from the ISFSI. Therefore, the NRC staff concludes that the impacts on ecological resources from the proposed action would be SMALL and, thus, would not be significant.

The Higgins eye pearl mussel was federally listed as an endangered species on June 14, 1976 (41 FR 24064). NRC staff determined that the proposed action would not adversely affect federally listed threatened and endangered terrestrial species, nor state-identified rare species or species of special concern, because none of these terrestrial species are known to occur within the ISFSI boundary or areas of operations, and no critical habitat for threatened or endangered species is present on the PINGP site as discussed in Section 3.7.3 of this draft EA.

The NRC staff did not evaluate in detail impacts to listed aquatic species including the Higgins eye pearly mussel because PI ISFSI operations do not require water for cooling and do not discharge water. As stated in Section 4.5 of this draft EA, the casks are designed to eliminate the possibility of liquid leakage. Storm water runoff from the ISFSI area is collected by a surface drain in the southeast corner of the ISFSI that discharges the storm water to the landlocked area south of the ISFSI and does not affect aquatic resources. NRC staff determined that the proposed action would not adversely affect federally listed threatened and endangered species.

After taking into consideration an additional 40 years of PI ISFSI operation if the license is renewed, decommissioning could increase noise levels and change localized air quality as a result of fugitive dust from earthmoving activities and equipment exhaust emissions. As a result, animals would likely avoid the activity area. The PI ISFSI area was previously disturbed by ISFSI construction and was covered in prairie grass, weeds, and trees prior to the construction of the PI ISFSI (NRC, 1992). Following decommissioning activities, as the vegetation is reestablished, local wildlife would likely re-inhabit the area if the ISFSI area is not used for another PINGP-related activity. If decommissioning included removing the ISFSI structures, regrading, and reseeded activities, newly established vegetation would be similar to what was present prior to ISFSI construction. Therefore, the NRC staff concludes that potential impacts on terrestrial and aquatic ecology from decommissioning would be SMALL and would not be significant. In addition, decommissioning the PI ISFSI would not adversely affect threatened and endangered species.

4.8 Visual and Scenic

The NRC staff does not anticipate any changes in the local or regional scenic quality, because the scope of the proposed action does not include any new construction or changes in operations. Scenic quality is impacted by surface disturbances and facilities at the PI ISFSI, which contrast with the natural environment. However, an earthen berm and trees surrounds the PI ISFSI, preventing its visibility from offsite roadways. Based on this, the NRC staff determines that the impacts from the proposed action would not be significant.

After taking into consideration an additional 40 years of PI ISFSI operation if the license is renewed, decommissioning could cause short-term scenic and visual impacts from ISFSI demolition. Land disturbance impacts from the decommissioning activities, such as building demolition, would not be visible from offsite. The NRC potential scenic and visual impacts would be temporary and SMALL and, thus, would not be significant.

4.9 Noise

Approval of the proposed action will not result in construction or expansion of the existing ISFSI footprint that would generate construction-type noises. By design, the PI ISFSI is cooled by a passive cooling system with no moving parts that generate noise. Therefore, noise typically associated with the ISFSI is not audible. Cask handling and transporting loaded casks to the ISFSI pad would continue to occur on an infrequent basis (0 to 6 casks per year). The earthen berm around the ISFSI mutes noise generated by the transport vehicle during cask transfer activities. Therefore, impacts from noise generating activities as a result of the proposed action would be undetectable and SMALL and, thus, would not be significant.

After taking into consideration an additional 40 years of PI ISFSI operation if the license is renewed, decommissioning could result in local, short-term noise impacts. Sources of noise

would result from additional traffic, building demolition, and relocating the spent fuel currently stored at the ISFSI. As described in Section 3.9 of this draft EA, daytime noise levels at two locations just north of the PINGP property boundary ranged from 43 to 46 dB(A) and from 32 to 36 dB(A) (MPUC, 2009a)—well below the State of Minnesota noise standards. Demolition and earthwork equipment can generate noise levels exceeding 90 dB(A) (NRC, 2002). This noise level applies at a reference distance of 15 m [50 ft] from the source. For point sources, noise is reduced by about 6 dB(A) for every 15 m [50 ft] after the initial 15 m [50 ft]. Therefore, decommissioning activities at the PI ISFSI would produce noise levels above 60 dB(A) at a distance of about 91 m [300 ft] in all directions from the ISFSI and would dissipate to levels below background noise levels of about 30 dB(A) at a distance of about 167 m [550 ft] from the ISFSI, which is less than half the distance to the nearest PINGP property boundary. NRC estimates the noise level would not be detectable offsite. Because of this, the NRC staff concludes that potential noise impacts from decommissioning would be SMALL and, thus, would not be significant.

4.10 Historic and Cultural Resources

As discussed in Section 3.10, the APE is limited to the 2.2 ha [5.5 ac] PI ISFSI site and access road from the PINGP auxiliary building to the ISFSI. NRC contacted the Minnesota SHPO in accordance with 36 CFR 800 regarding the effects of proposed undertaking (proposed action) on historic properties. The Minnesota SHPO determined that no properties listed in or eligible for listing in the NRHP will be affected by this project (Minnesota Historical Society, 2012). As stated in the ER (NSPM, 2011a), the proposed action would not involve any new construction or disturbance of previously undisturbed land.

As stated previously, the NRC consulted with 28 regional Indian tribes. The documentation of these consultations can be found in Table 5.1 of this draft EA.

With respect to evaluating the proposed action's impact on historic and cultural resources, the PIIC requested that the following information be considered (PIIC, 2012a):

Prairie Island is rich in archaeological resources. These archaeological resources are an important part of the PIIC's history and culture. Over the years there have been many archaeological surveys documenting and recording hundreds of prehistoric archaeological sites over the entire length of Prairie Island. These sites include burial mounds, habitation sites, and lithic scatters.

In recent years there have been a number of archaeological surveys conducted within the boundaries of the PINGP. We remain concerned, however, that very little archaeological survey work in the vicinity of the ISFSI, was conducted prior to the construction of the ISFSI, in the immediate vicinity of the ISFSI. The archaeological survey work used to support the 1992 NRC ISFSI licensing proceedings was conducted in 1967 and has been found to be an unreliable source of information. These concerns are especially relevant given the NRC's decision to evaluate the expected expansion of the ISFSI in the cumulative effects analysis.

The NRC's 1992 EA for the ISFSI license apparently referenced a 1967 archaeological survey (conducted prior to the construction of the PINGP Units 1 and 2) that concluded, "nothing significant in the immediate area of the power plant

or ISFSI was found.” The EA further states “no other areas of historical, archaeological and cultural significance are found within the site boundary.” No information was provided relative to the real extent of the 1967 archaeological survey. (NRC, 1992)

Prior to the construction of the PINGP Units 1 and 2, NSPM hired Dr. Eldon Johnson (then, the State Archaeologist) to conduct archaeological surveys of the area. We learned, through the PINGP Units 1 and 2 relicensing process that Dr. Johnson was primarily interested in excavating the burial mounds, such as the Birch Lake Mound site that were located far from the PINGP Units 1 and 2 construction site (and nowhere near the ISFSI site). In the vicinity of the PINGP, Dr. Johnson conducted some mechanical trenching operations (close to the Mississippi River) and possibly some other work (mapping) in the immediate vicinity of the PINGP in 1967.

An NSPM-generated literature review and synthesis of all archaeological surveys and reports indicates that the 1967 work was not well documented and the “excavation units could not be re-located and no map or specific notes of the surveyed locations from that year are currently available.” That was the extent of the archaeological survey work (or even a literature review) conducted prior to the construction of the ISFSI. There does not seem to be any evidence that any actual fieldwork took place in the vicinity of the ISFSI, prior to the construction of the ISFSI. We remain concerned that the basis of the original license documents (ER, EA) was the very limited and undocumented 1967 survey.

We have no way of knowing whether any archaeological resources were present in the ISFSI area before construction. There simply is no documentation available.

The NRC should consider all of this information when evaluating the cumulative impacts of relicensing and expanding the ISFSI.

The NRC continues to update their understanding of resource areas, to include historic and cultural resources, through coordination with the PIIC via their MOU and examination of new survey data. As discussed in Section 3.10, NSPM commissioned a Phase I Archaeological Survey that included excavation of eight subsurface test pits to an average depth of 1.8 m [6 ft] below the surface around the ISFSI perimeter (Sather, 2010; NRC, 2011c, pp. 4–39). The consulting archaeologist reported finding fragments of concrete in one of the test pits but no other artifacts. Disturbed soil was present in all but one of the test pits. NRC staff reviewed this report along with photographs taken during grading and construction of the PI ISFSI. Based on the review of these materials, it is likely that grading activities for construction of the concrete ISFSI pads removed any potential for buried archaeological deposits up to 1.8 m [6 ft] below the pad surface; however, the east-west oriented trench excavated for this purpose did not extend the full horizontal width of the ISFSI.

Because identified historic and cultural sites are located outside the ISFSI facility footprint and the proposed action would not disturb any new land, NRC staff concludes that no historic properties would be affected by the proposed license renewal. Therefore, potential impacts to historic and cultural resources as a result of the proposed action would be SMALL and, thus, would not be significant. However, there remains the potential for unreported archaeological resources to be present in subsurface contexts in portions of the ISFSI that were not completely disturbed by the original construction. NSPM has implemented the CRMP on file at the PINGP

to manage and ensure the protection of archaeological and cultural resources at the PINGP Units 1 and 2. The CRMP includes a detailed overview of existing information regarding the nature and location of known cultural and historic resources within the PINGP property, identifies which types of activities have potential to cause disturbance to these resources, and establishes procedures and practices for proper review, notification, and consultation with concerned parties prior to initiating future construction and excavation projects at the PINGP. NSPM employees are required to notify and consult with a variety of federal, state, tribal, and local agencies and entities depending on the nature and scope of planned activities and applicable laws and regulations. NSPM has agreed to maintain and implement the CRMP as long as NSPM owns or controls the plant site.

Recent archaeological field investigations indicate that there is high potential for additional unrecorded archaeological resources within the PINGP boundary. Prior to decommissioning, a decommissioning plan (including archaeological surveys) would need to be submitted to the NRC for review and approval in accordance with 10 CFR Part 72.54. NRC authorization for decommissioning would constitute a federal action under NEPA and environmental impacts to historic and cultural resources would be assessed at that time. Portions of the PI ISFSI situated beyond the horizontal extent of the central trench constructed for the existing concrete pads may not have been significantly disturbed and therefore could retain the potential for unreported and unevaluated subsurface archaeological deposits. Therefore, if decommissioning activities are determined to have potential to cause disturbance to previously undisturbed soils with potential to contain archaeological resources, then subsurface testing would be required to determine the significance of resources that may be present. Archaeological testing may also be required to determine if unreported human burials are present in accordance with Minnesota's Private Cemeteries Act (Minnesota Statute 307.08) prior to ground disturbance. Through implementation of NSPM's CRMP and compliance with federal, state, and local requirements, the potential impacts of decommissioning to historic and cultural resources could be SMALL to MODERATE depending on the results of the subsurface tests.

4.11 Public and Occupational Health and Safety

4.11.1 Nonradiological Impacts

The PI ISFSI is a passive cooling system with no moving parts. If needed, NSPM performs maintenance operations on the cask transfer equipment and other ancillary equipment in a low-radioactive dose environment when spent fuel is not being moved from the PINGP auxiliary building to the PI ISFSI (NSPM, 2011a). Normal workplace hazards associated with the ISFSI operations (i.e., moving heavy objects, working outside, and working with heavy equipment during cask transfer operations) would not change as a result of the proposed action. Preventive maintenance at the PI ISFSI would be infrequent and similar to the maintenance activities that have occurred since the ISFSI operations began. For these reasons, the NRC staff concludes that potential nonradiological impacts from maintenance operations under the proposed action would be SMALL and, thus, would not be significant.

After taking into consideration an additional 40 years of PI ISFSI operation if the license is renewed, potential nonradiological health impacts from decommissioning would be associated with moving heavy objects, working outside, working with heavy equipment during cask transfer operations, relocating spent fuel, and demolishing and dismantling the ISFSI. NSPM could implement existing operating procedures to limit these impacts and reduce the likelihood of occupational incidents. If such procedures are in place, the NRC staff concludes that

potential nonradiological impacts during decommissioning would be SMALL and, thus, would not be significant.

4.11.2 Radiological Impacts

Radiological impacts from the proposed action would result from the storage of spent nuclear fuel in sealed, heavily shielded TN-40 and TN-40HT dry casks on concrete pads that hold up to a total of 48 casks. The exterior surfaces of the casks would be decontaminated and surveyed to ensure that (i) radioactive contamination meets technical specifications prior to transfer to the ISFSI and (ii) the casks are not opened at the PI ISFSI. Thus, the only source of radiation exposure from the ISFSI is from direct and scattered neutron and gamma radiation emanating from the spent fuel stored inside each dry cask. As described in Section 1.3.1 of this draft EA, a 5.18-m [17-ft]-high earthen berm surrounding the PI ISFSI provides additional radiological shielding and visual screening from the PINGP exclusion area boundaries (NSPM, 2011a). Because the shielded casks and earthen berm limit direct radiation to the public, the scattered radiation (skyshine) from the PI ISFSI is the only means of exposure from the PI ISFSI.

As of September 2011, 29 TN-40 casks were stored at the PI ISFSI. Six TN-40HT casks were placed at the ISFSI in spring 2013. When NSPM's license limit of 48 casks is reached, there will be 19 TN-40HT casks stored at the PI ISFSI. The impact analysis included in the applicant's ER (NSPM, 2011a) assumes that 48 TN-40HT casks are stored on the two ISFSI pads and each TN-40HT cask is loaded with the design basis spent fuel, producing the maximum allowable source term value for the purpose of radiation shielding analyses. This assumption provides a conservative analysis because the source term is much greater than that of the actual fuel loading in the casks on the pad. The dose contribution from the TN-40 was evaluated in the past and remains valid because the source term is decreasing as the fuel is getting cooler.

4.11.2.1 Occupational Dose

NSPM maintains a radiation protection program for the PI ISFSI in accordance with 10 CFR Part 20 to ensure that radiation doses are as low as is reasonably achievable (ALARA). During cask transfer and storage, radiological impacts to workers directly involved in ISFSI activities will result from transferring casks from the auxiliary building to the pad and from performing radiation surveys, surveillance activities (when necessary) of the inlet and outlet vent of the casks, and routine security patrols. The actual dose may deviate from this estimate due to dose rates, time to complete tasks, or number of persons working on tasks, but actual dose monitoring is conducted in such a way that each worker's exposure associated with the PINGP, including the PI ISFSI, is less than the regulatory limit specified in 10 CFR 20.1201 of 0.05 Sv [5 rem] annually. NUREG-0713, "Occupational Radiation Exposure at NRC Licensed Facilities" (NRC, 2012), includes a compilation of occupational exposure reports from all NRC-licensed facilities. The review of these data associated with PINGP indicates exposure to all workers associated with the PINGP, including the PI ISFSI, are well below the regulatory limits in 10 CFR 20.1201.

NRC's EA (NRC, 2009) evaluated NSPM's license amendment request to allow the use of the TN-40HT casks. The EA found that, for PINGP workers not directly involved in cask handling or routine ISFSI operations, potential radiological impacts from 48 fully loaded TN-40HT casks are limited by the distance to the casks and the shielding provided by the ISFSI berm. The dose rate at the PINGP site boundary {about 110 m [361 ft] from the western edge of the PI ISFSI concrete pad} was calculated to be 2.43E-04 mSv/hr [2.43E-02 mrem/hr] when the ISFSI is fully

loaded with 48 TN-40HT casks (NRC, 2009). For PINGP workers not involved in cask handling and maintenance activities, doses attributable to the PI ISFSI would be within the required occupational dose limits specified in 10 CFR Part 20 (NRC, 2009). Licensees are required to conduct authorized operational, inspection, and maintenance activities in accordance with the occupational dose limits specified in 10 CFR 20.1201 and to have and follow a radiation protection program consistent with 10 CFR 20.1101. Therefore, the NRC staff concludes that radiological impacts to PINGP workers from the proposed ISFSI license renewal would be SMALL and, thus, would not be significant.

During decommissioning workers could receive radiological doses while removing the casks from the ISFSI pads and decontaminating and dismantling the ISFSI. However, decommissioning activities are required to be conducted in a manner to meet annual occupational radiological dose regulatory limits in 10 CFR 20.1201 and to use procedures to achieve doses that are ALARA pursuant to 10 CFR 20.1101(b). For this reason, the NRC staff concludes that radiological impacts to workers during decommissioning would be SMALL and would not be significant.

Under the 20-year renewal alternative, additional spent fuel assemblies would be loaded and spent fuel would continue to be stored at the PI ISFSI for an additional 20 years. The 20-year alternative would not result in a reduction of the amount of spent fuel PINGP Units 1 and 2 would generate. Operational inspection and maintenance of the PI ISFSI would be conducted in the same manner as for the proposed action. Annual radiological doses to workers during the 20-year alternative would be similar to those from the first 20 years of the ISFSI operation, which have been below the annual limits in 10 CFR 20.1201. Therefore, potential radiological doses to workers from the 20-year renewal alternative would be SMALL and, thus, would not be significant.

4.11.2.2 Dose to the Public

The only means of exposure to members of the public from the PI ISFSI is the scattered radiation from the PI ISFSI (skyshine) because the shielded casks and earthen berm greatly limit direct radiation to the public. The calculation of collective population dose conservatively assumes that (i) all permanent residents within the 3.22-km [2-mi] radius are located at the same distance {0.72 km [0.45 mi] from the ISFSI} as the nearest resident and (ii) all transient residents associated with the PIIC's Treasure Island Casino are 1.3 km [0.8 mi] from the PI ISFSI. The highest exposure rates to the nearest offsite permanent and transient individuals, using 48 TN-40HT casks, were calculated to be 2.42E-6 and 2.64E-7 mSv/hr [2.42E-4 and 2.64E-5 mrem/hr], respectively (NRC, 2009; NSPM, 2011a). The rapid decrease of radiation dose rate as a function of greater distance from the source results in negligible exposure for the population located farther away from the ISFSI. The highest exposure rates would occur when the last two casks are placed on the ISFSI. The radiation from the ISFSI will continually decrease due to decay of the radiation sources in the casks.

At a distance of 0.72 km [0.45 mi] from the fully loaded 48 TN-40HT casks at the PI ISFSI, the annual exposure to the nearest offsite permanent resident has been calculated to be 0.022 mSv/yr [2.20 mrem/yr] (NRC, 2009; NSPM, 2011a). This calculated annual exposure to the nearest offsite real individual from the ISFSI is below the 0.25 mSv/yr [25 mrem/yr] limit specified in 10 CFR 72.104(a) and the 1 mSv/yr [100 mrem/yr] limit in 10 CFR 20.1301(a)(1). Doses to members of the public would be further limited by the distance to the PINGP site boundary and would therefore not exceed the regulatory limits of 0.02 mSv/hr [2 mrem/hr] for external sources in 10 CFR 20.1301(a)(2) for individual members of the public. For these

reasons, the NRC staff concludes that the potential radiological impacts to members of the public as a result of the proposed action would be SMALL and, thus, would not be significant.

During decommissioning, radiological dose to members of the public would be associated with removal of the casks and relocating the spent fuel. Offsite radiological exposures would be expected to be low given the distance of the decommissioning activities to the nearest offsite resident. For this reason, the NRC staff determined that such exposures, on an annual basis, would be less than the annual dose limit in 10 CFR 20.1302. Therefore, the NRC staff concludes that the potential radiological impacts to members of the public from decommissioning the PI ISFSI after the proposed license renewal period would be SMALL and, thus, would not be significant.

Under the 20-year renewal alternative, additional spent fuel assemblies would be loaded and spent fuel would continue to be stored at the PI ISFSI for an additional 20 years. As explained in Section 4.14 of this draft EA, the NRC staff reviewed the MPUC EIS and the NSPM-provided information for the expected radiological impacts from storage of up to 98 casks (NSPM, 2008a). NSPM projects the annual dose to the nearest residence located 0.72 km [0.45 mi] from the ISFSI, where 29 TN-40 and 69 TN-40HT casks would be stored, to be no greater than 0.05 mSv/yr [5 mrem/yr]. This analysis conservatively assumes that a resident is located at this distance outside and never moves from this location for the entire year (MPUC, 2009b). The annual exposure for 98 casks in this scenario to the nearest offsite permanent resident is below the 0.25 mSv/yr [25 mrem/yr] limit specified in 10 CFR 72.104(a) and the 1 mSv/yr [100 mrem/yr] limit in 10 CFR 20.1301(a)(1). The NRC staff determines that the radiological information provided in the 2008 NSPM application to MPUC is consistent with the radiological information that NSPM provided to NRC in its 2008 PINGP license renewal application. The NRC staff considers the methodology acceptable. These calculations are bounding for the 20-year alternative. For this reason, the NRC staff concludes that annual radiological doses to members of the public during the 20-year alternative would remain below the annual limits in 10 CFR 20.1301. Therefore, potential radiological impacts to members of the public from the 20-year renewal alternative would be SMALL and, thus, would not be significant.

4.11.3 Accidents

NSPM has evaluated the potential radiological impacts resulting from a suite of postulated accidents in its Safety Analysis Report (SAR) for the PI ISFSI (NSPM, 2011b). 10 CFR 72.70(c)(6) requires NSPM to update the SAR every 24 months from the date of issuance of the license. SAR Sections 8 and A8 (NSPM, 2011b) and Section E4.4.2 of PI ISFSI license renewal application (NSPM, 2011a) provide the following accident analyses for the TN-40 and TN-40HT casks. The NRC staff evaluated the public dose estimates provided in the applicant's SAR for the TN-40 and TN-40HT casks and determined that for the proposed action there is reasonable assurance that the effects of direct radiation from the postulated accidents will be below the regulatory limits in 10 CFR 72.106(b) (NRC, 2010).

- (1) Earthquake—NSPM postulated the design basis earthquake as an extreme natural phenomenon (NSPM, 2011a,b). The design earthquake would have a peak ground acceleration of 0.12 “g” horizontal and 0.08 “g” vertical (where “g” is the gravitational acceleration). NSPM's analysis concluded that the major components of the ISFSI have been designed and evaluated to withstand the seismic forces generated by the design earthquake. Results of the analysis show that the design-basis earthquake would not cause the cask to tip over or slide, would not damage the cask, and would not compromise cask leak-tight integrity. Therefore, the design-bases earthquake would not

result in a release of radioactive materials. This conclusion is applicable to both the TN-40 and TN-40HT casks (NSPM, 2011b, Sections 8.2.1 and A8.2.1; NSPM, 2011a, Section E4.4.2.1). The NRC staff reviewed NSPM's analysis and findings (NSPM, 2011a,b) and determined that no radiological dose consequences are expected from earthquake activity (NRC, 2010).

- (2) Extreme Wind—NSPM postulated the extreme winds resulting from a design-basis tornado or from a design basis tornado missile as an extreme natural phenomenon (NSPM, 2011a,b). The design tornado would have a rotational wind velocity of 483 kilometers per hour (kph) [300 miles per hour (mph)], a forward progression of 96 kph [60 mph], and a pressure drop of 0.43 kilopascals (kPa) [3 pounds per square inch (psi)] in 3 seconds. NSPM's SAR analysis concluded that all components of the ISFSI are capable of safely withstanding tornado wind loads and tornado-generated missiles (NSPM, 2011b). Results of the analysis show that these extreme winds would not be capable of overturning or sliding the casks or damaging their seals. Therefore, tornado wind loads and tornado-generated missiles would not result in a release of radioactive materials. This conclusion is applicable to both the TN-40 and TN-40HT casks (NSPM, 2011b, Sections 8.2.2 and A8.2.2; NSPM, 2011a, Section E4.4.2.2). The NRC staff reviewed NSPM's analysis and findings (NSPM, 2011a,b) and determined that the environmental impact of a tornado and tornado-generated missile on the ISFSI would not be significant (NRC, 2010).
- (3) Flood—The surface of the PI ISFSI concrete pad is located at 211.7 m [694.5 ft] AMSL (NSPM, 2011b, Section 4.2.1). The probable maximum flood has been calculated to reach a level of 214.4 m [703.6 ft] AMSL with a water velocity of 1.9 m per second [6.2 ft per second] and wave action to a maximum level of 215.4 m [706.7 ft] AMSL (NSPM, 2011b). The casks are designed to withstand the forces developed by the probable maximum flood without damaging cask integrity, damaging cask seals, or overturning the casks. The height of the cask seals will be above the level of the probable maximum flood and associated wave action. No fuel damage or criticality is postulated to occur as a result of flooding. Therefore, the probable maximum flood would not result in a release of radioactive materials. This conclusion is applicable to both TN-40 and TN-40HT casks (NSPM, 2011b, Sections 8.2.3 and A2.8.3; NSPM, 2011a, Section E.4.4.2.3). The NRC staff reviewed NSPM's analysis and findings (NSPM, 2011a,b) and determined that no release of radioactive materials is expected from flooding activity (NRC, 2010).
- (4) Explosion—NSPM (2011a,b) postulated a transportation accident involving a jumbo barge explosion in the Mississippi River as having the worst case impact on the safe operation of the PI ISFSI. This barge explosion has been postulated to occur at a location approximately 792 m [2,600 ft] from the PI ISFSI generating an estimated pressure wave of 15.5 kPa [2.25 psi] at the ISFSI, which is a significantly smaller pressure wave than the external pressure of the TN-40 and TN-40HT casks are designed to withstand. The cask will not overturn as a result of the postulated explosion pressure wave. All other potential sources of explosion are bounded by the barge explosion. Accordingly, this event would not result in a release of radioactive materials (NSPM, 2011a, Sections 8.2.4 and A8.2.4). This conclusion is applicable to both the TN-40 and TN-40HT casks (NSPM, 2011b, Sections 8.2.5 and A8.2.5; 2011a, Section E4.4.2.4). The NRC staff reviewed NSPM's analysis and findings (NSPM, 2011a,b) and determined that no release of radioactive materials is expected from explosion (NRC, 2010).

- (5) Fire—NSPM (2011a,b) postulated the impacts of a bounding 757-L [200-gal] engulfing fire directly around the cask, with the fuel source being a ruptured fuel tank of the cask transporter transport vehicle. NSPM postulated that 757 L [200 gal] of fuel would sustain an engulfing fire for about 12 minutes, but analyzed a 15-minute engulfing fire around the cask. The containment of the casks will be assured as long as the metallic lid seals remain below 299 °C [570 °F] for the TN-40 cask and 280 °C [536 °F] for the TN-40HT cask and the cavity pressure is less than 689 kPa [100 psi] for both casks.

The thermal analysis for the fire accident conditions shows that the TN-40 and TN-40HT casks would withstand the hypothetical fire accident event without compromising the containment integrity. Therefore, the postulated fire would not result in a release of radioactivity or associated dose. This conclusion is applicable to both the TN-40 and TN-40HT casks (NSPM, 2011b, Sections 8.2.5 and A8.2.5; 2011a, Section E4.4.2.5). Even in the unlikely event of total loss of the neutron shield, the site boundary accident dose rates would continue to be below 10 CFR 72.106(b) limits. The NRC staff reviewed NSPM's analysis and findings (NSPM, 2011a,b) and determined that no release of radioactive materials is expected from fire (NRC, 2010).

- (6) Inadvertent Loading of a Newly Discharged Fuel Assembly—NSPM (2011a,b) postulated the inadvertent loading of an assembly not intended for storage in the storage canister with a heat generation rate exceeding the design basis. To preclude this postulated accident from going undetected and to ensure that it can be rectified before the casks are sealed, NSPM requires a final verification of the assemblies loaded into the casks and a comparison with fuel management records to ensure that the loaded assemblies do not exceed any of the specified limits. Appropriate actions are taken to ensure that an erroneously loaded fuel assembly does not remain undetected. Therefore, the storage of a fuel assembly with a heat generation exceeding the maximum allowable heat generation rate is not considered credible in view of the multiple administrative controls in place, and no doses are postulated for this accident. This conclusion is applicable to both the TN-40 and TN-40HT casks (NSPM, 2011b, Sections 8.2.7 and A8.2.7; 2011a, Section E.4.4.2.6). The NRC staff reviewed NSPM's multiple controls in place (NSPM, 2011a,b) and determined that no release of radioactive materials is expected from this event (NRC, 2010).
- (7) Cask Seal Leakage—The storage casks feature redundant seals in conjunction with an extremely rugged body design (NSPM, 2011a,b). The sintered fuel pellet matrix and the zircaloy cladding that surrounds the fuel pellets provide additional barriers to the release of radioactivity. Furthermore, the gaps between the seals are pressurized in excess of the cask cavity pressure. The pressure between the seals is monitored in real-time for any failure of the inner or outer seal. Therefore, no credible mechanisms that could result in leakage of radioactive products have been identified (NSPM, 2011a,b). Nevertheless, a loss of the storage cask confinement capability NSPM postulated is presented in Item 9 in this list (NSPM, 2011a,b). This conclusion is applicable to both the TN-40 and TN-40HT casks (NSPM, 2011b, Sections 8.2.7 and A8.2.7; 2011a, Section 4.4.2.7).
- (8) Hypothetical Cask Drop Accident—NSPM (NSPM, 2011a,b) evaluated the cask under a bottom end impact on the PI ISFSI storage pad after a drop from a height of 46 cm [18 in], which is a postulated impact event that is extremely unlikely to occur. The storage pad is the hardest concrete surface outside of the containment building. Because the cask is determined to be structurally sound after drop from a height of

46 cm [18 in] and the worst case load produced by road conditions beyond those allowed by specifications would place the bottom of the cask at a height of 35.56 cm [14 in] (NSPM, 2011b, Section 4.3.3), NSPM evaluated the impact of such an event on the cask body, lid bolts, and basket and concluded that a cask drop would not breach the cask confinement barrier and would not result in a release of radioactive material or any resultant dose. This conclusion is applicable to both the TN-40 and TN-40HT casks (NSPM, 2011b, Sections 8.2.8 and A8.2.8; NSPM, 2011a, Section E.4.4.2.8). Even in the unlikely event of total loss of the neutron shield, dose calculations under this scenario show that the site boundary accident dose rates would continue to be below 10 CFR 72.106(b) limits (NSPM, 2011b, Sections 8.2.8.3 and A8.2.8.3). The NRC staff reviewed NSPM's analysis and findings (NSPM, 2011a,b) and determined that no radiological dose consequences are expected from cask drop accident (NRC, 2010).

- (9) Loss of Confinement Barrier—For the TN-40 cask, loss of the confinement barrier was not considered to be credible in the PI ISFSI SAR (NSPM, 2011b), but was hypothesized solely to demonstrate the inherent safety of the PI ISFSI by subjecting it to a set of simultaneous multiple failures, any of which is far beyond the capability of natural phenomena or man-made hazards to produce. The analyses in the SAR calculated the radiological consequences of a release of the entire gaseous inventory in a cask containing 40 fuel assemblies. All of the krypton-85 gas was conservatively assumed to be instantaneously released from the TN-40 cask. The analyses found the dose at the site boundary for the hypothetical loss of the spent fuel cask confinement barrier would remain within the 0.05 Sv [5 rem] criteria in 10 CFR 72.106(b). Similar conservative analyses for TN-40HT indicated dose values are well below the limiting offsite doses defined in 10 CFR 72.106(b) (NSPM, 2011a,b). The NRC staff reviewed NSPM's analysis and findings (NSPM, 2011a,b) and determined that no radiological dose consequences are expected from loss of confinement barrier (NRC, 2010).

The accident analyses summarized in the previous list bound cask performance throughout the proposed 40-year period of extended operation of the ISFSI (the proposed action) (NSPM, 2011a). Either dose consequences are not expected or the accident dose rates for the accident scenarios analyzed in the SER, for both the TN-40 and TN-40HT casks, are below the 10 CFR 72.106 regulatory limits. Therefore, the NRC staff concludes that the environmental impact of these accident scenarios would be SMALL and, thus, would not be significant.

4.12 Waste Management

As previously described in Sections 1.3.3 and 4.4 of this draft EA, the dry spent fuel storage casks used at the ISFSI emit no gaseous effluents and there are no ventilation or off-gas systems. NSPM maintains the cask transport vehicle inside the Equipment Storage Building located within the dry cask storage facility (Figure 1.3-5). Small amounts of wastes, such as ethylene glycol (antifreeze) or drips of lubricating fluid produced as a result of cask transport vehicle maintenance, would be cleaned up and disposed of at appropriate PINGP facilities (see Section 4.6 of this draft EA). Other waste generated at the PI ISFSI includes small amounts of cleaning and maintenance waste products (NSPM, 2011a). In its application, NSPM also noted that no sanitary sewage is produced at the PI ISFSI (NSPM, 2011a, Section E2.1.2.1).

Fuel handling, cask loading, and decontamination of the casks take place within the PINGP auxiliary building. The NRC evaluated potential impacts from these activities that occur within the PINGP auxiliary building during the license renewal SEIS. No fuel handling facilities are

associated exclusively with the ISFSI (NSPM, 2011a). Typical wastes generated as a result of cask loading operations and transfer cask decontamination may be liquid (from decontamination of transfer cask), gaseous (from loading and seal welding the storage cask), and/or solid (from protective clothing utilized and all tools and material used during a loading and transfer campaign). NSPM's existing onsite waste processing systems manage these wastes. These waste processing systems are not located within the PI ISFSI. Contaminated pool water removed during the loading of dry storage casks is normally drained back into the spent fuel pool, and this liquid, combined with liquid wastes from decontamination of storage casks, is directed to the power plant liquid waste processing system. During loading campaigns, separate from continued ISFSI operation, small quantities of low-level solid radioactive waste generated during the loading and transfer cask decontamination are processed by compaction using the power plant solid waste processing system. This low-level radioactive waste consists of disposable Anti-C garments, tapes, and decontamination cloths, among other things (NSPM, 2011a). The NRC staff concludes that the potential impacts of the proposed action on waste management would be SMALL and, thus, would not be significant.

After taking into consideration an additional 40 years of PI ISFSI operation if the license is renewed, decommissioning would result in short-term waste impacts due to the temporary activities associated with relocating the spent fuel currently stored at the PI ISFSI. Decommissioning wastes could be generated as a result of removal of the concrete pads, fencing, and the earthen berm around the ISFSI. Once ISFSI structures are removed, the ISFSI area would be backfilled, graded, and landscaped. Due to the leak-tight design of the storage casks, no radioactive waste would be generated by decommissioning activities (NSPM, 2011a).

The TN-40 and TN-40HT casks are designed to reduce waste management requirements (NSPM, 2011a). The TN-40 cask is certified for transportation. For any spent fuel that may need to be repackaged prior to shipping, the waste produced during decommissioning would be only that required to decontaminate the casks once the spent fuel was removed. NSPM expects that the remaining casks and associated materials will be slightly radioactive due to their long-term exposure to the relatively small neutron flux from the storage of spent fuel, the resultant waste materials would be below the allowable limits for release of the casks as noncontrolled material (NSPM, 2011a). However, the Industry Spent Fuel Handbook (Electric Power Research Institute, 2010) suggests that it is possible that the metal components would become radioactive and may need to be disposed of as low-level radioactive waste. NSPM would handle these potential low-level radioactive wastes according to regulatory requirements and doses to workers and the public would be below regulatory limits. Therefore, the NRC staff concludes that the potential impacts of decommissioning on waste management would be SMALL and, thus, would not be significant.

4.13 Environmental Justice

Through NRC's license renewal application review, consultation with the PIIC as a cooperating agency, and the applicant's responses to NRC's environmental RAIs, the NRC staff described potential impacts of the proposed action that could disproportionately impact population groups of concern as identified in Section 3.12 of this draft EA. In the majority of its assessment, the NRC staff used data from the USCB as provided in Sections 3.3 and 3.12 of this draft EA and verified data with the PIIC. Where the NRC staff used different analytical methods or additional information for the analysis, the sections include explanatory discussions and citations for those sources.

With respect to evaluating the proposed action's impact on environmental justice, the PIIC requested that the following information be considered (PIIC, 2012a, 2013b):

As discussed above, the Tribe's view is that the PINGP and ISFSI are NOT separate installations. One exists because of the other; they are both part of the same whole.

Most members of the PIIC believe that the PINGP was built at its location because, at that time, the Tribe was in no position to fight it. In the late 1960s members of the tribe were quite poor and totally disenfranchised. The City of Red Wing fully supported the \$200 million project, as the city would benefit tremendously from it. The city annexed a large area of land that included the PINGP site (exclusive of the PIIC, although its reservation boundaries are within the annexed area) so that the PINGP would become part of its tax base. Jobs were promised, but very few Tribal Members have ever worked at PINGP 1 and 2. Moreover, the ISFSI was developed in order to keep the PINGP 1 and 2 operational (and the jobs in Red Wing).

Most Tribal Members believe that the spent fuel from the PINGP will never leave Prairie Island. Each day the "temporary" waste storage at PINGP 1 and 2 becomes more permanent. To fully understand the Tribe's viewpoint one must go back to the early 1990s when NSPM first requested approval for short-term, on-site storage.

During the initial on-site dry cask licensing process in the early 1990s, the PIIC expressed its concerns regarding the long-term storage of spent fuel in dry casks and the possibility that the waste would never leave Prairie Island. We were told then that the ISFSI was to be an interim or temporary solution, to keep the PINGP operating (and thereby save jobs in the Red Wing area) until the national repository, Yucca Mountain, could begin accepting waste. The probability that the waste will leave during the lifetime of those Tribal members and leaders who fought against interim or temporary storage is close to zero.

Minnesota law requires approval from the Public Utilities Commission (PUC) and the State Legislature before a utility can use on-site dry cask storage. During the process to evaluate NSPM's application for a Certificate of Need (CON) for the PI dry cask storage facility (by the PUC), hearings were held before Administrative Law Judge Allan Klein in November and December 1991. In April 1992, Judge Klein recommended that the PUC deny the CON, stating:

"The likelihood that the dry cask storage would become permanent is so great that it is appropriate to require legislative authorization if the project must go forward immediately."

The PUC nevertheless rejected Judge Klein's recommendations and ruled that NSPM could store the waste, though the Minnesota Legislature reduced the number of casks allowed from 48 to 17 (NSPM initially sought a CON for 48 dry casks). Subsequent Legislative Action in 2003 increased the cask limit to 29 casks. In 2010 the PUC approved NSPM's CON for an additional 35 casks, increasing the limit to 64 casks. An additional 34 casks will be needed if the PINGP is decommissioned in 2034, which would bring the total to 98 casks of

spent nuclear fuel on Prairie Island. We have no way of knowing whether NSPM will seek to relicense the PINGP for another 20-year term. However, the Waste Confidence Generic EIS (currently under development) contemplates a second 20-year renewal term. Another 20 years of operation would result in another 1299 spent fuel assemblies being produced at the PINGP, requiring an additional 32 casks (130 total casks).

The 1992 legislative hearings for the PI ISFSI were highly contentious and divisive. It is highly doubtful that NSPM would have received state approval then if legislators believed that the waste would be on site indefinitely (as it should be considered in the absence of a National repository).

Most recently, the US Court of Appeals vacated the NRC's WCD and Temporary Storage rule. Spent nuclear fuel poses a dangerous, long-term health and environmental risk (see Public and Occupational Health and Safety Sections 3.11 and 4.11).¹ It will remain dangerous "for time spans seemingly beyond human comprehension."² Despite years of "blue ribbon" commissions, congressional hearings, agency reports, and site investigations, the United States has not yet developed a permanent solution for disposing spent nuclear fuel envisioned and required by the Nuclear Waste Policy Act.³ That failure, declared the Blue Ribbon Commission on America's Nuclear Future, is the "central flaw of the U.S. nuclear waste management program to date."⁴

Spent nuclear fuel is currently stored on site at the PI ISFSI and other nuclear plants because of the government's failure to establish a permanent repository for spent fuel. In the meantime, as the Court of Appeals for the District of Columbia Circuit observed, "[t]his type of storage, optimistically labeled 'temporary storage,' has been used for decades longer than originally anticipated. The delay has required plants to expand storage pools and to pack spent nuclear more densely within them. The lack of progress on a permanent repository has caused considerable uncertainty regarding the environmental effects of temporary spent nuclear fuel storage and the reasonableness of continuing to license and relicense nuclear reactors."⁵ The irony that we are now working through the 40-year license renewal process for a "temporary" facility originally licensed for 20 years cannot be overlooked.

The Court's finding that temporary storage "has been used for decades longer than originally anticipated" is the focus of the PIIC's concerns. The PIIC believes that the prospect that spent nuclear fuel will be stranded onsite indefinitely is very real, and that the current regulatory framework doesn't

¹"At massive levels, radiation exposure can cause sudden death." *Nuclear Energy Inst. v. EPA*, 373 F.3d 1251, 1258 (D.C. Cir. 2004) (internal citations omitted). Even "[a]t lower doses, radiation can have devastating health effects, including increased cancer risks and serious birth defects such as mental retardation, eye malformations, and small brain or head size." *Ibid* at 1258.

²*New York v. NRC*, 681 F.3d 471, 474 (D.C.Cir. 2012) citing *Nuclear Energy Inst., Inc. v. Env'tl.Prot.Agency*, 373 F.3d 1251, 1258 (D.C.Cir 2004) (per curiam). Spent nuclear fuel must be contained from the environment for tens of thousands of years.

³*Ibid*, 681 F.3d at 474.

⁴*Ibid*, citing Blue Ribbon Commission on America's Nuclear Future, Report to the Secretary of Energy 10-11 (2012) at 27.

⁵*Ibid*.

adequately account for that fact. For example, the regulatory scheme for spent nuclear fuel is compartmentalized into storage and transportation, Parts 72 (licensing requirements for the independent storage of spent nuclear fuel) and 71 (packaging and transportation of radioactive material), respectively. The regulatory compartmentalization may have made sense when the duration of onsite storage was anticipated to be no more than a decade or two. However, considering the possibility that spent nuclear fuel may remain onsite indefinitely, this artificial regulatory compartmentalization may preclude a full and complete analysis of the potential adverse health and environmental impacts.

For example, there is still considerable uncertainty regarding the long-term effects of high burn up fuel during extended dry cask storage, including unresolved concerns associated with degradation of fuel assemblies and internal cask components and cladding. Potential problems are less likely to occur during the proposed extended license term (i.e., up to 40 years), but beyond that term there is far more uncertainty. As a result, the potential transportation of these casks will become more problematic the longer the spent nuclear fuel is stored onsite.

The PIIC fears that by the time a detailed analysis of the potential health, safety and environmental risks associated with the transportation of the casks off Prairie Island is conducted for periods of time beyond the proposed extended license term (i.e., in 50, 100, or 200 or more years), the risks associated with transportation will be greater than the risks of continued onsite storage, leaving the spent nuclear fuel stranded at the PI ISFSI indefinitely. The potential risks and adverse environmental impacts of storage beyond the proposed license term and subsequent transportation must be fully explored now. To defer rigorous environmental impact analysis to some unknown point in the future is meaningless. NSPM will continue to load and store up to 64 dry casks during the first 20 years of the proposed extended license term, with an additional 34 casks needed if the PINGP is decommissioned in 2034. What good would it do to fully analyze the potential risks and adverse environmental impacts of indefinite storage or transportation until after 98 casks—more than 2500 tons of nuclear waste according to NSPM's estimate—are already placed at the PI ISFSI? Deferring the analysis of long-term storage and transportation risks and potential adverse environmental impacts for 40 or more years, and thereby allowing the generation and storage of even larger quantities of nuclear waste in the interim, is like trying to unring a bell after it's been rung. It simply can't be done.

The PI ISFSI is located right next to the PIIC Reservation, a mere 600 yards away from the nearest homes, and less than 1.6 km [1 mi] from various community buildings and the Tribe's gaming enterprise. Prairie Island is the PIIC's only homeland, the land promised to the Community by the US government. The PIIC cannot simply relocate to another place, somewhere away from the nuclear waste dump that has been established next door.

The NRC staff evaluated whether the minority and low-income populations could experience disproportionately high and adverse human health and environmental effects from the proposed action. As discussed in Section 3.12 of this draft EA, the NRC staff found significant differences in minority populations, mostly American Indians and Native Alaskans, between census tract 802, block group 6 and the state minority population. In addition, the NRC staff identified

unique cultural ties between the PIIC and the PINGP site. Through its review of NSPM's ER, its own research of census data, information the PIIC provided the NRC staff as part of the MOU, and comments the City of Red Wing provided NRC on the proposed action, the NRC staff identified communities with unique characteristics that would make them susceptible to disproportionately high and adverse impacts. Due to its close proximity to PINGP Units 1 and 2, the PIIC could be disproportionately affected.

To perform this environmental justice assessment of impacts, the NRC staff: (i) reviewed REMP's, NSPM's SAR, and NRC's SERs and EAs to identify all potentially significant pathways for human health and environmental effects, (ii) determined the impact of each of those potentially significant pathways for populations within the identified census block groups and populations not identified with particular census block groups, and (iii) determined whether or not there were any unique characteristics or practices among the minority or low-income populations identified that would result in a disproportionately high and adverse impact on minority or low-income people within each census block group (via consultations with the PIIC and review of the City of Red Wing's comments on the proposed action). Additionally, the NRC staff considered whether (i) the radiological or other health effects were significant or above generally accepted norms, (ii) the risk or rate of hazard were significant and appreciably in excess of the general population, and (iii) whether the radiological or other health effects occur in groups affected by cumulative or multiple adverse exposures from environmental hazards. Although all resource areas were reviewed, these NRC efforts resulted in identification of the following pathways and impacts with the potential to disproportionately affect the environmental justice groups:

- Nonradiological health impacts potentially affecting populations living in close proximity to the PI ISFSI site (see draft EA Section 4.11.1)
- Radiological health impacts potentially affecting populations living in close proximity to the PI ISFSI site (see draft EA Sections 4.11.2.2 and 4.11.3)
- Cultural impacts potentially affecting the PIIC due to the community's ancestral connections to the PI ISFSI site (see draft EA Section 4.10)

The NRC staff determined, in the Public and Occupational Health and Safety sections of this draft EA (Sections 3.11 and 4.11), that the level of potential nonradiological impacts and radiological doses to the public from the proposed action would be within the NRC regulatory limits and applicable federal, state, and local regulatory limits. Different segments of the population, including minority or low-income population would not be affected differently by continued operations of the PI ISFSI. In addition, the proposed action would not yield any pathways that could lead to adverse impacts on population groups of concern.

The NRC staff considered whether (i) there is an impact on the natural or physical environment that significantly and adversely affects a particular group, (ii) there are any significant adverse impacts on a group that appreciably exceed or [are] likely to appreciably exceed those on the general population, and (iii) environment effects occur in groups affected by cumulative or multiple adverse exposure from environmental hazard. The NRC staff found that the presence of the PI ISFSI on PIIC ancestral lands, as described in Section 3.12.2 of this draft EA, may have a disproportionate effect on the PIIC. In addition, the NRC staff acknowledges that because of its proximity to the plant and the uniqueness of the community, there is the potential for the PIIC to be disproportionately affected by the continued operation of PINGP 1 and 2 (NRC, 2011c). The land occupied by the PI ISFSI is not accessible to the PIIC, and past

impacts to culturally important sites (e.g., prior destruction of burial mounds, placement of fill/spoils on top of a burial mound) have had an impact on the PIIC. Archaeological evidence described in Section 3.10 of this draft EA, including village sites and burial mounds, conclusively demonstrates that Prairie Island has been a place of historical and cultural significance for thousands of years.

In light of the PIIC's input, NRC staff considered impacts from ISFSI expansion to accommodate up to 98 casks. NRC considered the placement of up to 98 casks as part of the cumulative analysis of this draft EA (see Section 4.14). Expansion of the ISFSI would require that an application and ER be submitted to the NRC for review and approval of the proposed action. Once the application and ER are submitted to the NRC, staff would conduct a thorough assessment of both safety implications and impact to the environment.

The NRC staff concluded that offsite health and environmental impacts from the proposed action would be SMALL. The NRC staff did not identify any studies, reports, or anecdotal evidence to suggest otherwise. NRC staff found no environmental pathway (e.g., subsistence consumption) that would physiologically affect minority or low-income populations differently from other segments of the general population should the PI ISFSI be expanded. Annual REMP prepared specifically for the PI ISFSI indicates that all radiological levels are below regulatory limits. The PI ISFSI is a passive system that doesn't produce any liquid or gaseous discharges (effluents). Consequently, no disproportionately high and adverse human health impacts would be expected in special pathway receptor populations in the region as a result of subsistence consumption of fish and wildlife. Moreover, the NRC staff's assessment generated no indication of any unique characteristics or practices among minority or low-income populations in the region that could lead to disproportionately high and adverse health and environmental impacts. Based on the potential environmental impacts from continued operation of the PI ISFSI during the license renewal period, which are not significant (SMALL), the NRC staff concludes that there would be no disproportionately high and adverse impacts to the PIIC or any other minority and low-income populations.

The NRC staff concludes that environmental impacts on all resource areas from decommissioning the existing ISFSI after the proposed license renewal period would be SMALL, with the exception of potential impacts on cultural and historic resources, which could be SMALL to MODERATE depending on the results of the subsurface tests (see Section 4.10 of this draft EA). As described in Section 4.10, NSPM employees are directed under the CRMP to notify and consult with a variety of federal, state, tribal, local agencies and entities depending on the nature and scope of planned activities and applicable laws and regulations. Because a decommissioning plan would be developed consistent with applicable regulations and submitted for NRC review and approval, NRC staff expects that decommissioning activities will be conducted in accordance with the CRMP and federal, state, tribal, and local agencies and entities. In light of the available information, NRC staff concluded that potential socioeconomic impacts within the ROI from decommissioning the ISFSI would be SMALL and would not be significant because the 20 additional workers needed to support ISFSI decommissioning would not appreciably affect the overall socioeconomic characteristics of the area. There is no evidence that impacts from decommissioning would be disproportionately high and adverse on minority or low-income populations or to communities with unique characteristics or practices. Moreover, the NRC staff's assessment generated no indication of any unique characteristics or practices among minority or low-income populations in the region that could lead to disproportionately high and adverse health impacts. NSPM has agreed to maintain and implement the CRMP as long as NSPM owns or controls the plant site. Therefore, the NRC staff concludes that there would be no disproportionately high and adverse impacts on

population groups of concern or on minority and low-income populations from decommissioning the PI ISFSI after the proposed license renewal period.

4.14 Cumulative Impacts

The Council on Environmental Quality regulations implementing NEPA define cumulative effects as “the impact on the environment which results from the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). The NRC staff evaluated whether cumulative environmental impacts could result from the incremental impact of the proposed action when added to the past, present, or reasonably foreseeable future actions in the area. For the purposes of this analysis, past actions are those related to the resources at the time of the PI ISFSI licensing and construction, present actions are those related to the resources at the time of current operation of the PI ISFSI, and future actions are considered to be those that are reasonably foreseeable through the end of the PI ISFSI operation including the proposed action. Therefore, the analysis considers potential impacts through the end of the current license term as well as the proposed 40-year PI ISFSI renewal license term. The geographic area over which past, present and future actions would occur is dependent on the type of action considered and consistent with the affected area described for each resource in Chapter 3 of this draft EA. Actions considered in this cumulative impact include the license renewal for PINGP Units 1 and 2; Lock and Dam 3 navigation safety and embankment improvements on the Mississippi River; the replacement of PINGP Unit 2 steam power generators; and the potential expansion of the PI ISFSI (NSPM, 2013a; NRC, 2011c).

The NRC staff recognized that NSPM had expressed an interest in pursuing a power uprate for PINGP Units 1 and 2 (NRC, 2011c, Section 4.11) during the NRC staff review of the PINGP license renewal. Since that time, NSPM has decided not to request a power uprate (NSPM, 2013a).

In the PINGP license renewal SEIS (NUREG–1437, Supplement 39, NRC, 2011c), the NRC staff evaluated the potential environmental impacts of an additional 20 years of operation. In addition, refurbishment activities, including steam generator replacement and maintenance activities (e.g., refueling, pipe replacement) were evaluated. NSPM began to replace the PINGP Unit 2 steam power generators in the fall of 2013 to support plant operations through the renewed PINGP license period (NSPM, 2013a; NRC, 2011c). As discussed in the PINGP license renewal SEIS, the steam generator replacement activities are expected to take approximately 80 days to complete. An additional 750 workers are estimated to complete the combined maintenance and refueling outage (NRC, 2011c). The steam generators are expected to be moved via a self-propelled transporter to a temporary building, which will house the replacement steam generators until they are ready for installation. No onsite road improvements would be required to offload the steam generators. Several additional temporary buildings will be constructed which may include office space for construction contractors and a decontamination building. Warehouses may be also built for storage purposes during the steam generator replacement. No construction will take place on previously-undisturbed land (NRC, 2011c). In its response to NRC’s environmental RAs, NSPM stated that construction of temporary buildings and a warehouse have been completed, and that the parking lot will be expanded during the summer of 2013 (NSPM, 2013a). None of the construction activities are planned outside of the areas that have already been disturbed by other projects, and all activities would occur within the PINGP site boundary (NSMP, 2013a).

As explained in Section 1.4 of this draft EA, MPUC issued NSPM a CON in December 2009 authorizing NSPM to expand of the PI ISFSI to store up to 64 casks. NSPM plans to install two 5.5-m-wide by 66-m-long by 1-m-deep [18-ft-wide by 216-ft-long by 3-ft-deep] concrete pads, each 0.9 m [3 ft] thick, and plans to store up to 64 casks by the end of year 2031 (NSPM, 2013a). Each concrete pad can hold up to 12 casks. NSPM stated that the expansion would include excavating the new pad area, trenching the new duct bank path, pouring the new concrete pad and duct bank, and replacing the structural fill (NSPM, 2013a). The new pads would be installed immediately adjacent and south of the existing pads within the ISFSI security and nuisance fences (MPUC, 2009a). In its MPUC CON application, NSPM stated that if additional concrete pads were installed north and south of the existing concrete pads, the PI ISFSI could accommodate a total of 100 casks without having to change the security perimeter (NSPM, 2008a, p. 3A–12). In their role as a cooperating agency, the PIIC recommended that the NRC staff consider the potential expansion of the PI ISFSI to accommodate up to 98 casks. As part of the cumulative analysis for this draft EA NRC considered the placement of up to 98 casks. This action would require that an application and ER be submitted to the NRC for review and approval of the proposed action. Once an application is submitted to the NRC, staff will conduct both a safety and environmental review. The PINGP Units 1 and 2 operating licenses will expire in years 2033 and 2034, respectively. In their 2008 MPUC CON application, NSPM stated that 3,895 spent fuel assemblies would be expected to be produced by the end of 2034 (NSPM, 2008a, pp. 3–10). Assuming 40 assemblies per cask and adequate cooling (see Section 1.3.2 of this draft EA), a total of 98 casks could be needed and placed in the PI ISFSI.

The PIIC’s text included in this section considers past activities at the PI ISFSI and the cumulative and integrated impacts on the Tribe, its people, and its lands (PIIC, 2013b). The following discussion is provided by the PIIC (PIIC, 2013b):

Spent nuclear fuel is currently stored on site at the PI ISFSI and other nuclear plants because of the government’s failure to establish a permanent repository for spent fuel. In the meantime, as the Court of Appeals for the District of Columbia Circuit observed, “[t]his type of storage, optimistically labeled ‘temporary storage,’ has been used for decades longer than originally anticipated. The delay has required plants to expand storage pools and to pack spent nuclear more densely within them. The lack of progress on a permanent repository has caused considerable uncertainty regarding the environmental effects of temporary spent nuclear fuel storage and the reasonableness of continuing to license and relicense nuclear reactors.”⁶

The Court’s finding that temporary storage “has been used for decades longer than originally anticipated” is the focus of the PIIC’s concerns. The PIIC believes that the prospect that spent nuclear fuel will be stranded onsite indefinitely is very real, and that the current regulatory framework doesn’t adequately account for that fact. For example, the regulatory scheme for spent nuclear fuel is compartmentalized into storage and transportation, Parts 72 (licensing requirements for the independent storage of spent nuclear fuel) and 71 (packaging and transportation of radioactive material), respectively. The regulatory compartmentalization may have made sense when the duration of onsite storage was anticipated to be no more than a decade or two. However, considering the possibility that spent nuclear fuel may remain onsite indefinitely, this artificial

⁶*New York v. NRC*, 681 F.3d 471, 474 (D.C.Cir. 2012).

regulatory compartmentalization may preclude a full and complete analysis of the potential adverse health and environmental impacts.

For example, there is still considerable uncertainty regarding the long-term effects of high burn up fuel during extended dry cask storage, including unresolved concerns associated with degradation of fuel assemblies and internal cask components and cladding. Potential problems are less likely to occur during the proposed extended license term (i.e., up to 40 years), but beyond that term there is far more uncertainty. As a result, the potential transportation of these casks will become more problematic the longer the spent nuclear fuel is stored onsite.

The PIIC fears that by the time a detailed analysis of the potential health, safety and environmental risks associated with the transportation of the casks off Prairie Island is conducted for periods of time beyond the proposed extended license term (i.e., in 50, 100, or 200 or more years), the risks associated with transportation will be greater than the risks of continued onsite storage, leaving the spent nuclear fuel stranded at the PI ISFSI indefinitely. The potential risks and adverse environmental impacts of storage beyond the proposed license term and subsequent transportation must be fully explored now. To defer rigorous environmental impact analysis to some unknown point in the future is meaningless. NSPM will continue to load and store up to 64 dry casks during the first 20 years of the proposed extended license term, with an additional 34 casks needed if the PINGP is decommissioned in 2034. What good would it do to fully analyze the potential risks and adverse environmental impacts of indefinite storage or transportation until after 98 casks—more than 2,500 tons of nuclear waste according to NSPM's estimate—are already placed at the PI ISFSI? Deferring the analysis of long-term storage and transportation risks and potential adverse environmental impacts for 40 or more years, and thereby allowing the generation and storage of even larger quantities of nuclear waste in the interim, is like trying to unring a bell after it's been rung. It simply can't be done.

If the PI ISFSI license is renewed, up to 48 casks with spent fuel generated at PINGP Units 1 and 2 would continue to be stored at the PI ISFSI for up to 40 years beyond the original licensing period of 20 years. In addition, NSPM's original ISFSI license has been modified to allow storage of higher initial enrichment and higher burnup fuel at the PI ISFSI. NRC (2010) evaluated the storage of higher initial enrichment and higher burnup fuel at the PI ISFSI during the original licensing period, and NRC staff is conducting a safety review the PI ISFSI for this proposed license renewal (up to 40 more years) in a separate SER. In light of the PIIC's concerns for potential future ISFSI expansion up to 98 casks, the PIIC and NRC worked together to identify and evaluate potential impacts to the resource areas identified in the MOU as part of the cumulative impact analysis of this draft EA. NRC also considered the ISFSI expansion in the remaining resource areas not included in the MOU between the PIIC and NRC as part of the cumulative impact analysis. The NRC staff cannot project with certainty the details of a potential expansion; however, if the current ISFSI were to be expanded, NRC would require that an application and ER be submitted to the NRC for review and approval of the proposed action. Once the application and ER are submitted to the NRC, staff would conduct a thorough assessment of both safety implications and impacts to the environment.

The WC Decision and Rule is a part of the environmental analysis for agency decisions on the licensing and relicensing of nuclear reactors and ISFSIs. In response to the United States Court of Appeals for the District of Columbia Circuit [*New York v. NRC*, 681 F.3d 471 (D.C. Cir. 2012)]

ruling that vacated the NRC's WC Decision and Rule Update, the Commission, determined that it would not issue licenses dependent upon the WC Rule until the issues identified in the Court's decision are appropriately addressed. In addition, the Commission directed the NRC staff to proceed with a rulemaking that includes the development of an EIS to support an updated WC Decision and Rule. The updated rule and supporting GEIS will provide the necessary NEPA analyses of waste-confidence-related environmental issues.

Cumulative Impacts on Land Use

For the purposes of this analysis, the geographic area considered includes the PINGP Units 1 and 2 and 8 km [5 mi] around the PINGP site. Land use impacts from the construction and operation of the PI ISFSI were addressed in the original PI ISFSI licensing EA (NRC, 1992) and were determined to be minimal because operation the ISFSI would occur on land that had already been cleared, excavated, and graded during the PINGP construction. As discussed in Section 4.10 of this draft EA, all activities related to continued operation of the PI ISFSI would occur within the industrial footprint of the site involving existing structures and roads.

During the PINGP license renewal environmental review, NRC staff did not identify any new and significant information (NRC, 2011c) regarding land use and determined that there would be no impacts related to these issues beyond those discussed in the NUREG-1437 GEIS (NRC, 2011c). Steam generator replacement activities consist of installing temporary buildings for construction contractors, to house the generators before replacement, etc. (NRC, 2011c). These activities would occur within the industrial footprint of the site. Regarding the potential expansion of the ISFSI, NSPM plans to install two concrete pads to store up to 64 casks (NSPM, 2013a). The new pads would be installed immediately adjacent and south of the existing pads within the ISFSI security and nuisance fences (MPUC, 2009a). The potential expansion of the ISFSI, to store 64 or 98 casks, would occur on land which had already been cleared and graded during PINGP construction and within the industrial footprint of the site. Therefore, the NRC staff concludes that the PI ISFSI expansion to store either 64 or 98 casks would not change the ISFSI's industrial land use and any land disturbance would occur within previously disturbed industrial areas at PINGP and the PI ISFSI. Therefore, the PI ISFSI expansion would not have a significant incremental contribution to land use cumulative impacts.

The following discussion is provided by the PIIC (PIIC, 2013c):

The analysis [i.e., this draft EA] includes the current land use of the PINGP and PI ISFSI site, but does not address how the land use of the PIIC or other neighbors might change if the PI ISFSI is allowed to expand and become a *de facto* permanent storage site. One catastrophic incident at the PINGP or PI ISFSI, or even a near-miss incident, could significantly alter the land use of the PINGP and PI ISFSI neighbors.

The PIIC questions the usefulness of the land use impacts analysis in the 1992 EA relative to today's land use impacts, not to mention land use impacts in the foreseeable future. When the ISFSI was originally licensed, no one ever imagined that we, as a nation, would be contemplating storage periods of up to one hundred years or longer.

According to the September 13, 2013 Federal Register Notice regarding the issuance of a draft Generic Environmental Impact Statement (GEIS) and proposed rule codifying the GEIS in 10 CFR 51.23. Paragraph (a) of 10 CFR 51.23 will be

revised to state “it is feasible to safely store spent nuclear fuel beyond the licensed life for operation of a reactor and to have a mined geologic repository within 60 years following the licensed life of a reactor.” In the case of the PINGP ISFSI, this would be by 2094. The proposed rule does not and cannot state that there will be a repository within 60 years following the licensed life of a reactor, merely that it is feasible to have one within that timeframe.

It is not clear whether the proposed action in the Waste Confidence GEIS and rulemaking has been fully considered in this action (i.e., ISFSI renewal). While the Waste Confidence Rule is not a licensing decision in and of itself, the rule undergirds the PI ISFSI licensing action. That the revised Waste Confidence GEIS and Rule are proceeding in tandem with this EA and the relicensing of the PINGP ISFSI won't be final until the Waste Confidence Rule is final should be noted.

Although the Waste Confidence GEIS is not final at this time and the conclusions may change, it may be instructive to review the assumptions, analysis, findings, and conclusions in the Waste Confidence GEIS to ensure that the assumptions, analysis, findings, and conclusions in this EA are consistent with those in the draft GEIS. For instance, the GEIS contemplates that NSPM will construct a dry transfer system (DTS) on the PI ISFSI, move all of the spent fuel in each cask to a new cask every 100 years, and replace the PI ISFSI DTS and concrete pads every 100 years. We therefore question whether the land use impacts of these specific actions (or any other actions that the GEIS assumes will occur) have been analyzed in this EA? Because the Waste Confidence GEIS and rule are inextricably linked to the PI ISFSI license renewal, the assumptions, analysis, findings and conclusions in this EA must be reflective of, and reconciled with, the assumptions, analysis, findings and conclusions of the GEIS.

As discussed throughout this document, the PINGP and ISFSI are located right next to the PIIC reservation, a mere 600 yards away from the nearest homes, and less than 1.6 km [1 mi] from various community buildings and the PIIC's gaming enterprise, on the tribe's ancestral lands. Prairie Island is the PIIC's only homeland, the land promised to the Community by the United States government. The PIIC cannot simply relocate to another place, somewhere away from the nuclear waste dump that has been established next door. This land was acquired by the United States government for the common benefit of all tribal members in perpetuity. This land was to allow the PIIC continue to maintain its traditions and cultural. Tribal members are integral to traditions and culture.

The continued and indefinite presence of the PINGP and the ISFSI with its tons of spent nuclear waste has had a negative effect on the tribe, community growth and land development. Most tribal members do not believe that the spent nuclear waste stored at the PI ISFSI will ever leave Prairie Island in their lifetime. As a result, many tribal members do not want to raise their families so close to such a facility. If tribal members refuse to reside on Prairie Island, how can the PIIC and its culture survive?

NRC recognizes that the continued operation of the PINGP and PI ISFSI precludes that land from being used for other purposes and influences land development surrounding the PINGP. As previously stated, this draft EA analysis considers future potential impacts through the end of the current license term as well as the proposed 40-year PI ISFSI renewal license term. In

addition, NRC has evaluated accidents in Section 4.11.3 in this draft EA, and will document NRC's safety analysis of the proposed action in a separate SER. Although past, present, and reasonably foreseeable future activities as discussed in this section may result in land use impacts in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Because the PI ISFSI license renewal and the continued operation would not require any additional land nor would it cause any current land use to change, the NRC staff concludes the potential land use impacts from the continued operation of the ISFSI would not be significant.

Cumulative Impacts on Transportation

For the purposes of this analysis, the geographic area considered consists of Goodhue and Dakota Counties, Minnesota, and Pierce County, Wisconsin. In the PINGP license renewal SEIS, no new and significant information was identified that changed NRC's impacts determination from PINGP Units 1 and 2 continued operations (NRC, 2011c). The NRC also evaluated the transportation impacts during the 80-day refurbishment project (steam generator replacement and refueling) as part of the PINGP license renewal SEIS (NRC, 2011c, Section 3.2.7).

NSPM expects that the expansion of the ISFSI to store 64 casks would require 13 additional construction workers including equipment operators, laborers, electricians, iron-workers, concrete finishers, and construction supervision staff for a total of 4 weeks and would increase traffic flow by approximately 24 additional truck trips per day and an additional 6 commuter vehicle trip on roads leading to the ISFSI work site (NSPM, 2008a, 2013a). U.S. Highway 61, Prairie Island Boulevard, and Sturgeon Lake Road would be used as transportation routes during the expansion activities. In its RAI responses, NSPM stated that the PI ISFSI expansion activities will not overlap with the steam generator replacement activities planned for PINGP Unit 2 (NSPM, 2013a). Therefore, the NRC staff concludes that the transportation impacts from the expansion of the ISFSI to store 64 casks would not have a significant incremental contribution to transportation cumulative impacts. Similar transportation impacts over a similar time period and with a similar number of workers would be needed to accommodate up to 98 casks.

Although past, present, and reasonably foreseeable future activities as discussed in this section may impact transportation in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff concludes that, although the proposed ISFSI license renewal period would extend beyond the current PINGP Units 1 and 2 operating licenses, the potential impacts to transportation from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Socioeconomics

The primary geographic area of interest considered in this cumulative analysis is Goodhue and Dakota Counties in Minnesota and Pierce County in Wisconsin where most of the PINGP Units 1 and 2 employees reside. In the EA for the construction and operation of the ISFSI, the NRC staff determined that basic socioeconomic characteristics of the local area would not be affected during initial ISFSI construction because the increase of 20 workers to the area would not affect the basic socioeconomic characteristics (NRC, 1992). In the PINGP license renewal SEIS, the NRC staff concluded that continued operation of PINGP Units 1 and 2 would not have a negative impact on socioeconomic conditions in the region. The NRC staff also considered

the socioeconomic impacts from refurbishment activities (i.e., steam generator replacement), in the PINGP license renewal SEIS (NRC, 2011c).

NSPM expects that the expansion of the PI ISFSI, to accommodate the 64 casks would require six additional construction labor workers for a total of 4 weeks and would increase to traffic flow by approximately 24 additional truck trips per day on roads leading to the ISFSI work site (MPUC, 2009a; NSPM, 2013a). The NRC staff finds that potential socioeconomic impacts from the expansion of the ISFSI from 64 to 98 casks would be similar to the socioeconomic impacts described for the ISFSI expansion from 48 to 64 casks because the length of time and number of workers would be similar for each expansion. For these reasons, the NRC staff concludes that potential socioeconomic impacts, within the ROI, from an ISFSI expansion of 48 to 64 casks and from 64 to 98 casks would not have a significant incremental contribution to cumulative impacts.

Although past, present, and reasonably foreseeable future activities as discussed in this section may result in socioeconomic impacts in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore the NRC staff concludes that potential socioeconomic impacts from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Climate, Meteorology, and Air Quality

For the purposes of this analysis, the geographic area considered consists of Goodhue and Dakota Counties, Minnesota, and Pierce County, Wisconsin. The NRC's EA regarding the initial construction and operation of the PI ISFSI for up to 48 casks concluded that temporary increases in levels of suspended particulate matter (dust) would be insignificant (NRC, 1992 Section 9.1) In its responses to NRC's environmental RAIs, NSPM confirmed that during ISFSI construction activities, water was used to control fugitive dust (NSPM, 2013a).

Construction of temporary structures for the PINGP Unit 2 steam generator replacement project requires earthmoving equipment with combustion engines that can result in fugitive dust and exhaust emissions from worker vehicles, which may result in minor air quality impacts. Impacts to air quality were also evaluated in the PINGP license renewal SEIS. NSPM stated that best management practices would be used, such as seeding and wetting disturbed areas (NSPM, 2008c, Section 4.8). NRC staff identified additional mitigation measures that could be employed such as using multi-person vehicles for the workforce to reduce the total passenger vehicles miles (NRC, 2011c).

Construction of new ISFSI pads to accommodate expanded storage capacity is a foreseeable future action with potential air impacts similar to those impacts described in the EA for ISFSI construction, which determined fugitive dust impacts to be insignificant with best management practices (NRC, 1992, Section 9.1). Construction activities require earthmoving and vehicles with combustion engines that may degrade the local air quality over the short term and cause direct impacts to air quality, including fugitive dust. NSPM expects to use earthmoving equipment such as bulldozers, scrapers, backhoes, and graders for ISFSI expansion activities (NSPM, 2013a). In addition, the operation of the PI ISFSI does not emit gaseous effluents. In its responses to NRC's environmental RAIs, NSPM states that fugitive dust related to PI ISFSI expansion will be controlled by wetting exposed soil areas and covering stockpiles (NSPM, 2013a, p. 12). Therefore, the NRC staff concludes that the potential impacts on air quality from ISFSI expansion activities would not have a significant incremental contribution to cumulative impacts.

Although past, present, and reasonably foreseeable future activities as discussed in this section may result in climate, meteorology, and air quality impacts in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff concludes that potential impacts to climate, meteorology, and air quality from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Geology and Soils

This analysis considers impacts on and in the vicinity of the PINGP site. The 1992 initial licensing EA concluded that with good construction practices, erosion impacts from constructing the PI ISFSI would be insignificant (NRC, 1992). Geology and soils at the ISFSI were impacted as a result of excavating subsurface soils, filling, and regrading activities during ISFSI construction. NRC's 1992 initial licensing EA states that subsurface materials are stable and adequate for the expected foundation load from 48 casks (NRC, 1992). No new or significant information was identified during the development of the PINGP license renewal SEIS (NRC, 2011c), and the NRC staff determined that there would be no impacts from continued operation of the PINGP Units 1 and 2 related to this issue beyond those discussed in the NUREG-1437 GEIS (NRC, 2011c).

In its responses to NRC's environmental RAIs, NSPM described the work activities to expand the PI ISFSI to store 64 casks which would include excavation of the pad area and duct bank path, pouring concrete to form the duct bank and pad, and replacing the structural fill to a 2 percent grade (NSPM, 2013a). NSPM plans to use earth moving equipment such as bulldozers, scrapers, backhoes, and graders to excavate and level the pad and duct bank areas (NSPM, 2013a). Construction activities to accommodate up to 98 casks would require similar steps and equipment. As stated in Section 4.5 of this draft EA, the NRC staff expects that disturbance to the soil horizons if the ISFSI foundation is removed and disturbance from leveling and regrading of the ISFSI would not impact subsurface geology. NRC also expects that new ISFSI pads constructed adjacent to the existing ISFSI pads would not extend to a depth beyond the unconsolidated soil deposits and would not impact subsurface geology. NSPM would manage storm water runoff and provide sediment control in accordance with local construction codes. The NRC staff expects the foundation load for up to 98 casks on additional slabs would be adequate and that the slabs would be seismically qualified (as are the existing slabs). In its RAI responses, NSPM states it will use energy-absorbing controls (e.g., riprap and other sediment controls) to minimize the potential for storm water erosion during the construction and operation periods related to PI ISFSI expansion (NSPM, 2013a). Therefore, the NRC staff concludes that the potential impacts to geology and soils from ISFSI expansion would not have a significant incremental contribution to cumulative impacts.

Although past, present, and reasonably foreseeable future activities as discussed in this section may impact geology and soils in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff concludes that potential impacts to geology and soils from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Water Resources

For the purposes of this analysis, the geographic area considered includes the bodies of water around the PINGP site. During NRC's 1992 initial licensing EA, the NRC staff concluded that construction of the PI ISFSI would have a negligible impact on water quality, and that there would be no impact on surface or ground water quality during ISFSI operations (NRC, 1992).

Also, the NRC staff evaluated the impacts on surface and groundwater consumption and quality during the license renewal period of PINGP Units 1 and 2 (NRC, 2011c); and concluded that minimal impacts of the continued operation of PINGP Units 1 and 2 to water resources would not contribute to an overall decline in the current condition of these resources (NRC, 2011c). The NRC staff also evaluated the impact to water resources from refurbishment activities in the PINGP license renewal SEIS and discussed the cumulative impacts from other past, present, and future actions, including dredging by the PIIC, water quality issues from agricultural and urban runoff, and the creation of the Lock and Dam system, which have had and will continue to have an impact on the Upper Mississippi River (NRC, 2011c).

The PI ISFSI expansion activities would involve earthmoving activities that could increase sediment runoff. As noted earlier in this section, NSPM commits to use energy-absorbing controls (e.g., riprap and other sediment controls) to minimize the potential for storm water erosion during the construction and operation periods related to PI ISFSI expansion (NSPM, 2013a). In addition, any ground-disturbing activities would be conducted in accordance with appropriate permits from federal, state, and local agencies. Therefore, the NRC staff concludes that potential impacts to water resources from expansion activities would not have a significant incremental contribution to cumulative impacts.

Although past, present, and reasonably foreseeable future activities as discussed in this section may impact water resources in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff concludes that potential impacts to water resources from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Ecology and Threatened and Endangered Species

For purposes of this analysis, the geographic area considered includes the PINGP site. The NRC's EA regarding the initial construction and operation of the PI ISFSI for up to 48 casks concluded that impacts from noise and habitat loss during construction activities would be minimal (NRC, 1992). The NRC staff determined that the incremental increase in the TN-40HT casks' surface temperature would have no impacts on federally listed species or critical habitat (NRC, 2009).

In the PINGP license renewal the NRC staff evaluated the impacts to aquatic and terrestrial resources and threatened and endangered species. The NRC staff concluded that there would be no significant impacts to aquatic and terrestrial resources from Units 1 and 2 during the license renewal term (NRC, 2011c, Sections 4.5.4 and 4.6). The NRC staff concluded that the continued operation of PINGP Units 1 and 2 would not likely adversely affect any federally listed aquatic species; however, continued operation of PINGP Units 1 and 2 during the license renewal term would likely affect State-listed mussel species and could cause long-term destabilization to certain mussel populations (NRC, 2011c). The NRC staff concluded that potential impacts during the license renewal term are not expected to adversely affect any threatened or endangered terrestrial species (NRC, 2011c, Section 4.7.2). The NRC staff also concluded that the steam generator replacement activities would not significantly impact terrestrial and aquatic threatened and endangered species (NRC, 2011c, Section 3.2.2).

Expansion of the PI ISFSI to store 64 casks or 98 casks would occur on site and would not impact any areas beyond the disturbances already assessed in the 1992 licensing EA. As stated in its application to MPUC, the PI ISFSI could accommodate a total of 100 casks without having to change the security perimeter (NSPM, 2008a, p. 3A–12). Section 3.7.3 of this draft

EA explains that PI ISFSI operations do not have the potential to affect aquatic species. Construction activities could increase erosion, noise levels, and change local air quality as a result of fugitive dust and equipment exhaust emissions, but would be minor. Construction activities associated with a 64-cask storage capacity and a 98-cask storage capacity would be similar in duration and severity. For these reasons, the NRC staff determined that ISFSI expansion that occurs within the existing ISFSI security fences and berm, regardless of the number of casks, would not adversely affect threatened and endangered species and would not have a significant impact on aquatic and terrestrial resources.

Although past, present, and reasonably foreseeable future activities as discussed in this section may result in impacts to ecology and threatened and endangered species in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff concludes that potential impacts to ecology and threatened and endangered species from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Visual and Scenic Resources

The major natural landscape feature near the affected area of the PI ISFSI is the Mississippi River. The NRC staff determined that visual impacts would be negligible from construction of the PI ISFSI (NRC, 1992). No new and significant information was identified during the development of the PINGP license renewal SEIS (NRC, 2011c) and, therefore, the NRC staff determined that there would be no impacts from continued operation of the PINGP Units 1 and 2 related to this issue beyond those discussed in the NUREG-1437 GEIS (NRC, 2011c). The NRC staff also evaluated the impacts to visual and scenic resources from the planned steam generator replacement project in the PINGP license renewal SEIS (NRC, 2011c).

Similar short-term visual and scenic impacts would occur for expansion activities that are discussed as part of decommissioning the existing ISFSI in Section 4.8 of this draft EA, which the NRC staff determined to be SMALL. For ISFSI expansion activities that occurred within the existing ISFSI security fences and berm, dry casks would not be transported offsite and would therefore not have an offsite visual impact. The onsite visual impacts described previously for the proposed action in Section 4.8 of this draft EA would continue because of contrast with the natural environment. Similar onsite visual impacts would occur regardless of the number of casks that are located within the existing ISFSI security fences and berm. Therefore, the NRC staff concludes that the potential impact on scenic and visual resources from ISFSI expansion within the existing ISFSI security fences and berm would not have a significant incremental contribution to cumulative impacts.

Although past, present, and reasonably foreseeable future activities as discussed in this section may result in visual and scenic impacts in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff concludes that potential impacts to visual and scenic resources from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Noise

This analysis considers impacts on and in the vicinity of the PINGP site. The NRC staff determined that noise impacts from construction of the PI ISFSI to the nearest resident would be acceptable due to the distance from the ISFSI to the nearest resident (NRC, 1992). Also impacts on construction workers would be minimal provided the applicant complies with

Occupational Safety and Health Administration's noise regulations and with good construction practices (NRC, 1992). No new and significant information was identified during the development of the PINGP license renewal SEIS (NRC, 2011c) and therefore, the NRC staff determined that there would be no impacts from continued operation of the PINGP Units 1 and 2 related to this action beyond those discussed in the NUREG-1437 GEIS, (NRC, 2011c). The NRC staff also evaluated the impacts on noise from the planned steam generator replacement project in the PINGP license renewal SEIS (NRC, 2011c).

Similar noise impacts as described for decommissioning activities in Section 4.9 of this draft EA would occur during ISFSI expansion activities. The NRC staff concludes that decommissioning of the existing ISFSI would not elevate noise impacts outside of PINGP property boundary above background levels (as explained in Section 4.9 of this draft EA). Construction activities to expand the ISFSI to accommodate 64 casks or 98 casks would be similar in duration and scope; therefore, noise levels during expansion activities would be similar. For these reasons, the NRC staff concludes that potential noise impacts during ISFSI expansion would not have a significant incremental contribution to cumulative impacts.

Although past, present, and reasonably foreseeable future activities as discussed in this section may impact noise in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff concludes that, because noise generating activities as a result of the proposed action would be virtually undetectable from routine maintenance activities and cask transfers, potential impacts on noise from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Historic and Cultural Resources

The geographic area considered in this analysis is the area of potential effect and the immediate environs. As stated in Section 4.10, no historic and cultural resources are located within the area of potential effect; however, there remains the potential for unknown historic and cultural resources near the ISFSI.

The NRC staff evaluated whether ISFSI expansion could affect historic and cultural resources. Areas around the ISFSI could retain potential for archaeological materials. Prior to any licensing activities (expansion or decommissioning), NSPM would submit a license application to the NRC for review. NRC authorization for ISFSI expansion would constitute a federal action under NEPA and would be an undertaking under the NHPA. NRC would consult with the Minnesota SHPO, the PIIC, NSPM, and other interested parties to determine whether additional subsurface testing is warranted. Impacts to historic and cultural resources would be assessed at that time.

The following are the PIIC's concerns regarding cumulative archaeological resource impacts from ISFSI expansion:

As discussed previously in Section 1.4 of the draft EA, the MN PUC issued a CON for additional casks in December 2009. It is important to note that the 2009 Final EIS for the MPUC CON (MPUC, 2009a) for expanded dry cask storage was completed before Merjent completed its limited Phase I Archaeological Reconnaissance Survey for the PINGP site, which identified a previously unrecorded mound site and before the 2009 Hudak report which identified the paleosol. Furthermore, the Final EIS only references the 1973 Final Environmental Statement (which relied on the now discredited and out of ISFSI vicinity Johnson

survey work) and the 2008 License Renewal Application (NSPM, 2008a), which contained no new archaeological information. As we have stated previously in Section 4.10, since there was no new archaeological survey work completed prior to the construction of the ISFSI, we have no way of knowing whether any archaeological resources are or were present.

The Minnesota Department of Commerce, the author of the Final EIS, simply did not have the new archaeological information to disclose in the 2009 Final EIS, as it was not yet available. The Merjent and Hudak reports, had they been available, may have lead the Minnesota Department of Commerce to a different conclusion regarding the expansion of the ISFSI, in our view. As the Merjent Report concluded, “there is a possibility of deeply prehistoric archaeological sites across most of the Plant grounds, most recently demonstrated by a geomorphology study by Carl Hudak (2009).” Dr. Hudak’s survey identified a paleosol, which is a stable surface capable of preserving cultural materials, at up to 3 meters deep. The Merjent report further states “prehistoric archaeological sites could be buried under parking lots, modular buildings or other structures or features within the Plant.” This would include the ISFSI, in our view. The PIIC did not participate in the MPUC dry cask storage expansion docket, due the terms of the 2003 Settlement Agreement.

NRC staff recognizes that based on the number, type and density of known archaeological sites identified, there is a high probability that additional unrecorded resources may exist within the PINGP property (see Section 3.10.1). NRC staff considered the PIIC’s input and reviewed additional information that was not previously available or considered as part of NRC’s 1992 ISFSI construction EA or the 2011 PINGP license renewal SEIS. As described in Section 4.10 of this draft EA, NSPM employees are directed under the CRMP to notify and consult with a variety of federal, state, tribal, local agencies and entities depending on the nature and scope of planned activities and applicable laws and regulations. Because any ISFSI amendment (decommissioning or expansion) would be developed consistent with applicable regulations and submitted for NRC review and approval, NRC staff has confidence that future activities will be conducted in accordance with the CRMP and federal, state, tribal, local agencies and entities.

Although past, present, and reasonably foreseeable future activities as discussed in this section may impact historic and cultural resources in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff concludes that, because no historic properties would be affected by continued operation of the ISFSI, potential impacts on historic and cultural resources from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Public and Occupational Health and Safety

For all environmental reviews conducted for PINGP Units 1 and 2 and for the PI ISFSI, the NRC staff has determined that radiological impacts, from construction activities and operations, for workers and the public would be well below the regulatory limits (NRC, 1992, 2009, 2011c). In addition, the NRC staff concluded that the radiological impacts from the current operation of PINGP including those from reasonably foreseeable actions, including the steam generator replacement, power uprate, and ISFSI operation would not be expected to change significantly.

The initial PI ISFSI licensing EA and the license amendment EA for the use of TN-40HT casks identified the cask surface temperature to be a source of nonradiological impacts (NRC, 1992,

2009). Similar nonradiological impacts to workers and the public would occur during ISFSI expansion activities as described for the nonradiological impacts from the decommissioning activities in Section 4.11.1 of this draft EA. Compliance with the regulatory dose requirements in 10 CFR Part 20 and Part 72 during the ISFSI expansion and operations would not result in a significant radiological impact to the public and workers (occupational).

As part of MPUC's EIS to evaluate the expansion of the PI ISFSI (MPUC, 2009a), MPUC analyzed cumulative radiological impacts from storage of up to 98 casks—29 TN-40 and 69 TN-40HT casks. For conservatism in neglecting decay of older fuel and self-shielding of the additional casks themselves, MPUC multiplied the 0.022 mSv/yr [2.20 mrem/yr] dose rate (explained in Section 4.11.2.2 of this draft EA) by 2 to give a conservative dose rate estimate of 0.044 mSv/yr [4.40 mrem/yr] for 96 [2 × 48] casks on the PI ISFSI pad (MPUC, 2009b). NSPM projects the annual dose to the nearest residence located 0.72 km [0.45 mi] from the ISFSI, where 29 TN-40 and 69 TN-40HT casks would be stored, to be no greater than 0.05 mSv/yr [5 mrem/yr]. This analysis conservatively assumes that a resident is located at this distance outside and never moves from this location for the entire year (MPUC, 2009b). The annual exposure for 98 casks in this scenario to the nearest offsite permanent resident is below the 0.25 mSv/yr [25 mrem/yr] limit specified in 10 CFR 72.104(a) and the 1 mSv/yr [100 mrem/yr] limit in 10 CFR 20.1301(a)(1). The NRC staff reviewed the MPUC EIS and the NSPM-provided information for the expected radiological impacts from storage of up to 98 casks (NSPM, 2008a). The NRC staff determines that the radiological information provided in the 2008 NSPM application to MPUC is consistent with the radiological information that NSPM provided to NRC in its 2008 PINGP license renewal application. The NRC staff considers the methodology acceptable. For these reasons, the NRC staff concludes that the potential radiological impacts to members of the public from expansion of the PI ISFSI up to 98 casks would not have a significant incremental contribution to cumulative impacts.

Actual dose monitoring for all PINGP workers, regardless of the number of casks emplaced at the PI ISFSI, would be conducted in such a way that each worker's exposure associated with the PINGP, including the PI ISFSI, is below the regulatory limit in 10 CFR 20.1201 of 0.05 Sv [5 rem] annually. As explained in Sections 4.11.2.1 and 4.11.2.2 of this draft EA, continued operation of the ISFSI for up to 40 years (this proposed action) is required to be conducted in a manner to meet occupational annual radiological dose regulatory limits in 10 CFR 20.1201. NSPM is required to have procedures in place to minimize occupational doses to levels ALARA pursuant to 10 CFR 20.1101(b) and public doses to levels pursuant to 10 CFR 20.1302. Although past, present, and reasonably foreseeable future activities as discussed in this section may affect public and occupational health and safety in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff determines that the potential radiological impacts to workers and members of the public from continued operation of the ISFSI would not be significant.

Dose consequences from postulated accidents involving the PI ISFSI are not expected, and the effects of direct radiation from the postulated accident scenarios analyzed in the ISFSI SERs, for both the TN-40 and TN-40HT, casks are below the 10 CFR 72.106 regulatory limits (NRC, 2010). Although past, present, and reasonably foreseeable future activities as discussed in this section may result in accidents in the vicinity of the PI ISFSI, postulated accidents from continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, NRC staff concludes that the potential incremental contribution of non-radiological and radiological impacts from postulated accidents to workers and the public from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Waste Management

In the initial PI ISFSI licensing EA, the NRC staff stated that the ISFSI would not generate any chemical, sanitary, or solid wastes during normal operations (NRC, 1992 Section 5.4). The NRC determined in its PINGP license renewal SEIS, that waste management impacts would be SMALL because PINGP waste disposal systems and operating procedures would ensure that all wastes are handled in accordance with 40 CFR Parts 239 through 299, "Protection of the Environment," (40 CFR 239, et seq.) and 10 CFR Part 20, "Radiation Protection Standards;" 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities;" the plant's technical specifications; and the PINGP 1 and 2 Offsite Dose Calculation Manual (NRC, 2011c).

Wastes associated with the steam generator replacement project would be disposed of appropriately in a permitted manner as part of PINGP's waste disposal systems and operating procedures and would not result in any additional waste other than what is already anticipated during the PINGP license renewal period (NRC, 2011c).

Waste management impacts during ISFSI expansion would be less than those impacts during ISFSI decommissioning activities because less waste would be generated or removed (i.e., concrete pads, fencing, and the earthen berm around the ISFSI) and disposed of in a construction debris landfill. The same kind of casks evaluated for the proposed action would be used; therefore, due to the leak-tight design of the storage casks, no radioactive waste is anticipated to be generated by ISFSI expansion activities (NSPM, 2011a). Because existing NSPM programs and/or systems are in place to manage waste generated from activities associated with ISFSI operations and because any expansion activities would require development of a waste management plan prior to construction, the NRC staff concludes that the potential waste management impacts of ISFSI expansion would not have a significant incremental contribution to cumulative impacts.

Although past, present, and reasonably foreseeable future activities as discussed in this section may result in waste management impacts in the vicinity of the PI ISFSI, continued operation of the ISFSI would not have a significant incremental contribution to cumulative impacts. Therefore, the NRC staff concludes that potential waste management impacts from continued operation of the ISFSI would not be significant.

Cumulative Impacts on Environmental Justice

The environmental justice cumulative impact analysis assesses the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations that could result from past, present, and reasonably foreseeable future actions including PI ISFSI operations during the renewal term. Adverse health effects are measured in terms of the risk and rate of fatal or nonfatal adverse impacts on human health. Disproportionately high and adverse human health effects occur when the risk or rate of exposure to an environmental hazard for a minority or low-income population is significant and exceeds the risk or exposure rate for the general population or for another appropriate comparison group. Disproportionately high environmental effects refer to impacts or risk of impact on the natural or physical environment in a minority or low-income community that are significant and appreciably exceeds the environmental impact on the larger community. Such effects may include biological, cultural, economic, or social impacts. Some of these potential effects have been identified in resource areas presented in Section 4 of this draft EA. Minority and low-income populations and the PIIC are subsets of the general public residing in the area

and all would be exposed to the same hazards generated from PI ISFSI operations. As previously discussed in this chapter, there would be no significant impacts from license renewal.

The PIIC shares the following comments regarding environmental justice issues from ISFSI expansion:

As the Court of Appeals for the District of Columbia Circuit observed, “[t]his type of storage, optimistically labeled ‘temporary storage,’ has been used for decades longer than originally anticipated. The delay has required plants to expand storage pools and to pack spent nuclear more densely within them. The lack of progress on a permanent repository has caused considerable uncertainty regarding the environmental effects of temporary spent nuclear fuel storage and the reasonableness of continuing to license and relicense nuclear reactors.”⁷

The Court’s finding that temporary storage “has been used for decades longer than originally anticipated” is the focus of the PIIC’s concerns. The PIIC believes that the prospect that spent nuclear fuel will be stranded onsite indefinitely is very real, and that the current regulatory framework doesn’t adequately account for that fact. For example, the regulatory scheme for spent nuclear fuel is compartmentalized into storage and transportation, Parts 72 (licensing requirements for the independent storage of spent nuclear fuel) and 71 (packaging and transportation of radioactive material), respectively. The regulatory compartmentalization may have made sense when the duration of onsite storage was anticipated to be no more than a decade or two. However, considering the possibility that spent nuclear fuel may remain onsite indefinitely, this artificial regulatory compartmentalization may preclude a full and complete analysis of the potential adverse health and environmental impacts.

For example, there is still considerable uncertainty regarding the long-term effects of high burn up fuel during extended dry cask storage, including unresolved concerns associated with degradation of fuel assemblies and internal cask components and cladding. Potential problems are less likely to occur during the proposed extended license term (i.e., up to 40 years), but beyond that term there is far more uncertainty. As a result, the potential transportation of these casks will become more problematic the longer the spent nuclear fuel is stored onsite.

The PIIC fears that by the time a detailed analysis of the potential health, safety and environmental risks associated with the transportation of the casks off Prairie Island is conducted for periods of time beyond the proposed extended license term (i.e., in 50, 100, or 200 or more years), the risks associated with transportation will be greater than the risks of continued onsite storage, leaving the spent nuclear fuel stranded at the PI ISFSI indefinitely.

What would the potential biological, cultural, economic or social impacts be if the spent nuclear fuel stored at the PI ISFSI is never removed from Prairie Island? Or if the waste is stored on Prairie Island for 100 years, 200 years or longer? What would the potential biological, cultural, economic or social impacts be if one assumes that NSPM will construct a dry transfer system (DTS) on the PI ISFSI,

⁷*New York v. NRC*, 681 F.3d 471, 474 (D.C.Cir. 2012).

move all of the spent fuel in each cask to a new cask every 100 years, and replace the PI ISFSI DTS and concrete pads every 100 years? These assumptions are analysis assumptions used in the draft Waste Confidence GEIS (pp. 1-13 to 1-14). The PIIC believes that if these assumptions are permissible as part of the Waste Confidence GEIS, and the GEIS is the foundation of the Waste Confidence Rule (10CFR51.23), which also informs the ISFSI renewal licensing process, then they should they be considered as part of this EA. Each of these analysis assumptions are reasonably foreseeable given our Nation's failed nuclear waste policy, and the inability (or unwillingness) of the Federal Government, now more than thirty (30) years after its enactment, to comply with the requirements of the Nuclear Waste Policy Act.

The potential risks and adverse environmental impacts of storage beyond the proposed license term and subsequent transportation must be fully explored now. To defer rigorous environmental impact analysis to some unknown point in the future is meaningless. NSPM will continue to load and store up to 64 dry casks during the first 20 years of the proposed extended license term, with an additional 34 casks needed if the PINGP is decommissioned in 2034. What good would it do to fully analyze the potential risks and adverse environmental impacts of indefinite storage or transportation until after 98 casks—more than 2,500 tons of nuclear waste according to NSPM's estimate—are already placed at the PI ISFSI? Deferring the analysis of long-term storage and transportation risks and potential adverse environmental impacts for 40 or more years, and thereby allowing the generation and storage of even larger quantities of nuclear waste in the interim, is like trying to unring a bell after it's been rung. It simply can't be done.

The PIIC is concerned with the human health effects of long-term exposure to radiation from ISFSI expansion. Placement of up to 98 casks at the PI ISFSI would increase skyshine radiation exposure to the public in addition to the radiological impacts expected from the licensed 48 casks. However, radiation exposure from up to 98 casks including the operations of PINGP Units 1 and 2 would not exceed NRC regulatory limits as discussed in this section of this draft EA under Public and Occupational Health and Safety (MPUC, 2009a; NRC, 2009). The NRC staff found no environmental pathway that would physiologically affect minority or low-income populations differently from other segments of the general population should the PI ISFSI be expanded. Moreover, the NRC staff met with Prairie Island community members, elected tribal officials, and other city officials, and conducted field observations resulting in no indication of any unique characteristics or practices among minority or low-income populations in the region that could lead to disproportionately high and adverse nonradiological health impacts. Therefore, the combined incremental effects from continued operation of the PI ISFSI and PINGP Units 1 and 2 would not cause any significant cumulative high and adverse human health effect, and all populations living in close proximity to PINGP Units 1 and 2 and the PI ISFSI would be exposed to the same cumulative effect.

As discussed in Section 4.13, there would be no disproportionately high and adverse impacts to minority and low-income populations from the continued operation of PI ISFSI during the license renewal term. Since NSP has no plans to hire additional non-outage workers during the license renewal term, employment levels at the PI ISFSI would remain relatively constant with no additional demand for housing or increased traffic. Based on this information and the analysis of human health and environmental impacts presented in this draft EA, it is not likely there would be any disproportionately high and adverse contributory effect on minority and

low-income populations from the continued operation of PI ISFSI during the license renewal term.

In the 2009 EA for TN-40HT cask design use, the NRC staff recognized that there is a potential for the PIIC to be disproportionately affected by the PI ISFSI, but that no disproportionately high and adverse human health impacts would be expected in any environmental justice community in the region as a result of subsistence consumption of fish and wildlife (NRC, 2009). On this basis, the NRC staff concluded that the cask modification would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations residing near the PI ISFSI (NRC, 2009). The EA for TN-40HT cask design use determined that there would not likely be any cumulative impacts at the PI ISFSI from the same past, present, and reasonably foreseeable actions considered (NRC, 2009).

Potential impacts of construction activities from ISFSI expansion would include temporary transportation congestion from trucks and commuter vehicles and noise, air pollution, and construction noise. NSPM expects 13 additional construction workers including equipment operators, laborers, electricians, iron-workers, concrete finishers, and construction supervision staff for a total of 4 weeks (NSPM, 2008a, 2013a). NRC's PINGP license renewal SEIS concluded that County Road 18 and Sturgeon Lake Road currently have the capacity to handle this additional volume of traffic (NRC, 2011, Section 3.2.7). Although the PIIC and other minority and low-income individuals are in close proximity of the population to the source(s) of the potential impacts, the distance from the site and the earthen berm would mitigate physical impacts of construction on water, noise, and air such that they would be minimal for all offsite populations, including the minority and low-income populations closest to the site.

The analysis of potential cultural resource impacts and potential measures to mitigate impacts from ISFSI expansion and decommissioning activities would be similar. It is assumed that NSPM will use best management practices and conduct preventative maintenance, no wells would be installed because of PI ISFSI expansion, and that ISFSI expansion activities would avoid portions of the PINGP site with potential for subsurface archaeological deposits.

As discussed in Section 3.12, the general population, including minority or low-income populations, would not be affected any differently by continued operation of the PI ISFSI for up to 40 years. In addition, the impacts from decommissioning the PI ISFSI after the proposed ISFSI license renewal period expires would be addressed in a separate NEPA review after the development and NRC approval of a decommissioning plan.

Since no significant human health or environmental effects from the proposed action were identified in Section 4.13 of this draft EA, the NRC staff concludes that there would be no disproportionately high and adverse cumulative human health and environmental impacts on minorities or low-income populations living in the area if the PI ISFSI license is renewed.

5.0 AGENCIES AND PERSONS CONSULTED

The NRC staff consulted with other agencies regarding the proposed action in accordance with NUREG-1748 (NRC, 2003). These consultations were intended to (i) ensure that the requirements of Section 7 of the Endangered Species Act and Section 106 of the NHPA were met and (ii) provide the designated state liaison agencies the opportunity to comment on the proposed action.

5.1 Minnesota Historical Society

On April 25, 2012, the NRC contacted the Minnesota Historical Society and requested input to help identify local resource areas that may be affected by the proposed renewal of the PI ISFSI license (NRC, 2012k). The Minnesota Historical Society responded via a letter dated May 29, 2012, that, based on available information, it concluded that no properties listed in or eligible for listing in the NRHP will be affected by this project (Minnesota Historical Society, 2012).

5.2 Native American Indian Tribes

On June 14, 2012, the NRC sent letters to 28 Indian tribes requesting information regarding historic sites or cultural resources that may be affected by the proposed action, including properties of religious and cultural significance that may be eligible as historic properties under the NHPA. On July 9, 2012, the Leech Lake Band of Ojibwe responded to the NRC that it does not have any known recorded sites of religious or cultural importance near the site. The tribe requested that if any human remains or suspected human remains were found, all work should cease and the County Sheriff's Office and Office of the State Archaeologist should be contacted (Leech Lake Band of Ojibwe, 2012). The PIIC also responded via letter dated July 18, 2012, and provided information regarding cultural and archaeological resources (PIIC, 2012b). In October 2012, NRC and the PIIC entered into a MOU acknowledging the PIIC's special expertise in four resource areas and worked together to develop a comprehensive evaluation of the areas covered by the MOU. Impacts to historic and cultural resources are discussed in Section 4.10 of this draft EA. Table 5.5-1 lists the tribes contacted and the letters' ADAMS accession numbers.

5.3 U.S. Fish and Wildlife Service

On April 25, 2012, the NRC sent a letter to the FWS Twin Cities Minnesota Field Office describing the proposed action and requesting a list of threatened and endangered species and critical habitats that could potentially be affected by the proposed action (NRC, 2012f). The FWS responded via a letter dated April 11, 2013, identifying one endangered mussel (*Lampsillis higginsii*) and nesting pairs of bald eagles that are likely to be present within 8 km [5 mi] of the PI ISFSI (FWS, 2013a).

5.4 Minnesota Department of Natural Resources and Wisconsin Department of Natural Resources

The NRC also sent letters to the Minnesota DNR (NRC, 2012c) and Wisconsin DNR (NRC, 2013b) requesting input to help identify local resource areas that may be affected by a renewal

of the PI ISFSI license. In the response letter dated July 3, 2012, Minnesota DNR recommended including flood protection information and impacts to species and native plant communities in the EA (Minnesota DNR, 2012). Impacts to threatened and endangered species and critical habitats and flooding are provided in Chapter 4.

5.5 City of Red Wing

The NRC also sent a letter to the City of Red Wing (NRC, 2012d) requesting input to help identify local resource areas that may be affected by a renewal of the PI ISFSI license. The City of Red Wing responded on March 18 and April 3, 2013, with several suggestions for NRC consideration (Harlan, 2013a,b).

Table 5.5-1. List of Consultation Documents

Consulting Organization	Document	Date	Agencywide Documents Access and Management System Accession Number
Minnesota (MN) Historical Society	U.S. Nuclear Regulatory Commission's (NRC) Initiation of National Historic Preservation Act (NHPA) Section 106 Consultation	April 25, 2012	ML120830042
U.S. Fish and Wildlife Service	NRC's Consultation Letter	April 25, 2012	ML120830111
MN Department of Natural Resources	NRC's Consultation Letter	April 25, 2012	ML120830159
WI Department of Natural Resources	NRC's Consultation Letter	February 13, 2013	ML12341A136
MN Historical Society	MN Historical Society Response to Consultation Letter	May 29, 2012	ML12177A079
28 Tribes	NRC's Initiation of NHPA Section 106 Consultation Letters	June 14, 2012	ML120830050 (PIIC) ML12166A438 (Yankton Sioux) ML12166A429 (Winnebago Tribe) ML12166A388 (White Earth Nation) ML12166A358 (Upper Sioux) ML12166A335 (Turtle Mountain) ML12166A314 (Three Affiliated Tribes) ML12166A299 (St. Croix Chippewa) ML12166A287 (Standing Rock Sioux) ML12166A279 (Spirit Lake) ML12166A274 (Sisseton Wahpeton) ML12166A266 (Santee Sioux) ML12166A257 (Rosebud) ML12166A540 (Shakopee Mdewakandon Sioux) ML12166A255 (Bois Forte) ML12166A270 (Cheyenne)

Table 5.5-1. List of Consultation Documents

Consulting Organization	Document	Date	Agencywide Documents Access and Management System Accession Number
			River Sioux) ML12166A277 (Crow Creek) ML12166A291 (Flandreau Santee Sioux) ML12166A300 (Fond Du Lac) ML12166A343 (Grand Portage) ML12166A356 (Ho-Chunk) ML12166A385 (Leech Lake) ML12166A422 (Lower Brule Sioux) ML12166A433 (Lower Sioux) ML12166A455 (Mille Lac Band Ojibwe) ML12166A464 (MN Chippewa) ML12166A491 (Oglala Sioux) ML12166A499 (Red Lake Band Chippewa)
MN Department of Natural Resources	MN Department of Natural Resources Response to Consultation Letter	July 3, 2012	ML12192A191
Leech Lake Band of Ojibwe	Leech Lake Band of Ojibwe's Response to Section 106 Consultation Letter	July 9, 2012	ML12207A247
Prairie Island Indian Community (PIIC)	PIIC's Response to Section 106 Consultation Letter	July 18, 2012	ML12201A131
PIIC	Memorandum of Understanding Between the NRC and the PIIC as a Cooperating Agency	October 3, 2012	ML12284A456
City of Red Wing	Consultation Letter to City of Red Wing	November 7, 2012	ML12310A306
City of Red Wing	Relicensing of Independent Spent Fuel Storage System Installation for the Prairie Island Nuclear Generating Plant located in Red Wing, Minnesota, Docket No. 72-10-ISFSI-2	March 18, 2013 April 3, 2013	ML13099A037 ML13101A068
Advisory Council on Historic Preservation	NRC's Letter to ACHP regarding the PI ISFSI Proposed 40-Year License Renewal	May 8, 2013	ML13094A222

Table 5.5-1. List of Consultation Documents

Consulting Organization	Document	Date	Agencywide Documents Access and Management System Accession Number
U.S. Fish and Wildlife Service	U.S. Fish and Wildlife Response to Consultation Letter	April 11, 2011	ML13102A010

6.0 CONCLUSION AND DRAFT FINDING OF NO SIGNIFICANT IMPACT

Based on its review of the proposed action, in accordance with the requirements in 10 CFR Part 51, the NRC staff has preliminarily determined that renewal of NRC License SNM-2506, authorizing continued operation of NSPM's site-specific ISFSI for a period of 40 years, will not significantly affect the quality of the human environment. In its license renewal request, NSPM is proposing no changes in how it handles or stores spent fuel at the. No significant changes in NSPM's authorized operations for the PI ISFSI were requested as part of the license renewal application. Approval of the proposed action would not result in any new construction or expansion of the existing ISFSI footprint beyond that previously approved. The ISFSI is a passive facility that produces no liquid or gaseous effluents. No significant radiological or nonradiological impacts are expected from continued normal operations. Occupational dose estimates from routine monitoring activities and transfer of spent fuel for disposal are expected to be at ALARA levels and are expected to be within the limits of 10 CFR 20.1201. The estimated annual dose to the nearest potential member of the public from ISFSI activities is 0.02 mSv/y [2.20 mrem/yr], which is below the 0.25 mSv/yr [25 mrem/yr] limit specified in 10 CFR 72.104(a) and the 1 mSv/yr [100 mrem/yr] limit in 10 CFR 20.1301(a)(1). Therefore, the NRC staff has determined that pursuant to 10 CFR 51.31, preparation of an EIS is not required for the proposed action and a FONSI is appropriate.

Pursuant to 10 CFR 51.33, the NRC staff is making this draft EA and draft FONSI available for public review and comment. In doing so, the NRC staff determined that preparation of the draft EA and draft FONSI furthers the purposes of NEPA. Based on the comments received, the NRC staff may determine that a final FONSI is appropriate or instead may find that preparation of an EIS is warranted should significant impacts resulting from the proposed action be identified. The NRC staff's final determination will be published in the FR.

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APPENDIX A
FEDERAL AND STATE SPECIAL-STATUS SPECIES

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FEDERAL AND STATE SPECIAL-STATUS SPECIES

**Table A–1. Terrestrial Endangered, Threatened, Candidate, or Special Concern
Animal and Plant Species Found in Goodhue County, Minnesota***

Common Name	Scientific Name	Federal Status	State Status
Mammals			
Prairie vole	<i>Microtus ochrogaster</i>		SC†
Least weasel	<i>Mustela nivalis</i>		SC†
Northern myotis	<i>Myotis septentrionalis</i>		SC†
Plains pocket mouse	<i>Perognathus flavescens</i>		SC†
Western harvest mouse‡	<i>Reithrodontomys megalotis</i>		Tracked§
Birds			
Henslow's sparrow	<i>Ammodramus henslowii</i>		E†
Red-shouldered hawk	<i>Buteo lineatus</i>		SC†
Cerulean warbler‡	<i>Dendroica cerulea</i>		SC§
Trumpeter swan	<i>Cygnus buccinator</i>		T†
Acadian flycatcher	<i>Empidonax virescens</i>		SC†
Peregrine falcon‡	<i>Falco peregrinus</i>		T†§
Bald eagle‡	<i>Haliaeetus leucocephalus</i>		SC§
Loggerhead shrike	<i>Lanius ludovicianus</i>		T†
Insects			
Leonard's skipper	<i>Hesperia leonardus</i>		SC†
Regal fritillary	<i>Speyeria idalia</i>		SC†
Plants			
Moschatel	<i>Adoxa moschatellina</i>		SC†
Red three-awn	<i>Aristida purpurea</i> var. <i>longiseta</i>		SC†
Kitten-tails	<i>Besseya bullii</i>		T†
Raven's foot sedge	<i>Carex crus-corvi</i>		SC†
Sterile sedge	<i>Carex sterilis</i>		T†
Wood's sedge	<i>Carex woodii</i>		SC†
Squirrel-corn	<i>Dicentra canadensis</i>		SC†
Goldie's fern	<i>Dryopteris goldiana</i>		SC†
Rattlesnake master	<i>Eryngium yuccifolium</i>		SC†
Minnesota dwarf trout lily	<i>Erythronium propullans</i>	E	E†
Beach-heather	<i>Hudsonia tomentosa</i>		SC†
Twinleaf	<i>Jeffersonia diphylla</i>		T†
Creeping juniper	<i>Juniperus horizontalis</i>		SC†
Prairie bush clover	<i>Lygodium palmatum</i>	T	T†
Rock sandwort	<i>Minuartia dawsonensis</i>		SC†
Glade mallow	<i>Napaea dioica</i>		T†
Clustered broomrape	<i>Orobanche fasciculata</i>		SC†
American ginseng‡	<i>Panax quinquefolius</i>		SC§
Tuberclad reinorchid	<i>Platanthera flava</i> var. <i>herbiola</i>		E†
Sessile-flowered cress	<i>Rorippa sessiliflora</i>		SC†
Beaked snakeroot	<i>Sanicula trifoliata</i>		SC†
Snow Trillium	<i>Trillium nivale</i>		SC†
Valerian	<i>Valeriana edulis</i> var. <i>ciliata</i>		T†

Table A-1. Terrestrial Endangered, Threatened, Candidate, or Special Concern Animal and Plant Species Found in Goodhue County, Minnesota*

Common Name	Scientific Name	Federal Status	State Status
Plants (continued)			
Gravel Oak Savannah‡			N/A§
Spikerush–Bur Reed Marsh (Northern)‡			N/A§
Sugar Maple–Basswood–(Bitternut Hickory) Forest‡			N/A§
Reptiles			
Smooth Softshell	<i>Apalone mutica</i>		SC†
North American racer	<i>Coluber constrictor</i>		SC†
Blanding’s turtle	<i>Emydoidea blandingii</i>		T†
Gophersnake	<i>Pituophis catenifer</i>		SC†
Timber rattlesnake	<i>Crotalus horridus</i>		T†
*Aquatic species are not included in this table †Minnesota DNR, 2012 ‡Species or native plant communities reported within 1.6 km [1 mi] of Prairie Island Nuclear Generating Plant §NSPM, 2011 FWS, 2013 E = Endangered, SC = Special Concern, T = Threatened			

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APPENDIX B
COMMENT RESPONSE REPORT

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COMMENT RESPONSE REPORT

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