Final
Environmental Assessment for the White Earth Nation Wind Energy Project Becker County, Minnesota, White Earth Indian Reservation, U.S.A.

April 2009

U.S. Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401

DOE/EA # 1648

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

April 9, 2009

DOE/EA 1648

FINDING OF NO SIGNIFICANT IMPACT FOR THE WHITE EARTH NATION WIND ENERGY PROJECT BECKER COUNTY, MINNESOTA

AGENCY: Department of Energy, Golden Field Office

ACTION: Finding of No Significant Impact

SUMMARY: The U.S. Department of Energy (DOE) prepared an Environmental Assessment (EA) that analyzed the potential impacts associated with the construction and operation of a proposed wind turbine located on tribal trust land near the tribal village of White Earth in Becker County, Minnesota.

DOE, through its Golden Field Office, proposes to provide congressionally directed federal funding to the White Earth Nation in support of their proposed installation, construction, and operation of a single low-speed wind turbine and associated facilities. The project would generate electricity for the White Earth Nation and offset the Reservation's overall consumption of fossil fuels with renewable wind power. All discussion, analysis and findings related to the potential impacts of the project are contained in the Final EA. The Final EA is hereby incorporated by reference.

The proposed action would consist of a single 750-kW to 1.0-MW wind turbine. Two units are under consideration; the 750-kW Heron or the 1-MW Nordic. These turbines are, respectively, 256 feet and 230 feet in height at the blade hub and have 197-foot and 194-foot blade sweep diameters. A transformer and meter box would be placed on a pad within a few feet of the turbine base. The proposed turbine and associated transformer and metal box would occupy an approximately 100 x 150 foot (0.25 acre) area. Electric power from the wind turbine would be routed underground and follow existing rights-of-way as much as possible to a nearby electrical substation, the MinnKota substation, located less than one mile to the northwest of the proposed location.

The project would be located on a parcel between the tribal headquarters building to the east and the villages' sewer lagoons to the west. This parcel is also surrounded by the fire department building, Head Start building, and a senior living facility. A 40-meter meteorological tower is

currently located approximately 200 feet north of the proposed turbine site to monitor wind characteristics for the project.

An approximately 400 x 350 foot (3.2 acres) area (referred to as the laydown area) would be temporarily needed for construction. The laydown area would be used for crane maneuvering and temporary storage of tower components between arrival and assembly. An unpaved access road, approximately 400 feet in length by 10 feet wide (0.1 acre), would lead to the turbine site from the existing Eagle View Road. The turnout off Eagle View Road and a rough trail leading to the proposed turbine site are already in place. This trail would be upgraded for the access road.

In accordance with applicable regulations and policies, DOE sent scoping notices to potentially interested federal, state, and local agencies, tribal representatives, businesses, and individuals, and published the notice in the local *Anishinaabeg Today* newspaper. The scoping letters described the Proposed Action and requested assistance in identifying potential issues that could be evaluated in the EA. In response to the scoping notice, DOE received comments from the U.S. Fish and Wildlife Service, Department of Health and Human Services Indian Health Services, Department of Interior Bureau of Indian Affairs, and Department of Agriculture Natural Resource Conservation Service. The agencies did not object to the project, but raised general concerns about wildlife, siting, and archaeological resources; asked questions about the project; and provided information for use in the EA. Final siting of the turbine was made in response to the concerns expressed, specific questions raised were addressed in the EA, and information provided by agencies was used in the impact analysis.

DOE sent notices announcing the availability of the Draft EA for public comment to the same agencies, representatives, businesses, and individuals as received the scoping notice. The Draft EA was also made available for public review and comment on the DOE Golden Field Office reading room website. One public comment was received. This comment was provided by the manager of the Biimaadiiziiwiin Senior Apartments located west of the proposed project site and it expressed his concern over the noise factor that could potentially disturb the tranquility of the residents when the turbine is in operation .This comment is addressed in the Final EA.

DETERMINATION: DOE determines that providing funding to support the construction and operation of the proposed wind turbine on the White Earth Nation tribal trust land near the tribal village of White Earth in Becker County, Minnesota, would not constitute a major Federal Action significantly affecting the quality of the human environment, as defined by the National Environmental Policy Act. The applicant-committed environmental protection measures identified in the Final EA shall be incorporated and enforceable through DOE's funding award to the White Earth Nation. The measures include having a staff archaeologist on site during all excavation activities who will coordinate with the Tribe and State Historic Preservation Officer if cultural resources are discovered; enacting specific actions to minimize noise, air, visual, and health and safety impacts during construction and operation; providing erosion and sediment control during construction; obtaining and complying with a NPDES permit; prohibiting off-road travel or access outside the cleared work areas; co-locating utility lines underground; reclaiming areas disturbed during construction including noxious weed control; and monitoring post-construction bird and bat fatalities.

The preparation of an Environmental Impact Statement is not required and DOE is issuing this Finding of No Significant Impact.

Copies of the Final EA are available at the DOE Golden Field Office Public Reading Room website at http://www.eere.energy.gov/golden/Reading_Room.aspx, or from:

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Issued in Golden, Colorado this 10th day of April, 2009.

Rita L. Wells
Executive Director for Field Operations

White Earth Nation Wind Energy Project
Final Environmental Assessment
White Earth Nation Reservation, Minnesota, U.S.A.

DOE/EA # 1648

U.S. Department of Energy

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1.0 INTRODUCTION

1.1 NATIONAL ENVIRONMENTAL POLICY ACT

In accordance with the Department of Energy (DOE) National Environmental Policy Act (NEPA) implementing regulations, DOE is required to evaluate the potential environmental impacts of DOE facilities, operations, and related funding decisions. Based on action by the U.S. Congress, DOE has funding available to support the proposed project described in this Environmental Assessment (EA). This Congressionally Directed Funding would allow the White Earth Nation to build on the findings of a prior DOE First Steps grant in developing available wind resources. The Bureau of Indian Affairs may also provide funding for the project or be involved in a land lease if a third party holds financial interest in the turbine development, but with their concurrence, the DOE is the lead federal agency for the NEPA process. In compliance with NEPA (42 U.S.C. 4321) and DOE's NEPA implementing regulations (10 CFR section 1021.330) and procedures, this EA examines the potential environmental impacts of the proposed project, as well as a No Action alternative.

1.2 BACKGROUND

The White Earth Nation, or White Earth Band of Chippewa Indians, as represented by the White Earth Reservation Tribal Council, seeks to develop viable wind resources within its boundaries to power its tribal government facilities and access commercial markets for income generation from electric power. The White Earth Reservation encompasses the entire land area of Mahnomen County, the northernmost two tiers of townships in Becker County, and the western two tiers of townships in Clearwater County, all within Minnesota (Figure 1). The Reservation is approximately 990,000 acres in size with approximately 10 percent of the land area under direct control of the tribe. Considerable ecological diversity exists within the reservation: the western third is agricultural/prairie, the middle third is transitional from agricultural to deciduous and coniferous forest, and the eastern third is coniferous forest. White Earth Village is one of five unincorporated communities on the White Earth Reservation. About 10,000 of the approximately 20,000 enrolled tribal members live on or near the Reservation and constitute about 40 percent of the population within its boundaries.

1.3 PURPOSE AND NEED

The purpose of DOE's proposed action is to provide financial assistance to the White Earth Nation in support of their proposed installation, construction, and operation of a single low-speed wind turbine and its associated facilities. The project is needed to generate electricity for White Earth Nation and offset the Reservation's overall consumption of fossil fuels with renewable wind power. Recent national and regional forecasts project increasing consumption of electrical energy to continue into the foreseeable future, thus requiring development of new sources to meet the increasing energy demand.

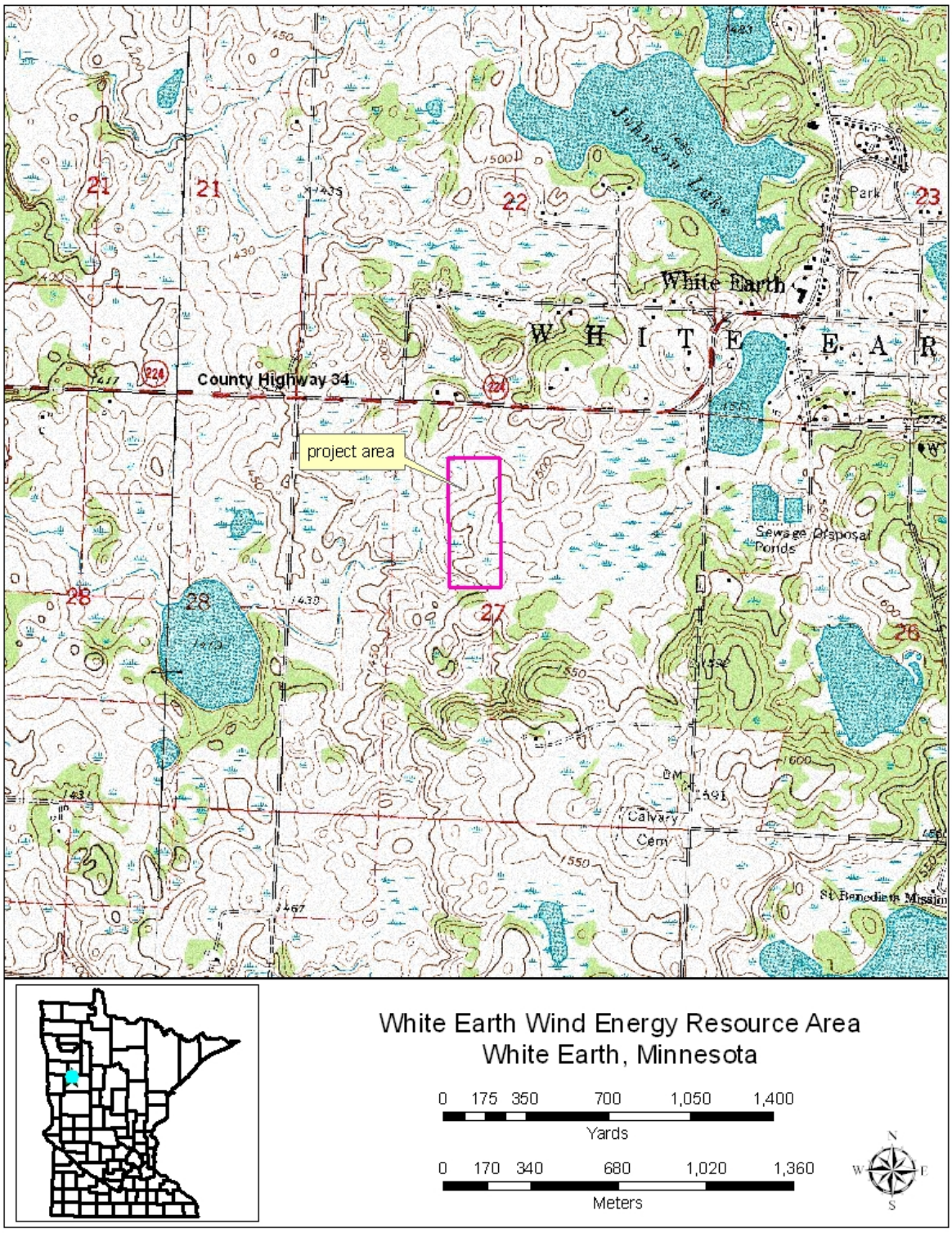

Figure 1. General project location.

The goal of this project is to increase use of renewable energy technology in meeting the energy needs of the White Earth Nation tribal government and tribal community. The primary beneficiaries of this project are the White Earth tribal government and residents of the reservation and the upper Midwest. The tribal government would benefit from low cost wind energy, potential revenue from sale of the wind energy, greater utilization of renewable energy, and reduced reliance on fossil fuel. The residents of the reservation and the upper Midwest would benefit from potentially better air quality, which is currently impacted by fossil fuel-driven electrical generation.

1.4 OBJECTIVES OF THIS ENVIRONMENTAL ASSESSMENT AND DOCUMENT ORGANIZATION

NEPA, as amended, and DOE regulations require DOE, as the lead federal agency, to consider several factors before making a final decision regarding funding. Accordingly, this EA identifies the environmental impacts of the Proposed Action including adverse environmental impacts that cannot be avoided, considers and evaluates alternatives to the Proposed Action (the No Action alternative), describes the irreversible and irretrievable resource commitments of the Proposed Action, and compares the short-term environmental effects to the long-term benefits of the project. This EA also identifies management practices to prevent or minimize environmental impacts.

This EA is organized in a manner consistent with NEPA and DOE's NEPA implementation guidelines. The EA has six primary sections; the organization, content, and objectives of each section are as follows:

Section 1 – Introduction presents the regulatory context and rationale for preparing this EA; provides background about the project and proposed project site; defines the purpose and need for the project; clarifies the organization, content, and objectives of this EA; and summarizes the public scoping process and results.

Section 2 - Proposed Action and Alternatives presents a detailed project description, including characteristics of the construction and operation of the proposed wind turbine installation. Applicant-committed practices are identified. A description of the No Action alternative is also included, along with alternatives that were considered but eliminated from detailed study.

Section 3 - Affected Environment describes environmental baseline information about the project site and surrounding area.

Section 4 - Environmental Consequences describes and compares the potential impacts of the Proposed Action and No Action alternatives. Unavoidable adverse impacts, cumulative impacts and irreversible and irretrievable commitment of resources are also described, along with a comparison of short-term use of the environment versus the long-term productivity.

Section 5 - Consultation and Coordination lists personnel and agencies consulted during development of the EA.

Section 6 – References lists key documents and resources used in the preparation of this EA.

Appendices - include relevant materials attached to the EA.

1.5 PUBLIC INVOLVEMENT

The White Earth Nation published a public scoping notice on July 11, 2007 in the *Anishinaabeg Today* newspaper (Appendix A). No written comments or phone calls were received in response to the published public scoping notice.

A meeting with the White Earth Community Council, an ad hoc local group linking the tribal government with the general population of the unincorporated tribal village, was held March 29, 2007 to explain the project and any potential impact upon the village and its residents. Comments received from the community council participants were general in nature and in support of renewable energy.

Additionally, DOE sent letters to several federal agencies requesting comments (Appendix B). Comments received include the following:

a. U.S. Fish and Wildlife Service provided their *Interim Guidelines for Wind Turbines* and noted concerns about lighting the wind turbine and its proposed placement between open waterbodies, although acknowledged there did not seem to be a better location within the project area boundaries. They also asked if overhead utility lines would be installed.

b. Department of Health and Human Services, Indian Health Service recommended a different location be selected 1,000 ft away, since it may limit any future development on existing stabilization ponds. However, future expansion or development of existing stabilization ponds into the project area is considered unlikely because it would require relocation of one or more existing sanitary sewer lines (see Chapter 2, Figure 3). In addition, the proposed project site is at a higher elevation (30-40 feet higher) than the sewer lagoons, again making future expansion or development of existing stabilization ponds onto the proposed turbine site unlikely. Furthermore, the community is not substantially growing and growth capabilities are limited due to a lack of developable land and near zero housing growth (most housing is governmental with little or no development anticipated). Based on this, again, future expansion or development of existing stabilization ponds into the project area is considered unlikely. Finally, the Tribe has determined that the proposed wind turbine is a priority over potential future sewer lagoon expansion.

c. Department of Interior, Bureau of Indian Affairs recommended a Phase 1 archaeological identification survey be conducted in the part of the project area that was not covered by the previous survey. This area of concern was in regards to Option C (see Chapter 2, Figure 2), which was not carried forward and is no longer under consideration for the proposed turbine.

d. Department of Agriculture, Natural Resource Conservation Service (NRCS) provided two sets of maps showing soil survey data and a Farmland Conversion Impact Rating form.

The form has been completed jointly by the local NRCS officer and the project proponent. This form was used to help assess impacts to land use (see Section 4.4).

Copies of these response letters are included in Appendix C.

The public review period for the Pre-Decisional Draft EA was from February 3, 2009 to March 3, 2009. One comment was received (see Comment/Response form on following page).

Comment Form **Reviewer: E. Lack**

EA Name: White Earth Nation Wind Energy Project **Date: 3 March 2009**

Comment #	Page #	Line #	Comment	Response/Resolution
1	32-34	Multiple	Should the wind turbine be installed, will there be a noise factor that could/would disturb the tranquility of our apartment complex when the turbine is in operation?	A noise analysis was conducted and it concluded that the nearest residential development (the senior housing facility located approximately 750 feet east of the proposed turbine site) would hear turbine-related noises at approximately 35 dB(A). The noise would only occur when the wind turbine is operating and other existing background noises would mask the turbine noise levels to some degree. To put these noise levels in perspective, noise levels of 30 dB(A) are comparable to a soft whisper and 40 dB(A) are typical of noise in a library. See section 4. 2 of the EA for further explanation.
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2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

2.1.1 Project Description

The White Earth Nation (Tribe) intends to build a wind turbine on tribal trust land near the tribal village of White Earth, i.e. the Proposed Action. The project location is within 420 acres of land that was acquired from a private landowner in the early 1990s for a new health clinic, community sewer lagoons, housing subdivision, and tribal administration building, which have all been built. The project area is a 25 acre parcel, located between a paved access road (Eagle View Road) leading to the new tribal headquarters building to the east and the villages' sewer lagoons to the west (Figure 2). This parcel is surrounded by the fire department building, Head Start building, a senior living facility, and the new administrative building. The project area is crossed by underground sewer outfall lines, one of which runs along the western boundary of the project area and serves the new tribal administration building south of the project area, and electric lines (Figure 3). Utility maintenance trails cross the project area. A 40-meter meteorological tower is currently located approximately 200 feet north of the proposed turbine site to monitor wind characteristics for the project.

Several locations for the turbine within the 25 acre project area were initially considered (Figure 2). The final turbine location was selected because 1) the access road length would be minimized, 2) it falls within the archeological-cleared area, and 3) the location minimizes the potential for shadow flicker at the nearby senior housing building.

The proposed turbine site, centrally located in the project area, consists of an approximately 100 x 150 foot (0.25 acre) area where the turbine and associated transformer and metal box would be located, plus an approximately 400 x 350 foot (3.2 acres) area temporarily needed for construction, and referred to as the laydown area (Figure 4). The laydown area would be used for crane maneuvering and temporary storage of tower components between arrival and assembly. An unpaved access road, approximately 400 feet in length by 10 feet wide (0.1 acre) would lead to the turbine site from Eagle View Road (Figure 4). The turnout off Eagle View Road and a rough trail leading to the proposed turbine site are already in place. This trail would be upgraded for the access road.

The Proposed Action would consist of a single 750-kW to 1.0-MW wind turbine. Two units are under consideration; the 750-kW Heron or the 1-MW Nordic. These turbines are, respectively, 256 feet and 230 feet in height at the blade hub and have 197-foot and 194-foot blade sweep diameters. A transformer and meter box would likely be placed on a pad within a few feet of the turbine base. Electric power from the wind turbine would be routed underground and follow existing rights-of-way as much as possible to a nearby electrical substation, MinnKota substation, located less than one mile to the northwest (Figure 3). The option of connecting directly to the new administration building or a series of additional buildings was rejected based on discussions with the local electric cooperative due to power quality concerns.

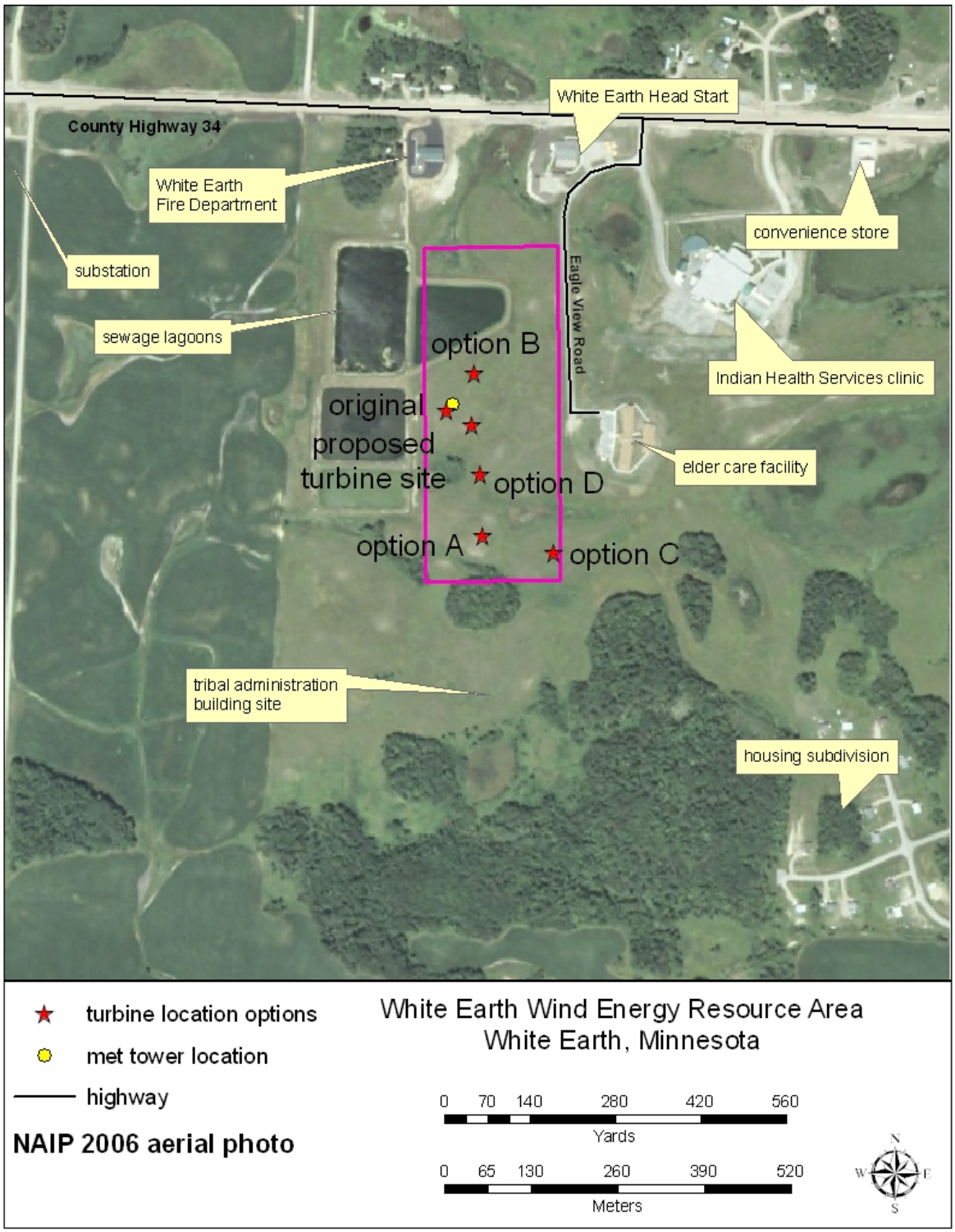


Figure 2. Project Area.

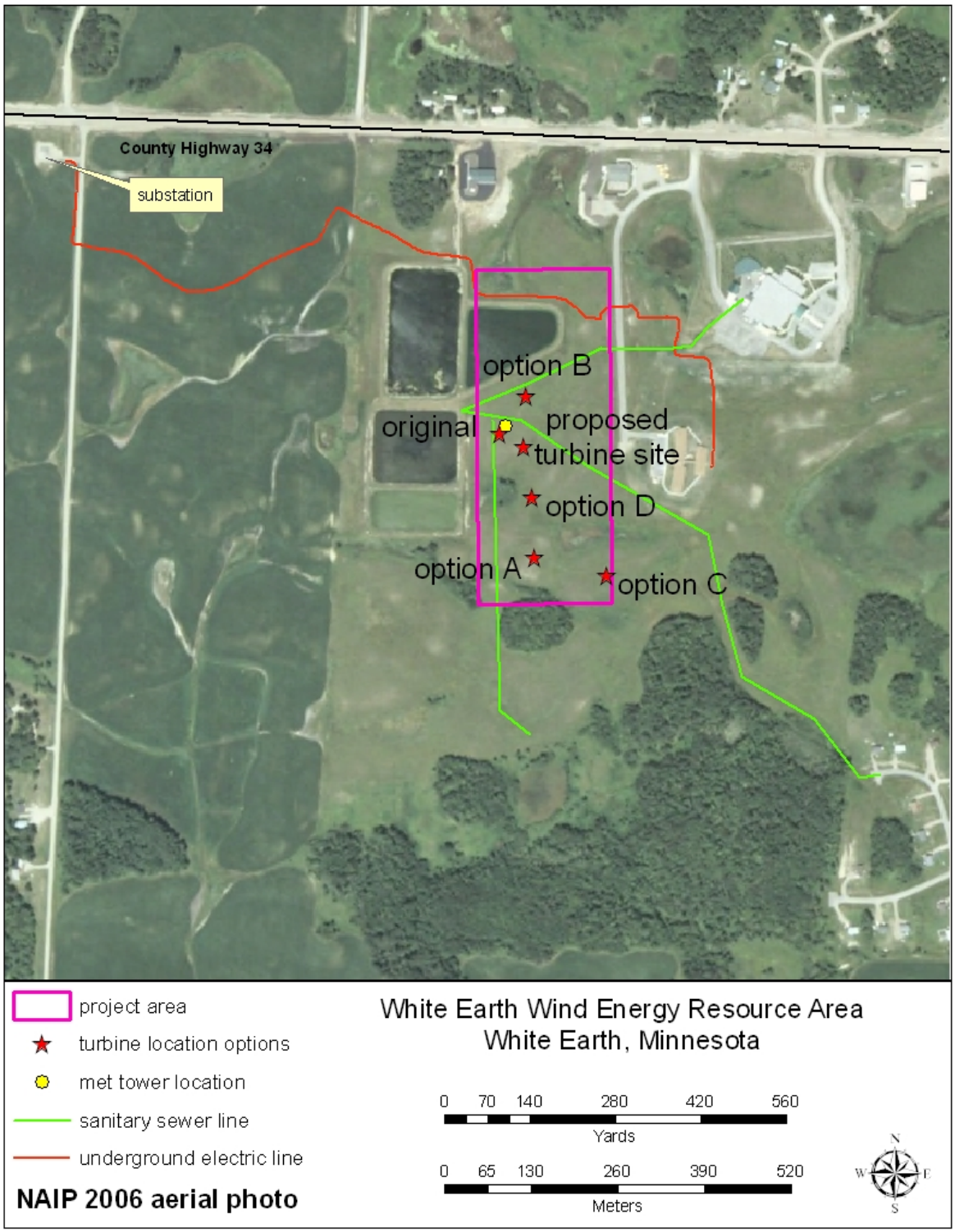


Figure 3. Utilities in the Project Area.

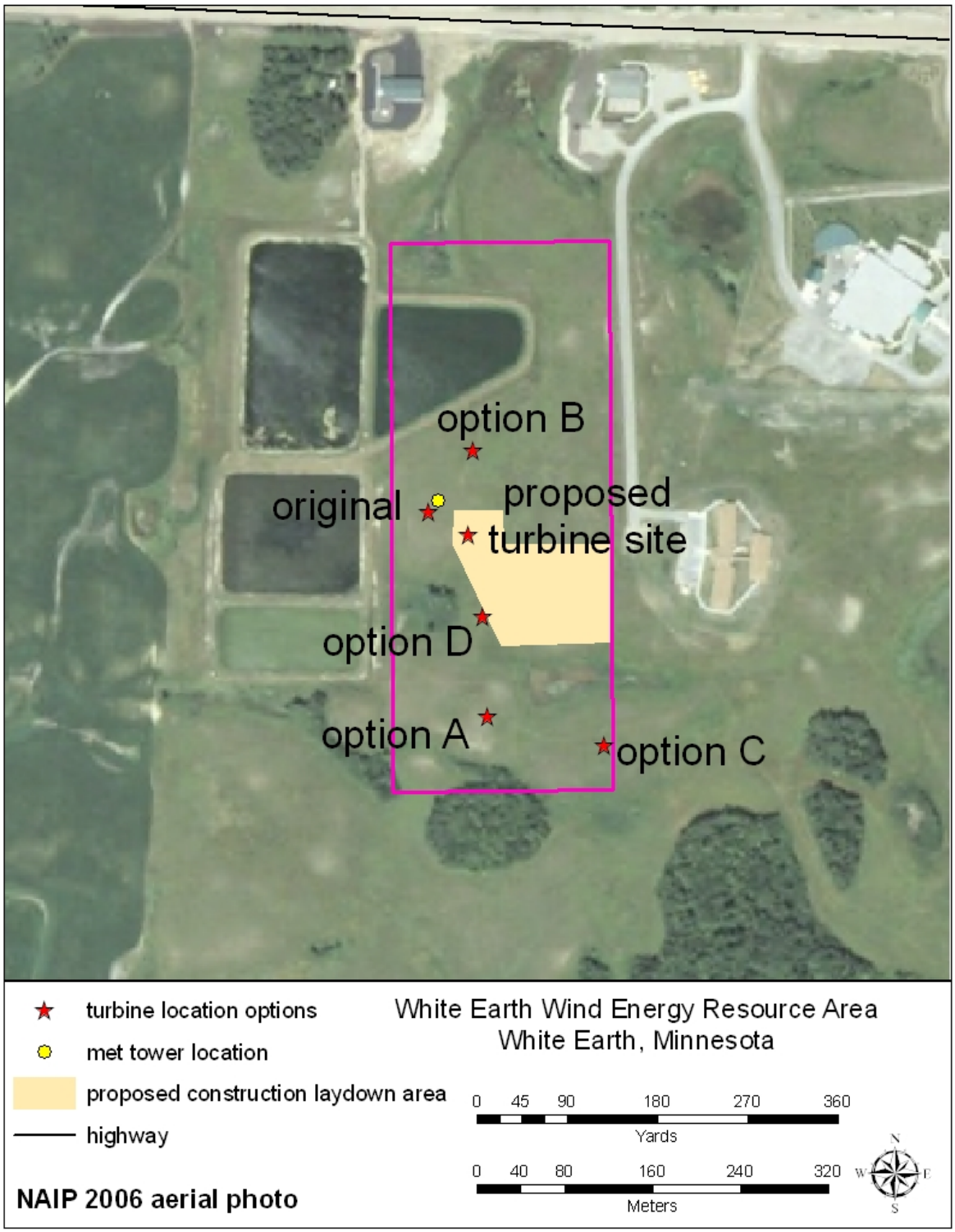


Figure 4. Proposed turbine site with laydown area.

It is anticipated that that the wind turbine and associated equipment would last approximately 20 years, after which time the turbine would be decommissioned and all equipment removed or the turbine would be upgraded.

2.1.2 Permits and Approvals

Prior to construction, the White Earth Tribal Council would ensure compliance with all required federal and state permits and approvals (Table 1). County permits are not required because the project would be located on tribal land.

Table 1. Required Permits/Approvals

Agency	Permit/Approval Type
Federal	
Federal Aviation Administration	Aeronautical Determination*
Environmental Protection Agency	Stormwater drainage permit
US Army Corp of Engineers	Section 404 permit
State	
MN Department of Transportation	Utility Access Permit Highway Access Permit

*A determination of no significant aeronautical change has been received and from the FAA, valid until January 19, 2011 – see Appendix F.

The Minnesota wind turbine siting ordinance guideline states that turbines should be placed "at least 600 feet from residential buildings" (MPUC 2008). The Proposed Action complies with this ordinance.

2.1.3 Construction and Installation Phase

White Earth Nation would start construction after all necessary federal and state permits and approvals (Table 1) are obtained. Construction activities would be based at the laydown area. Construction would involve the following tasks: (1) surveying and constructing access road and turbine pad, (2) constructing a foundation for the tower, (3) trenching for underground utilities, (4) placing underground electrical and communications cables in trenches, (5) connecting to the transformer, (6) transporting tower sections to the site and assembling the towers with a crane, (7) installing nacelle, rotor, and other turbine equipment, (8) final testing, and (9) final road grading, erosion control, and site cleanup. Further details on the construction phases are discussed below.

2.1.3.1 Access Road

An access road, approximately 400 feet long, would be built extending from Eagle View Road. The finished width of the access road would be approximately 10 feet, but would be wider (up to 20 feet) during construction to allow access of heavy equipment (e.g., crane). Total permanent disturbance would be approximately 0.1 acre, with an additional 0.1 acre of temporary disturbance. The access road would be surfaced with gravel or crushed stone, as locally available, for all-season access. Topsoil would be salvaged from road areas and replaced on

roadside slopes and other temporarily disturbed areas following construction to provide a reclaimed growth medium.

2.1.3.2 Turbine Pad

The circular turbine base would be constructed of concrete poured into a metal form. Depending on the turbine selected, the base would either be to a depth of 30 feet and with a diameter ranging from 12 to 15 feet or a spread foundation 10 feet deep and 40 to 50 feet in diameter. There is variation among turbine manufacturers as to preferred foundation methodology. A metal ring support for foundation bolts would be placed into the form prior to pouring the concrete. The hole for the turbine base would be excavated with a large backhoe or similar heavy equipment and the spoil would be removed from the site or used for road construction in accordance with all applicable regulations and permit conditions. The total disturbed area for the turbine pad and associated structures is expected to be less than 0.25 acre for the life of the project.

2.1.3.3 Transmission

Approximately 20 feet of 600 V underground power line would be installed from the wind turbine to a transformer/shutoff adjacent to the turbine, which would then interconnect with Wild Rice Electric Cooperative via the nearby MinnKota power substation. Up to 4,300 feet of 600 V underground powerline would be installed from the transformer pad to the MinnKota power substation. Interconnection with MinnKota would help ensure that the intermittent power production from the turbine does not interfere with the local power distribution system. The underground line to the MinnKota substation would be installed in an existing transmission corridor. All underground transmission lines would be installed using conventional installation/trenching techniques. Besides the transmission line, approximately 1,000 feet of communication wiring and cables would be installed in the same trench. Temporary disturbance for the transmission lines is estimated at 1.1 acre. No permanent disturbance is planned. No aboveground power lines or cables would be constructed or installed.

2.1.3.4 Turbine

The metal turbine tower would arrive via trucks in two or three pieces and be assembled on site. The turbine nacelle and three blades would arrive separately via trucks. A large crane would be used to assemble the tower, place the nacelle on top of the tower, and attach the blades to the nacelle hub. The tower would be bolted to the concrete pad using the anchor bolts; guy wires or other external support systems would not be used. There would be approximately 3.2 acres of temporary disturbance for construction of the tower and placement of the nacelle, hub, and blades (i.e., the laydown area, Figure 4). There would be a safety zone area equal in radius to the height of the turbine and blade (i.e., blade-tip height), up to 450 feet, around the turbine that would be kept free of further development.

2.1.3.5 Construction Facilities

Project construction would require 10-15 construction personnel and equipment for 1-2 months. During construction, the contractor would provide necessary facilities consistent with similarly sized construction projects, including construction trailer, temporary chemical toilets, solid waste collection containers, etc. All solid and liquid wastes would be removed from the site in accordance with all applicable regulations and permit conditions. Fuel would be used onsite to power vehicles and other equipment. Turbine oil would also be onsite, used as a lubricant. No other anticipated hazardous or flammable materials are expected to be on site.

2.1.4 Operations Phase

Once the turbine is constructed and tested, the White Earth Nation would begin the operations phase of the project. There would be a full-time technician on site initially, however after the initial testing, more periodic (weekly) maintenance would be completed to maximize performance and detect problems. The turbine would also be monitored from a remote location recommended by the turbine supplier through a computerized control system. Any problems would be promptly reported to Operations and Maintenance (O&M) personnel for correction. O&M personnel would perform both routine maintenance and most major repairs. Most servicing would be performed "uptower" (that is, without using a crane to remove the turbine from the tower). Routine maintenance would include replacing lubricating fluids periodically and checking parts for wear and damage. The roads, turbine pad, and trenched areas would be inspected regularly and maintained.

2.1.5 Decommissioning Phase

Pursuant to any final negotiated financial assistance agreement between White Earth Nation and DOE, White Earth Nation would retain title to the wind turbine and associated infrastructure and would be responsible for any decommissioning.

The turbine and other infrastructure is expected to have a useful life of at least 20 years. The trend in the wind energy industry has been to "repower" older wind energy projects by upgrading equipment with more efficient turbines. It is possible that the project could be upgraded with more efficient equipment and therefore have a useful life longer than 20 years. However, if the project were terminated, the turbine and other infrastructure would be decommissioned and all facilities would be removed to a depth of approximately 3 feet below grade; unsalvageable material would be disposed of at authorized sites. Salvageable items (including fluids) would be sold, reused, or recycled as appropriate. The soil surface would be restored as close as possible to its original condition. Reclamation procedures would be based on site-specific requirements commonly employed at the time the area is to be reclaimed and would include re-grading, adding topsoil, and replanting of all disturbed areas. Decommissioned roads would be reclaimed or left in place, at the discretion of the White Earth Nation.

2.1.6 Applicant-committed Practices

The White Earth Nation commits to the following measures and procedures to minimize or avoid environmental impacts if the Proposed Action is carried forward.

2.1.6.1 Cultural Resources

The project area has been previously disturbed and graded. However, the White Earth Nation is committed to minimizing impacts to cultural resources from the Proposed Action through the implementation the following actions:

- White Earth Nation will have its staff archaeologist on site during all excavation activities. This is standard practice for the White Earth Nation during excavations on federally-funded projects.
- If cultural resources are discovered during construction, the construction supervisor will halt construction activities and immediately notify SHPO and appropriate officials with the White Earth Nation who will then notify DOE within 24 hours of discovery. Construction will not resume until the materials are reviewed and evaluated to Professional Qualification Standards (48 FR 22716, September 1983) and proper notice has been given the Tribal Historic Preservation Officer, White Earth Band of the Chippewa Tribe, and DOE has provided concurrence with the intent to restart construction.
- If a site cannot be avoided, a detailed cultural resources recovery and mitigation plan will be developed and implemented after approval from the DOE and tribal authorities.

2.1.6.2 Noise

To minimize the impacts of noise on residences of White Earth and adjoining properties:

- Vehicles will be properly maintained and mufflers will be installed.
- Loud music will not be permitted on site.
- Construction will occur during daylight hours.
- A modern turbine, with low noise levels, will be used (the two units under consideration meet this criteria).

2.1.6.3 Soils and Vegetation

During construction, the following guidelines will be followed to minimize impacts to soils and vegetation:

- White Earth Nation will limit construction activities to the permanent and temporary disturbance areas described above (Section 2.1.1). The construction contractor will be required to provide erosion and sediment control measures in accordance with federal, state, and local laws and regulations.

- Travel off-road or other access outside of the cleared workspace will be prohibited.
- Appropriate NPDES (storm water) permits will be obtained and adhered to.
- Transmission lines, power cables, communication cables, and roads will be collocated.

During reclamation, operation, and decommissioning of the Proposed Action, the White Earth Nation will implement the following actions to minimize impacts to soils and vegetation:

- All areas not needed for permanent operation of the Proposed Action will be restored to the original or near-original topographic features and will be reseeded with a native seed stock or other seed stock.
- Invasion of noxious weeds will be monitored and controlled.

2.1.6.4 Land Use

The Proposed Action is planned for construction within an area already developed for sewer lagoons and surrounded by other developments. To minimize impacts to land use, the White Earth Nation will limit construction activities to the permanent and temporary disturbance areas described above (Section 2.1.1) so as to allow continued use of the surrounding areas under their current uses.

2.1.6.5 Air Quality

The White Earth Nation will ensure that:

- No garbage or other materials will be burned at the site.
- Dust abatement techniques will be employed during construction to minimize fugitive dust from leaving the site.
- All equipment will be properly maintained to minimize exhaust emissions.

2.1.6.6 Visual Resources

To minimize the impacts to visual resources from the Proposed Action, the White Earth Nation will implement the following:

- The wind turbine tower, nacelle, and blades, as well as the transformer box, will be painted a neutral color to blend in with the surroundings.
- The turbine will be sited to reduce the possibility of shadow flicker falling on surrounding inhabited structures (the selected proposed turbine site meets this criterion).

2.1.6.7 Water Resources

To minimize loss or degradation to water resources from the proposed project, the following measures will be taken:

- Wetlands will be avoided when determining final turbine location, road construction, and placement of underground lines (the selected proposed turbine site meets this criterion).
- The construction contractor will be required to provide erosion and sediment control measures in accordance with federal, state, and local laws and regulations.
- A stormwater drainage permit will be acquired prior to construction.

2.1.6.8 Wildlife (Including Special Status Species)

The White Earth Nation is committed to minimizing impacts to wildlife from the Proposed Action through implementing the following guidelines:

- The White Earth Nation will conduct training with all construction personnel instructing them to not harm any wildlife, regardless of species, and to brief them on applicable laws and regulations.
- White Earth Nation will limit construction activities to the permanent and temporary disturbance areas described above (Section 2.1.1).
- All transmission and other cables will be installed underground.
- The White Earth Nation will develop and implement a post-construction bird and bat fatality monitoring plan under the guidance of the USFWS and approval of DOE. Regularly scheduled surveys (e.g., every other week) for the spring, summer, and fall seasons after construction and searching of the area under the turbine for dead or injured birds and bats is expected to be part of the monitoring; these and other specific details will be included the plan.

2.1.6.9 Health and Safety

To minimize the impacts to public health and safety, the White Earth Nation will:

- Provide clean, safe drinking water, waste disposal services, portable toilets, and other items to meet basic human needs during the project. All waste will be collected and properly disposed of off-site.
- Require the contractor to conduct fueling and lubrication of equipment and motor vehicles in a manner to protect against spills and evaporation. The White Earth Nation will require the contractor to dispose of unused lubricants and oils in approved manners and locations. White Earth Nation will also require that the contractor immediately clean up any accidental spills of fuel, oil, grease, or other potentially toxic substances from construction equipment and dispose of the contaminated soils in an approved manner and location.
- Any open pits or holes left unattended will be fenced and flagged.
- The public would not be permitted in the work area.

2.2 NO ACTION ALTERNATIVE

The No Action alternative would mean that the DOE would not provide funding and therefore the wind energy project would not be developed on the White Earth Reservation. The No Action alternative would not fulfill White Earth's purpose and need for the project, which is to offset the reservation's overall consumption of fossil fuels with renewable wind power. If the Proposed Action is not constructed, the reservation's need for electrical power would continue to be provided by existing off-site sources and baseline conditions, as described in Chapter 3, would remain unchanged.

2.3 ALTERNATIVE SITE LOCATIONS CONSIDERED BY WHITE EARTH BUT ELIMINATED FROM DETAILED STUDY

The White Earth Reservation Tribal Council considered several other alternate locations. These alternate locations were eliminated from detailed study by White Earth Nation due to screening conflicts (e.g., poor wind speeds, shielding from trees), increased environmental impacts, and conflicts with existing Tribal infrastructure. These are described below.

2.3.1 Locate the Proposed Project - Proposed New Permanent Campus

Under this alternative, the Tribe would construct and operate the wind turbine project at a site located on agricultural land near the City of Mahnomen's Industrial Park and proposed White Earth Tribal and Community College. The primary disadvantages of this alternative are that the site is obstructed by two large grain elevators to the west and potential conflicts exist relating to existing and proposed development in the area. This site would result in further land restrictions for future development on the reasonably small acreage available for development. This alternative site was determined not to be feasible when compared to the Proposed Action, was eliminated from further consideration, and is not studied in detail in this EA.

2.3.2 Locate the Proposed Project - Solid Waste Transfer Station

Under this alternative, the Tribe would construct and operate the wind turbine project at a site located on a 20-acre parcel of Tribal lands currently housing a Tribal solid waste transfer station and headquarters and Tribal lumber yard near Waubun, Minnesota. The primary disadvantage of this alternative site is that the existing solid waste facility needs the currently available open lands for future development. Further, the existing electrical capacities of the power line at the site are not adequate to carry electricity generated by the size of turbine planned for this project. This alternative site was eliminated from further consideration and is not studied in detail in this EA.

2.3.3 Locate the Proposed Project - White Earth Housing Authority Campus

Under this alternative, the Tribe would construct and operate the wind turbine project at a site located on a 20-acre parcel of tribal land that houses a Head Start Center and the Tribal Housing Authority headquarters and shop buildings at Waubun, Minnesota. The primary disadvantage of the alternative site is that it has extensive wetlands surrounding much of the site and an adjacent active railroad would require setbacks. This alternative site was determined not to be environmentally sound when compared to the Proposed Action, was eliminated from further consideration, and is not studied in detail in this EA.

3.0 AFFECTED ENVIRONMENT

3.1 LOCATION, SETTING, AND HISTORICAL USE

3.1.1 Location

The proposed project would be located in the southwest area of the unincorporated tribal village of White Earth, Minnesota, in northern Becker County (Figure 1). Access to the site is via the newly constructed Eagle View Road off Becker County Highway 34. The proposed project would be located on tribal trust lands. A health center, housing subdivision, 31-unit senior housing facility, a Head Start facility, an ambulance/fire station facility, and a convenience store are located within 0.5 miles of the proposed turbine site. A new administration building located approximately 900 feet south of the proposed turbine site has recently been completed. Four sewage lagoon cells, comprising 21 acres, are located approximately 400 feet to the north and west of the project site.

The project area is near the top of a hill on a rolling ridge that runs north-south above the flatland prairie to the west. The topography rises from approximately 1,270 feet elevation, as measured approximately four miles west of the project site, to about 1,500-1,550 feet elevation at the project site (Figure 1). The proposed project would disturb a portion of the site that is a level area.

3.1.2 Setting

The project site falls within the Prairie Parkland ecological province of Minnesota (MDNR 2008a). Within the province, the site is within the Red River Valley section and the Red River Prairie subsection. The Red River Prairie subsection is largely a flat, uniform glacial lake plain interspersed with wetlands. This area drains to the north into the Red River of the North and then into Canada. Tallgrass and wet prairie were the dominant presettlement vegetation (Marschner 1974). Land use in this subsection is primarily agricultural.

The White Earth Indian Reservation is located in a humid continental zone, which results in wide variations in seasonal temperatures. The average summer temperature is 65 degrees Fahrenheit, with temperatures at times exceeding 100 degrees. The average winter temperature is 11 degrees Fahrenheit above zero, with lows dropping to 50 degrees Fahrenheit below zero. The average annual precipitation on the Reservation is 24 inches, with about 75% accumulating during the 120 day growing season, typically May through July, of each calendar year. Snowfall averages between 45 and 55 inches annually, with snow cover lasting approximately 130 days each year.

3.1.3 Historical Use

Prior to purchase by the Tribe, the project area was utilized as farmland. The Tribe purchased the land from a private landowner for the purpose of developing the sewer lagoons, housing, and other Tribal infrastructure. After purchase by the Tribe, the land was placed into the

Conservation Reserve Program (CRP) beginning in October 1997, until such time that planned developments could begin. In 2006, the land was removed from the CRP so that development actions could begin.

3.2 AFFECTED RESOURCES

3.2.1 Cultural Resources

Cultural resources are physical remains of past human activity and are protected under Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. Sec. 470 et seq), the Archaeological Resources Preservation Act of 1979, as amended (16 U.S.C. Sec. 470aa et seq), and other laws. Archeological Class I and Class III surveys of the area encompassing the project area were completed in1994 (Appendix D) prior to construction of the sewer lagoons, housing subdivision, and clinic. The author concluded that there were no Historic Properties located in the survey area and that the project should be allowed to proceed as planned. Letters were sent to SHPO and TPHO for archeological records review of the project area. Both groups responded that the reviews were negative regarding historic properties or other features that could be listed on National Register of Historic Places (Appendix D).

Consultations with Native American groups have been conducted by DOE (i.e., letters were sent to tribal contacts), and no sites of religious or traditional cultural importance were identified within the project area. Formal consultation is ongoing between DOE and the White Earth Nation; however, the tribe has not identified to DOE any traditional cultural properties or specific Native American issues concerning the Proposed Action.

3.2.2 Noise

There are no known studies of ambient noise levels in the project area. Noise levels in the project area are expected to be typical of a semi-rural setting. The project area is considered semi-rural based on the transition seen in the last five years from agricultural to more intense land use as noted by the recent non-agricultural construction that has taken place. Sources of ambient noise include vehicular traffic (cars, trucks, farm equipment), people in the developed areas (senior center, Head Start, etc.) sewage lagoon employees, sirens and vehicle noise from the fire station, weather disturbances, occasional aircraft flying over, and natural sources (e.g., wildlife, wind). Because the project site is semi-rural, sources of loud noises are probably few and intermittent and ambient noise levels are likely between 50 and 60 decibel A-weighted sound level (dBA), under calm wind conditions. This is the noise level range of a typical quiet suburban residential area that is not located near a major noise source, such as a highway (BFCWA 2001). Based on land use, this is a reasonable comparison to the project area.

Humans likely to be sensitive to noise in the general project area are at private residences (the closest residences are the 31-unit senior housing facility approximately 750 ft east of the project area) and scattered individual residences approximately one-quarter to three-quarters of a mile north of the proposed site. No sensitive wildlife receptors are known or likely to occur in the

project area based on the surrounding land uses (i.e., the area is not pristine; buildings roads, sewer lagoons occur near the project site), but no study has occurred.

3.2.3 Soil Resources

Under the Proposed Action, the turbine would be located in an area where the predominant soil series is Fordale-Langhei complex (Christensen 1998). This complex is commonly found on glacial moraines and the slope is usually 6 to 12 percent. Both soil components are well drained, classified texturally as clay loam, and have a depth class of "very deep" (more than 60 inches).

Soil types within the project area boundary are listed in Table 2 and shown in Figure 5. Of these, about 50% of the project area by soil type is farmland of state importance (including the proposed turbine site), 32% is prime farmland, and 18% would be prime farmland if drained (Christensen 1998).

Table 2. Project Area Soils

Map unit symbol	Map unit name	Rating
36	Flom silty clay loam	Prime farmland if drained
171B	Formdale clay loam, 2 to 5 percent slopes	All areas are prime farmland
544	Cathro muck	Not prime farmland
931C2	Formdale-Langhei complex, 6 to 12 percent slopes, eroded	Farmland of statewide importance
1234B	Formdale-Buse complex, 2 to 6 percent slopes	All areas are prime farmland

3.2.4 Vegetation Resources

Becker County is predominantly agricultural in the western half, where the project site is located, and heavily forested with oak, basswood, birch, aspen, and pines in the eastern half (MACLC 2006). Prior to 1997, the project area was used for agricultural production. In October 1997, the Tribe bought the land and enrolled the project and surrounding area in the CRP, a voluntary program administered by the Farm Service Agency where former agricultural land is planted in resource-conserving vegetative covers to reduce water and erosion and increase wildlife habitat. Landowners are paid annual rental payments for lands enrolled in the program. In 2006, the land was removed from the CRP program so that development actions could begin.

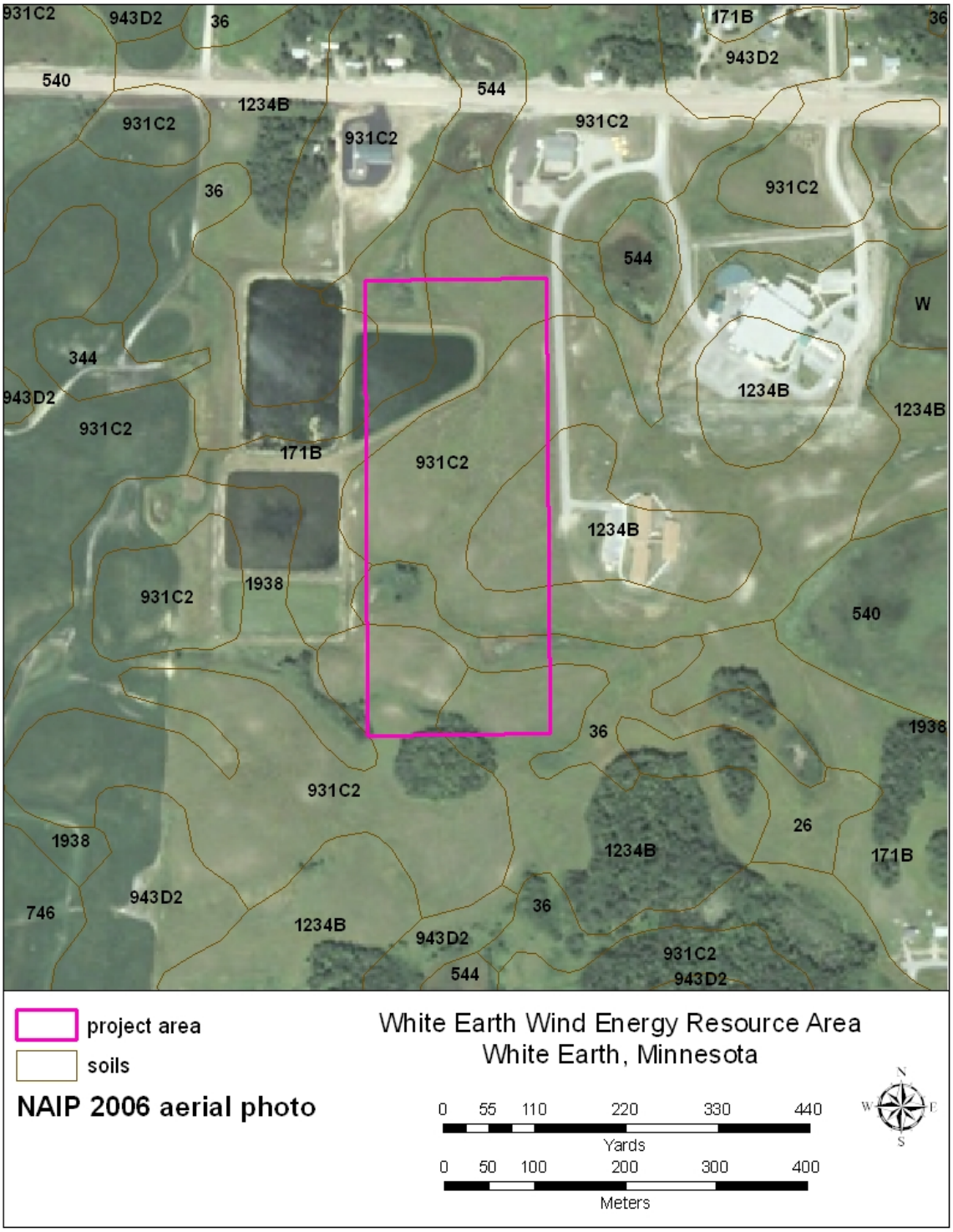


Figure 5. Soils in the Project Area.

Currently, vegetation at the project area is planted with native grasses and forbs. The grasses include big bluestem (*Andropogon gerardii*), switch grass (*Panicum virgatum*), and Indian grass (*Sorghastrum nutans*); the forbs include Maximilian sunflower (*Helianthus maximiliani*), purple prairie clover (*Dalea purpurea*), white prairie clover (*Dalea candida*), cone flower (*Ratibida* sp.), and sweet clover (*Melilotus* sp.). There are scattered patches of small deciduous trees and shrubs, including willow (*Salix* sp.) and aspen (*Populus tremuloides*) around some of the wetland and larger wooded areas south and southeast of the site. Leafy spurge, a weedy species, is found in spotty infestations in the project area. The Tribe is currently using biological control methods (release of insects that are known to control leafy spurge) to control this species. The success of this method will be monitored in 2009 and the use of a herbicide (spot spraying) may be added as a control method if necessary.

3.2.5 Land Use

The White Earth Reservation was created in 1867 by a treaty between the United States and the Mississippi Band of Chippewa Indians. The parcel of land containing the project area was purchased by the Tribe from private landowners in the 1990's. The site was enrolled in the CRP from 1997 to 2006. Although no longer in CRP, most of the project area remains in planted grasses of a native seed mix (see Section 3.2.4). Current adjacent land uses include developed community facilities such as a fire department building, Head Start building, a senior living facility, health clinic, community sewer lagoons, housing subdivision, and a newly constructed tribal administration building and road.

The Farmland Protection Policy Act (FPPA), administered by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. The FPPA ensures that Federal programs are administered to be compatible with state and local government, as well as private programs and policies that protect farmland.

In compliance with FPPA, the NRCS and project proponent jointly completed a Farmland Conversion Impact Rating form for the Proposed Action (Appendix E). Data used to fill out the form was obtained from a site visit, GIS analysis, the U.S. Census Bureau, and the White Earth Nation. The NRCS calculated the relative value of farmland to be converted at the site and assigned a score of 78 out of 100. The informal site evaluation resulted in a score of 42 out of a possible 160. The combined relative value (78) and the site assessment (42) score is 120 points (Appendix E). The FPPA states that sites receiving a combined score of less than 160 do not need protection under FPPA. It should be noted that the form was filled out based on initial acreage estimates of 10 acres of disturbance prior to final selection of the turbine location. Final acreage estimates of disturbance are less than 4 acres (02.5 acres for the turbine pad, 3.2 acres for the temporary laydown area, and 0.2 acres for the access road). Therefore, the form was filled out using conservative estimates and the actual score would be lower than 120. Using either the conservation or actual acreage figure would result in a score that shows the site does not need protection under the FPPA.

3.2.6 Air Quality

In Minnesota, four pollutants are used to calculate the Air Quality Index (AQI): ground-level ozone, sulfur dioxide, carbon monoxide, and fine particulate matter (PM_{10}) (MPCA 2008). The pollutant with the highest value determines the AQI for that hour. The two pollutants of most concern in Minnesota are ozone and PM_{10}. Ozone is only a problem in warm weather and therefore is only monitored April through September; PM_{10} is monitored year-round. The closest AQI monitoring station is in Detroit Lakes, Becker County. In 2007, Average AQI for this station was 40 and the median was 38. This rating is considered "good". By comparison, an AQI of 100 reflects where health effects might be expected in sensitive populations. The AQI was good for 80% of the days and moderate for 18.9% of the days (MPCA 2008).

3.2.7 Visual Resources

The existing view of the project area is a semi-rural setting (some man-made features are evident) with rolling hills and mostly unobstructed views. There are some vertical features currently present, including the meteorological tower for the project. Other features, particularly the sewer lagoons, do not have a strong vertical component and are not immediately visible from many viewpoints. The nearest visual receptors are the residents of the senior housing facility, located approximately 750 feet east of the project area. The current view of the project area from the senior housing facility is shown in Figure 6. Trees obscure most of the view of the project area from the subdivision southeast of the project area. Scattered residents located about one-quarter mile or greater north and northeast of the project area have unobstructed view of the project area. Various government buildings and travelers on Becker County Highway 34 have unobstructed views of the project area, as shown in Figure 7.

Figure 6. View of Project Area looking west from the senior housing complex immediately east of the site.

Figure 7. View of Project Area looking south from Becker County Highway 34.

3.2.8 Water Resources (Including Wetlands)

Surface water resources on the White Earth Nation include 530 water bodies encompassing 51,290 acres, over 300 miles of rivers and streams, and 124,311 acres of wetlands and seasonal wetland areas. Water resources within the project area consist of the man-made sewer lagoons; three of the four cells are outside the western boundary of the project area but one cell is mostly within the project area. These lagoons provide about 12.5 acres of open water and are known to receive waterfowl and shorebird use (Derby and Dahl 2007).

The project area has several small natural wetlands, according to the National Wetland Inventory Maps for the area (Figure 6). These include the following:

- a 0.1 acre seasonal wetland
- a 0.4 acre seasonal wetland that is partially drained or ditched, located in the southeast part of the project area
- a 0.6 acre temporary wetland that is partially drained or ditched along the northern boundary of the project area

There are several other small temporary and seasonal wetlands near the project area, but outside the boundaries (Figure 8).

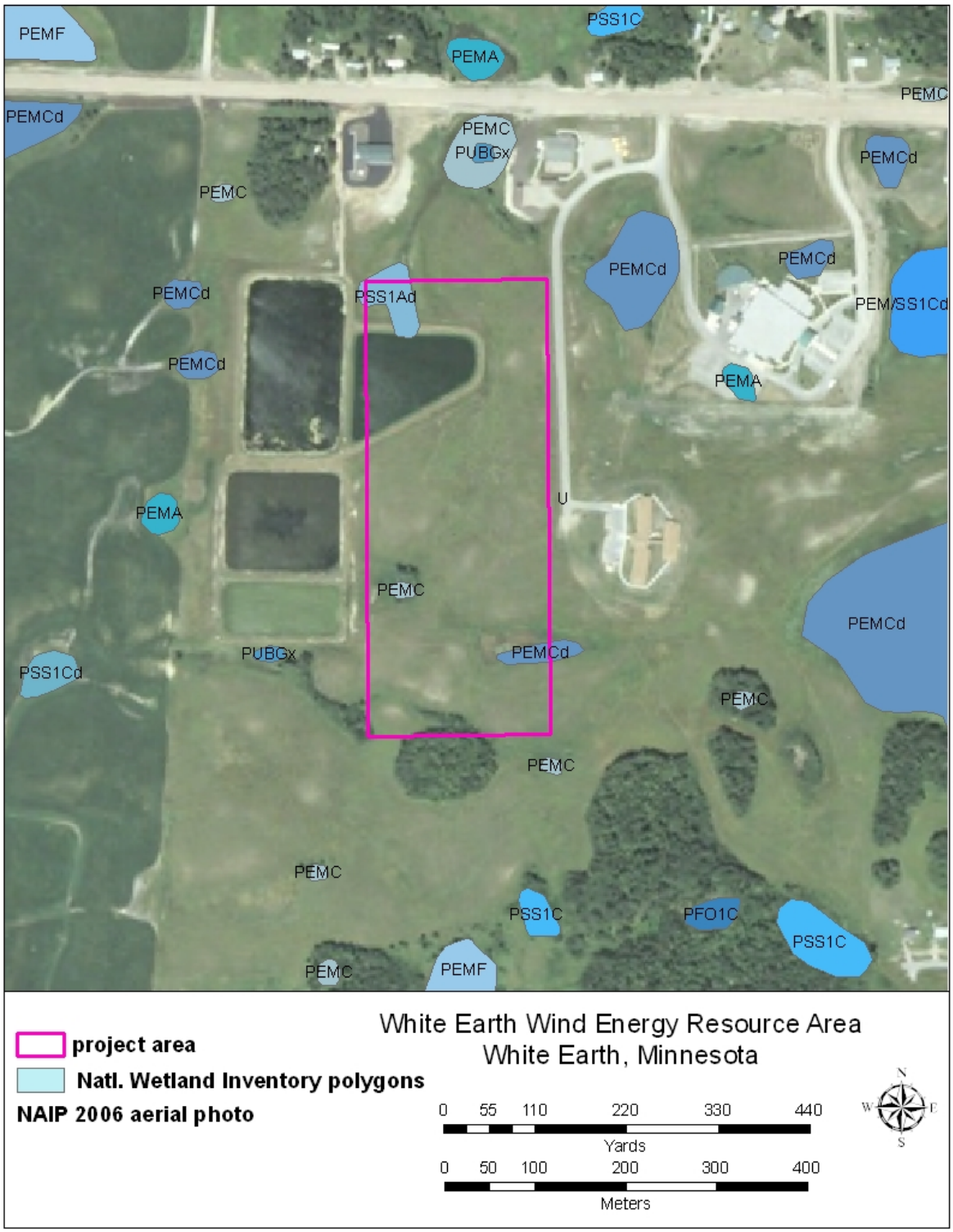


Figure 8. Wetlands in the Project Area

3.2.9 Threatened, Endangered, Candidate, and Proposed Species

An extensive review of existing publications and data revealed no evidence of any federally protected plants or animals within the project area (Derby and Dahl 2007). Additionally, the USFWS, in their reply to a letter of inquiry, did not indicate the presence of any federally protected species (Appendix C).

The Minnesota Natural Heritage database was reviewed (October 2007) for rare plants, animals, or important natural features that are known to occur within the project area and within a 2-mile radius of the project area (Appendix I). Three known occurrences of rare species are listed in the database within the 2-mile radius: two plants (English sundew [*Drosera anglica*] and hair-like beak-rush [*Rhynchospora capillacea*]) and one bird (trumpeter swan [*Cygnus buccinators*]). Additionally, two known occurrences of rare native plant communities occur within the 2-mile radius, Dry Hill Prairie (Northern) Type and Mesic Prairie (Northern) Type. These occurrences are within the 2-mile radius, but outside the project area. The trumpeter swan, a threatened species on the Minnesota State Endangered, Threatened, and Special Concern Species list, occurs throughout Becker County and has the potential to occur in the project area, particularly the sewage lagoons. The plant species and two rare native plant communities, however, are not likely to occur on the project area since the area has previously been in agriculture production.

Four other species listed on the Minnesota State Endangered, Threatened, and Special Concern Species list could occur on or near the project area based on the presence of suitable habitat, even though there are no known records in the Minnesota Natural Heritage database. These include the eastern spotted skunk (a state threatened species), the northern myotis (a species of special concern in Minnesota), the bald eagle (a species of special concern in Minnesota), and the snapping turtle (a species of special interest in Minnesota).

3.2.10 Wildlife

The area immediately around the project area site is partially developed and the site itself is native mixed grasses and forbs. Wildlife potentially occurring at or near the project area is described below.

3.2.10.1 Big Game

Big game found in the region includes the white-tailed deer (*Odocoileus virginianus*) and black bear (*Ursus americanus*). Black bear are found in areas of forests, swamps, and remote areas with dense cover (MDNR 2008b); this project area, with its lack of forest cover and nearby development, would not be considered bear habitat. White-tailed deer are very common throughout the state, and could occur at the project area (MDNR 2008b). Based on information from the Minnesota Department of Natural Resources populations of both species are thought to be stable and both are harvested during hunting seasons (MDNR 2008b).

3.2.10.2 Other Mammals

The dirt mounds of burrowing rodents (possibly pocket gophers [*Geomys bursarius*]) were observed in the project area during a site visit (Derby and Dahl 2007). Based on range maps and habitat requirements and availability, other small mammals likely to be found on or near the project area are listed below (Table 3) (MDNR 2008b).

Table 3. Small Mammals Potentially Occurring At or Near the Project Area.

Common name	Scientific name
Weasel	*Mustela* sps.
Mink	*Mustela vison*
Badger	*Taxidea taxus*
Raccoon	*Procyon lotos*
Virginia opossum	*Didelphis virginiana*
Porcupine	*Erethizon dorsatum*
Northern flying squirrel	*Glaucomys sabrinus*
Thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*
Fox squirrel	*Sciurus niger*
Gray squirrel	*Sciurus carolinensis*
Red fox	*Vulpes vulpes*
Gray fox	*Urocyon cinereoargenteus*
Coyote	*Canis latrans*
Eastern cottontail	*Sylvilagus floridanus*
White-tailed jackrabbit	*Lepus townsendii*
Beaver	*Castor canadensis*
Muskrat	*Ondatra zibethicus*
Striped skunk	*Mephitis mephitis*
Eastern spotted skunk	*Spilogale putorius*
Bobcat	*Lynx rufus*

Several species of bats could be found in Becker County, Minnesota, including the big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), eastern red bat (*Lasiurus borealis*), little brown bat (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*), and the silver-haired bat (*Lasionycteris noctivagans*) (BCI 2008). Potential roosting habitat within the project area is probably limited to trees or buildings; no caves (roosting habitat for some species) were observed during a site visit (Derby and Dahl 2007) or reported by tribal personnel. Bats may forage over the entire project area, although the extent of use is not known.

3.2.10.3 Raptors

Although generally considered environmentally friendly, wind power development has been associated with the death of birds that collide with turbines and other wind farm structures

(Erickson *et al*. 2001). Raptors are of special concern due primarily to the large numbers of dead raptors found at the Altamont, California wind facility (Orloff and Flannery 1992).

The range of golden eagles (*Aquila chrysaetos*) and bald eagles (*Haliaeetus leucocephalus*) includes the project area. Many species of hawks could also be found in the area, such as the Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), broad-winged hawk (*Buteo platypterus*), red-tailed hawk (*Buteo jamaicensis*), sharp-shinned hawk (*Accipiter striatus*), and rough-legged hawk (*Buteo lagopus*) hawk. The osprey (*Pandion haliaetus*), northern harrier (*Circus cyaneus*), and American kestrel (*Falco sparverius*) also have ranges that include the project area.

Raptors utilize areas for a number of different reasons, particularly nesting and feeding. Potential nesting sites in the project area for above-ground nesting raptor species are present in the form of scattered trees and the wooded area to the south and southeast but these sites are limited. These areas could also serve as roost sites. No cliffs or rock outcrops were identified during the site visit, which serve as nesting and roosting areas. There are no prominent bluffs or ridges in the project area; raptors are often observed flying along the rim edges of bluffs or ridges, using updrafts to maintain altitude while hunting, migrating, or soaring. Based on the site features observed during a site visit (Derby and Dahl 2007), it does not appear that the proposed project site would support high densities of raptor nests.

Potential raptor prey sources include isolated ground squirrels and other rodents, rabbits, and waterfowl. The dirt mounds of burrowing rodents (possibly pocket gophers) were observed in the grassland area during the site visit; these types of areas can attract feeding raptors. Waterfowl that concentrate in the sewage lagoons during certain times of the year can also attract feeding raptors.

Since some roost sites and food sources are available in or near the project area, it is likely that raptors would use the area. However, raptor use is likely no greater than surrounding areas with similar habitat.

3.2.10.4 Upland Game Birds

The wild turkey (*Meleagris gallopavo*) and ruffed grouse (*Bonasa umbellus*) could be found in the project area, according to range maps and habitat requirements. The wild turkey frequents open wooded areas, brushy grasslands, and river bottoms and the ruffed grouse commonly inhabit forests, including aspen forests (MDNR 2008b). Their preferred habitat is limited in the project area but is found in the surrounding area so they could use the project area occasionally, such as when moving from one area to another. However, the development around the project area probably limits such use.

3.2.10.5 Other Birds (Including Migratory Birds)

Grasslands and wetlands provide nesting habitat for many migratory bird species, including the grasslands and wetland found at the project area. However, the project area is close to many

buildings and driveways and there is daily human activity at the sewage lagoons, on the driveways, and at the buildings. Given the current conditions, the area does not provide high quality nesting opportunities, but nesting likely occurs at some level.

During a site visit, bird use of the sewage lagoons was recorded (Table 4) (Derby and Dahl 2007). While it was not an exhaustive survey, it provides a snapshot of bird use and confirms that migratory birds use the area.

Table 4. Observed Bird Use of the Sewer Lagoons

Species	Number
Canvasback (*Aythya valisineria*)	24
Gadwall (*Anas strepera*)	4
Blue-winged teal (*Anas discors*)	4
Mallard (*Anas platyrhynchos*)	6
Bufflehead (*Bucephala albeola*)	2
Killdeer (*Charadrius vociferous*)	1
Yellow-legs (*Tringa* sp.)	1
American coot (*Fulica Americana*)	1

3.2.10.6 Amphibians, Reptiles, and Fish

Amphibians

Three toad species could occur in the project area; Canadian toad (*Bufos hemiophrys*), American toad (*Bufo americanus*), and Great Plains toad (*Bufo cognatus*). Toads prefer to be near wetter habitats, such as creeks, small wetlands, or lakeshores, but they also utilize various upland habitats such as grasslands, woodlots, gardens, and parks (MDNR 2008b).

Several frog species may inhabit the project area. The gray tree frog (*Hyla versicolor*), Northern leopard frog (*Rana pipiens*), and western chorus frog (*Pseudacris triseriata*) are species that prefer open habitats such as wetlands and fields. The wood frog (*Rana sylvatica*) lives in forested areas with wetlands or ponds nearby (MDNR 2008b).

The tiger salamander is probably found in the project area because it is common throughout Minnesota. It requires permanent bodies of water (e.g. the sewer lagoons) for breeding (MDNR 2008b). The blue-spotted salamander, which lives in forests with areas of small wetlands and moist soils could be found in the wooded areas outside of the immediate project area (MDNR 2008b).

Reptiles

Several snake species could be found in the project area, such as the brown snake (*Storeria dekayi*), common garter snake (*Thamnophis sirtalis*), plains garter snake (*Thamnophis radix*), redbelly snake (*Storeria occipitomaculata*), and smooth green snake (*Liochlorophis vernalis*). With the exception of the redbelly snake (forest and woodland dwellers), most of these species

can be found in about any habitat in the project area, such as open grasslands, near water, or wooded areas (MDNR 2008b).

The western painted turtle (*Chrysemys picta bellii*) ranges throughout Minnesota and can be found near permanent bodies of water with basking sites (MDNR 2008b). The snapping turtle (*Chelydra serpentine*) lives near permanent water, such as lakes, ponds, and water-filled ditches. It is possible that both these species could utilize the sewage lagoons.

Fish

The temporary and seasonal wetlands near the site probably do not support fish because they do not have a permanent water regime. The sewage lagoons are the closest permanent open water to the site and they are not managed to support fish.

3.2.11 Health and Safety

Existing public safety hazards in the project area are very few. Potential hazards include the meteorological tower and sewage lagoons, but no safety incidents have been reported. There are currently no public roads into the project area so there are no traffic hazards.

3.2.12 Socioeconomics/Environmental Justice

For the purposes of this EA the area of potential socioeconomic impact includes both White Earth Village and the White Earth Reservation. White Earth Village is one of five unincorporated communities on the White Earth Reservation that contain governmental housing subdivisions, tribal governmental offices and service delivery facilities, community buildings and limited numbers of commercial businesses. The Reservation comprises nearly 1,000,000 acres, encompassing Mahnomen County, and portions of Becker and Clearwater counties in Minnesota. Land ownership within the Reservation is largely privately held with tribal government controlled land approximately 11 percent of the total land area. This is principally land that is in wildlife protection programs, or is made up of surface water, forest, or underlies built-up communities. Nearly 43 percent of the land is forested, 33 percent cultivated, 10 percent transitional agriculture, and 12 percent surface water or wetlands.

The main sources of employment are the tribal casino, and tribal and federal governmental facilities. Private development is limited except within the four incorporated cities and towns within the boundaries of the Reservation ranging in population from 94 to 1,202. These communities are not under tribal control. Manufacturing industry is present in the region, but is very limited within the Reservation boundaries. A few small resorts and convenience stores exist to serve local and tourist populations. Nearly all goods and services are imported and only minimal economic development has occurred. Electric power is purchased by residences, tribal facilities, and businesses from outside suppliers such as Otter Tail Power Company or Wild Rice Electric Cooperative and is derived from coal burning or hydropower plants in North Dakota. The Western Area Power Administration (WAPA) provides and subsidies some of the power purchased by the investor-owned electric companies and electric cooperatives, passing along the subsidy in slightly reduced rates. Tribal facilities, including the tribal casino, consume over

$500,000 in electricity annually. The tribal government derives funding for its operation from governmental grants and net revenues as distributed from the casino. The level of revenue from the casino has been insufficient for distribution as per capita payments to tribal members. Approximately 20,000 persons are enrolled as tribal members with about 4,000 living on the Reservation.

White Earth Village is classified as a Census Designated Place (CDP) by the U.S. Census Bureau. As the capital city of the tribal nation, major administrative and service facilities are present along with a tribal school and a U.S. Public Health Service clinic. A new convenience store developed by an area non-profit development corporation is the only commercial establishment. In 2000, the population of White Earth, MN was 424 (Census 2000) and was evenly divided between males and females. The town contains 165 housing units, with 154 households and 84 family households. About 94% of the population is American Indian. The median age of the population is 25 years. Median household income is $12,361; median family income is $15,469 (based on Census 2000 sample data). Per capita income is $6,982. About 42% of families and 46% of individuals lived below poverty level in 1999 (based on Census 2000 sample data).

4.0 ENVIRONMENTAL CONSEQUENCES

This section discusses the known and potential environmental consequences associated with the Proposed Action and No Action alternatives. An environmental consequence includes a change, positive or negative, in the existing environment as a result of implementation of one of the alternatives. The discussion in this section assumes that the Applicant-committed Practices identified in Section 2.1.6 are implemented.

4.1 CULTURAL RESOURCES

4.1.1 Proposed Action

No cultural resources were identified during the original Class I (file search) or Class III (field inventory) surveys conducted in the project area (Appendix E). Implementation of the Proposed Action would not have an impact on any known cultural resource within the project area.

As stated in the Applicant-committed Practices (Section 2.1.6.1), the White Earth Nation would have its staff archaeologist on site during all excavation activities. If any are found incidentally, the construction supervisor would halt construction activities and immediately notify the SHPO and appropriate officials with the White Earth Nation who would then notify DOE within 24 hours of discovery. Construction would not resume until the materials are reviewed and evaluated and proper notice has been given to the Tribal Historic Preservation Officer, White Earth Tribal representative, and DOE has provided concurrence with the intent to restart construction. If a site cannot be avoided, a detailed cultural resources recovery and mitigation plan would be developed and implemented after approval from the DOE and tribal authorities.

4.1.2 No Action Alternative

Under the No Action alternative, DOE would not provide funding to the White Earth Nation for their proposed Wind Energy Project. The project would not be built as part of a Federal Action, no potential impacts would occur to cultural resources at the White Earth village and baseline conditions as described in Chapter 3 would remain unchanged.

4.2 NOISE

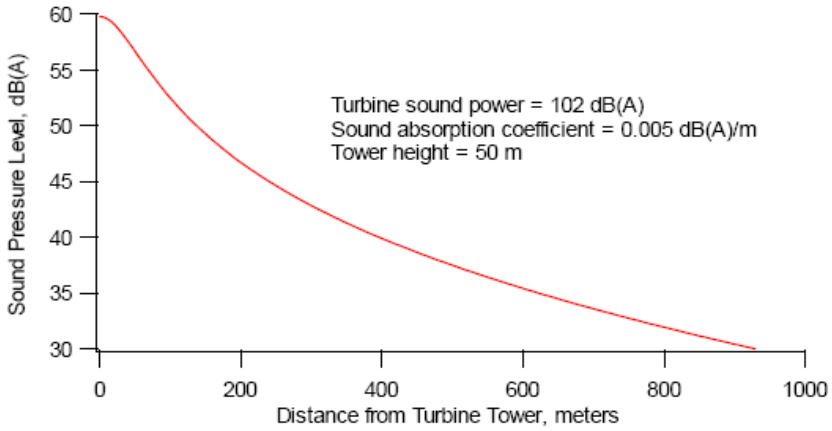
4.2.1 Proposed Action

Increased noise levels would occur in and near the project area during construction. The noise would be associated with construction activities, including noise generated by increased traffic on area roadways. Construction activities associated with development of a wind farm have been reported to generate noise levels of 85 to 88 dBA at a distance of 50 feet (Bureau of Land Management 1995). This noise level is greater than the estimated ambient noise levels at the project area, and can be equated with the noise levels associated with a heavy truck at 55 mph. The nearest residential development is located approximately 750 feet from the proposed turbine

site. The greater the distance from a noise source, the less the noise is heard. There are, however, many other variables that affect noise propagation such as source characteristics, air absorption, ground effects, blocking of sound by obstructions and uneven terrain, and weather. Calculating noise impacts from construction using complex models that consider all these factors is beyond the scope of this EA, however construction noise would likely to be audible at the nearby residential development and other facilities (such as the new administrative building). The noise, however, is unlikely to be at levels that are disruptive and any noise would be temporary in nature. Additionally, Applicant-committed Practices identified in Section 2.1.6.2 (properly maintaining vehicles including installation of mufflers, prohibiting loud music at the project site, and limiting construction to daylight hours,) further help control project-related construction noise levels. Therefore noise levels associated with project construction are not considered significant.

Noise from operation of the proposed wind turbine is most likely to be produced from the revolving rotor blades as they encounter turbulence in the passing air, known as aerodynamic noise. Such noise is usually described as "swishing" or "whooshing" sounds. Mechanical noise has virtually disappeared from modern wind turbines due to engineering designs that minimize vibrations. Blade tips and back edges are currently designed to minimize aerodynamic noise. Actual noise levels are affected by the speed at which the blades are moving through the air.

Of the two turbine models under consideration for this project, the 1MW Nordic reports noise levels of less than 104 dB(A) at 8 meter/second in their product specifications; no noise information is available for the 750 kW Heron. The Nordic data are comparable with information found in the literature. The following graph shows an example of noise that might be produced by a single large modern wind turbine, assumed to be on a 164-foot tower, the source sound power level is assumed to be 102 dB(A), and the sound pressure levels are estimated at ground level (Rogers 2004).



Assuming the turbine chosen for the Proposed Action is similar to the one used in the above graph (the Nordic is similar in turbine sound power at a rating of less than 104 dB(A) as compared to 102 dB(A) but it would be on a higher tower at 230 feet as compared to 164 feet), the nearest residential development (the senior housing facility located approximately 750 feet

east of the proposed turbine site) would hear turbine-related noises at approximately 35 dB(A). Noise impacts to residences and other developments at a greater distance would be less than those at the senior housing development. The noise would only occur when the wind turbine is operating and other existing background noises would mask the turbine noise levels to some degree. To put these noise levels in perspective, noise levels of 30 dB(A) are comparable to a soft whisper and 40 dB(A) are typical of noise in a library. At noise levels predicated for the Proposed Action, noise associated with operation of the wind turbine is not considered significant.

4.2.2 No Action Alternative

Under the No Action alternative, DOE would not provide funding to the White Earth Nation for their proposed Wind Energy project. The project would not be built as part of a Federal Action and no increases in noise levels would be expected. Existing baseline noise sources (wind, traffic, wildlife, dogs, humans, etc.), as described in Chapter 3, would remain.

4.3 SOIL AND VEGETATION RESOURCES

4.3.1 Proposed Action

The Proposed Action would temporarily impact approximately 3.3 acres during construction (3.2 acres for the laydown area 0.1 acre for the access road) and permanently impact approximately 0.35 acre (0.25 acre for the turbine pad and associated structures and 0.1 acre for the access road). These disturbances would directly affect the soils and vegetation currently on site. The soils that would be affected are classified as farmland of state importance. This rating indicates the on-site soils would be productive for agricultural uses, however they are not currently used for agriculture production. They are unlikely to be used for agriculture in the foreseeable future because the site is within an area set aside for development. Based on the current and future land use for these soils and small amount of acreage involved, the Proposed Action would not result in significant impacts to soils.

The project area vegetation that would be disturbed by construction and operation of the Proposed Action includes planted grasses and forbs that were formerly enrolled in CRP and, prior to that, used for cultivated agriculture. No impacts to wetlands or wooded areas are anticipated. Impacts to vegetation are not considered significant because the existing vegetation has been previously disturbed and replanted and because of the small area that would be permanently disturbed (0.25 acres for the turbine pad and associated structures and 0.1 acre for the access road).

Temporary impacts to soils and vegetation due to construction would be mitigated through the Applicant-committed Practices identified in Section 2.1.6.3. These include limiting the construction activities to approved areas; requiring the contractor to provide erosion control measures; prohibiting off-road travel; obtaining and adhering to NPDES permits; co-locating transmission lines, power cables, communication cables, and road; restoring temporarily

disturbed area to original or near-original topographic features and reseeding with native seed stock (or other approved seed stock); and monitoring and controlling noxious weeds.

4.3.2 No Action Alternative

Under the No Action alternative, DOE would not provide funding to the White Earth Nation for their proposed Wind Energy project. The project would not be built as part of a Federal Action and there would be no disturbances to the soils and vegetation and the existing planted grasses would remain. Baseline conditions described in Chapter 3 would remain unchanged.

4.4 LANDUSE

4.4.1 Proposed Action

The Proposed Action would result in the temporary disturbance of approximately 3.3 acres during construction (3.2 acres for the laydown area 0.1 acre for the access road) and the permanent conversion of 0.35 acre (0.25 acre for the turbine pad and associated structures and 0.1 acre for the access road) of planted grassland to roads, turbine pad, and other project features. The project area is currently surrounded by other development including the White Earth Village sewer lagoons (see Section 3.2.5). Development of the Proposed Action would impact a small acreage that is currently unused and bring it to a similar, developed use as the surrounding area.

The project area has not been farmed in over 10 years, so active farmland would not be lost. Additionally, the amount of land involved is very small. Both of these factors, along with others, were evaluated in the FPPA Conversion Impact Rating form which resulted in a score of 120 points. The FPPA states that sites receiving a combined score of less than 160 do not need protection under FPPA, so farmland conversion is not considered an impact.

To minimize land use impacts, the applicant has committed to limiting construction activities to the permanent and temporary disturbance areas described in this EA (see Section 2.1.6.4). Based on the above discussion, land use impacts are not significant under the Proposed Action.

4.4.2 No Action Alternative

Under the No Action alternative, DOE would not provide funding to the White Earth Nation for their proposed Wind Energy project. The project would not be built as part of a Federal Action and there would be no new impacts to land use. The baseline conditions described in Chapter 3 would remain unchanged.

4.5 AIR QUALITY

4.5.1 Proposed Action

Both negative and beneficial impacts to air quality are likely to be associated with development the Proposed Action. Air quality would be minimally impacted in the immediate project area during construction due to dust and exhaust from construction equipment. Fugitive dust from ground disturbance would be generated during construction of the turbine pad, access road, and buried transmission line. The amount of fugitive dust would depend largely on weather conditions during construction, with windy and dry weather generating the most fugitive dust. Fugitive dust emissions would be temporary and intermittent during trenching and pad construction activities within the two month construction window. After construction, air quality is expected to return to near pre-construction levels.

It is assumed that if the wind turbine is not built, the power needed by the White Earth Village would continue to be supplied primarily by fossil fuel sources. Use of wind power would offset greenhouse gases and other fossil fuel emissions currently used to generate electricity. In the U.S., annual emissions due to fossil fuel burning total 5.7 billion tons of carbon dioxide, 15.6 million tons of sulfur dioxide, and 8 million tons of nitrous oxide. These pollutants are known to cause human health hazards and acid deposition. Based on calculations of the American Wind Energy Association (AWEA 2008), over the 20-year life of the project, construction of the Proposed Action can be expected to offset 26,972 tons of carbon dioxide, 142 tons of sulfur dioxide, and 87 tons of nitrogen oxides. These offsets are a beneficial impact of the Proposed Action.

4.5.2 No Action Alternative

Under the No Action alternative, DOE would not provide funding to the White Earth Nation for their proposed Wind Energy project. The project would not be built as part of a Federal Action and no negative or beneficial impacts would occur to air quality at the White Earth Village or the region. The baseline conditions as described in Chapter 3 would remain unchanged.

4.6 VISUAL RESOURCES

4.6.1 Proposed Action

The turbine tower for the Proposed Action would be between 230 and 256 feet, depending on the model selected, and have a 194 to 197-foot rotor sweep area. The maximum height at the top of the blade (top of rotor swept area) would be a maximum of 453 feet. The wind turbine would be placed in the west central part of the project area within a 0.25 acre parcel east of one of the sewer lagoon cells (Figure 2). The proposed wind turbine tower and blades would be painted a

neutral color. Simulated views of the Proposed Action from two viewpoints are shown in Figures 9 and 10.

Figure 9. Simulated view - looking west from the senior housing complex located immediately east of the site.

Figure 10. Simulated view - looking south from Becker County Highway 34.

The nearest sensitive visual receptors are the residents of the senior housing project, Biimaadiiziiwiin Senior Apartments, located approximately 750 feet east of the proposed turbine location. The other closest residences are 1) a subdivision about one-half to three-quarters mile to the southeast where tree cover would obscure the view of the turbine site, 2) a single mobile home about one-quarter of a mile north of the site with the wind turbine in full view, 3) one or two residences about a one-third to one-half mile southwest of the site, 4) one residence about one-half to one mile to the north and northeast of the wind turbine site. These residents would experience visual impact of the wind turbine similar to the views shown in Figures 9 and 10. With the height of the wind turbine and the proximity of the turbine to the senior housing facility the blades of the turbine would probably be viewed at forty-five degrees or higher than the horizon. Relative to other types of utility projects and facilities, the wind turbine would present clean, graceful lines that would not overpower the landscape or obstruct views as do large buildings. The turbine, however, would introduce a strong vertical element into the landscape. The perceived dominance of the turbine on the landscape would vary during time of day, time of year, and weather conditions. When the angle of the sun is lower, sunlight striking the turbine would make it more visible. Reactions to the turbine would likely vary. Some people would prefer the setting as it now exists without the turbine. Others, however, may find it an interesting or even aesthetic point of visual interest on the landscape.

It is expected that at certain times during the evening as the sun sets there may be a flickering or shadowing effect of the turning wind turbine blades as the horizon is viewed directly or indirectly from the residents of the senior housing and those residents living further east across

open space and wetlands. To minimize this impact, the applicant has sited the turbine to reduce the possibility of shadow flicker falling on surrounding inhabited structures.

The Proposed Action would result in a visual impact when viewing the project area, but with the applicant-committed practices identified in Section 2.1.6.6 which minimize impacts, visual impacts are not considered significant.

4.6.2 No Action Alternative

Under the No Action alternative, DOE would not provide funding to the White Earth Nation for their proposed Wind Energy project. The project would not be built as part of a Federal Action and there would be no impacts to the area's visual resources. The baseline conditions described in Chapter 3 would remain unchanged.

4.7 WATER RESOURCES

4.7.1 Proposed Action

The Proposed Action is not expected to have any impact on water quality at the site or within the project and surrounding area. During construction, the potential exists for runoff if there is a high precipitation event while soil is exposed. However, the wind turbine would be on a level area, so the possibility of runoff is small. Adherence to all applicable Storm Water and other permits during construction would minimize the likelihood of soil erosion and prevent lubricating oils from the generator on the tower entering groundwater or adjacent wetlands. The applicant has committed to requiring the contractor to obtain a stormwater drainage permit and to provide erosion and sediment control measures in accordance with federal, state, and local laws and regulations (see Section 2.1.6.7).

4.7.2 No Action Alternative

Under the No Action alternative, DOE would not provide funding to the White Earth Nation for their proposed Wind Energy project. The project would not be built as part of a Federal Action and there would be no impacts to water resources. The baseline conditions described in Chapter 3 would remain unchanged.

4.8 WILDLIFE (INCLUDING SPECIAL STATUS SPECIES)

4.8.1 Proposed Action

Based on consultation with the USFWS, there are no known federal threatened, endangered, proposed, or candidate (TEP&C) species that occur in the project area. Therefore the Proposed Action is not expected to affect the population of any TEP&C species. Furthermore, the Proposed Action is not expected to impact most or any of the Minnesota state listed species and

rare plants, animals, or important natural features described in Section 3.2.9 because they do not or are unlikely to occur in the project area. The exception is the trumpeter swan, a species considered rare, but not protected by federal or state regulations beyond the Migratory Bird Treaty Act. The following discussion on impacts to other birds would also apply to the trumpeter swan.

Impacts to wildlife from wind energy facilities can be described as either direct (e.g., mortality) or indirect (e.g., displacement). The Proposed Action would have no to minimal direct effects on most species of wildlife that may occur in the project area (see Section 3.2.10), including big game, most other mammal species (with the exception of bats), reptiles, amphibians, and fish. The potential for direct effects to these groups would be during construction, e.g., if they are hit by equipment, but since most of these species are mobile they could avoid potential collisions. Indirect effects to these groups would also be zero or very minimal given the low likelihood of use in the area, however, temporary displacement could occur during construction as most wildlife would avoid construction activities.

The wind turbine may directly impact individual birds and bats of various species. The National Wind Coordinating Committee calculated the average mortality of birds at 2.3 birds/turbine/year or 3.1 birds/MW/year (NWCC 2004). For bats the mortality was 3.4 bats/turbine/year or 4.6 bats/MW/year. These estimates were based on data from studies across the U.S., including the Midwest. Impacts from the Proposed Action are likely to be similar to these averages, however, the Proposed Action is a single turbine and most of the collision data is from multiple-turbine wind farms. Anecdotally, it seems likely that birds and bats could more easily avoid collision with a single turbine than multiple turbines, thus actual impacts may be lower than estimated. Although some mortality is likely, the estimated impact to birds and bats from the Proposed Action is not considered significant because bird and bat populations would not be affected, only a small number of individuals. The impacts would be spread across numerous species and bird/bat groups, as well as across seasons.

All proposed transmission lines would be placed underground, eliminating the risk to most wildlife species.

Section 2.1.6.8 outlines the Applicant-committed Practices applicable to wildlife. The White Earth Nation is committed to minimize impacts to wildlife from the Proposed Action through implementing the following actions:

- The White Earth Nation will conduct training with all construction personnel instructing them to not harm any wildlife, regardless of species, and to brief them on applicable laws and regulations.
- White Earth Nation will limit construction activities to the permanent and temporary disturbance areas described in Section 2.1.3.
- All transmission and other cables will be installed underground.
- The White Earth Nation will develop and implement a post-construction bird and bat fatality monitoring plan under the guidance of the USFWS and approval of DOE. Regularly scheduled surveys (e.g., every other week) for the spring, summer, and fall

seasons after construction and searching of the area under the turbine for dead or injured birds and bats is expected to be part of the monitoring; these and other specific details will be included the plan.

4.8.2 No Action Alternative

Under the No Action alternative, DOE would not provide funding to the White Earth Nation for their proposed Wind Energy project. The project would not be built as part of a Federal Action and there would be no impacts to wildlife resources. The baseline conditions described in Chapter 3 would remain unchanged.

4.9 HEATH AND SAFETY

4.9.1 Proposed Action

Health and safety issues related to the Proposed Action are primarily related to construction. Workers health and safety during construction would be the responsibility of the contractor. Contractors typically have a Health and Safety Plan that addresses issues such as confined space entry, hoisting and rigging operations, and proper handling and disposal of toxic and hazardous substances. White Earth Nation would ensure the contractor hired for construction has a health and safety plan that protects its workers. Additional Applicant-committed Practices related to health and safety during construction are listed in Section 2.1.6.9 and include providing clean, safe drinking water, waste disposal, portable toilets, fencing of open pits, and limiting site access to contractors and other necessary personnel.

Because no fuel is burned to power the wind turbines, there would be no spent fuel, ash, sludge or other process waste generated during operation of the wind turbine that could cause health and safety concerns. Some lubricants are used in wind turbines, including gearbox oil, hydraulic fluid, and gear grease. White Earth Nation would insure that the maintenance worker hired is knowledgeable in the proper handling and disposal of these lubricants, as well as general health and safety issues related to wind turbine work. During operation, access to the turbine would be limited to the maintenance worker and White Earth Nation officials; therefore no public health and safety issues are anticipated.

4.9.2 No Action

Under the No Action alternative, DOE would not provide funding to the White Earth Nation for their proposed Wind Energy project. The project would not be built as part of a Federal Action and there would be no impacts to health and safety. The baseline conditions described in Chapter 3 would remain unchanged.

4.10 SOCIOECONOMICS/ENVIRONMENTAL JUSTICE

4.10.1 Proposed Action

Construction of the project would result in the commitment of resources including capital, manpower, and materials. It costs at least $1 million to purchase and install one wind turbine with an annual maintenance costs average $20,000 per turbine (B Pete, DISGEN, pers. commun.). The cost to produce electricity is approximately 5 cents per KWh, which provides a cost savings to the White Earth Nation, after adjustments for maintenance expenditures, of approximately $127,840 per year. The turbine would pay for itself after 7.8 years, and the total lifetime cost savings to the Reservation would be approximately $3.8 million. The savings to the Reservation associated with the project would also result in a decrease in profits for utility companies currently supplying electricity if other markets cannot be found to replace the loss of income.

Several workers would be employed during the construction period. Most construction workers would be employees of the various construction and equipment manufacturing companies under contract to the Reservation. It is likely that construction workers would include a mix of locally hired workers for road and turbine foundation construction, and specialized staff from outside the area for specialized construction (for example, electrical collector system construction, turbine erection, turbine testing). Construction of the project would require use of concrete, fuel, and other equipment and supplies, most of which would be purchased locally or regionally. After the Project has been constructed and tested, it is anticipated that a small staff of part-time employees would be required for operations and maintenance. Therefore the Proposed Action would have a small direct, beneficial impact to the local economy, especially during the construction period.

On February 11, 1994, President Clinton issued Executive Order 12989 requiring federal agencies to incorporate environmental justice considerations into the NEPA process. The purpose of this order was to ensure that low-income households, minority households, and minority businesses do not experience a disproportionate share of adverse environmental effects resulting from any given federal action. Since the Proposed Action would benefit the local economy, including local low-income and minority populations in White Earth, the Proposed Action would not have disproportionate adverse effects on these groups of people. In White Earth, 94% of the population is American Indian, which is considered a minority population by the U.S. Census Bureau and 42% of the families and 46% of individual live below the poverty level.

No monitoring is planned for socioeconomics or environmental justice.

4.10.2 No Action

Under the No Action alternative, the project would not be built and there would be no the socioeconomics or environmental justice impacts.

4.11 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts associated with the Proposed Action include:

- an increase in noise levels during construction and operation
- introduction of a dominant vertical element into the existing viewshed
- direct and indirect impacts to wildlife, particularly birds and bats

These impacts are not considered significant as described in the relevant sections in Chapter 4 and would last for the life of the project.

4.12 CUMULATIVE IMPACTS

Cumulative effects considers the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions (see 40 CFR 1508.7). The project area and surrounding area was purchased in the 1990s by the Tribe for development of various community facilities including a health clinic, community sewer lagoons, a housing subdivision, and a tribal administration building, which have all been constructed, along with associated infrastructure such as powerlines and roads. A fire department building and Head Start building are also located near the project area. These are the past and present projects considered in this cumulative effects analysis. No future projects are anticipated for the project or surrounding area because the community is not substantially growing and growth capabilities are limited due to a lack of developable land and near zero housing growth. Therefore, no reasonably foreseeable future projects are considered in the cumulative impacts analysis. Because no impacts are expected to cultural resources, soils, vegetation, land use, air quality, water and health and safety, as a result of the Proposed Action, no cumulative impacts are anticipated.

The Proposed Action would generate a certain level of noise, which would add to the ambient noise levels in the immediate project vicinity. As discussed in Section 4.2.1, the noise from the turbine would be very localized and the residents located approximately 750 feet from the turbine are unlikely to hear turbine-generated noise above the level of a whisper or typical library noises. Furthermore, the noise would not be constant, occurring only when the turbine is operating. Other noises from the project area vicinity are also intermittent, such as the occasional noise from fire engines, or noise from occasional passing vehicles on area roads. While the turbine would add to ambient noise levels, these levels, even when added to other nearby noise sources, are not likely to adversely impact area residents or change the semi-rural nature of the area.

The Proposed Action would affect the viewshed in the project area. The turbine would be the dominant vertical component in the landscape due to its height, but it would not obstruct views in the way that a large building might. Since it is surrounded by other development that has a vertical component (e.g., buildings, powerlines), the visual impact of the turbine is minimized.

In other words, placing the turbine on a landscape that already has vertical features has less of an impact than placing it on a flat landscape with no other development. In terms of visual resources, past and present actions help to reduce the cumulative effect of the Proposed Action.

The only wildlife species that are likely to be impacted by the Proposed Action are birds and bats due to the possibility of collisions with the turbine. Birds and bats, but birds in particular, are known to collide with numerous man-made structures such as vehicles, buildings and windows, powerlines, communication towers, as well as wind turbines. It has been estimated that from 100 million to well over 1 billion birds are killed annually in the United States due to collisions with human-made structures (Erickson 2001). The proposed action would add one more structure into the project area that birds and bats are likely to collide with. However, since the estimates of collisions with the proposed turbine are low (2.3 birds/turbine/year and 3.4 bats/turbine/year) and there is room for birds and bats to maneuver around the turbine without colliding with another nearby structures, cumulative impacts to birds and bats are not expected to be significant.

The Proposed Action is expected to have a small, beneficial impact on the local economy. This beneficial impact is likely to affect other nearby development by potentially reducing the cost of electricity for these entities. If these entities are paying less for electricity, money would be available for other uses. The electricity savings over the life the proposed project is estimated at approximately $3.8 million, or $127,840 per year. This money, potentially available for other development projects, could have a small beneficial cumulative economic impact for the local community.

4.13 IRREVERSIBLE & IRRETRIEVABLE COMMITMENT OF RESOURCES

Construction of the Proposed Action would require a commitment of natural, physical, human, and fiscal resources. Labor, materials, and energy would be expended. Approximately 0.35 acres of land would be irreversibly committed during the functional life of the project. Soil could be lost through erosion due to wind or run-off. Forage for animals and wildlife habitat could be destroyed and animals could be harmed or killed during construction and operation of the project. Unknown cultural resources could be destroyed.

4.14 SHORT-TERM USE OF THE ENVIRONMENT VS LONG-TERM PRODUCTIVITY

Short-term use of the environment during the duration of the project should not affect the long-term productivity of the project area. When the turbine has been decommissioned, equipment has been removed, and the area reclaimed, the resources that were there before the project began should still be present. The negative short-term effects stated above are necessary in order to receive the positive effects of the proposed project. The long-term positive benefits include displacing carbon-generated power. This ultimately results in a saving of fossil-fuels, and associated reduction in the generation of green-house gases. As described in the Air Quality section (Section 4.5.1), this means displacing an estimated 26,972 tons of carbon dioxide, 142 tons of sulfur dioxide, and 87 tons of nitrogen oxides over the life of the Proposed Action.

Additionally, the long-term benefits include a better ability for the White Earth Nation to address their energy needs.

4.15 INTENTIONAL DESTRUCTIVE ACTS

In December 2006, the DOE Office of General Counsel issued interim guidance stipulating that NEPA documents completed for DOE actions and projects should explicitly consider intentional destructive acts (i.e., acts of sabotage or terrorism). Construction and operation of the White Earth Nation wind energy project would not involve the transportation, storage, or use of radioactive, explosive, or toxic materials. Consequently, it is highly unlikely that construction or operation of this project would be viewed as a potential target by saboteurs or terrorists. The project location is not near any national defense infrastructure or in the immediate vicinity of a major inland port, container terminal, freight trains, or nuclear power plants. The Proposed Action would not offer any targets of opportunity for terrorists or saboteurs to inflict adverse impacts to human life, heath, or safety.

5.0 CONSULTATION AND COORDINATION

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APPENDICES

APPENDIX A. PUBLIC NOTICE

Public Notice
White Earth Nation Wind Turbine Project
White Earth Reservation Tribal Council
White Earth, Minnesota

The White Earth Nation, as represented by the White Earth Reservation Tribal Council, seeks to develop viable wind resources within its boundaries to power its tribal government facilities and for the sale of generated electrical energy to the local utility. The U.S. Department of Energy is providing partial funding for the project.

The proposed White Earth Wind Energy project would involve the construction of a single 750 kW to 1.0 MW wind turbine with an approximately 300-ft tall tubular tower, approximately 1,000 to 4,600 linear feet of underground power line, one or two pad mounted transformer boxes, and 1,000 ft of 10-ft wide service road to provide access to the facilities. Potential interconnect with the local electric utility may entail an additional underground line outside the immediate project area in or along an existing right-of-way to a nearby substation or between the sewer lagoons to the west to a proposed underground feeder line on tribal land. All associated cables and power lines would be buried between the wind turbine, transformer boxes and interconnect boxes. The proposed wind turbine size has not been determined but will be within the footprint commonly used for turbines between 750 kW and 1.0 MW and will be situated centrally on an approximately 800-foot square site south and east of the community sewer lagoons. A 40-meter meteorological tower is currently located there to monitor wind characteristics for the project.

The proposed White Earth Wind Energy project site is located on tribal trust land along the west edge of the community of White Earth, Minnesota and is a parcel of land generally described as about 13-15 acres to the south and east of the community's sewer lagoons. This site is within about 420 acres of land acquired in the early 1990's for a new health clinic, community sewer lagoons, and housing subdivision, that have all been built, and a new tribal administration building under construction. The site is adjacent to the fire department building, head start building, and a senior living facility.

Written comments regarding the proposed project will be accepted until 4:30 p.m., August 13, 2007 at the office of Michael Triplett, Planner, White Earth Reservation Tribal Council, P.O. Box 418, White Earth, MN 56591 (218.983.3285 ext. 1290).

Published July 11, 2007, Anishinaabeg Today

APPENDIX B. EXAMPLE LETTERS SENT TO FEDERAL AGENCIES

June 4, 2007

Laure Fairchild
U.S. Fish and Wildlife Service
Twin Cities Field Office
4101 E American Boulevard
Bloomington, MN 55425

Dear Ms. Fairchild:

The White Earth Band of Ojibwa proposes to purchase and install a wind turbine near its new administrative headquarters located in the Village of White Earth. Currently wind monitoring is being conducted at the proposed site on tribal trust land on the west edge of White Earth village adjacent to the community's sewer lagoon facility and approximately one-quarter mile from the new administrative headquarters site. Western EcoSystems Technology, Inc. of Bismarck, North Dakota is performing a Phase One Screening Report and USFWS PII Score. The proposed wind turbine size has not been determined but will be within the footprint common to 225 kW to 1.2 MW-sized wind turbines and will be situated centrally on an approximately 800-foot square site where the wind anemometer is currently located.

These actions have initiated our investigations and this correspondence. White Earth is requesting consultation and comment on this project from the United States Fish and Wildlife Service. Please advise as to whether this project is likely to adversely affect a species listed on the Federal list of endangered or threatened species or the category 1 candidate specific being considered for listing. Included is a detailed project description and map for the project. Please relay any potential concerns to this proposed action as soon as possible within the 30 days following the receipt of this letter to:

Monica Hedstrom
White Earth Natural Resources
2209 271st Avenue
Mahnomen, MN 56557

Please feel free to contact me at 218.935.2488 if there are any further questions or if you or other USFWS staff desires to schedule a visit to examine the project site.

Thank you for your assistance.

Monica Hedstrom
White Earth Natural Resources

Cc: Douglas McArthur, White Earth Wildlife Biologist

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

November 2, 2007

Mr. Rodney B. Heschke
Area Resource Soil Scientist
Natural Resources Conservation Service
2038 State Highway 1 NE
Thief River Falls, MN 56701-2566

Dear Mr. Heschke:

SUBJECT: Environmental Assessment for the Construction and Operation of a Low-Speed Wind Turbine and Ancillary Facilities within the Boundaries of the White Earth Nation, MN

The U.S. Department of Energy (DOE) and the National Renewable Energy Laboratory (NREL), in compliance with the National Environmental Policy Act (NEPA) of 1969, will be preparing an Environmental Assessment (EA) of the proposed construction and operation of a single, 750 kW to 1.0 MW wind turbine with an approximately 300-foot (ft) tall tubular tower. The proposed wind turbine size would be within the footprint commonly used for turbines in that range and would be situated centrally on an approximately 800-square-foot site south and east of the community sewer lagoons. A 40 meter meteorological tower is currently operating at that location to monitor wind characteristics for the project. Approximately 1,000 to 4,600 linear feet of underground power line, one or two pad mounted transformer boxes, and 1,000 ft of 10-ft wide service road to provide access to the facilities are proposed. This project is part of the White Earth Nation's plan to develop viable wind resources within its boundaries to power tribal government facilities.

The proposed White Earth Wind Energy project site is located on a 13-15 acre parcel of tribal trust land along the west edge of the community of White Earth, MN. This site is within about 420 acres of land acquired by the Tribe in the early 1990's for a new health clinic, community sewer lagoons, and a housing subdivision, all of which have been built. A new tribal administration building is under construction. The site is adjacent to the fire department building, Head Start building, and a senior living facility. Detailed maps of the location of the site are included in the attachment to this letter.

DOE is the lead agency for this EA, and other federal, state, and local agencies are invited to participate in the environmental review process. DOE is requesting public and agency input on the proposed NEPA process, Proposed Action, alternatives, and the environmental issues to be addressed in the EA.

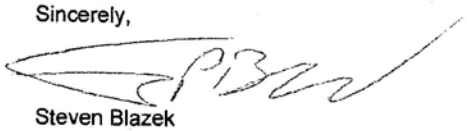
This letter and the draft EA, when it is available, will be posted on the DOE Golden Field Office electronic public reading room at http://www.go.doe.gov.

Please direct your comments to:

Kristin Kerwin, NEPA Document Manager
U.S. Department of Energy, Golden Field Office
1617 Cole Blvd.
Golden, Colorado 80401-3305
(303)275-4968, (303) 275-4790 (fax)
Kristin.Kerwin@go.doe.gov

Please provide your scoping input on or before **December 5, 2007.** We look forward to hearing from you.

Sincerely,



Steven Blazek
DOE NEPA Compliance Officer

Enclosures

APPENDIX C. RESPONSE LETTERS RECEIVED FROM FEDERAL AGENCIES

Via email

July 3, 2007

Hi Monica,

I have a few comments regarding the project and a few questions. If you haven't seen them, the Service does have Interim Guidelines for Wind Turbines. You can find them at http://www.fws.gov/midwest/eco_serv/wind/index.htm where there is also a lot of other information regarding wind power. My concerns have to do with the need to light the turbine and the placement of the turbine between several open waterbodies where birds are likely to be approaching/leaving, so will be flying low. The fact that it's a solitary turbine makes it much more easy to avoid, so that's a positive thing. I'd suggest that you take a look at the website and at the Guidelines and see if they give you any ideas regarding siting of the turbine.

My question has to do with the infrastructure. Would this require installation of overhead utility lines?

I don't think there's any particularly "better" place within the boundaries described in your letter; let me know if you have questions after reviewing the Guidelines. Thanks for giving us the opportunity to provide comments!

Laurie

Laurie Fairchild
U.S. Fish and Wildlife Service
Twin Cities Field Office
4101 E American Boulevard
Bloomington, MN 55425

DEC 1 0 2007

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Midwest Regional Office
Bishop Henry Whipple Federal Building
One Federal Drive, Room 550
Ft. Snelling, MN 55111

IN REPLY REFER TO:

TAKE PRIDE IN AMERICA

Environmental, Cultural and Safety

DEC 0 5 2007

Kristin Kerwin, NEPA Document Manager
U.S. Department of Energy, Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3305

RE: **Request for Comments**: Environmental Assessment for the Construction and Operation of a Low-Speed Wind Turbine and Ancillary Facilities within the Boundaries of the White Earth Nation, MN

Dear Ms. Kerwin:

We are responding to your request for comments in reference to the DOE's NEPA compliance activities relating to the proposed **Low-Speed Wind Turbine Project** in Section 27, T142N, R41W, Becker County, Minnesota on lands owned by the White Earth Band of the Minnesota Chippewa Tribe. We have some information and recommendations regarding the potential for cultural resources on the subject property.

It appears that the western portion of the 15 acre project area was surveyed for archaeological resources by Bureau of Indian Affairs (BIA) archaeologists in 1994. The results of that survey are outlined in the report entitled "An Archaeological Reconnaissance Survey for Three Proposed Construction Sites in Section 27 of White Earth Township on the White Earth Reservation in Becker County, Minnesota" by Richard E. Berg, December 1994. Enclosed please find a copy of this report along with Minnesota SHPO comments on our report and determination. Labeled as the"Sewage Lagoon Survey Area" in the report, surface survey and shovel testing failed to uncover any cultural resources within the project area. However, two archaeological sites were found just east of the project area in Section 27 within the separate "Housing Subdivision Survey Area". Both sites, BK-BIAFN-1 and BK-BIAFN-2, contained severely impacted elements of early 20th Century farmsteads. Site BK-BIAFN-1 also contained four lithic artifacts (1 hammerstone, 1 core, and 2 flakes) indicating a prehistoric component.

While neither of these sites were found eligible for listing on the National Register or are located in the proposed project area, the possibility of disturbing significant cultural resources during construction does exist. Therefore, it is the recommendation of the BIA, Midwest Regional Office, that a Phase I archaeological identification survey be conducted in the part of the project area (including any electrical feeder lines) that were not covered by the previous survey.

United States Department of Agriculture

NRCS Natural Resources Conservation Service

USDA

NOV 2 6 2007

2038 State Hwy 1 NE, Thief River Falls, MN 56701 Phone: 218-681-6600 Fax: 218-681-5598

November 20, 2007

Kristen Kerwin, NEPA Document Manager
U. S. Department of Energy, Golden Field Office
1617 Cole Blvd.
Golden, Colorado 80401-3305

Re: Environmental Assessment (EA) for the Construction and Operation of a Low-Speed Wind Turbine and Ancillary Facilities within the Boundaries of the White Earth Nation, MN

Dear Ms. Kerwin:

Please find enclosed Department of Energy letter of request for Environmental Assessment for construction of wind turbine and access road on the White Earth Indian Reservation by Steven Blazek, NEPA Compliance Officer. We (NRCS) retained copies of this request.

Also enclosed are two sets of maps generated from websoilsurvey depicting the approximate location of the proposed construction of the wind turbine and access road. These maps show the soils mapped in this vicinity of 14.6 acres at different scales. These are for your use, but only show approximate location and extent of soil within the area of interest.

The Farmland Conversion Impact Rating (AD-1006 with instructions) is the last portion. The portions completed (Parts II and IV) are required to be filled out by NRCS, the remaining portions are to be completed by the requesting federal agency. This is a fill-able form available at www.nrcs.usda.gov/programs/fppa/pdf_files/AD1006.PDF.

If you have any questions and concerns, please feel free to call me at 218 681-6600 ext. 107.

Respectfully,

Rodney B. Heschke
Area Resource Soil Scientist
Natural Resources Conservation Service
2038 State Hwy 1 NE
Thief River Falls, MN 56701

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
SIBLEY SQUARE AT MEARS PARK
190 FIFTH STREET EAST, SUITE 401
ST. PAUL MINNESOTA 55101-1638

DEC 0 3 2007

REPLY TO
ATTENTION

30 November, 2007

Operations
Regulatory (2007-05994-RQM)

Ms. Kristin Kerwin
US Department of Energy
1617 Cole Blvd.
Golden, Colorado, 80401-3305

Dear Ms. Kerwin:

We have received your letter of November 02, 2007. Due to limited staff and resources, it is unlikely that U.S. Army Corps of Engineers Regulatory staff will complete a jurisdictional determination on this project until we receive a jurisdictional determination request and/or a permit application. We believe a Department of the Army Section 404 permit may be required for this project. Please consider the following general information concerning our regulatory program that may apply to the proposed project.

If the proposal involves activity in navigable waters of the United States, it may be subject to the Corps of Engineers' jurisdiction under Section 10 of the Rivers and Harbors Act of 1899 (Section 10). Section 10 prohibits the construction, excavation, or deposition of materials in, over, or under navigable waters of the United States, or any work that would affect the course, location, condition, or capacity of those waters, unless the work has been authorized by a Department of the Army permit.

If the proposal involves deposition of dredged or fill material into waters of the United States, including discharges associated with mechanical land clearing, it may be subject to the Corps of Engineers' jurisdiction under Section 404 of the Clean Water Act (CWA Section 404). Waters of the United States include navigable waters, their tributaries, and adjacent wetlands (33 CFR § 328.3). CWA Section 301(a) prohibits discharges of dredged or fill material into waters of the United States, unless the work has been authorized by a Department of the Army permit under Section 404. Information about the Corps permitting process can be obtained online at http://www.mvp.usace.army.mil/regulatory.

The Corps' evaluation of a Section 10 and/or a Section 404 permit application involves multiple analyses, including (1) evaluating the proposal's impacts in accordance with the National Environmental Policy Act (NEPA) (33 CFR part 325), (2) determining whether the proposal is contrary to the public interest (33 CFR § 320.4), and (3) in the case of a Section 404 permit, determining whether the proposal complies with the Section 404(b)(1) Guidelines (Guidelines) (40 CFR part 230).

If the proposal requires a Section 404 permit application, the Guidelines specifically require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR § 230.10(a)). Time and money spent on the proposal prior to applying for a Section 404 permit cannot be factored into the Corps' decision whether there is a less damaging practicable alternative to the proposal.

If an application for a Corps permit has not yet been submitted, the project proposer may request a pre-application consultation meeting with the Corps to obtain information regarding the data, studies or other information that will be necessary for the permit evaluation process. A pre-application consultation meeting is strongly recommended if the proposal has substantial impacts to waters of the United States, or if it is a large or controversial project.

If you have any questions, contact Rob Maroney in our Brainerd Field office at (218) 829-2711. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely,

for Robert J. Whiting
Chief, Regulatory Branch

Department of Health and Human Services **Public Health Service**

Indian Health Service
Minnesota District Office
522 Minnesota Ave NW
Bemidji, Minnesota 56601

DEC 0 3 2007

November 27, 2007

Kristin Kerwin, NEPA Document Manager
U.S. Department of Energy, Golden Field Office
1617 Cole Blvd.
Golden, CO 80401-3305

RE: White Earth Wind Energy Project

Dear Ms. Kerwin,

The Indian Health Service received a letter dated November 2, 2007 from Steven Blazek (Attached) from the Department of Energy requesting input on a proposed wind turbine project for the White Earth Nation. The maps attached to that letter show the proposed turbine and underground power lines near the existing wastewater stabilization pond system.

We strongly recommend that a different location be selected to construct the proposed turbine and power lines. The proposed location if selected would severely limit any future rehabilitation or expansion to the existing stabilization ponds.

It is our opinion that no additional structures or underground power lines be constructed within 1000-ft of the existing pond system.

We appreciate the opportunity to comment on the plan to develop viable wind resources to power tribal government facilities.

Sincerely,

Mark Baker 11-27-2007

Mark Baker, PE
LT USPHS
IHS, Minnesota District Office
522 Minnesota Avenue NW, Room 303
Bemidji, MN 56601
Phone (218) 444-0514
Fax (218) 444-0533

Attachments

cc: Burnham Tibbets, White Earth Public Works (w/attachments)
Mike Triplett, White Earth (w/attachments)
Craig Larson, PE, District Engineer, MDO (w/attachments)

MINNESOTA HISTORICAL SOCIETY
STATE HISTORIC PRESERVATION OFFICE

July 25, 2007

Ms. Monica Hedstrom
White Earth Natural Resources
2209 271st Avenue
Mahnomen, MN 56557

RE: Construction of a single 300 foot wind turbine
T142 R41 S27, Becker County, White Earth Reservation
SHPO Number: 2007-2479

Dear Ms. Hedstrom:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by the National Historic Preservation Act of 1966 and the Procedures of the Advisory Council on Historic Preservation (36CFR800).

Based on available information, we conclude that no buildings or structures eligible for or listed on the National Register of Historic Places will be affected by this project.

Please note that the White Earth Tribal Historic Preservation Officer has assumed partial Section 106 review responsibilities for projects located within the reservation area as approved by the National Park Service. Since this project is located in that area, you should consult with the Tribal Historic Preservation Office as well.

Please contact Dennis Gimmestad at (651) 259-3456 if you have any questions regarding our review of this project.

Sincerely,

Britta L. Bloomberg
Deputy State Historic Preservation Officer

cc: White Earth THPO

345 Kellogg Boulevard West / Saint Paul, Minnesota 55102-1906 / Telephone 651-296-6126

APPENDIX D. ARCHAEOLOGICAL RECONNAISSANCE SURVEY

Bk#22

AN ARCHEOLOGICAL RECONNAISSANCE SURVEY FOR THREE PROPOSED CONSTRUCTION SITES IN SECTION 27 OF WHITE EARTH TOWNSHIP ON THE WHITE EARTH RESERVATION IN BECKER COUNTY, MINNESOTA

BY

Richard E. Berg

RICHARD E. BERG
PRINCIPAL INVESTIGATOR/AREA ARCHEOLOGIST

BUREAU OF INDIAN AFFAIRS
MINNEAPOLIS AREA OFFICE
331 SOUTH SECOND AVENUE
MINNEAPOLIS, MINNESOTA 55401

DECEMBER 1994

PREPARED FOR
WHITE EARTH RESERVATION TRIBAL COUNCIL
P.O. BOX 418
WHITE EARTH, MINNESOTA 55772

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Abstract

An archeological reconnaissance survey of approximately 160 acres was completed in White Earth Township on the White Earth Reservation. The survey covered three proposed construction projects in Section 27 of this township. The three projects involve construction of a housing subdivision, clinic, and sewage lagoons. Two historic archeological sites (BK-BIAFN-1 and BK-BIAFN-2) were identified during the investigation. The three proposed construction projects will have no effect upon Historic Properties. They are recommended for clearance under Section 106 of the National Historic Preservation Act.

Introduction

The Department of Housing and Urban Development (HUD) and the Indian Health Service (IHS) plan to construct new facilities southwest of the town of White Earth, Minnesota. HUD is planning to build a housing subdivision immediately west of County Road 21. Fifty-nine lots and a road system will make up the subdivision. IHS will be constructing a clinic south of Highway 224. Both projects will be connected to a new sewage lagoon and water system (Figure 1). Some land clearance, road construction and foundation work was completed or underway when the archeological survey was done. The Housing Office at White Earth was notified that there are two sites in the proposed subdivison. The Office has redirected work to avoid the sites until comments are received from the Minnesota State Historic Preservation Office and the White Earth Tribal Council.

Project Location and Environment

The proposed construction sites are located in White Earth Township on the White Earth Reservation in Becker County, Minnesota. All three construction sites are in different areas of Section 27, Township 142 North, Range 41 West, totalling 150 acres (U.S.G.S. 1969). The housing subdivision will be built on 100 acres in the SE¼, NE¼, SE¼; NE¼, SE¼; E½, SW¼, SE¼; S½, SE¼, NW¼, SE¼. A 40 acre sewage lagoon is planned for the SE¼, NW¼, and the clinic will be situated on 10 acres in the NE¼, NW¼, NE¼ of the section.

The topography for all survey locales is hilly. The low areas are dominated by ponds and wetlands. The housing subdivision was partially disturbed by road and house construction. Approximately half of the division has deciduous woodlands and the other half contained unharvested soy bean fields. The clinic site was recently harvested of sunflowers while the sewage lagoon site was in a unharvested soybean field.

The survey area falls within the Alexandria Moraine Complex Geomorphic Region (State Historic Preservation Office 1993). About half of the soils in the housing subdivision are Forman series. The others are more or less equally divided among the Flow, Formdale, and Lakepark series. The sewage lagoon site is located in portions of the Flow, Formdale, Lakepark, and Langhei series. The clinic will be built almost entirely within the Langhei series. These series are described in Appendix A. The descriptions were excerpted from the Soil Conservation Service's "Soil Interpretation Records" on file in the Detroit Lakes office.

The average annual temperature ranges between 38-45 degrees Fahrenheit, with 90-140 frost free days and 16-24 inches of precipitation annually (Soil Conservation Service 1991).

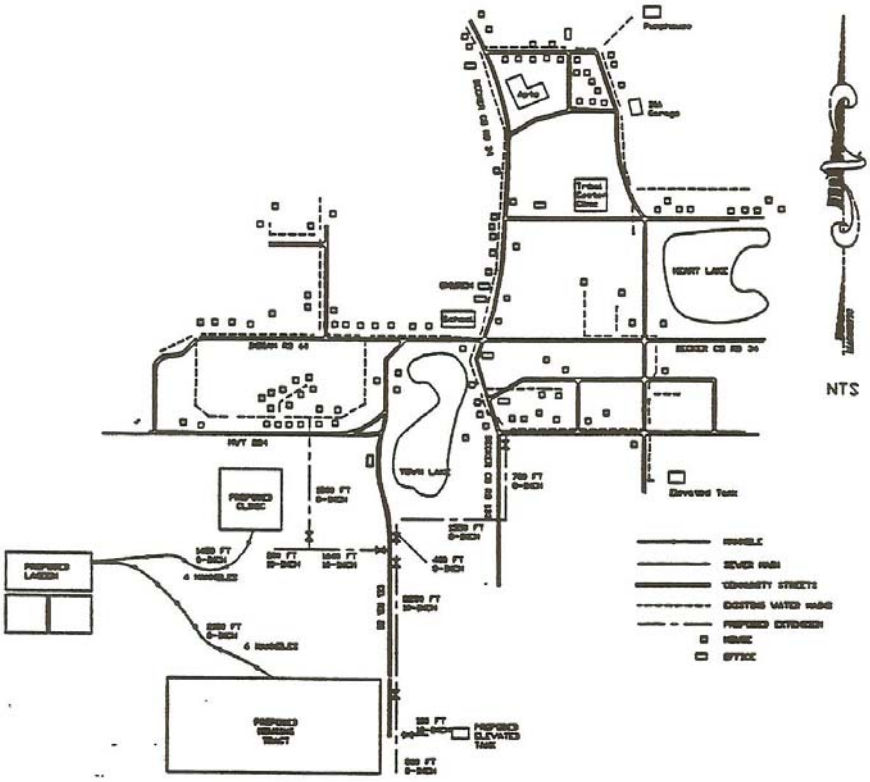

Figure 1. The proposed HUD housing subdivision, sewage lagoon, and IHS clinic (highlighted)(1"=2000').

2

Background Research

A file search was conducted by the principal investigator at the Minnesota Historical Society in St. Paul on September 16, 1994 and the University of Minnesota (Wilson Library), Minneapolis campus on September 26th and October 11, 1994. The National Register of Historic Places and it's current supplements were consulted. Currently, no Historic Properties are located in Section 27. There are no records at the Minnesota Historical Society to indicate that the project area was investigated previously for cultural resources.

County atlases and plats were also checked earlier in this investigation at the Becker County Historical Society and Courthouse on August 25, 1994. Later aerial photographs and additional maps at the Wilson Library were reviewed. Composite maps for the years 1853-1855 (Trygg 1964) and county atlases for 1904 (Anonymous), 1971 (Title Atlas Company), 1974, 1975 (Rockford Map Publishers), 1964 (Nelson), and 1983 (Rockford Map Publishers) show no evidence for historic period occupation. A 1916 plat (Hixson 1916) of this township shows a building in the N½, SE¼ and 3 possible buildings in the SW¼, SE¼, NE¼ in Section 27. The 1929 Becker County atlas (Brock and Company 1929) shows a building in the NE¼, SE¼ and another one in the SW¼, NE¼. In addition, a 1959 county highway may (Nelson) and the 1961 county plat (Carson Map Company) shows a building in the SW¼, NE¼. These buildings are within or very close to the proposed housing subdivision.

The 1939 and 1953 (U.S. Department of Agriculture) aerial photographs at the Wilson Library also confirm the locations of several buildings. These photographs also indicate that there are possible buildings (sheds?) or hay mounds close to the sewage lagoon and clinic sites.

The author attempted to get a chain of title search from the Aberdeen Area Office for the possible historic sites. The Aberdeen Realty Office maintains the land records for this reservation. However, that office was not able to provide the requested information. A check of the land records available in the Minneapolis Area Office (U.S.B.I.A. Tract Book 141-142:198) for the NE¼, SE¼ shows this parcel as an allotment approved on February 28, 1901 for Augustine Bellanger. It was later patented to him on December 30, 1902. An M. Belanger is identified as the owner in 1916 (Hixson 1916). A fee simple deed was issued February 15, 1923. Subsequent land owners were Clifford Warren (Carson Map Company 1961, Nelson 1964, Title Atlas company 1971), Duane Jasken (Rockford Map Publishers 1975) and the White Earth Band, Chippewa Tribe (Rockford Map Publishers 1983).

For the SW¼, NE¼, the land records (Ibid) have an allotment approved for Maggie Vauwert on February 28, 1901, followed by a patent July 21, 1902, and a fee simple issued November 28, 1919.

The records also indicate that she was born in March of 1891. Other land owners include T.H. Beaulein and a G.F.H. (Hixson 1916; the initials were not identified on the plat map), Donald and Joyce Bents (Nelson 1964), either Clarence Pramhus or Becker County(Title Atlas Company 1971), Vern A. and Elizabeth Teiken (Rockford Map Publishers 1975) and the White Earth Band, Chippewa Tribe (Rockford Map Publishers 1983).

Research Goals

The purpose of this investigation was to determine if any cultural resources are located within the project area, and identify and evaluate any impacts that might occur to existing or potentially significant sites. If necessary, potentially significant sites would be evaluated and additional Section 106 compliance actions implemented. Sites/structures less than fifty years of age would be photographed and briefly described.

The background research for Section 27 indicates that there is a possibility of finding Historic period sites. In addition, there is also the likelihood that recent construction has caused some level of disturbance if earlier sites are found within the proposed housing project area.

Field Methods

The fieldwork was conducted over two separate field sessions. The first session occurred September 19, 20, 22, and 23 by BIA archeologists Richard Berg and Tom McCauley. The second session was done on October 19, 1994 by Messrs Berg, McCauley, and Gary Navarre (BIA Roads Archeologist). The survey areas actually covered an area larger than the proposed construction sites (See Figure 2). Approximately 160 acres were surveyed for cultural resources. This is 10 more acres than that idientified above for the three construction sites. Each area was walked in parallel transects spaced about 30 meters apart.

Shovel tests were placed in areas considered to have little evidence of previous disturbance, dense vegetation, relatively flat land, or on elevations. No shovel tests were done in cultivated fields, wetlands, poorly drained land with standing water or land clearly disturbed by building and road construction. Shovel tests ranged in depth from about 5cm to 30cm in depth and 20-25cm in diameter. The topsoils were usually black and highly organic. Below the topsoil, deposits generally comprised sand and gravel, or clay. All soils not containing clay deposits were passed through ¼" mesh. Clay soils were examined by slicing into clods with a trowel in order to look for artifacts. They generally matched the soil series described in Appendix A.

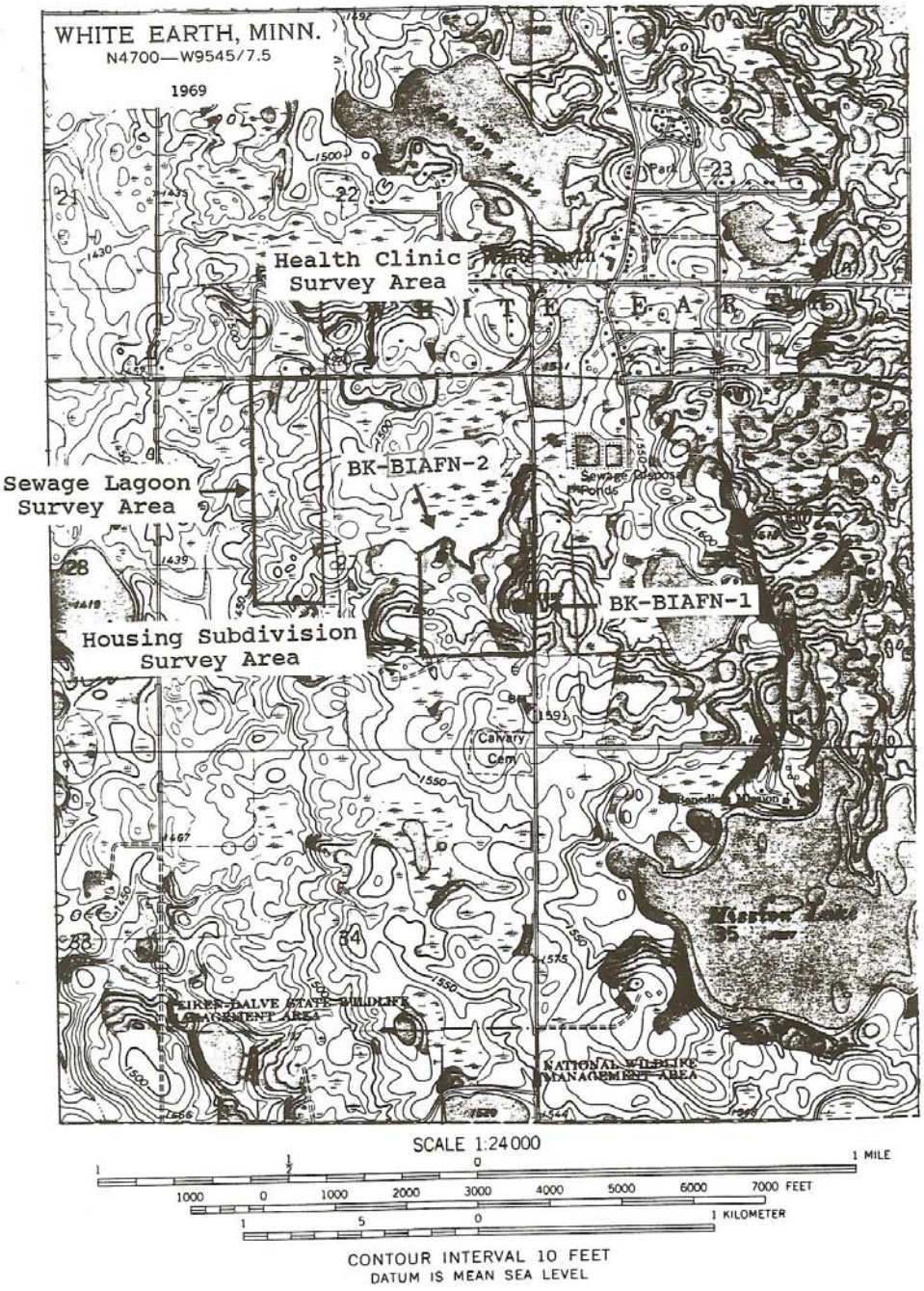

Figure 2. Areas surveyed for cultural resources (highlighted) and historic sites (BK-BIAFN-1 and BK-BIAFN-2).

5

Artifact Description and Analysis

All artifacts were inventoried and described in the field. The prehistoric and historic artifact types were identified by lithic type and reduction phase (primary, secondary tertiary flakes). Makers of historic ceramics, beer cans, and glass bottles and bottle bases were identified by consulting Kovel (1953) and Lehner (1988), Martells (1976) and Toulouse (1971), respectively. The purpose of this was to try and get additional dates for occupation to supplement the information found in the atlases and aerial photographs.

The historic artifacts include a large number of ceramics (brick, common pottery, and earthenware); glass (alcohol, canning, condiment, headlight, soft drink, and window); and metal (vehicles, farm implements, and hardware). The ceramics and glass are listed in Table 1 and the other historic artifacts are listed in Table 2.

Results

Two historic archeological sites (BK-BIAFN-1 and BK-BIAFN-2) were identified during this investigation. Both date to the twentieth century. Three prehistoric artifacts were also found on the surface of BK-BIAFN-1. No readily discernable architectural features were observed at either site. Site forms were submitted to the State Archaeologist Office requesting site numbers. That office has indicated that field numbers could be used in lieu of site numbers (Clouse 1994).

BK-BIAFN-1. This site is located in a cul-de-sac within the proposed HUD housing subdivision. Construction of the cul-de-sac has partially disturbed the site (Figure 3). It may have destroyed the building site observed in the atlases and aerial photographs. Artifacts are scattered along both sides of the cul-de-sac road and are also found on the east side of a segment of the north south road in the subdivision (Figure 1). It isn't clear whether these artifacts were bulldozed to this spot or are associated with another feature at the site. The undisturbed part of the site is located in a small bean and woodland north of the cul-de-sac.

The prehistoric artifacts recorded at the site are 1 quartzite hammerstone; 1 possible tan gray banded chert core (4cm x 3.5cm x 2cm); 1 tertiary, unifacially retouched, gray chert flake (2.2cm x 2.2cm x 3mm); and 1 tertiary, gray mottled, chert flake (2cm x 1.2 cm x 5mm).

This site contained historic artifacts of brick, earthenware, glass, metal, modified and unmodified animal remains, and stone (Table 1). The ceramic artifacts totaled 44 brick fragments, complete and broken crockery, and broken white earthenware (plates/platters). There were no markings seen on the brick

fragments. One unmarked, intact lid for a quart-sized container and a broken handle were separable crockery fragments. Several of the white earthenware have some decoration. They all were represented by blue floral, linear, or geometric designs. A bowl fragment also had a floral pattern. One of the plates had a faint makers mark which read "Dine USA" and another had just part of a "W" inside what appears to be a box. It was not possible to identify the maker of either artifact from Kovel (1953) or Lehner (1988).

Figure 3. Cul-de-sac viewed to the east. Artifacts associated with site BK-BIAFN-1 were found on either side of the road and in the trees to the left (north).

There were 202 glass artifacts representing complete and broken bottles, window, and an automobile headlight. Most of the bottles had screw tops, although there were soft drink bottles and medicine (?) bottles with plain finishes. The identifiable bottles include 4 brown beer bottles (1 had a wide mouth), 6 soft drink bottles, of which 4 were identifiable (3 7up and 1 Pepsi Cola), 2 fruit jars (Ball), 1 condiment, and a "San A Day Wash" bottle from the "Barton Chemical Co./Chicago-St. Paul."

A few bottle bases and sides were sufficiently intact to identify embossing, labels, or the companies that made them. The three that were observed comprise a green bottle base with "2", clear fruit "Ball" jars, and the above named chemical company bottle. No date specific information was found for these items.

One broken window pane was confirmed from flat glass fragments. Most of the window was still in a recognizable shape. The remaining glass fragments probably were bottles, drinking glasses, or other identifiable patterned vessels.

The metal, faunal remains, and stone artifacts numbered in excess of 57 (Table 2). They include items associated with buildings, farming and transportation, food stores, clothing, and miscellaneous activities. The artifacts that could be associated with buildings are a rectangular door hinge and one triangular door hinge, rectangular flashing with square embossing possibly used as a heat barrier, stove parts, a threaded (water?) pipe, two spikes, and a couple of concrete fragments. Evidence for farming and transportation are 10' of 2 strand barbed wire, a disc with "1875, 1877, 1880" embossed on one surface, 2 square nails that could be for shoeing horses or mules, and a whetstone. Items associated with transportation are an automobile jack, wheel drum, a narrow gauged wheel rim with metal spokes, and a quart of "Quaker State Oil". Food storage containers include 2 cans of condensed milk, 1 maple syrup can, and several other unidentifiable cans. Animal remains were few; all were unburned. There was a two hole button made from Mother-of-Pearl. Also noted were miscellaneous metal bars, a spring and staple, a washer, several straps, and one or two washtubs, and unidentifiable pieces of rusted metal.

BK-BIAFN-2. The second historic site is located in two separate clumps of deciduous trees and brush surrounded by an agricultural field. At the time of the survey the field was in soy beans and sunflowers. The larger artifact cluster was identified as Feature 1 and the smaller cluster, Feature 2. Both features appear as at least two buildings on the aerial photographs mentioned above. There is no evidence of standing structures or building foundations at either feature today. The only physical remains are artifacts and rock cairns situated around the periphery of each feature and a mound in Feature 1 (Figure 4).

Feature 1. This is the larger (ca. 100m N-S x 30' E-W) of the two concentrations of Historic period artifacts located at this site. Although there were no building remains or foundations here, there is a small mound near the east edge of the feature that may cover additional historic materials. A 50 gallon drum is buried beside it which contains glass bottles, flat glass, and some tin cans.

Most of the ceramic and glass items seen in this feature were complete, and a few were missing less than about 25 percent of

their body from breakage. This observation is represented by the numbers in Table 1. Only two nearly complete crockery containers were found: a two quart and a one gallon vessel. The +33 glass bottles were one-half gallon in size or smaller. Several uncounted brown beer bottles were found in the above mentioned 50 gallon drum with flat glass window or picture frame fragments. Scattered about the feature was a one pint bottle of "Mrs Stewart's Bluing", a catsup bottle, a soft drink bottle neck, 2 honey jars, a one quart mayonnaise jar, 2 mustard jars, a pickle jar; 4 one-half pint jars, a "Full Pint" liquor bottle and 5 other pint jars (two plain and three screw tops-one with a lid still screwed in place), a one quart "Kerr/Self Sealing/Trademark Registered/Mason" fruit jar and 6 other quart jars (one of "Duraglass"), 2 one-half gallon jars (one of "Duraglass), and a plain octangular bottle. There also was an embossed bottle with triangles that is believed to have held a condiment.

Figure 4. T. McCauley standing on mound on the east edge of Feature 1 AT BK-BIAFN-2 viewed to the east.

There were a number of glass containers bearing their manufacturers marks. Twelve originated from the Hazel-Atlas Glass Company, 10 from the Owens Illinois Glass Co., and 1 from the Knox Glass Company (Toulouse 1971). The Hazel-Atlas Company had a logo of a capital "A" below the horizontal bar of a capital "H".

Numbers were positioned to the left, right, and below the "H" and "A". This logo covered a period from 1920-1964 (Ibid:239). The Owens company had a capital "I" located within an oval and a diamond with the plant, year, and mold numbers positioned at the left, right, and bottom points of the diamond respectively. This mark was in use between 1929-1954 (Ibid:403-408). This company also made "Duraglass" after 1940. Two of the bottles found in this feature were embossed with "Duraglass." The single Knox Company logo was a capital "K" within a "keyhole." There were numbers to the left and bottom of the logo. This identifier was in use from 1924-1968 (Ibid:293). The Kerr-Mason jar mentioned above had the embossed "Self Sealing Trademark Registered" after 1916 (Ibid:44).

The metal and stone remains numbered in excess of 21 different items (Table 2). No faunal remains were observed in the feature, although a leather shoe sole (size 12-14?) was found and placed under this heading in Table 2. Most of the metal artifacts were made up of a variety of different containers and closures. These were: an enameled basin, a white enameled oval baking pan; a 2 quart soup/juice can, a 2 gallon bucket with a handle, a blue (exterior) and white (interior) enameled wire-handled pot about 3 gallon in size; a round gasoline/kerosine can, a 5 gallon can, 2 large barrels (one 20-30 gallon and a 50 gallon drum), an aluminum handled pan, the top to a lunch bucket minus the handle, a possible 3# coffee can, several beer cans with cone shaped necks, and three lids (one was perforated with holes and another had a clamp).

Other metal artifacts include an automobile wheel rim and body parts for a car or farm machinery, unidentifiable miscellaneous pieces, a strap, a kerosine lantern, and a white enamel woodstove identified with "King. ECO. No. 162 182/Comstock Castle/Store Co./Quincy-Ill./Kansas-City/Chicago-Minneapolis." The remaining non-metal items was a single cinder block and several rock cairns distributed around the periphery of the feature.

Besides the beer cans, no further date specific information was located for the other metal items. The beer cans with the cone shaped necks were popular between 1935 and 1956 (Martells 1976).

Feature 2. A smaller cluster of historic artifacts and field stone cairns is located in a clump of trees about 150'-200' southwest of Feature 1. The clump of trees measures approximately 28m N-S by 24m EW. Most of the artifacts seen in this feature were metal. Only a single glass artifact was found here (Table 1). It was another empty bottle of "Mrs. Stewart's Bluing." The other artifacts comprised basins/tubs, buckets, or pots (Table 2). These were identified as an enamel basin with a wire handle, a washtub with handles exactly the same size and shape as one seen at BK-BIAFN-1; a quart bucket with a wire handle, a 2 gallon bucket and a pot each without a handle, and a blue enamel coffee pot. An unidentifiable metal cylinder with a riveted bottom and embossed with "Twin City" was also noted in Feature 2. There were also

stone cairns here that were built as the farmer removed stones from the field.

Table 1
Historic Ceramics and Glass Inventoried at BK-BIAFN-1 and Features 1 and 2 at BK-BIAFN-2

Type	BK-BIAFN-1	BK-BIAFN-2	
		Feature 1	Feature 2
Ceramics			
Brick	2		
Crockery	20	2	
White Earthenware	22		
Glass			
Aqua	1		
Brown	12	Several	
Clear (Pressed)	5	1	
Clear	118	32	1
Clear (Flat)	20	Several	
Green	33		
Opalescent	1		
Violet	8		
White (Milk)	3		
Automobile Headlight	1		

Table 2
Historic Metal, Faunal Remains, and Stone Inventoried at BK-BIAFN-1 and Features 1 and 2 at BK-BIAFN-2

Type	BK-BIAFN-1	BK-BIAFN-2	
Metal		Feature 1	Feature 2
Automobile Body Jack Wheel Wheel Drum	 1 1 1	Several 1	
Bar	3		
Barrel		2	
Barbed Wire	10'		
Basin		1	2
Bolt	1		
Bucket		3	3
Cans	7	4	
Coffee Pot			1
Disc	1		
Door Hinge	2		
Flashing	1		
Lantern		1	
Lids		3	
Nail (spike)	2		
Pan		2	
Pipe	1		
Spring	2		
Staple	1		
Stove	Parts	1	
Strap	4	1	
Square Nails	2		
Washtub	2?		1
Washer	1		

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Table 2 Continued			
Miscellaneous	17	Several	
Mammal Bone/Teeth			
Unidentified Bone	3		
Unidentified Tooth	1		
Button	1		
Shoe		1	
Stone			
Cairn		Several	Several
Concrete	2	1	
Whetstone	1		

In addition to identifying the artifacts and determine the functions of the two sites, the author consulted several books (Anonymous 1907, Christianson 1935, Folwell 1921, Wilcox 1907) containing biographies to see if the landowners identified above were important local, statewide, or national figures. Unfortunately, none of the landowners were mentioned in any of the publications.

Interpretations

The first site, BK-BIAFN-1, is a multicomponent occupation. There were no clearly datable prehistoric or historic artifacts. It is suspected that more of the prehistoric site may be found on a hilltop just across the highway to the east. From the available atlases and aerial photographs, the historic component probably was a farm and had a house situated within the artifact scatter. It was probably built and occupied from the 1910s to the 1950s.

The other historic site, BK-BIAFN-2, contains two features located in two distinct wooded areas surrounded by an agricultural field. The larger of the two features possessed the most datable artifacts in the form of glass manufacturing companies and beer bottlers. Based on the Kerr-Mason jar manufactured by the

Alexander H. Kerr & Company, the earliest this site could have been occupied was 1916 (Toulouse 1971). This could have continued until the early 1960s as shown by the Becker County Plat Book (Carson Map Company 1961). This site was also a farm that probably had several buildings in place at one time.

The historic artifacts indicate that both sites were very likely contemporaneous farms. The latter site has had fewer impacts since it's abandonment. However, neither site has any remaining or recognizable architectural elements present.

National Register Eligibility

Bulletin 15 of the National Register (Shrimpton nd) was consulted to determine the significance of both sites. Both properties would be categorized as sites. The historic context that would best fit these sites is "Indian Communities and Reservation, 1837-1945" (Anfinson 1994). The property type that would fit this context are isolated single habitations (Ibid:12). Both farms were originally allotments that had their origin in the 1887 Dawes Act. This act was intended to assign reservations lands to specific tribal members. Certain reservations were exempt, however, this exemption did not include the White Earth Reservation. The first landowners for these parcels were probably Native American or mixed blood. It isn't clear from the records or artifacts if all later owners were Native American or mixed blood.

Within the historic context, these sites can be evaluated for their associative value with criteria A (significant events), B (significant persons in the past), and D (have yielded or will likely yield information important to history). Although the Dawes Act (as an event) had a major impact to the White Earth Reservation; the two sites in question are not relics of the act. That is, they did not remain in the same families and therefore are not extant examples of an allotment created under the act. In addition, the size of the parcels fluctuated as their ownership changed.

Research into the possibility that one or more of the landowners may have been important with respect to significant persons of the past under criterion B could not be identified and documented. None of the landowners are mentioned in state biographies or county history. There appears to be no specific information about their activities and their impact, and there is no perspective to determine if their activities or contributions were historically important.

An area of research proposed by the historic context indicates that such sites "will ... be eligible if they can be used to research Indian ways of life that are not well documented in the written literature or oral accounts" (Ibid:14). Both sites clearly

possess information that might contribute something to our understanding of human history. This information (e.g.-the artifacts or surnames) cannot identify specific Indian ways of life from the later, possibly Euroamerican occupations. This information, by itself, is not considered to have a significant bearing in addressing this area of research.

Finally, is it possible to understand the physical features of these sites to the extent that they convey significance. The location where the farms were built is still extant, although the setting has been altered by land alteration at BK-BIAFN-1 it isn't the case for BK-BIAFN-2. The latter site looks as it did when there were farm buildings onsite. The feeling of a historic sense associated with agriculture is changing because of earlier land alteration and future construction. Neither site can convey a direct association with the Dawes Act, nor are there physical features present that show their historic character.

In conclusion, neither site identified during the survey is recommended for nomination to the National Register of Historic Places.

Project Effects and Recommendations

Currently, there are no Historic Properties located in Section 27 that will be impacted by the three projects. It is recommended that the projects proceed as planned.

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Appendix A

Soil Descriptions

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Soil Descriptions

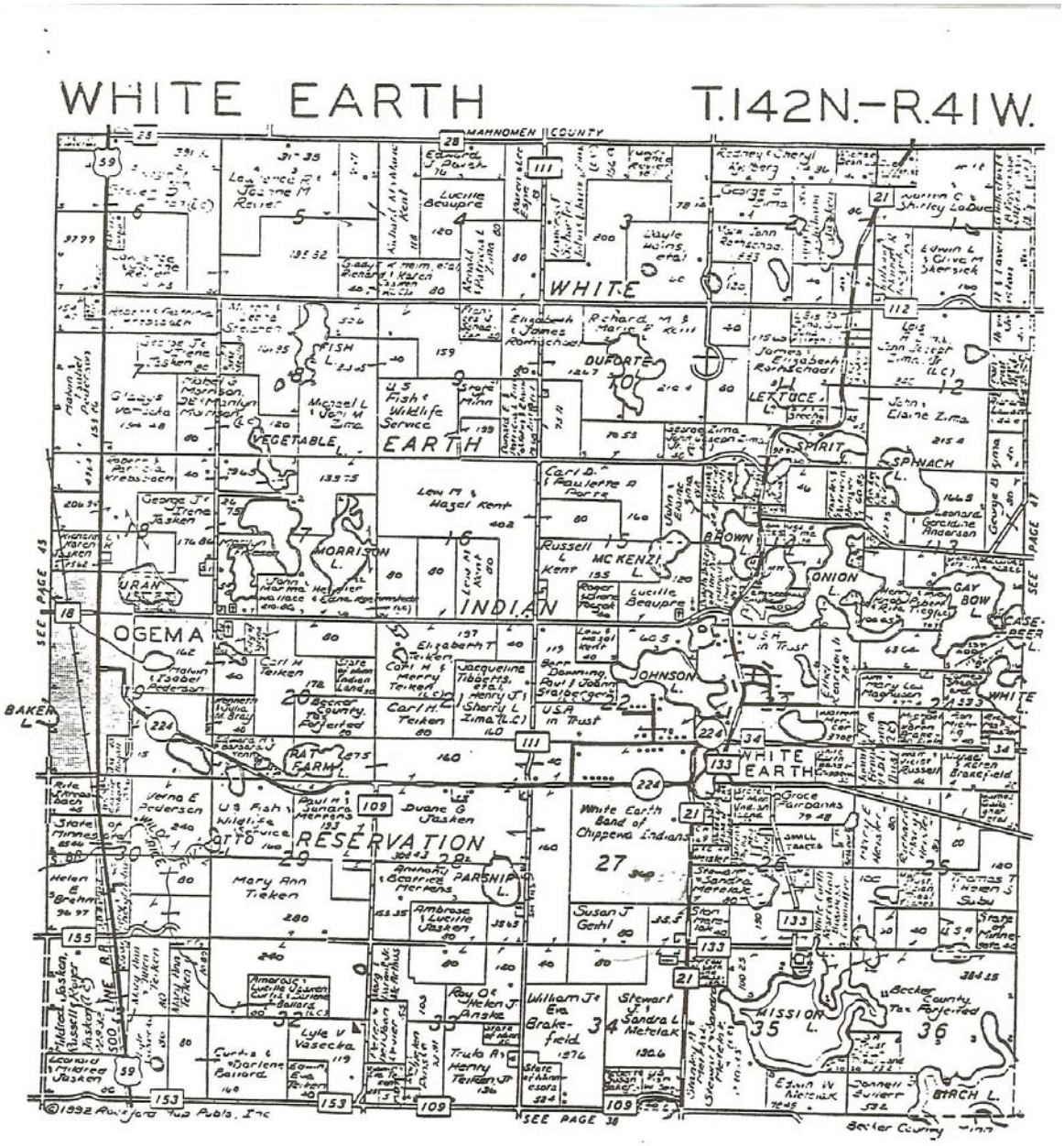
Flow series. The Flow series consists of very deep, poorly drained soils formed in glacial till or lacustrine sediments under prairie and wet meadow grasses on lowlying level or concave surfaces on glacial ground moraines. The surface soil is black and very dark gray silty clay loam 15 inches thick. The subsoil is olive gray clay loam 54 inches thick. The substratum is light olive gray and olive gray loam. Slopes range from 0 to 3 percent. Most areas are used for cropland (Revised 1991).

Forman series. The Forman series consists of deep, well drained soils formed in loamy glacial till on glacial till plains. The surface layer is very dark clay loam 8 inches thick. The subsoil is brown and grayish brown clay loam 9 inches thick. The underlying material is light yellowish brown clay loam. Slopes range from 0 to 30 percent. Most areas are used for cropland and pasture land (Revised 1987).

Formdale series. The Formdale series consists of deep well drained soils formed in glacial till under tall grass prairie on upland till plains and ground moraines. The surface layer is black clay loam 9 inches thick. The subsoil is dark brown clay loam 7 inches thick. The substratum is yellowish brown and light olive brown clay loam. Slopes range from 2 to 18 percent (Revised 1988).

Lakepark series. The Lakepark series consists of poorly drained soils in alluvium and glacial till under prairie vegetation on uplands. The surface layer is black clay loam 8 inches thick. The subsurface layers are black and very dark gray clay loam 20 inches thick. The subsoil is olive gray mottled silty clay loam 6 inches thick. The substratum is light brownish gray mottled loam. Slopes range from 1 to 3 percent. Most areas are used for cropland (Revised 1988).

Langhei series. The Langhei series consists of deep well drained soils formed in calcareous glacial till under prairie vegetation glacial moraines. The surface layer is mixed grayish brown and very dark grayish brown loam 6 inches thick. The substratum is grayish brown and light olive brown loam. Slopes range from 2 to 55 percent. Areas are used for cropland and pastureland (Revised 1991).


WHITE EARTH T.142N.–R.41W.
MAHNOMEN COUNTY
WHITE EARTH
INDIAN
OGEMA
RESERVATION
MISSION
JOHNSON L.
BROWN L.
ONION L.
SPIRIT L.
SPINACH L.
DUFORTE L.
LETTUCE L.
MORRISON L.
FISH L.
VEGETABLE L.
RAT FARM L.
PARSNIP L.
BAKER L.
BIRCH L.
GAY BOW L.
CASE LAKE
MC KENZI L.
SEE PAGE 43
SEE PAGE 17
SEE PAGE 38
Becker County
©1992 Rockford Map Publs. Inc
W. E. Housing Project
New W. E. Clinic site

04/29/94 14:59 ☎218 335 2819 BIA MINN AGENCY 001/001

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Minnesota Agency
Rt. 3, Box 112
Cass Lake, Minnesota 56633-8913

IN REPLY REFER TO:

Real Estate Services

April 28, 1994

Darrell Wadena, Chairman
Attention: Mike Heisler
White Earth Tribal Council
P.O. Box 418
White Earth, Minnesota 56591

Dear Chairman Wadena,

This letter is to confirm that the land described as the North half of the Southeast Quarter (N1/2SE1/4) and the Northeast Quarter of the Southwest Quarter (NE1/4SW1/4) and the South Half of the South Half of the Northeast Quarter (S1/2S1/2NE1/4) and the South Half of the Southeast Quarter of the Northwest Quarter (S1/2SE1/4NW1/4) of Section 27, Township 142 North of Range 41 West of the 5th Principal Meridian, less highway right of Way, containing 180 acres, more or less is in the prócess of review for Final Title Opinion before being submitted to the Aberdeen Title Plant for recording.

The above described property has been approved into trust on March 15, 1993 and was recorded in Becker County On September 20, 1993.

We hope this is the informatio you are seeking. If you have any questions or need any additional, please contact our Realty Services Branch at 218-335-2523, Ex. 37.

Sincerely,

Frank Annette,
Superintendent.

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL
# of pages ▶ 1
To Mary Defoe
From Mavis
Dept./Agency Land Office
Phone # 218-335-2523
Fax # Fax #
NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

APPENDIX E. FARMLAND CONVERSION IMPACT RATING FORM

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 11/2/07
Name Of Project White Earth Wind Energy project	Federal Agency Involved Department of Energy
Proposed Land Use Construction of wind turbine and access road	County And State Becker County, Minnesota
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 11/15/07

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☑	No ☐	Acres Irrigated N/A / Average Farm Size 364
Major Crop(s) ROW CROP / SMALL GRAINS	Farmable Land In Govt. Jurisdiction Acres: 602,620 % 72		Amount Of Farmland As Defined in FPPA Acres: 513,480 % 61
Name Of Land Evaluation System Used LESA	Name Of Local Site Assessment System N/A		Date Land Evaluation Returned By NRCS 11/20/07

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	10			
B. Total Acres To Be Converted Indirectly	10			
C. Total Acres In Site	0.0 25	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	7.6			
B. Total Acres Statewide And Local Important Farmland	7.0			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.1			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	26.7			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	78	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use		12			
2. Perimeter In Nonurban Use		3			
3. Percent Of Site Being Farmed		0			
4. Protection Provided By State And Local Government		0			
5. Distance From Urban Builtup Area		15			
6. Distance To Urban Support Services		0			
7. Size Of Present Farm Unit Compared To Average		10			
8. Creation Of Nonfarmable Farmland		0			
9. Availability Of Farm Support Services		2			
10. On-Farm Investments		0			
11. Effects Of Conversion On Farm Support Services		0			
12. Compatibility With Existing Agricultural Use		0			
TOTAL SITE ASSESSMENT POINTS	160	0 42	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	78	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0 42	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	78 120	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ■

Reason For Selection:

Relative value pertains to tower site location and road construction.

Placement of overhead and/or underground power lines is not considered as a conversion of farmland.

(See Instructions on reverse side) Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

APPENDIX F. FEDERAL AVIATION ADMINISTRATION DETERMINATION

Federal Aviation Administration
Air Traffic Airspace Branch, ASW-520
2601 Meacham Blvd.
Fort Worth, TX 76137-0520

Aeronautical Study No.
2006-AGL-10202-OE

Issued Date: 01/19/2009

Mike Triplett
White Earth Tribe
Box 418
White Earth, MN 56591

**** Extension ****

A Determination was issued by the Federal Aviation Administration (FAA) concerning:

Structure:	Wind Turbine WE1
Location:	White Earth, MN
Latitude:	47-05-20.76N NAD 83
Longitude:	95-51-38.42W
Heights:	400 feet above ground level (AGL) 1903 feet above mean sea level (AMSL)

In response to your request for an extension of the effective period of the determination, the FAA has reviewed the aeronautical study in light of current aeronautical operations in the area of the structure and finds that no significant aeronautical changes have occurred which would alter the determination issued for this structure.

Accordingly, pursuant to the authority delegated to me, the effective period of the determination issued under the above cited aeronautical study number is hereby extended and will expire on 01/19/2011 unless otherwise extended, revised, or terminated by this office.

This extension issued in accordance with 49 U.S.C., Section 44718 and, if applicable, Title 14 of the Code of Federal Regulations, part 77, concerns the effect of the structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (770) 909-4329. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2006-AGL-10202-OE.

Signature Control No: 497238-107853023 (EXT -WT)
Michael Blaich
Specialist

Page 1 of 1