TESTIMONY OF MICHAEL J. DONNELLY

Q. Would you please state your name, address, and occupation?

A. My name is Michael J. Donnelly. My business address is Suite 730, 8501 West Higgins Road, Chicago, Illinois. I am a Project Principal at Stanley Consultants, Inc., which provides engineering, environmental, and construction services.

Q. Would you outline your educational background?

A. I am a 1987 graduate from the University of Iowa with a Master of Science degree in Geology. I graduated from the University of Iowa in 1984 with a Bachelor of Science degree in Geology. I am a licensed geologist, and I participated in a 40-hour Specialized Training course in Hazardous Waste Site Operations in 1989, with an 8-hour refresher course in 2000.

Q. Please describe your background and experience in the area of environmental regulation.

A. I have been working as an environmental professional since 1987. I have participated in a wide variety of projects, including the siting of a number of power generating facilities, and I have worked extensively within the applicable regulatory frameworks associated with this proposed Project.

My technical experience includes Remedial Investigations/Feasibility Studies (RI/FS), RCRA Facility Investigations (RFIs), Corrective Measures Studies (CMSs), human health risk assessments, ecological risk assessments, Remedial Design (RD), and Remedial Action (RA). I also have specialized technical experience in all aspects of water resource development, I am familiar with water quality standards and requirements, and I have specialized experience in water well rehabilitation.

I have served as project manager on a number of wetlands mitigation and banking projects, and I have utilized this specialized experience in a number of areas, including assisting on delineation through evaluation of soil characteristics. In addition, in wetlands banking, I have used my experience in geology and hydrogeology to model and predict the feasibility of damming streams and the anticipated resultant induration of soils.

I have worked in the power generation industry as a consultant since the beginning of my career, and have a wide variety of experience in this area, including air, land, and water aspects of environmental impact from power generation and distribution.

Q. What is the environmental setting for the preferred site?

A. The preferred site for the Project is located in the City of Faribault, west of Highway 76 and south of 170th Street West. The general area surrounding the Project is rural. The landscape is generally flat with few woods. The potential Project area consists of cultivated farmland, which is owned by one landowner. The closest residence is located northeast of the Project and is occupied by a different owner. The address of this location is 17250 Acorn Trail and the property is owned by Ken Carpenter. This residence is located approximately 700 yards northeast of the preferred site property boundary. The preferred site location is due east of Interstate 35. The Lake Marion – West Faribault 115 kV overhead transmission lines are located west of the proposed sites. Much of the surrounding land is farmed in soybeans and corn. Detailed descriptions of the setting and natural resources follow.

The geology of the area is characterized by glacial till at the surface to a depth of approximately 30 feet below ground surface, in turn underlain by inter layered sands and gravels to a depth of about 70 feet, in turn underlain by bedrock. Surface topography is gently rolling, with little change in elevation in the area according to available topographic maps and visual surveillance of the area. A figure included in Section 2 of the Site Permit Application titled Figure 1 - Vicinity Map provides the applicable United States Geological

Survey (USGS) topographic map for the potential Project area. The primary surface water drainageway in the area of the Project is a perennial stream, flowing northeast to the Cannon River. Anticipated construction for the preferred site involves the construction of created wetlands to manage spent cooling water, with an overflow by NPDES permit into this perennial drainageway. A figure included in Section 2 of the Site Permit Application titled Figure 6 - Faribault Energy Park details this configuration.

Q. What is the environmental setting for the alternate site?

A. The environmental setting for the alternate site is very much the same as for the preferred site with a few exceptions. The Ken Carpenter residence is closer, and the alternate site does not abut the gas and electric transmission lines. The geology is the same. Should the alternative site be selected, the footprint of the available land will not allow the construction of a created wetlands. In this case, process wastewater would be treated and then discharged into the unnamed tributary of the Cannon River under applicable permit.

Geotechnical data conducted as a function of evaluating soil bearing capacities and implications on engineering design indicate groundwater is relatively near surface. Groundwater levels are likely controlled by drainage tiles installed for agricultural purposes. Depth to groundwater appears to be about 6 feet below ground surface.

Q. Did you consider the impacts on human settlement, displacement and demographics?

A. Yes. We considered the impacts on human settlement, displacement and demographics.

Q. Would development of the primary site result in the displacement of any persons?

A. No. The construction of the Project on the preferred site would result in no displacement of any persons. The preferred site is currently farmland and one owner owns the land. Faribault Energy Park currently holds an option for the purchase of this property.

Q. How about the alternate site?

A. Should the alternative site be selected, it is likely the nearest receptor would desire his property be purchased, resulting in the displacement of one person. In addition, this would result in an incrementally higher cost to acquire and clear this land.

Q. What are the demographics in the area?

A. The potential Project area is within the City of Faribault city limits. According to the United States Census Bureau 2000 census, the population of Faribault was 20,818. There are 10,751 males and 10,067 females. The population consists of the following, 89.9 percent of the population is white, 2.7 percent African American, 0.7 percent Native American, 1.8 percent Asian, 0.1 percent Native Hawaiian or other Pacific Islander, 3.3 percent is some other race, and 1.5 percent are two or more races. The major industries in Faribault are manufacturing and educational, health and social services. The median family income for Faribault in 1999 was $49,662.

Q. Did you consider noise generated by the Project?

A. Yes. As a function of the Site Permit Application, local and state ordinances for noise were evaluated. Appropriate noise monitoring and calculations (supported by engineering) will be made to demonstrate that noise levels from the proposed plant will not exceed state or local noise tolerance levels. A variety of sources in natural, industrial, and community settings generate sound/noise. Sound is defined as the result of the vibration of millions of air molecules traveling in waves to our ears. Sound waves move outward from the vibrating source, weaken, and may be reflected or bent by obstacles as they travel. Each sound wave has a different frequency, or rate of speed. Humans are only able to hear sound that falls between 30 to 12,000 cycles per second. In general, noise is defined as unwanted sound. Hearing damage is the most serious effect of noise, but the nuisance of particular sound characteristics may diminish the quality of life for those affected by the noise. Sound/noise is measured using a unit known as a decibel (dB).

Several frequency weighing schemes have been used to derive a dB scale that estimates the level at which humans detect various stimuli. The development of this schematic is because humans are only able to hear certain frequencies at certain volume levels. This range is typically described as the A-weighted decibel scale, or the dBA scale. Table A-1 in Appendix A of the Site Permit Application provides a summary of typical A-weighted sounds and their effects on human ears, along with anticipated equipment sound level specifications for standard packaged equipment in similar facilities for comparison.

Noise levels are given a constant equivalent dB level in order to develop single-value descriptions of the various noise levels. These units, denoted as Leq, give a numerical value to an average noise exposure over an average length of time. Time of day, annoyance, and other factors are taken into consideration when the Leq rating is determined. The Leq statistical descriptions are used to characterize noise conditions and are denoted as L10, L30, L50, etc., where the number represents the percentage of time studied that a noise is present and exceeds that level. For example, an air conditioning unit running in the background can be classified as an L90, and an airplane flying overhead may be classified as an L10. Distance is a main criteria for measuring the strength of noise. For every doubling of distance from the noise source, a decrease of 6dB occurs from isolated sources. When studying noise originating from a continuous line, the dB level decreases by 3dB for every doubling of distance. This is the case when observing traffic on an interstate or highway. However, a dB decrease of 4.5 may be considered when the roadway is at ground level, and the ground located between the noise source and monitor is effectively absorbing sound. If the roadway is elevated, potential sound wave absorbers are absent, and the 3 dB decrease is used.

All of the above measurements are based on distance being the only varying factor. When conducting traffic noise studies several other variants must be taken into consideration.

Included among these are wind, temperature, humidity, manufactured structures, and topographic elements. These elements contribute to the alteration of sound by diffracting sound waves and even increasing their intensity. All of these factors are taken into consideration when beginning a noise study.

Q. Do Minnesota Rules outline the standards followed for noise pollution control?

A. Yes. Minnesota Rules Part 7030.0040, subpart two outlines the standards followed for noise pollution control. The regulatory agency responsible for the formation and implementation of these standards is the MPCA. These standards, according to the definition of land use activities, demonstrate consistency with the requirements for annoyance, hearing, and conversation, and sleep for all receptors within these areas classified as such.

Q. What are the noise classifications as determined by the MPCA?

A. In addition to the Minnesota Rules, the MPCA has also produced numerous noise area classifications (NAC) and the standards for each. These classifications are based on what activity is being conducted at the location of each receiver. The noise standard is then classified according to the listed NAC.

There are four noise area classifications as determined by the MPCA. NAC-1 applies to household units, hospitals, religious services, correctional institutions, and entertainment gatherings. NAC-2 land use activities consist of mass transit terminals, automobile parking, and retail trade. Some of the NAC-3 described land uses are manufacturing facilities, highway and street right-of-way, and utilities. Undeveloped and under construction land use areas compose NAC-4. The standards for these classifications are described in Appendix A, Table A-2, of the Site Permit Application.

Q. Did FEP conduct a background noise survey in the Project area?

A. Yes. Faribault Energy Park conducted a preliminary background noise survey in the potential Project area to determine ambient noise levels. A sound pressure meter was used to

determine background noise levels at three locations, far west property line along transmission corridor, center of property near proposed plant and eastern property adjacent to railroad. Monitored levels were obtained for a 30-minute period and filtered by octave band. The results of the noise monitoring indicate that existing noise levels on and adjacent to the property range from 54-59 dBA. These data were used as a baseline in noise impact modeling for the facility. Measurements were conducted at the periphery of the preferred site at exactly the midpoint of each side of the property boundary. Values for noise collected are presented in Table A-3a in Appendix A of the Site Permit Application.

Q. What noises will occur during facility construction?

A. The resulting construction noise to build the facility would consist mostly of a series of intermittent sources, most of which would originate from the diesel engine drive systems that power most construction equipment. It is likely that during peak construction, construction work may occur for 10 to 16 hours per day. Typical construction noises, as modeled for a similar power plant Project in southeastern Wisconsin, are illustrated in Appendix A, Table A-3, of the Site Permit Application.

Q. What noises will occur during plant operation?

A. While construction noise would be emitted during the development of the Project and erection of the plant, operational noise would be emitted throughout the life of the plant. Major noise sources introduced by the proposed project would include noises from combustion turbine, generator packages, HRSG, steam turbine/generator packages, generator step-up transformers, circulating and water feed pumps, and cooling towers. Audible operational noise levels from the plant should be maintained at a low level compared to the existing ambient levels so that the overall increase in noise is minimal.

Q. Are noise considerations at the alternate site any different?

A. The preferred site would be located farther away from the potential receptors, resulting in significantly less noise impact than the alternate site.

Q. What conclusion do you reach regarding the overall increase in noise level?

A. Estimates of noise levels at various distances from the source were made to determine the impact of the new facility on ambient and background levels. Estimates of noise generation from each piece of equipment generating continuous noise at the proposed facility were obtained from manufacturer's data. Noise levels were calculated by logarithmically adding each source's contribution to total level at specific distances. The background levels monitored previously were also added to obtain the peak Leq, A-weighted, using FHWA noise prediction model, the FHWA TNM, Version 1.0 (FHWA TNM). The noise modeling estimates maximum noise levels at the plant boundary to be 62-65 dBA, which is within the limits of MPCA for industrial and commercial zoning. A noise isopleth diagram titled Figure 7 – Noise Isopleth is included at then end of Section 3 of the Site Permit Application.

Should the project be located on the alternate site, noise mitigation options will be identified and utilized, if necessary, to reduce noise at the residence located to the northeast of the alternate site. There are several options available to reduce noise to acceptable levels, if necessary.

Q. How will the aesthetics of the area surrounding the Project be affected?

A. In this part of Minnesota, farmland mingles with housing developments, large commercial or industrial buildings, and transmission lines. The potential Project area is located in an undeveloped area of Faribault, planned for industrial development, adjacent to Interstate 35, and will be sited on a 37-acre parcel. The landscape is generally flat with few woods, so that people can see for long distances. The facility should be visible from about a mile away, primarily from Interstate 35 and other surrounding roadways, nearby residents, and the adjacent farmland. Figure 6 - Faribault Energy Project included in Section 2 of the Site

Permit Application presents a rendering of the Project from the perspective of the preferred site.

Q. What will the people living or working around the Project area see?

A. The Project will provide a strong visual impression of modern industry. The existing farm field around the proposed facility and the intermittently vegetated fence lines with scrub growth give a strong visual impression of rural Minnesota. The proposed plant would change the view of people living in or working around the farm houses nearest to the potential Project area. These people would see a commercial-looking building, possibly with natural lines and colors curving behind and to one side of it (assuming the preferred site is selected and the constructed wetlands for effluent treatment is permitted). In addition, construction at the preferred site would allow the development of an interpretive park around the created wetlands, resulting in a resource that would improve the aesthetics of this area and provide a recreational resource.

Q. What will be done to mitigate the potential aesthetic impacts?

A. There is probably no attractive way to mitigate the view of construction. However, the visual impact of the proposed plant will be reduced by a number of details, such as shrub and tree plantings, fences, paint colors, and lighting design.

Q. Will the Project have an exhaust stack?

A. Yes. The Project will have a single exhaust stack that will be 170 feet high.

Q. Will the Project be lighted and how might the lighting affect the area?

A. Faribault Energy Park would light the plant site in a manner similar to other industrial sites. Lighting may also increase at special times during construction or operation (for construction at night or during special plant maintenance). This means that the level of light would increase near the site. Faribault Energy Park would use outdoor light fixtures that shade the source of light, directing the light downward, so that it is unlikely that their lighting would

light up the night sky or create a nuisance for nearby homeowners. Faribault Energy Park would decide on the location of lights during the final Project design phase. The Federal Aviation Administration may also require a light or lights on the plant stack.

Q. Will there be a visible plume from the stack?

A. Yes. Under certain meteorological conditions, the facility's stack would also emit a visible steam plume that, after traveling a relatively short distance, would dissipate by dispersion and evaporation. A visible plume can be expected to occur when ambient air temperatures are relatively low with respect to plume temperature, thus promoting plume cooling and condensation, and ambient humidity levels are relatively high, preventing evaporation of the water in the plume. The persistence of the plume is dependent upon wind speed at the time required for evaporation and dispersion.

Q. How will the Project affect cultural values, recreation, and public services of the area?

A. It is anticipated the Project will have an insignificant effect on cultural values and recreational services in the area. The Project will require City of Faribault police and fire protection services, though this level of effort is anticipated to be minimal. The Project will not utilize City of Faribault water or sewer services.

Q. Have you determined whether the construction and normal operation of the plant will have any effect on human health and safety?

A. Yes. Construction and normal operation of the Project is not expected to have any measurable adverse effect on the health of plant construction workers, operating personnel, or residents of the surrounding area. Typical potential health concerns are related to worker accidents, worker and public exposure to noise, impacts from air emissions, electric and magnetic field exposure, and security issues.

Safe construction practices and adherence to Occupational and Safety Health Administration (OSHA) regulations will mitigate dangers present to workers during heavy construction projects and operations.

Harmful noise exposure to workers during construction and operation of the plant will be prevented through use of hearing protection and adherence to OSHA rules related to hearing protection.

The proposed Project will be constructed and operated in accordance with all applicable air quality rules and regulations. More details on air quality can be found in this report.

Q. Have you considered the effects of electric and magnetic fields?

A. Yes. Electric and magnetic fields (EMF) arise from the flow of electricity and the voltage of a line. The intensity of the electric field is related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors. Electric and magnetic fields emanating from transmission lines have been a concern to the general public in similar projects in the past. In May of 1999, the National Institute of Environmental Health and Sciences (NIEHS) released a study clarifying the potential health risks from exposure to extremely low frequency –electric and magnetic fields (ELF-EMF). The study concludes:

> "ELF-EMF exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. The finding is insufficient to warrant aggressive regulatory concern. However, because virtually everyone in the United States uses electricity and therefore is routinely exposed to ELF-EMF, passive regulatory action is warranted such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing

exposures. The NIEHS does not believe that other cancers or non-cancer health outcomes provide sufficient evidence of a risk to currently warrant concern."

Q. Will the Project be fenced?

A. Yes. The generating facility will be fenced and access limited to authorized personnel only during construction and operation. This will keep curious youngsters away from the dangerous equipment. The Project will have minimal impacts to the security and safety of the surrounding area.

Q. Have you considered socioeconomic impacts of the plant?

A. Yes. The proposed generating facility is not expected to present adverse impacts to the social and economic character of the Project area. The economic character of the Project area could be enhanced by the proposed generating facility due to the enhanced possibility of the construction of an industrial area using energy from the Project.

During the peak construction period, the facility would be expected to generate 250 jobs, approximately $5 million in local expenditures, and a payroll of approximately $15 million. Once in operation, the plant would have approximately 17 full-time employees, including residents of the local community. Faribault Energy Park intends to be an active member of the local community, participating in charitable and community service organizations.

Q. What effects will construction and operation of the plant have on local homeowners?

A. Construction and operation of the generating facility would have a negative impact on local homeowners with the increase of traffic in the area. While the Project is under construction, local motorists would be temporarily inconvenienced by the increase in large construction vehicles on the roadways. These roads could become damaged during the construction process, but would be surfaced and maintained as necessary by the Faribault Energy Park to provide suitable access to the generating facility during operation.

Q. Does operation on fuel oil have any special effects on the area?

A. The facility may also operate on fuel oil as an emergency backup fuel, for economic reasons, and because it is required for MAPP accreditation. This alternate fuel supply will increase the reliability of the power supply in the event of natural gas supply interruption. The fuel oil would be received by truck deliveries. At this time, Faribault Energy Park does not anticipate delivery of fuel oil by pipeline.

Q. Will the Project impact state parks and recreation areas around the Project?

A. No. There are numerous state parks and recreation areas throughout the state of Minnesota. Several of these sites are located near the city of Faribault, in the southeast portion of the state. The MDNR was contacted and provided information about state parks and resources in the Project area. Sakatah Lake, Nerstrand Big Woods, and Rice Lake are near Faribault and the Project site. Sakatah Lake is 14 miles west of Faribault and offers biking, hiking, and camping. Nerstrand Big Woods is about 9 miles northeast of Faribault and offers hiking and camping. Rice Lake is located southeast of Faribault and offers canoeing and bird watching. In addition, there is a MDNR area office approximately one mile to the south of the Project site. These recreational areas are remote locations in reference to the Project site and will not be impacted by this Project. Therefore, no mitigation is necessary.

Q. What effects will the Project have on public services?

A. The facility will not require potable water or sanitary treatment by nearby governmental authorities, but will utilize fire and police services, anticipated to be provided by the City of Faribault.

The Faribault Fire Department provides emergency response for the City of Faribault and surrounding townships. The department is comprised of one Director of Fire & Code Services, nine full-time firefighters, thirty part-time firefighters and a full-time department secretary. The fire department building is located at 122 Northwest 2nd Street. It is not

anticipated that the generating facility will significantly affect the capabilities of the fire department.

The Faribault Police Department is a full service agency made up of administration, patrol (with a full time community crime prevention officer), investigations (with full time school liaison officer), records, and special services unit for parking and animal control and nuisance abatement. It is not anticipated that coverage of the generating facility will significantly affect the capabilities of the police department.

Q. Will any road construction be required for the Project?

A. Depending upon the facility's exact location, paving may be required of up to ½ mile of existing roadway or construction of a new plant entrance road. The preferred site will require marginally more road construction for the actual construction phase of the Project. At this time, the City of Faribault's exact plans for requirements for roadway construction and access in this planned industrial park are unknown. Any new roads will be constructed with the least amount of impact possible and according to necessary safety standards. Roads would be built and maintained to provide safe operation. The City of Faribault is in the planning process to develop the area near the proposed facility. This planning process involves the design of roadways in the area to provide access and enhance development. Faribault Energy Park is working closely with the City of Faribault in this planning process.

Q. Have you considered whether the Project will have an effect on land use?

A. Yes. Currently the land use of the potential Project area is agricultural. The land is a cultivated farm field and is owned by one person.

Minnesota Rules Chapter 4400.3450 subpart 1 states that no generating plants may be located in any of the prohibited sites. There are no prohibitive sites at the Project location such as:

- National parks
- National historic sites and landmarks;
- National historic districts;
- National Wildlife refuges;
- National monuments;
- National wild, scenic, and recreational riverways;
- State wild, scenic, and recreational rivers and their land use districts;
- State parks;
- Nature conservancy preserves;
- State Scientific and Natural Areas; and
- State and national wilderness areas.

In 1989, a land use plan was developed for the City of Faribault by the City Council and Planning Commission, and with the assistance of City staff and various citizen advisory boards. In this plan, population projections are made out to 2010. Continued growth is expected in these projections. In the 1989 plan, the land use is detailed for areas within the corporate boundaries of the City of Faribault and some fringe areas. Both sites were not within the corporate boundaries of Faribault at that time, although it has since been annexed. City of Faribault City Planners are in the process of reviewing proposed plat plans for industrial development in this area. The facility is a key component of this planned expansion.

In summary, Faribault's land use plan suggests that the long-term plan for the Project area will be an industrial area. Therefore, there will be no long-term impact on the land use of the area. The current property owners will be adequately compensated for the purchase of their land.

Q. Have you considered the effects of the Project on property values in the area?

A. Yes. The potential Project area would be converted from agricultural land to an industrial area. Approximately 12 acres of farmland will be converted to industrial use. This decreases the natural resources of the land, and has a negative effect on the current and surrounding landowners. The presence of the generating facility will have an unknown effect on the local property values, although adjacent land values have the potential to rise considerably if converted to industrial use.

Secondary development may occur if the power plant is built. Natural gas is already available in the area. The electric transmission line connected to the proposed power plant would not serve other customers, and the power that the plant produced would be sold wholesale through the transmission system. Faribault Energy Park intends to market the facility's steam production for possible use for other manufacturing facilities in the area, perhaps attracting additional industry to the area. In summary, a short-term positive economic benefit would result from the construction of this Project. The Project will generate construction-related employment and expenditures at nearby businesses. The City of Faribault may experience increased business activity during construction. After the construction is over and the plant would be in operation, the economic benefit would continue to be positive with the addition of approximately 17 permanent full time positions. In addition, the Project could attract additional industry to the area, resulting in additional capital investment and consequent growth in employment.

Q. What conclusion do you draw regarding socioeconomic impacts of the plant?

A. In summary, a short-term positive economic benefit would result from the construction of this Project. The Project will generate construction-related employment and expenditures at nearby businesses. The City of Faribault may experience increased business activity during construction. After the construction is over and the plant would be in operation, the

economic benefit would continue to be positive with the addition of approximately 17 permanent full time positions. In addition, the Project could attract additional industry to the area, resulting in additional capital investment and consequent growth in employment.

Q. Are the preferred site and the alternate site considered prime farmland?

A. Yes. The preferred site and the alternate site are considered prime farmland. Prime farmland, as defined in CFR Title 7, 657.5 a, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Prime farmland is also available for other uses including cropland, pastureland, rangeland, forestland, or other land, but not urban build-up land or water. The Natural Resource Conservation Service (NRCS) classifies soils that are considered prime farmland.

In 2000, a soil survey was published for Rice County by the NRCS in cooperation with the Minnesota Agricultural Experiment Station. The survey contains a list of soils that are considered prime farmland in the county. About 186,726 acres, or nearly 57 percent of the Rice County area, meets the requirements for prime farmland.

Several soils within the potential Project area are characterized as prime farmland. Table A-4 in Appendix A of the Site Permit Application shows the soils that are considered prime farmland. Hayden loam with 2-6 percent slopes is considered prime farmland. Cordova clay loam with 0 to 2 percent slopes where drained is considered prime farmland. Glencoe clay loam depressional with 0 to 1 percent slopes where drained is considered prime farmland. By visual inspection, these three soils combined, take up approximately 75 percent of the Project area.

Q. Does the amount of prime farmland to be used fall within the allowable guidelines of Minnesota Rules?

A. Yes. The area of prime farmland used by the generating station will be well within the area allowed by Minnesota state rules. Minnesota Rule 4400.3450 subpart 4 states that no large

electric power generating plant site may be permitted where the developed portion of the plan site, excluding water storage reservoirs and cooling ponds, includes more than 0.5 acres of prime farmland per megawatt of net generating capacity. Given the nominal 250 MW capacity Generating Station, this rule would allow up to 125 acres of prime farmland for the generation station site. Since the Project area of the generation station site requires substantially fewer acres than allowed, it is consistent with Minnesota Rule 4400.3450. In summary, the impact on agriculture will be low.

Q. Will the Project adversely affect forestry, tourism and mining?

A. No. Since either of the potential sites are currently used as farmland, the Project does not have the potential to adversely affect mining, forestry, and tourism. According to a 1998 Mineral Industries map from the MDNR, mining operations in Rice County include horticultural peat and crushed stone mining. These operations are not within the potential Project area. In addition, MDNR forestry maps indicate that there are no state forests near the potential Project area.

Q. What roadways presently serve the area?

A. The potential Project area is located off Highway 76 to the west, south of 170th Street West, and east of Interstate 35. Roads near the Project will be utilized as much as possible to reduce the area disturbed. These roads will be maintained as necessary, and provided with adequate drainage.

Rice County Highway Department has indicated that the 2001 average daily traffic for Highway 76 is 180 vehicles per day. Traffic counts for other roadways are not available.

Q. What impact will the Project have on local traffic?

A. Traffic near the proposed facility will increase during construction. Local motorists would be temporarily inconvenienced by the increase in large construction vehicles on the roadways and possible delays in traffic. These roads could become damaged, but would be surfaced

and maintained as necessary to provide suitable access to the generating facility. Traffic on local roads will increase during construction with anticipated 250 individuals traveling to the job site each day. This impact is expected to last during the construction period of 21 months. Traffic due to the construction workers could be expected to produce local impacts over a thirty-minute period at the beginning and end of the day and each time a change in shift occurs.

Traffic near the proposed facility will increase slightly during plant operation. A maximum of 17 individuals will work at the facility during operation. In addition, truck traffic would be expected to increase slightly with truck deliveries to the plant, primarily during short-term fuel oil deliveries to the plant. The plant will not burn fuel oil on an extended basis because of air permit limitations.

Q. Will the Project have an impact on the nearby Faribault airport?

A. No. The Faribault Municipal Airport is a general aviation airport that serves Faribault and Rice County with a main runway oriented northwest to southeast. It is located three miles northwest of the center of the City of Faribault, and two miles southwest of the potential Project area. It is owned and maintained by the City of Faribault and features a paved runway extending 4,254 feet. The Project will not affect the airport.

As a function of the permitting portion of the facility, the Faribault Energy Park will secure a flight hazard determination from the Federal Aviation Administration (FAA). This will involve providing the FAA the general configuration of the facility along with the elevations of the buildings. The primary area of concern in this effort will be the stack height for the single exhaust stack of the facility. The FAA will issue a finding that will likely include provision for lighting the stack for pilot visibility.

Q. Did you reach a conclusion regarding the effects of the Projects on land-based economies?

A. Yes. The impact on land-based economies will be low.

Q. Was an evaluation done of the possible Project impacts on historical, cultural, and archaeological resources?

A. Yes. IMA Consulting, Inc. was retained to perform a Phase I Historical, Cultural, and Archaeological Resources evaluation of the potential Project area. IMA Consulting shares a professional services agreement with its parent organization, the non-profit Institute for Minnesota Archaeology.

IMA Consulting, Inc., concluded the construction of the facility has no potential to impact significant historical, cultural, or archaeological resources in potential Project area. Their report is provided in Appendix B of the Site Permit Application.

Q. Did you consider the impact of the Project on the natural environment?

A. Yes. We considered the impact on land and soils, air quality, storm water runoff, groundwater, flora and fauna.

Q. How will the Project affect land and soils?

A. The potential Project sites are in a geologic area with depth of unconsolidated materials up to 70-feet deep. Geologic formations consist of glacial till interlaced with variable quantities of glacial lake and glacial outwash materials. Much of the resulting soils are fine-grained and generally not very well drained. The specific conditions at the sites are typical of this area, made up of relatively poorly drained silt loams and loams.

According to the Rice County Soil Survey, four different soils are found within the Project area sites. In Appendix A of the Site Permit Application, Table A-5 details the soil types and the following summarizes the characteristics of the soils on the Project area sites:

- Cordova Clay Loam, 0-2 Percent – A poorly drained soil with moderately slow permeability. This soil can be found on the microlows of moraines.

- Hayden Loam 2-6 Percent – A well-drained soil with moderate permeability. This soil can be found on the summits of moraines.
- Hayden Loam 6-12 Percent Eroded – A well-drained soil with moderate permeability. This soil can be found on the backslopes and shoulders of moraines.
- Glencoe Clay Loam, Depressional 0-1 Percent – A very poorly drained soil with moderately slow permeability. This soil can be found in the depressions on moraines.

All of the soil materials on which the Project would be built have supported crops and are the types of soil materials that can support the proposed construction. Construction would remove, compact, and mix soil profile layers. Any equipment operated during wet periods on the poorly drained soils where nothing is to be built would damage their structure. Those poorly drained soils have required tile drainage to crop, and their hydrological and biological functions would support landscaping and be enhanced by creating of native prairie or wetland communities. Construction and landscaping would need to avoid compaction that would damage soil percolation and cause erosion of soil that would plug the drainage ditch. Past and current land uses have resulted in the disturbance of native soils. Therefore, the overall impact of the construction will be minimal.

Q. Is anything being done to enhance area land and soils?

A. Yes. Several aspects of the Project will be constructed to enhance the natural environment, as depicted on Figure 6 - Faribault Energy Park included in Section 2 of the Site Permit Application. If the preferred site is selected, constructed wetlands will be built (contingent on MPCA NPDES permit authorization to discharge spent cooling water to serve as a water source). These wetlands will be constructed as an educational park for area citizens, and will

actually serve to mitigate erosion in this area while developing a natural habitat. Stormwater will be managed by construction of a stormwater retention pond in conjunction with applicable regulatory requirements, with possible overflow into these constructed wetlands.

Q. Does the alternative site have different considerations?

A. Yes. If the alternative site is selected, the footprint and topographic considerations would not allow the construction of a created wetlands or interpretive park. Treated wastewater would be discharged into the unnamed tributary of the Cannon River under applicable permit. Stormwater would be managed in a stormwater retention pond and outfall into the unnamed tributary of the Cannon River under applicable permit.

Q. Will efforts be taken during construction to prevent erosion?

A. Yes. During construction, Best Management Practices (BMPs) will be used to prevent erosion. Examples of BMPs include: installation of silt fences around the construction perimeter prior to excavation and grading; maintenance of silt fences until stabilization of soils is achieved; establish erosion control measures in stockpile areas; mulch and vegetate areas not planned to be paved or built on in a timely manner to reduce erosion and seedling mortality; apply riprap at outfalls of culverts and stormwater holding ponds to dissipate energy and control erosion.

Q. Will the Project be a source of air emissions?

A. Yes. Emissions of air pollutants will occur because of combustion of fuels from several sources within the proposed facility. The primary source of combustion-related emissions is the combined-cycle gas turbine. Secondary combustion sources include an auxiliary boiler, an emergency generator, and a fire pump engine. The combustion turbine will be fueled by natural gas, while the auxiliary boiler may be fired with either natural gas or fuel oil, with the emergency generator fired only by fuel oil. Other non-combustion emission sources include fuel-oil storage tanks, a cooling tower, and traffic/roadway related fugitive emissions.

Q. Will the Project require an air permit?

A. Yes. An application for an air permit is pending before the Minnesota Pollution Control Agency.

Q. Do any of the emissions exceed the threshold for Prevention of Significant Deterioration (PSD) as defined in the Clean Air Act?

Yes. The pollutants generated from combustion activities include five criteria pollutants and several hazardous air pollutants. These pollutants and the predicted emission of these pollutants from the facility are shown in Table A-6 in Appendix A of the Site Permit Application. These anticipated emissions were derived through site-specific calculations of potential operating emissions at the proposed Project sites, and are consistent with applicable permit applications. Through the selection of good combustion technology, use of good operating practices, the preferential use of natural gas as a fuel source, and the use of add-on control to abate NOx emissions, the Faribault Energy Park will strive to minimize associated adverse impacts to the air from the proposed facility.

There are five pollutants NOx, CO, PM10, SO2, and VOC that exceed the threshold for Prevention of Significant Deterioration (PSD) as defined in the Clear Air Act (CAA). Selected emission controls are presented in Section 5 of the Site Permit Application.

The facility-wide potential emissions of hazardous air pollutants will be well below the major source thresholds as defined by the National Emission Standards for Hazardous Air Pollutants (NESHAP) contained in Title III of the CAA.

Q. What is meant by Best Available Control Technology (BACT), and when is BACT applicable?

A. The analysis and selection of Best Available Control Technology (BACT) for the Combustion Turbine (CT) operating in combined cycle, firing natural gas for a maximum of 8,000 hours per year and fuel oil for a maximum of 2,500 hours per year. In addition,

supporting information is presented for the determination of BACT for the 40 MMBtu/hr boiler and cooling tower.

Any major stationary source or major modification subject to PSD must conduct an analysis to ensure the application of BACT. The requirement to conduct a BACT analysis and determination is set forth in Section 165(a)(4) of the CAA, in federal regulation 40 CFR 52.21(j), in regulations setting forth the requirements for State Implementation Plan (SIP) approval of a State PSD program at 40 CFR 51.166(j), and in the SIP's of the various States at 40 CFR Part 52, Subpart A - Subpart FFF.

As described, five pollutants, NOX, CO, PM10, SO2, and VOC exceed PSD significance thresholds thereby requiring BACT analysis. The greatest contributor of these emissions is the CT and a pollutant-by-pollutant analysis is presented for the BACT determination of this unit.

Q. When is NOX formed?

A. NO_X is generated from the proposed facility during the combustion of natural gas in the CT. Nitrogen oxides form in the gas turbine combustion process because of the dissociation of nitrogen (N_2) and oxygen (O_2) into N and O, respectively. Reactions following this dissociation result in seven known oxides of nitrogen: NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5. Of these, nitric oxide (NO) and nitrogen dioxide (NO_2) are formed in sufficient quantities to be significant.

Virtually all NOX emissions originate as NO. This NO is further oxidized in the exhaust system or later in the atmosphere to form the more stable NO2 molecule. There are two mechanisms by which NOX is formed in turbine combustors: (1) the oxidation of atmospheric nitrogen found in the combustion air (thermal NOX and prompt NOX) and (2) the conversion of nitrogen chemically bound in the fuel (fuel NOX).

Thermal NOX is formed by a series of chemical reactions in which oxygen and nitrogen present in the combustion air dissociate and subsequently react to form oxides of nitrogen. The major contributing chemical reactions are known as the Zeldovich mechanism and take place in the high temperature area of the gas turbine combustor. Simply stated, the Zeldovich mechanism postulates that thermal NOX formation increases exponentially with increases in temperature and linearly with increases in residence time.

Flame temperature is dependent upon the equivalence ratio, which is the ratio of fuel burned in a flame to the amount of fuel that consumes all of the available oxygen. An equivalence ratio of 1.0 corresponds to the stoichiometric ratio and is the point at which a flame burns at its highest theoretical temperature. Therefore, as air to fuel ratios approach this stoichiometric equivalence ratio, thermal NOX production increases.

Fuel NOX (also known as organic NOX) is formed when fuels containing nitrogen are burned. Molecular nitrogen, present as N2 in some natural gas, does not contribute significantly to fuel NOX formation. With excess air, the degree of fuel NOX formation is primarily a function of the nitrogen content in the fuel. The fraction of fuel-bound nitrogen (FBN) converted to fuel NOX decreases with increasing nitrogen content, although the absolute magnitude of fuel NOX increases. For example, a fuel with 0.01 percent nitrogen may have 100 percent of its FBN converted to fuel NOX, whereas a fuel with a 1.0 percent FBN may have only a 40 percent fuel NOX conversion rate. The low-percentage FBN fuel has a 100 percent conversion rate, but its overall NOX emission level would be lower than that of the high-percentage FBN fuel with a 40 percent conversion rate. Nevertheless, fuel NOX is not currently a major contributor to overall NOX emissions from stationary gas turbines.

Q. What control technologies are available for the control of NOX emissions?

A. NOX may be minimized at the front-end of the CT system by preventing the initial formation of NOX or it may be controlled at the back-end of the system through add-on control technology. An extensive BACT analysis was performed to determine the most effective NOx control technology. Technologies considered were: Dry Low NOX Combustion Techniques (DLN); Steam/Water Injection Control Techniques; Selective Catalytic Reduction (SCR); Emerging Technologies (SCONOX and XONON systems).

The selected technology is Selected Catalytic Reduction (SCR).

Q. Explain Selective Catalytic Reduction?

A. The SCR process reduces NOX emissions by injecting ammonia into the flue gas. The ammonia reacts with NO in the presence of a catalyst to form water and nitrogen. In the catalyst unit, the ammonia reacts with NOX primarily by the following equations:

$$NH3+ NO + 1/4\ O2 \rightarrow 6\ N2 + 3/2\ H2O;\ \text{and}$$

$$NH3 + 1/2\ NO2 + 1/4\ O2 \rightarrow 3/2\ N2 + 3/2\ H2O$$

The catalyst's active surface is usually a noble metal, base metal (titanium or vanadium) oxide, or a zeolite-based material. Metal-based catalysts are usually applied as a coating over a metal or ceramic substrate. Zeolite catalysts are typically a homogenous material that forms both the active surface and the substrate. The geometric configuration of the catalyst body is designed for maximum surface area and minimum obstruction of the flue gas flow path to maximize conversion efficiency and minimize backpressure on the gas turbine.

An ammonia injection grid is located upstream of the catalyst body and is designed to disperse the ammonia uniformly throughout the exhaust flow before it enters the catalyst unit. In a typical ammonia injection system, anhydrous ammonia is drawn from a storage tank and evaporated using a steam- or electric-heated vaporizer. The vapor is mixed with a pressurized carrier gas to provide both sufficient momentum through the injection nozzles

and effective mixing of the ammonia with the flue gases. The carrier gas is usually compressed air or steam, and the ammonia concentration in the carrier gas is about 5 percent.

An alternative to using the anhydrous ammonia/carrier gas system is to inject an aqueous ammonia solution. This system removes the potential safety hazards associated with transporting and storing anhydrous ammonia and is often used in installations with close proximity to populated areas. An anhydrous ammonia system is considered in this BACT analysis.

The NH3/NOX ratio can be varied to achieve the desired level of NOX reduction. As indicated by the chemical reaction equations listed above, it takes one mole of NH3 to reduce one mole of NO, and two moles of NH3 to reduce one mole of NO2. The NOX composition in the flue gas from a gas turbine is over 85 percent NO, and SCR systems generally operate with a molar NH3/NOX ratio of approximately 1.0. Increasing this ratio will further reduce NOX emissions but will also result in increased unreacted ammonia passing through the catalyst and into the atmosphere. This unreacted ammonia is known as ammonia slip and is generally designed at a rate of 5 ppm to 10 ppm.

Q. Did you evaluate the economic, energy, and other environmental impacts of NOX control technologies?

A. Yes. Following the top-down analysis, the first technology to consider for economic, energy and other environmental impacts is the control combination of Dry Low NOX design with SCR. This scenario uses a baseline uncontrolled NOX emissions of 690.64 tons per year. This is developed from a 100% load-operating scenario firing 8,760 hours per year, where 6,260 hours are on natural gas and 2,500 hours are on fuel oil. Although turbines have a higher NOX emission rate during start-up and shutdown, the SCR catalyst system is not active during this period because the exhaust is not hot enough to maintain the controlled reaction.

Q. What analysis did you do of the economic impact of NOX control technologies?

A. The cost estimate procedure used for this BACT analysis is consistent with methodology of the EPA Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual, Fifth Edition and the recent updates that are posted on the EPA Clean Air Technology Center Internet site http://www.epa.gov/ttn/catc/products.

As shown in Table A-8 in Appendix A of the Site Permit Application, the range of achievable emission rate for NOX with SCR is 2.5 to 4.5 ppmvd. To optimize ammonia slip at 10 ppmv, it is estimated that 3.0 ppmv NOX control can be achieved. The issue of ammonia slip is discussed further in the environmental impacts analysis of this evaluation. For purposes of designing the SCR and estimating its cost-effectiveness, a 3.0 ppmvd NOX concentration will be used in this analysis. The Purchased Equipment Costs (PEC) of SCR housing and catalyst were estimated using design and cost estimating methodology recently published by the EPA as Section 4.2 of the OAPQS Control Cost manual.

Table A-9 in Appendix A of the Site Permit Application presents the analysis of the incremental economic impact of the SCR technology applied after consideration of the NOX reduction from the DLN design.

Table A-10 in Appendix A of the Site Permit Application summarizes the combined and incremental economic impacts of these NO_X control technologies.

Q. What analysis did you do of the energy impact of NOX control technologies?

A. The energy requirements for the SCR are reflected in the economic impact analysis and are restated here. Minor impacts include the amount of electricity to run the ammonia pumps and exhaust fans. More significant energy impacts are associated with the backpressure on the CT associated with the SCR. This is estimated to create a pressure loss of approximately 3 inches of water resulting in a performance loss of approximately 0.32%. For the anticipated CT, this yields a power loss of 5,002,791 kWh per year. With a CT gross heat

input rate of 1876 MMBtu/hr, a heat rate increase from the pressure loss generates a fuel penalty of 51,766 MMBtu per year or approximately 51.5 million cubic feet (mmcf) per year of natural gas.

Q. What analysis did you do of the environmental impact of NOX control technologies?

A. Numerous collateral environmental issues have been raised in association with the use of SCR technology. In general, these include:

Increased ammonia emissions associated with ammonia slip of the SCR can occur at levels of 5 to 10 ppmv. In terms of nitrogen emitted, 1 ton of ammonia equals 1.7 tons of NO and 2.7 tons of NO2. Both ammonia and NOX are known to be acutely toxic, contribute to fine particle formation, acidifying deposition, eutrophication, and enrichment of terrestrial soils, and both may be converted to nitrous oxide, a powerful greenhouse gas. In a recent draft policy statement, the EPA analyzes these issues more thoroughly and concludes that in some situations – more so where nitrogen deposition and eutrophication are of concern – it may be preferable to limit ammonia emissions over NOX emissions.

Backpressure losses from SCR necessitate providing additional electrical generating capacity to meet demand. This demand is either satisfied through increased electricity production at older "higher emitting" plants or through construction of additional units. The implications of requiring SCR on combined cycle turbines was analyzed by EPA's Office of Air and Radiation using the Integrated Planning Model – a tool used extensively by EPA to analyze emissions reductions and costs for the electric power industry under a variety of policy options.

EPA identifies ammonia as an extremely hazardous substance and is an OSHA regulated substance. Facilities that handle over 10,000 pounds of anhydrous ammonia or 20,000 pounds of ammonia in an aqueous solution must prepare and implement a Risk Management Plan to prevent accidental releases. The Chemical Emergency Preparedness and

Prevention Office (CEPPO) received RMPs from 97 electric generating facilities. Since 1992, six accidental releases were reported from three of these facilities using ammonia for catalytic control.

The use of SCR systems results in spent catalyst waste. The amount of waste generated is dependent on the amount of catalyst used, the life of the catalyst, the quality of fuel and combustion air, and the amount of available recycling options. Typically, catalysts do not need to be replaced more than once every three years. Spent catalyst is not a hazardous waste.

Q. Did you identify the most effective NOX control technology?

A. Yes. After eliminating control alternatives that are not technically feasible in the proposed design and CT application, the most effective NO_X control technology is the use of Selective Catalytic Reduction (SCR). DLN combustion will be implemented with natural gas firing and water/steam injection will be utilized for fuel oil firing. The economic impact of DLN and Natural Gas Combustion were in an amount generally considered acceptable. The incremental economic impact of the SCR alone was determined to be $2,360 per ton of NO_X removed, which is consistent with BACT determinations as listed in the RBLC. The adverse environmental impacts associated with SCR should be given serious consideration, though. A review of technical literature including EPA sources identified numerous concerns that offset the apparent benefits of SCR. Most notably is the EPA report suggesting that a policy of presumptively adopting SCR may actually result in a net region or nationwide increase in NO_X emissions. To achieve the 3.0 ppmvd, an ammonia slip of 10 ppmvd should be anticipated. Ammonia slip can be reduced to 7 ppmvd with a corresponding increase of NO_X emission concentration of 3.5 ppmvd. Such a determination would remain consistent with other BACT determinations as listed in this application. This application is prepared with the determination that a NO_X concentration of 3.0 ppmvd can be achieved with SCR and DLN

and has therefore been determined as BACT. At the discretion of the agency, a 3.5 pmvd may be determined more appropriate given these considerations.

Q. Are there new technologies that would minimize NOX?

A. There is no new technology that would minimize NOX that is technically feasible.

Q. Explain how CO is formed in the turbine?

A. Carbon Monoxide (CO) – as well as VOC emissions – result from incomplete combustion. CO results when there is insufficient residence time at high temperature or incomplete mixing to complete the final step in fuel carbon oxidation. The oxidation of CO to CO2 at gas turbine temperatures is a slow reaction compared to most hydrocarbon oxidation reactions. In gas turbines, failure to achieve CO burnout may result from quenching by dilution air. With liquid fuels, this can be aggravated by carryover of larger droplets from the atomizer at the fuel injector. Carbon monoxide emissions are also dependent on the loading of the gas turbine. For example, a gas turbine operating under a full load will experience greater fuel efficiencies, which will reduce the formation of carbon monoxide. The opposite is also true, a gas turbine operating under a light to medium load will experience reduced fuel efficiencies (incomplete combustion), which will increase the formation of carbon monoxide. The CT anticipated for this Project has a manufacturer reported CO emission concentration of 10 ppmvd when firing both natural gas and fuel oil.

Q. What are the control technologies available for CO?

A. Options for control of CO emissions are more limited than what is available for controlling NO_X emissions. A review of the RACT/BACT/LAER Clearinghouse (RBLC) identifies combustion control and catalytic oxidation as the two available techniques for CO control. Good combustion practices are the selected alternative.

Good combustion practice and control is a stated goal of the CT design approach. CO emissions from a conventional gas turbine combustion systems are 10 ppmvd at loads

down to 75 percent for steady-state operation. As firing temperature is reduced below about 1,500°F, the CO emissions increase quickly. During ignition and acceleration, there may be transient emission levels at rates higher than 10 ppmvd.

Q. Did you identify a BACT for CO?

A. Yes. The BACT analysis concludes with the determination that an oxidation catalyst is not economically feasible and that good combustion practices be selected as BACT. The economic impact of the CO catalyst system at $11,420 per ton of CO removed is higher than historic cost-effectiveness thresholds including the reported $3,000 per ton for the Lakefield Junction, Minnesota facility. The removal of 93.13 tons of CO with an oxidation catalyst would require an initial capital investment of $1.94 million with an annualized catalyst replacement cost of $413,505 per year. Therefore, it is reasonable to determine that an oxidation catalyst system creates an economically unacceptable burden. This conclusion is consistent with recent BACT determinations for other CT facilities. The use of good combustion controls designed within the anticipated turbine performs at a rate of 10 ppmv, which is equivalent to or better than other BACT performance levels reported in the EPA RBLC and as reported for Minnesota by the EPA Region IV database. Furthermore, the use of an auxiliary boiler to facilitate a "warm-start" will lower CO emissions during start-up.

Q. What Volatile Organic Compounds (VOCs) will be present?

A. The pollutants commonly classified as VOC can encompass a wide spectrum of volatile organic compounds, some of which are hazardous air pollutants. Often referred to as "unburned hydrocarbons" (UHCs), these compounds are discharged into the atmosphere when some of the fuel remains unburned or is only partially burned during the combustion process. With natural gas, some organics are carried over as unreacted, trace constituents of the gas, while others may be pyrolysis products of the heavier hydrocarbon constituents.

With liquid fuels, large droplet carryover to the quench zone accounts for much of the unreacted and partially pyrolized volatile organic emissions.

The emissions of VOC's are almost solely associated with the start-up and shutdown of the CT. At normal operating conditions, VOC emissions are very low, 1.82 lb/hr when firing natural gas and 12.99 lb/hr when firing fuel oil. During start-up, the VOC emissions are estimated to be 792.22 lb per start-up/shutdown sequence (229.63 lb/hr) when firing natural gas and 4,110.61 lb per start-up/shutdown sequence (1191.48 lb/hr) when firing fuel oil. These rates are for a warm start, which takes approximately 2.7 hours to complete and 0.75 hours to shutdown the turbine for a total of 3.45 hours per start-up/shutdown sequence. Because the CT could start-up and shutdown once a day, the potential VOC emissions can be very large.

Q. What control technologies are available for VOCs?

A. With the exception of increased design efficiencies, there are also no direct UHC reduction control techniques used within the gas turbine. The same indirect emissions control techniques can be used for unburned hydrocarbons as for carbon monoxide. Abatement of VOC emissions can be achieved with post-combustion oxidation techniques such a thermal or catalytic oxidation. Other VOC control techniques such as carbon absorption or recovery are not applicable to flue gas treatment, especially with the exhaust rates associated with the anticipated CT.

In addition to the oxidation catalyst system reviewed for the CO control, thermal incineration is another control technology that is applied for VOC control. Since the primary source of VOC emissions is unburned hydrocarbon during start-up, the same technical limitations of the catalytic oxidation apply to controlling VOC start-up emission as for CO – primarily the low exhaust temperatures not being sufficiently hot enough to activate the catalyst.

Q. What did you identify as BACT for VOC?

A. Because of the large additional heat input requirement, thermal oxidation is not a feasible control option. Therefore, good combustion practices are presented as BACT for the combustion turbine.

Q. What is PM10?

A. PM_{10} emissions (particulate matter that is less than or equal to 10 micrometers in aerodynamic diameter) from turbines primarily result from carryover of noncombustible trace constituents in the fuel. PM_{10} emissions are generally considered negligible with natural gas firing and marginally significant with distillate oil firing because of the low ash content. However, because of the large size of the proposed facility, these "negligible" amounts have the potential to cumulatively exceed the PSD significance threshold. The principal components of the particulates are smoke, ash, ambient non-combustibles, and erosion and corrosion products. Two additional components that could be considered particulate matter are sulfuric acid and unburned hydrocarbons that are liquid at standard conditions.

PM emissions can be classified as "filterable" or "condensable". Filterable PM is that portion of the total PM that exists in the stack in the solid or liquid state and can be measured on an EPA Method 5 filter. Condensable PM is that portion of the total PM that exists as a gas in the stack but condenses in the cooler ambient air to form particulate matter. Condensable PM exists as a gas in the stack, so it passes through the Method 5 filter and is typically measured by analyzing the impingers, or "back half" of the sampling train. Condensable PM is composed of organic and inorganic compounds and is generally considered all less than 1.0 micrometers (mm) in aerodynamic diameter. Because natural gas is a gaseous fuel, filterable PM emissions are typically low. Particulate matter from natural gas combustion is usually larger molecular weight hydrocarbons that are not fully combusted. Increased PM_{10} emissions may result from poor air/fuel mixing or maintenance problems.

One EPA source provides the following particle size distribution for products of natural gas and distillate fuel oil combustions.

Q. What control technologies are available for PM10?

A. Since CT exhaust particulate emission rates are influenced by the design of the combustion system, fuel properties, and combustor operating conditions, the most readily available technique for PM10 control is to optimize these aspects of the CT operation. As stated in technology reviews for other pollutants, the anticipated turbine is state-of-the-art in optimizing combustion efficiency. In fact, upon review of the RBLC no other control technologies (preventive or abatement) were listed for PM10 control of CTs – especially those CTs primarily firing natural gas.

Nevertheless, there are several PM10 control technologies in use within the electric utility industry that can be considered here. It should be noted, however, that these abatement technologies are primarily used in coal-fired boiler service and that the particle size and distribution of the emissions from these sources are larger in mass than for gas or liquid fuel.

Possible PM10 controls are:

- Ultra Low Penetration Air (ULPA) Filter & High Efficiency Particle Air (HEPA) Filter
- Fabric Filters
- Dry Electrostatic Precipitators (ESP)
- Packed-Bed Scrubbers
- Venturi Scrubbers
- Centrifugal Collectors (Cyclones)

Q. Which control technology is BACT for PM10?

A. Based on the BACT analysis, the likely control technologies are the ESP and the Fabric Filter. The annualized cost-benefit of the ESP and Fabric Filter are $37,567 per ton and $13,251 ton of pollutant reduced respectively. Given the very high economic impact of either PM_{10} abatement control systems it is apparent that add-on control is not feasible. The use of good combustion practices designed within the anticipated CT is the best available control technology for this facility. This technology selection is consistent with other BACT determinations for similar CTs.

Q. How is Sulfur Dioxide formed in the turbine?

A. The gas turbine itself does not generate sulfur, which leads to sulfur oxides (SO_X) emissions. All sulfur emissions in the gas turbine exhaust are caused by the combustion of sulfur introduced into the turbine by the fuel, air, or injected steam or water. However, since most ambient air and injected water or steam has little or no sulfur, the most common source of sulfur in the gas turbine is through the fuel. Due to the latest hot gas path coatings, the gas turbine will readily burn sulfur contained in the fuel with little or no adverse effects as long as there are no alkali metals present in the hot gas.

Experience has shown that the sulfur in the fuel is completely converted to sulfur oxides. Sulfur oxide emissions are in the form of both SO2 and SO3. Measurements show that the ratio of SO2 to SO3 varies. For emissions reporting, GE reports that 95% of the sulfur into the turbine is converted to SO2 in the exhaust. The remaining sulfur is converted into SO3. SO3 combines with water vapor in the exhaust to form sulfuric acid. This is of concern in most heat recovery applications where the stack exhaust temperature may be reduced to the acid dew point temperature. Additionally, it is estimated that 10% by weight of the SOX generated is sulfur mist.

For the site permit application, SOX and SO2 are considered synonymous.

Q. What control technologies are available for SO2?

A. There are two ways to limit SO2 emissions. The first is to control the amount of sulfur entering the combustion system and the second is to abate the SO2 emission from the exhaust. The facility proposes using natural gas as its primary fuel source with low sulfur No. 2 fuel oil as an alternate fuel.

Available control technologies are:

- Limiting Sulfur Content
- Wet Flue Gas Desulfurization (FGD) Spray Tower Scrubber
- Dry Flue Gas Desulfurization Technologies

There is currently no internal gas turbine technique available to prevent or control the sulfur dioxides emissions from forming in the gas turbine. Control of sulfur dioxide emissions has typically required limiting the sulfur content of the fuel, by either lower sulfur fuel selection or fuel blending with low sulfur fuel.

Natural gas supplies available in the area have a typical sulfur content of 0.8 grains per 100 cubic feet or 0.0033% by weight. Low sulfur No. 2 fuel oil will be used by the facility. Low-sulfur fuel oil, a.k.a. "on-road distillate" has a specification of 0.05% sulfur by weight. Regulations effective for 2006 will require that refiners produce No. 2 Fuel oil to a 0.0015 percent sulfur content, which is lower than the current natural gas specification. As this "ultra-low" distillate becomes available in 2006, the use of this fuel at the facility becomes feasible. (Note: 2006 is the anticipated start date of the facility)

The use of natural gas and low sulfur No. 2 fuel oil (on-road) is planned for this facility. As previously mentioned, the availability of ultra-low sulfur fuel oil will not be mandated by regulation until 2006, which is concurrent with the planned commissioning of this facility and therefore predicting its availability is uncertain at this time.

Q. Which control technology was identified as BACT?

A. Given the high economic impact of any of the FGD technologies available, it would appear that add-on control is not practicable. Furthermore, the need of a SO_2 control system will only be necessary as a short-term control until the reduced sulfur (0.0015 percent) fuel oil is available in 2006. As such, it is recommended that the planned use of low-sulfur No. 2 fuel oil (0.05 percent S) be selected as BACT. This technology selection is consistent with other BACT determinations for similar CTs firing fuel oil.

Available data published by manufacturers and confirmed in practice indicate that emission levels of HAPs are lower for gas turbines than for other combustion sources. This is due to the high combustion temperatures reached during normal operation. The emissions data also indicate that formaldehyde is the most significant HAP emitted from combustion turbines. For natural gas fired turbines, formaldehyde accounts for about two-thirds of the total HAP emissions. Polycyclic aromatic hydrocarbons (PAH), benzene, toluene, xylenes, and others account for the remaining one-third of HAP emissions. For No. 2 distillate oil-fired turbines, small amount of metallic HAP are present in the turbine's exhaust in addition to the gaseous HAP identified under gas-fired turbines.

These metallic HAP are carried over from the fuel constituents. The formation of carbon monoxide during the combustion process is a good indication of the expected levels of HAP emissions. Similar to CO emissions, HAP emissions increase with reduced operating loads. Typically, combustion turbines operate under full loads for greater fuel efficiency, thereby minimizing the amount of CO and HAP emissions.

Q. Will FEP emissions satisfy the EPA's proposed Maximum Available Control Technology (MACT) requirements?

A. Yes. The EPA is in the rulemaking process for determining Maximum Available Control Technology (MACT) requirements applicable to facilities that are a major source of HAP emissions. While the Faribault Energy Park will be significantly below the major source

thresholds for any individual HAP or aggregate HAP total, it is important to note that the considered combustion turbine's performance is consistent with what may be the promulgated performance requirement for HAPs.

On August 21, 2001, EPA issued a memorandum indicating, "HAP emissions from lean premix stationary combustion turbines are equivalent or lower than HAP emissions from diffusion fan stationary combustion turbines equipped with oxidation catalyst systems. Thus, lean premix combustion technology is a comparable technology to oxidation catalyst."

The Faribault Energy Park intends to permit the facility as a synthetic minor source, with continuous emissions monitoring equipment in place to ensure the facility does not exceed applicable threshold limits. Air permits were submitted November 18, 2002.

Q. Is an MPCA Air Toxics Review required for this Project?

A. No. Because the fuel for the turbine and the auxiliary boiler will be fired primarily by natural gas, and the facility-wide emissions of pollutants are below federal permitting thresholds, an MPCA Air Toxics Review will not be required specifically for this Project. This determination is in accordance with MPCA guidance for natural gas combustion sources and has been confirmed by the MPCA Majors Air & Construction Section.

Q. Is FEP subject to the EPA's New Source Performance Requirements?

A. No. Pursuant to Section 111 of the CAA, the EPA issued NSPS rules in 40 CFR Part 60 for specific sources. In particular, 40 CFR Subpart GG -- Standards of Performance for Stationary Gas Turbines and Subpart Kb -- Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984, are potentially applicable to the Faribault Energy Park Project. These rules limit emissions from sources, and require testing, monitoring, record keeping, and reporting requirements to

determine compliance with those limitations. Table A-12 in Appendix A of the Site Permit Application includes the emission limitations required by the NSPS for the facility:

Faribault Energy Park will be installing two 350,000-gallon fuel oil tanks. 40 CFR Subpart Kb applies to storage tanks with a capacity larger than 40,000 gallons. However, storage tanks of this size holding a fuel with a vapor pressure lower than 3.5 kPa are exempt from the NSPS requirements. Distillate fuel oil has a vapor pressure of less than 1 kPa at 100 degrees Fahrenheit. Since this is the only liquid that will be stored in these tanks, Subpart Kb does not apply.

Q. Will FEP be subject to EPA Acid Rain requirements?

A. Yes. Title IV of the CAA Amendments was established to reduce the amounts of acid forming pollutants, specifically SO_2 and NO_x emissions, emitted to the atmosphere. EPA implemented Title IV of the CAA through rulemaking that established a sulfur dioxide emission cap and trade system, a nitrogen oxide emission reduction program, a permitting program, and a detailed monitoring plan for utilities. The Acid Rain program applies to any new fossil fuel fired utility, constructed after November 15, 1990, and has an electrical output capacity of 25 MW or more. Faribault Energy Park will be subject to the Acid Rain provisions, and will supply the appropriate documentation subsequent to the issuance of the construction permit.

Q. In your opinion, are there new generation technologies available that would minimize adverse air emissions?

A. No, not for the intended use of this unit as an intermediate load facility.

Q. What provisions are included in the Project for stormwater runoff?

A. The potential Project area is relatively flat. Construction of the power plant will slightly affect the topography of both sites. Construction will level the Project sites to allow for construction of the plant and buildings. Addition of impervious surfaces such as buildings,

roads, and parking area will create additional stormwater runoff. The impact on erosion will be low since the sites are nearly flat. There will be no direct discharge of stormwater into the unnamed tributary at the preferred site.

The facility will be required to follow an MPCA issued storm water management plan that meets applicable standards. This stormwater management plan could include construction of a stormwater retention basin, or diversion of stormwater into created wetlands intended to be constructed for management of wastewater effluent.

Upon completion of the facility, the client must comply with several MPCA water quality standards. Included among these are the permits for surface water discharge, stormwater discharge, and wastewater discharge. Stormwater permits are applicable for both the construction and industrial phases of the Project.

A Stormwater Pollution Prevention Plan will be prepared for the Facility in compliance with coverage under Minnesota NPDES General Industrial Stormwater Discharge Permit MN G611000. The plan will identify potential pollutant sources at the Facility, outline operating procedures for material handling activities, and describe controls and best management practices that will be implemented to minimize pollutants in stormwater runoff. In addition to the stormwater management provisions described above, management practices will also include storage of chemicals indoors or within appropriate containment areas, good site housekeeping practices, and proper disposal of any waste materials.

Q. What provisions are included in the Project for erosion and sediment control?

A. The potential Project area is relatively flat with no steep slopes or highly erodible soils. Approximately 37 acres of the site will be graded as part of the site development process. Vegetation and topsoil will be removed and stockpiled on the site for later use upon completion of rough grading operations. It is anticipated that soil excavated during site

development will be utilized elsewhere on the site. If any of the excavated material is found to be unsuitable for use on the site, it will be hauled offsite and placed in a designated upland area.

Since the Facility will disturb more than five acres of land, a permit application for coverage under Minnesota NPDES General Stormwater Discharge Permit MN R110000 is required and will be submitted to the MPCA prior to construction. The permit application certifies that temporary and permanent erosion and sediment control plans have been prepared and implemented to prevent soil particles from being transported offsite. Stormwater management will be in accordance with current industry practice, and will involved a number of strategies, including temporary vegetation, creation of temporary stormwater holding ponds, installation of silt fences, and installation of hay bales.

Under existing conditions, total site surface water runoff is influenced by how much rainwater can infiltrate the ground before it becomes surface runoff. Based on power plant building and associated structure designs, impervious surfaces would be created where soil and vegetation once existed, and rain and surface runoff would not be able to infiltrate the ground in a natural manner. Impervious surfaces such as concrete, packed gravel roads and fabricated buildings would cause an increase in surface water runoff from the site into the unnamed tributary of the Cannon River.

The increase in volume and velocity of surface water runoff would most likely introduce more water and suspended solids, such as eroded soils, into the Cannon River tributary. To prevent this from occurring, the long-term storm water management plan would include plans for the on-site construction of devices or BMPs that would both slow down and detain surface runoff. Structures such as grass berms (filter strips) and storm water detention ponds would help settle out suspended solids and govern the velocity and volume of the surface runoff. On a regional scale preventing “flash” or “peak” runoff events from sites

such as the proposed power plant would reduce overall runoff into surface waters in the area during periods of heavy rain or rapid snow melt events.

The proposed stormwater retention pond at the preferred site will be designed to meet the criteria set forth in the General Permit that requires a permanent wet sedimentation basin to treat stormwater runoff from Projects resulting in a net increase of more than one acre of impervious surface.

Q. How will groundwater requirements for the sites be satisfied?

A. Water for the proposed facility will be supplied by two wells from the Jordan bedrock aquifer underlying both sites, pending permit approval. Each well is capable of pumping sufficient water for plant cooling requirements. Water demands for the facility will not exceed 1.94 million gallons per day instantaneous demand. Faribault Energy Park will apply for a groundwater appropriation permit from the MDNR for this amount of water to be withdrawn from the Jordan bedrock aquifer underlying the site.

The Jordan Aquifer is a regional bedrock aquifer located at a depth of 700 to 800 feet below the Project. The Jordan Aquifer is capable of developing substantial amounts of relatively high quality groundwater. Preliminary calculations indicate such sustained withdrawal would not result in interference with nearby groundwater use, confirmed by consultation with the MDNR. Faribault Energy Park will comply with all aspects of the groundwater appropriation permit. The estimated water quality of the Jordan Bedrock Aquifer water (provided by the MDNR) is detailed in A-13 in Appendix A of the Site Permit Application.

Temporary site dewatering of the near surface groundwater may be required to facilitate excavation of building foundations and underground utility installation work. If dewatering is required, appropriate permits will be obtained from the MDNR. Temporary

dewatering is expected to have a minimal impact on groundwater levels outside of the Project site.

Q. What are the principal consumptive uses of raw water of the plant?

A. The project will have two principal consumptive uses of water, chilled water cooling and fire protection. The use requiring the greatest consumptive demand - approximately1350 gallons per minute maximum instantaneous demand - will be chilled water cooling for power generation purposes. The maximum water rate will occur only when the turbine is operating at maximum output in the combined cycle mode. A very small amount of water will be used for specialized uses in the generation process. Some water will be used in an evaporative cooling process. Sufficient reserve capacity will be maintained for fire protection purposes. An explanation of the primary uses of the water resources is presented in A-14 in Appendix A of the Site Permit Application.

Q. How will FEP store water on the Project site?

A. Water would be stored in a large tank capable of holding approximately one million gallons.

Q. What process will be used to treat this water?

A. Water would be drawn from this tank and pumped to an on-site treatment facility where it would undergo demineralization. The bottom portion of the tank would store water that would be dedicated to fire protection. The tank's supply tap for the on-site treatment facility would be set above the level dedicated to fire protection. The on-site water treatment facility would produce high quality demineralized water that would be stored in a 250 thousand gallon tank. The demineralized water would be used for steam cycle makeup, power augmentation, and various purposes during plant start-up.

Q. What other water sources will be used?

A. Water for domestic uses, such as drinking fountains, showers, toilets and sinks would be obtained from the on-site wells.

Q. Will construction of a water pipeline be necessary?

A. No. Both wells and both storage tanks will be located on site.

Q. How will solid wastes from the plant be disposed?

A. Wastes generated by the plant will be managed in accordance with applicable regulatory requirements. Sanitary wastes will be collected by a contracted waste disposal firm on a periodic basis and disposed at a permitted facility. Wastes generated as a result of ongoing maintenance activities at the facility will be characterized and if hazardous, recycled if possible, or properly disposed at a Resource Conservation and Recovery Act (RCRA) permitted Subtitle-C facility.

Q. How will sanitary wastewater be disposed?

A. Sanitary wastewater generated from the maximum 17 employees at the Facility (calculated to not exceed 3,000 gpd or 0.003 mgd) and non-process building floor drains will be directed to an onsite septic system permitted in accordance with applicable Rice County requirements. The total estimated flow from these sources is approximately 3,500 gpd. Floor drains located in the fuel storage buildings or other process areas of the Facility will not be connected to the septic system nor is water from these areas included in this discharge.

Q. How will other wastewater be disposed at the preferred site?

A. Faribault Energy Park's proposal to discharge approximately 0.5 mgd of wastewater (comprised of facility drain waters, cooling tower blowdown, and other operational wastewater) to a created wetlands at the preferred site will require an NPDES permit issued by MPCA. This created wetlands is depicted in Figure 6 - Faribault Energy Park included at the end of Section 2 of the Site Permit Application. This NPDES permit will regulate the water quality and chemistry of the plant discharge based on the composition of the discharge water.

Wastewater discharged to the created wetland will have no adverse impact on local water regimes, soils, groundwater, or agriculture. The wastewater consists primarily of groundwater concentrated by cooling cycles and treatment. It will not contain substances not normally found in groundwater except minor amounts of process chemicals. The wetlands will be sized to contain all of the wastewater discharge, with zero discharge to the unnamed tributary during normal operation.

Q. Has FEP considered alternative methods for wastewater disposal?

A. In the unlikely event this alternative be not approved in the permit process, wastewater would be discharged under NPDES permit directly into the unnamed tributary truncating the site.

Q. How will wastewater be disposed at the alternate site?

A. It is important to note the created wetlands is only feasible should the preferred site be selected, as the configuration of the alternate site would not allow a wetland to be constructed. If the alternate site were selected, wastewater would be treated and discharged into the unnamed tributary of the Cannon River under applicable permit.

Q. Will this method of wastewater disposal adversely impact soils, groundwater or agriculture?

A. The composition of the fluids discharged would be controlled by the limitations and conditions written into the NPDES permit. Before the permit could be issued, Faribault Energy Park would be required either to submit adequate existing data from databases such as those held by the EPA, or to carry out background monitoring to characterize the baseline water quality and chemistry of the receiving water.

Regulated constituents in the wastewater include, but are not limited to, flow, temperature, acidity (pH), total suspended solids (TSS), oil and grease, and chemicals added to prevent equipment fouling. The heat impact of the wastewater would also be considered to prevent adverse impacts to aquatic life, primarily related to heat shock to fish and other

aquatic life moving into the heated effluent plume. The design of the created wetlands onsite will include provision for heat dissipation of cooling water. The permit could also stipulate the frequency and duration of waste stream sampling required to ensure compliance with the permit conditions.

Q. Will any hazardous wastes be produced at the plant?

A. Yes. Secondary containment on fuel oil tanks will result in the generation of excess stormwater potentially contaminated with oily residue. This stormwater will be temporarily stored prior to offsite management by a service contractor.

Q. Are any hazardous wastes permits applicable to the plant?

A. No. The Facility is classified as a Conditionally Exempt Small Quantity Generator (CESQG). All permits are non-applicable.

Q. Has FEP made an assessment of hazardous wastes that may exist on the site?

A. Yes. An initial site assessment of the Project area reveals no storage tanks that might result in costly cleanup liability. Prior land use does not indicate the presence of potentially contaminated materials.

Q. Are any other permits required for this Project?

A. Yes. The following Federal, State, and local permits are required:

- Prevention of Significant Deterioration (PSD) Permit including air toxics review.
- Minnesota Department of Natural Resources (MDNR) Water Appropriation Permit, in accordance with Minnesota Statute 103G.265.
- MPCA Air Permit (Title V), the Environmental Protection Agency (EPA) has granted interim approval for the Minnesota Department of Pollution Control Title V (Class I) operating permit program.

- Water Discharge Permit NPDES (MPCA), in accordance with Minnesota Rules Chapter 7077.
- Certificate of Need (Public Utilities Commission).
- Stack Height Determination (Federal Aviation Administration).
- Section 404/401 Permit (United States Army Corps of Engineers).
- Stormwater Discharge Permit (MPCA). The MPCA is currently in the process of developing a general stormwater permit to include both large and small construction activity.
- Well Construction Permit (Minnesota Department of Health), Minnesota Rules, Chapter 4725 (rules regulating Wells and Borings).
- Spill Prevention Control and Countermeasure (SPCC) Plan (No specific regulatory approval, maintained at facility).
- Local Zoning Permits.
- Miscellaneous Construction Permits as applicable.

Q. Are either the proposed or alternate sites in a floodplain?

A. No. According to maps requested from the Federal Emergency Management Agency, the site is not within a recognized floodplain, and does not appear to have the ability to contribute significant flow to any receiving stream hydraulically connected to a floodplain. The Project site is situated at an elevation of an average 1,014 feet above sea level. Impact on floodplains by construction of the facility is negligible and mitigation efforts are not necessary.

Q. Was a wetland screening report done?

A. Yes. A wetland screening report is included in Appendix C of the Site Permit Application. The report identified six wetland areas:

"Three of the wetlands are depressions and three are drainageways. The total area for the three depressional wetlands is approximately 0.25 acres. Approximately 1.34 acres is included in the drainageway wetlands.

Development activities affecting these wetlands will require approval from the U.S. Army Corps of Engineers, Natural Resources Conservation Service, Minnesota Department of Natural Resources and/or the Minnesota Board of Water and Soil Resources. In addition, other state and local regulatory agencies may need to approve the proposed development activities…

Agency involvement can occur on a federal, state, or local level and could include the U.S. Army Corps of Engineers, U.S. Department of Agriculture Natural Resources Conservation Service, Minnesota Department of Natural Resources, Minnesota Pollution Control Agency, and the Rice Soil and Water Conservation District."

Q. What wildlife inhabit the Project area?

A. Wildlife inhabiting the Project and adjacent area is typical of that found in rural areas of Rice County. The natural habitat within the Project area is used by a variety of mammals including: eastern cottontail, striped skunk, whitetail deer, black bear, porcupine, eastern chipmunk, red fox, several species of mice, squirrels, and weasels. Sandhill crane, heron, waterfowl, shore birds, red-winged blackbird, meadowlark, bobolink, red-tailed hawk, common gackle, and American kestrel are a few of the bird species found in and around the Project area. Amphibians and reptiles located within the area include garter snakes, gray tree frogs, American toads, and the chorus frog.

Q. What impacts are expected to wildlife?

A. The land is already disturbed by agricultural activities. Impacts on wildlife are expected to be minor. The loss of cultivated land will reduce food sources for deer, rabbit, squirrels,

raccoons, and small mammals as well as some bird species. Direct wildlife losses from construction (animals or eggs destroyed by construction vehicles) will be confined to small mammals and the eggs, or young of ground nesting birds. These losses are expected to be minor. Aquatic life in area streams and drainageways may be temporary affected by increased silt loads if heavy rains occur before surface restoration is complete. Mitigative measures will be taken in accordance with applicable regulatory requirements to minimize this possibility. Any impacts to aquatic life are expected to be both minor and temporary.

It is not anticipated that the Project would have a significant impact upon the species present in the area. An abundant amount of similar type habitat exists in surrounding areas, so it is not anticipated that the overall capacity for wildlife would be significantly impacted. All wildlife species that may be displaced are considered "common" in Minnesota, and their displacement would not be detrimental to their populations. No mitigation measures are necessary.

Q. Describe the Project area vegetation?

A. The vegetation located around the potential Project area is primarily that of both a native prairie land and a deciduous, Maple-Basswood forest. Side-oats gramma, grayhead coneflower, purple coneflower, rough blazing star, and big blue stem are just a few of the native prairie species. Some of the species found within the deciduous forest are sugar maple, red oak, basswood, and oak, and a few underlying shrubs.

Construction activities like clearing, excavation, filling, and paving would remove agricultural crop land from production and realign the area topography in accordance with construction requirements. Individual plants and animals and local populations of some species might be affected, but not the stability of any species as a whole in Minnesota.

Q. How will construction and operation be managed to minimize impacts on vegetation?

A. Storm water management permit would require use of proper erosion control methods during construction. This should prevent unnecessary erosion and the resulting deposits of soil and dust that could affect nearby waterways and their vegetation.

The potential Project area is already disturbed by agricultural activities and the vegetation lost due to the proposed Project will include the cultivated field and surrounding vegetation lining the property lines and drainage ditches. Depending on the specific layout of the facility buildings, some of the grub areas around the potential Project area that contain larger trees may be able to be salvaged. Affects on vegetation are of little real consequence except as they relate to wildlife and their habitat as already discussed.

The vegetation within the study area is also important as it serves to impede and/or filter runoff from areas of erosion. Surface restoration, reseeding, and natural invasion will replace areas of vegetation important for erosion control, which will be lost during construction. Erosion control devices will control all surface runoff during construction. Also, we will be adding vegetation in the created wetland.

It is not anticipated that the Project would have a significant impact upon the species present in the Project area regardless of the site selected.

Q. Does the Project area contain rare and unique natural resources?

A. No. The potential Project area is located primarily on native prairie land and is relatively close to a Maple-Basswood forest. This, therefore, provides a suitable habitat for some species listed as threatened or endangered by the MDNR. As documented by the U.S. Fish & Wildlife Service (USFWS), Region 3, no federally threatened or endangered animals are know to reside in the immediate area of the Project, but two plant species have been observed and documented in the general Faribault area. Appendix C of the Site Permit Application contains correspondence with the USFWS. The two plant species are the Minnesota dwarf trout lily and the prairie bush clover.

The Minnesota dwarf trout lily (Erythronium propullans) is listed as endangered in the general Faribault area. This plant favors woodland habitats, and is commonly found growing along the slopes of watersheds and tributaries dominated by much larger trees such as elm and maple. The plant flowers in the early spring (late April through early June), and loses its leaves as the woodland canopy develops and begins blocking out any summer light. It is thought that this plant occupies less than 600 acres of woodland habitat in Minnesota.

Lespedeza leptostachya, commonly know as the prairie bush clover, is listed as threatened within the state of Minnesota. Rice County has been a documented home to this particular species of plant. The prairie bush clover is a legume and is found primarily within tall-grass prairie habitat.

Q. Will the Project impact any of Minnesota's Wildlife Management Areas?

A. No. Minnesota's Wildlife Management Areas (WMA) are home to numerous animals. Wildlife Management Areas exist in 86 out of the 87 counties though primarily in the western part of the state. Several WMAs are located within a four-mile radius of the potential Project area as well as one scientific and natural area just two miles east of the potential Project area. WMA provide habitat for a variety of species. In addition this area also provides recreation for the citizens of the state by offering hunting and wildlife watching. These WMA are remote to the Project location and are not anticipated to be impacted by the Project.

Q. Have you determined whether the Project will adversely or disproportionately impact any low-income, Native American, or minority persons in the Project area?

A. Yes. There are only a few private homes surrounding the Project area, which is currently used as farmland. The families living in these homes and the citizens of Faribault are the people that will be affected by the construction and operation of a power plant. According to information from the 2000 Census, there is not a significant percent of low-income, Native

American, or minority persons within the Project area. There is no reason to suspect that there will be any disproportionately high or adverse effects on these populations.

Q. Have you identified unavoidable environmental impacts, and if so, have you identified mitigation strategies?

A. Yes. Noise Impacts – The largest noise impacts will likely be temporary during construction. Mitigation measures for noise during construction include limiting work hours to daytime hours, use of properly muffled and maintained construction equipment, and controlling traffic during peak construction periods to minimize noise on adjacent public roadways. As discussed earlier, noise analysis indicates operational noise of the facility will be within applicable regulatory requirements. The preferred site delineated earlier will have lower effect on receptors, as it is farther from the nearest receptor than the alternative site.

Low frequency noise and vibration have been identified in some CTs. It is felt as a vibration or rattling of structures and is not clearly identifiable when measuring or estimating sound using the A-weighted decibel scale. Airborne sound waves in the frequency range below 40 Hz, if high enough in magnitude, can couple with building frame walls and windows and cause vibration.

The vibration problem occurs with simple-cycle CT plants, but generally not with combined cycle CTs such as the proposed Project. The CTs discharge their exhaust gases directly to the atmosphere through exhaust silencers, which do not silence well below 40 Hz. Most large simple cycle CTs create very high levels of acoustic energy below 40 Hz, and this energy can radiate as airborne waves and easily propagate over large distances. In combined-cycle plants, such as the proposed Project, the turbine exhaust gases are directed through a heat exchanger system and HRSG rather than to the atmosphere directly through an exhaust silencer. The exhaust gases lose energy in the boiler tubes. Low frequency exhaust noise is reduced to very low levels, and vibration problems do not appear.

Aesthetics – The character of the proposed structure does not lend itself to significant measures to alter its appearance. Reducing stack height is not feasible for engineering and operational reasons, as well as air permit requirements for dispersion. Faribault Energy Park plans significant landscaping and the creation of a wetlands, as described in Section 2 of the Site Permit Application. Wetlands creation and the associated interpretive park are an option at the preferred site, but are not available at the alternative site due to topographic and footprint considerations. Conceptual layout and landscape architecture for the preferred site are presented in a rendering titled Faribault Energy Park at the end of Section 2 of the Site Permit Application.

Soils – Organic surface soils will be stripped and reserved for creation of a wetlands and for reuse at the site if possible. Soil erosion during construction will be addressed by appropriate control measures as described in Section 2 of the Site Permit Application, in accordance with applicable regulatory requirements and good construction practice. Following completion of construction, the entire area will be revegetated and maintained by the Project owner.

Groundwater – All compounds that have the potential to contaminate the groundwater when accidentally released during construction and operation of the facility will be stored and handled in a manner which complies with all applicable regulatory requirements and good environmental practice. To reduce the risk of release of potential fuel spills, a Spill Prevention Control and Countermeasure Plan, as previously described in Section 2 of the Site Permit Application. During construction, equipment fuels will be stored onsite in bermed areas, with appropriate spill protection.

Groundwater supply impacts from supply water withdrawal may have the potential to impact nearby well owners or the City of Faribault. Groundwater withdrawal will be in strict accordance with permit requirements, which will include a limit judged to prohibit

interference with nearby wells. Water levels within onsite wells will be monitored to determine the status of groundwater levels, and the Faribault Energy Park will communicate with the City of Faribault to determine the status of water levels within their wells.

Surface Water – Stormwater discharges will be managed through a retention pond system regardless of site selected, although overflow may be directed to the created wetlands should the preferred site be constructed. Stormwater management conceptual plans for the preferred alternative are depicted in a rendering titled Faribault Energy Park presented at the conclusion of Section 2 of the Site Permit Application. Should the alternative site be selected, stormwater overflow will be directed under applicable permit to an unnamed perennial stream bisecting the Project site. Spent cooling water will be directed under permit to a created wetlands, also depicted in the aforementioned figure. All discharges will be managed in accordance with applicable regulatory requirements.

Air – Emissions of air pollutants will occur as a result of combustion of fuels from several sources within the proposed facility. The primary source of combustion-related emissions is the combined-cycle gas turbine. Secondary combustion sources include an auxiliary boiler, an emergency generator and a fire pump engine. The combustion turbine and auxiliary boiler will be fueled by natural gas with a fuel oil backup, while the emergency generator will be fired by fuel oil. Other non-combustion emission sources include fuel-oil storage tanks, a cooling tower, and traffic/roadway related fugitive emissions.

Selection of natural gas as the primary fuel is the main mitigative measure for impact to air. Additional control technologies include Selective Catalytic Reduction (SCR) to reduce NOx emissions to permit levels. Air emissions will be managed under permit, and will be monitored through a continuous emissions monitoring system to ensure compliance.

The release of fugitive dust during construction will be temporary. During periods of high wind or otherwise dry weather, dust emissions may pose a control issue. During these

times, dust will be managed by altering construction practices or applying water or other dust control materials to dust sources. Following completion of construction, the site will be landscaped.

Q. Will the Project result in an irreversible and irretrievable commitment of resources?

A. Yes, the Project site will be irreversibly and irretrievable committed from farmland to a generation site for the foreseeable future. As discussed above, the loss of farmland to this Project is not great when the Faribault area is considered as a whole. Moreover, the area has already been zoned industrial, so at some point the farmland will undergo a transition to an industrial use.

DIRECT TESTIMONY OF

MICHAEL J. DONNELLY

IN THE MATTER OF THE APPLICATION OF FARIBAULT ENERGY PARK, LLC, FOR A SITE PERMIT FOR A NOMINAL 250 MEGAWATT COMBINED CYCLE COMBUSTION TURBINE IN RICE COUNTY

(DOCKET NUMBER OAH 15-2901-15778-2)

BEFORE THE

MINNESOTA ENVIRONMENTAL QUALITY BOARD

ON BEHALF OF

FARIBAULT ENERGY PARK, LLC

MARCH 29, 2004