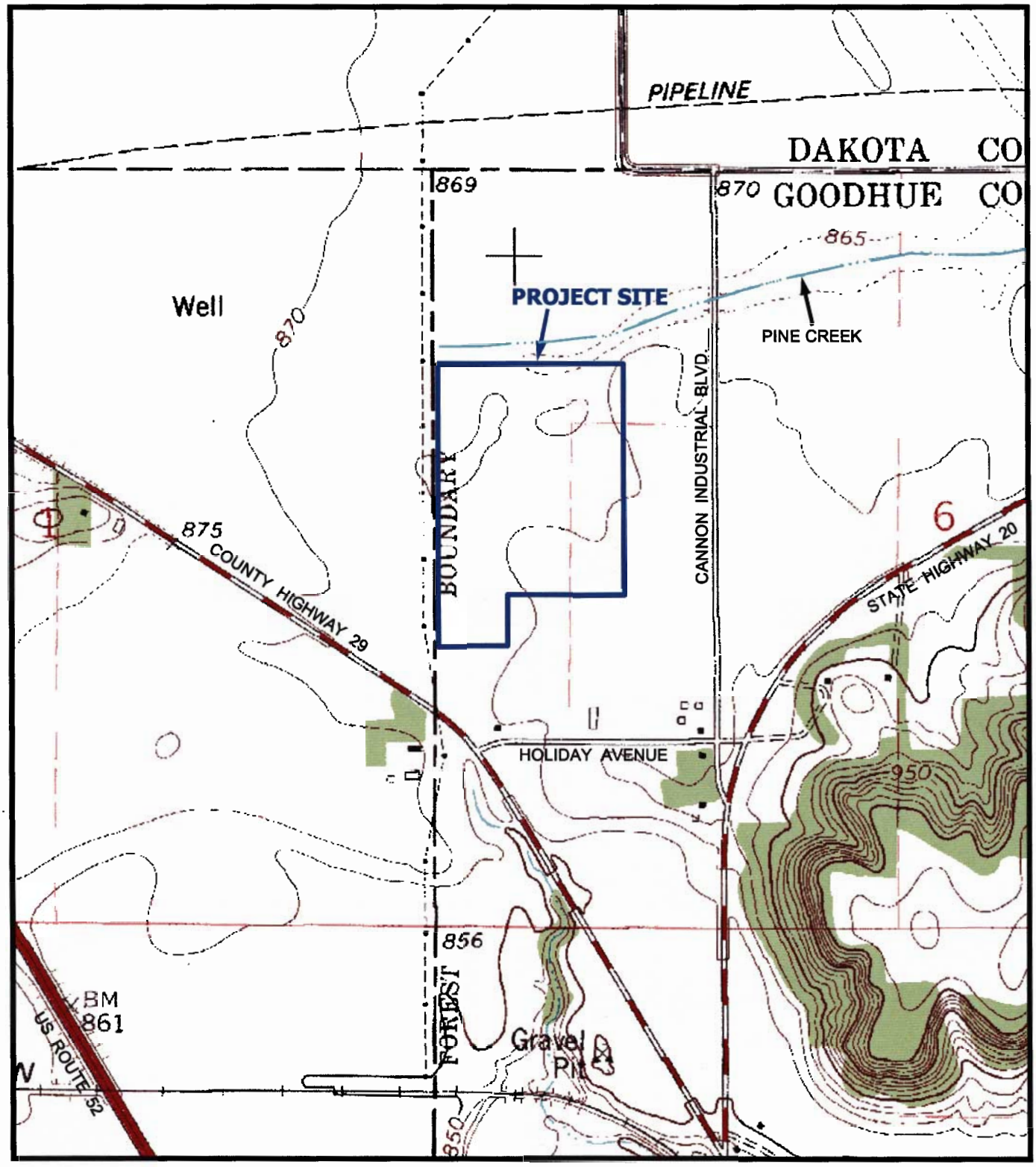
FIGURES



MAP REFERENCE:

PORTION OF U.S.G.S. QUADRANGLE MAP
7 ½ MINUTE SERIES (TOPOGRAPHIC)
CANNON FALLS, MINNESOTA 1974

NORTH

500 0 500 1000

SCALE IN FEET

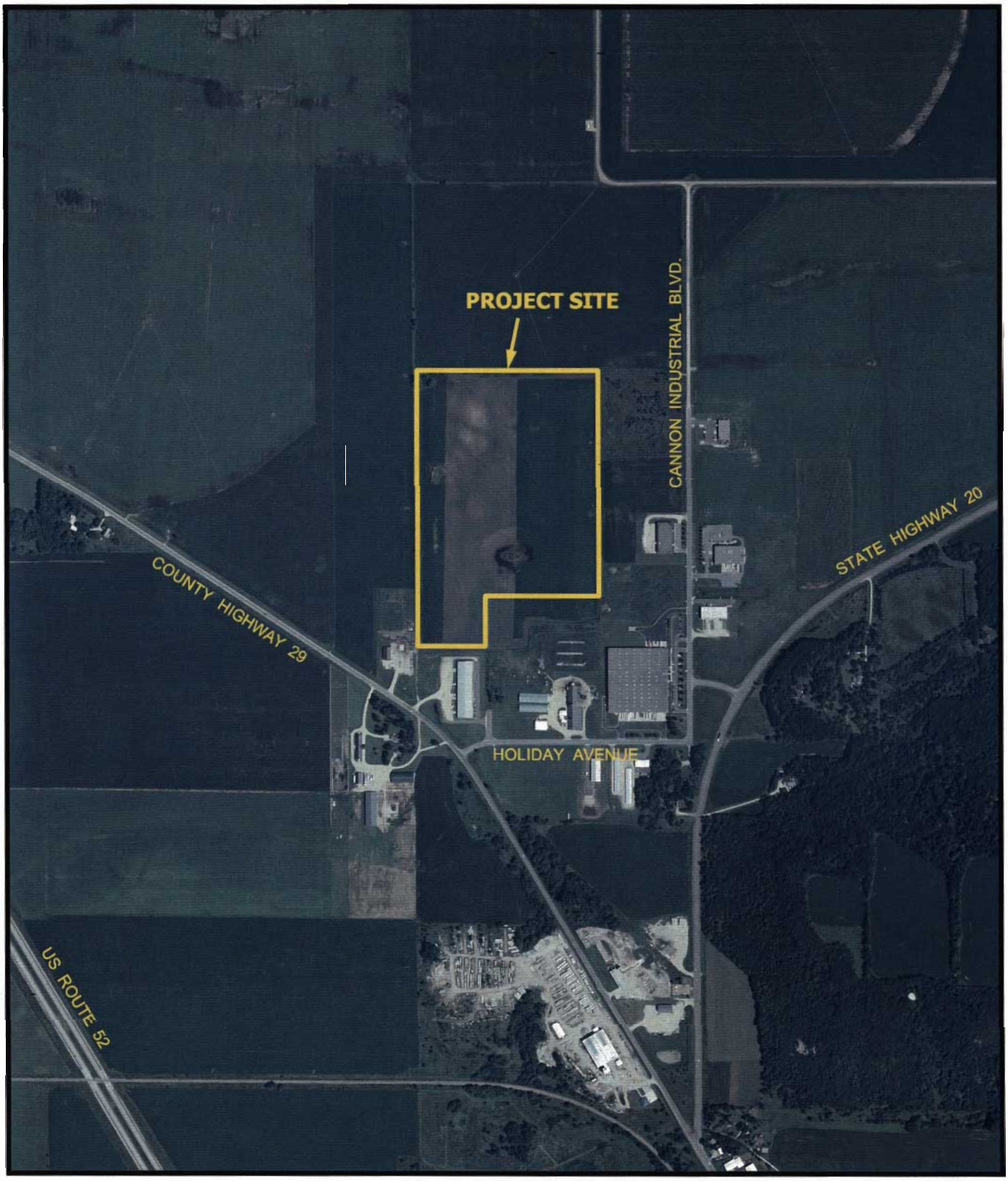
CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 1
PROJECT SITE MAP

DATE: JUNE 10, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS

1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



AERIAL MAP REFERENCE:

PORTION OF MINNESOTA DEPARTMENT OF NATURAL RESOURCE;
FARM SERVICES AGENCY (FSA) COLOR ORTHOPHOTOS (DOQs) DATED 2002
CANNON FALLS, DAKOTA COUNTY, MINNESOTA

NORTH

500 0 500 1000

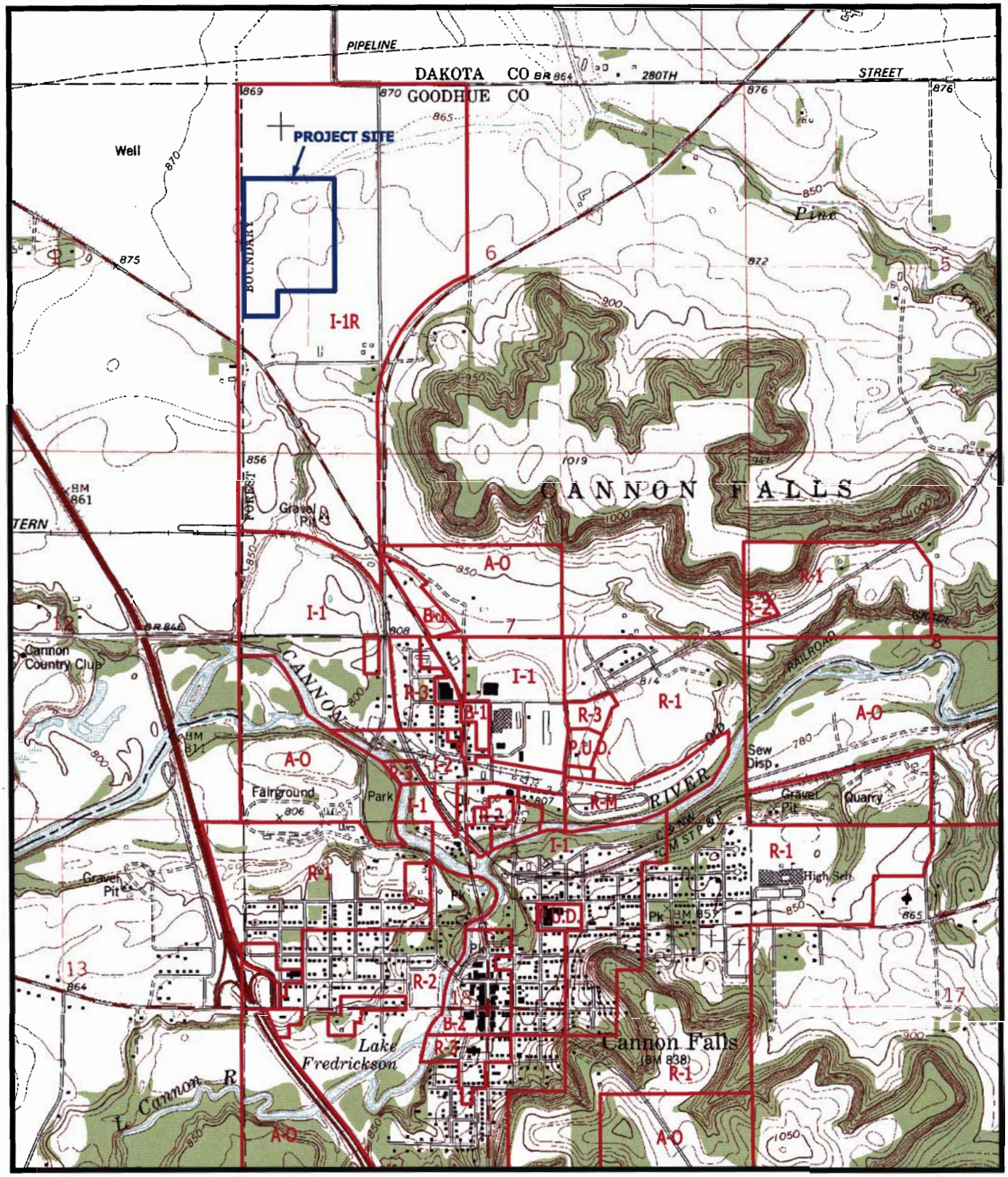
SCALE IN FEET

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 2
PROJECT SITE AERIAL MAP

DATE: JUNE 28, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



NORTH

1000 0 1000 2000

SCALE IN FEET

QUADRANGLE LOCATION

MAP REFERENCE:

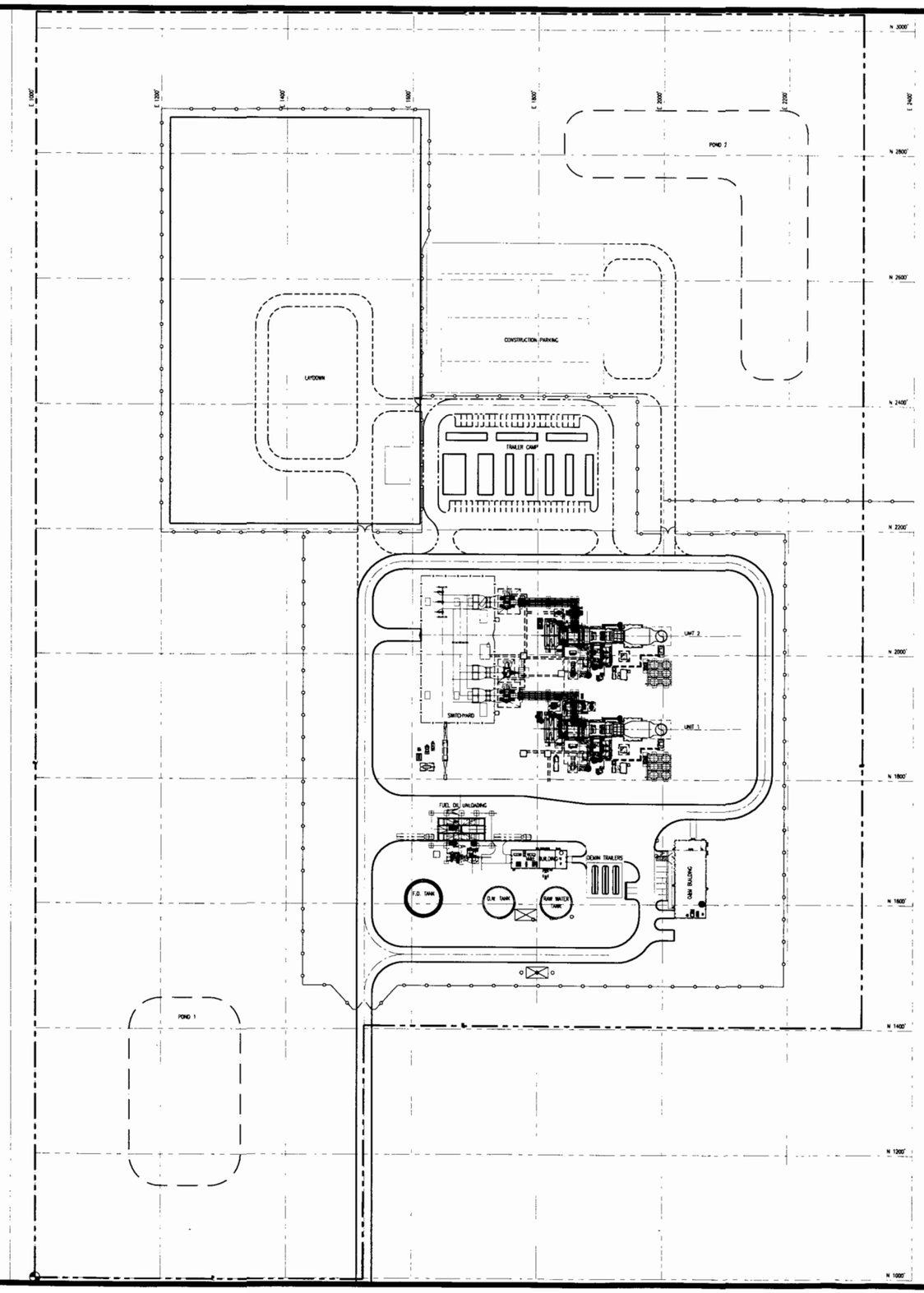
PORTION OF U.S.G.S. QUADRANGLE MAP
7 ½ MINUTE SERIES (TOPOGRAPHIC)
CANNON FALLS, MINNESOTA 1974

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 3
PROJECT AREA ZONING MAP

DATE: JULY 12, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



NORTH

BAR SCALE

0 200' 400' 600'

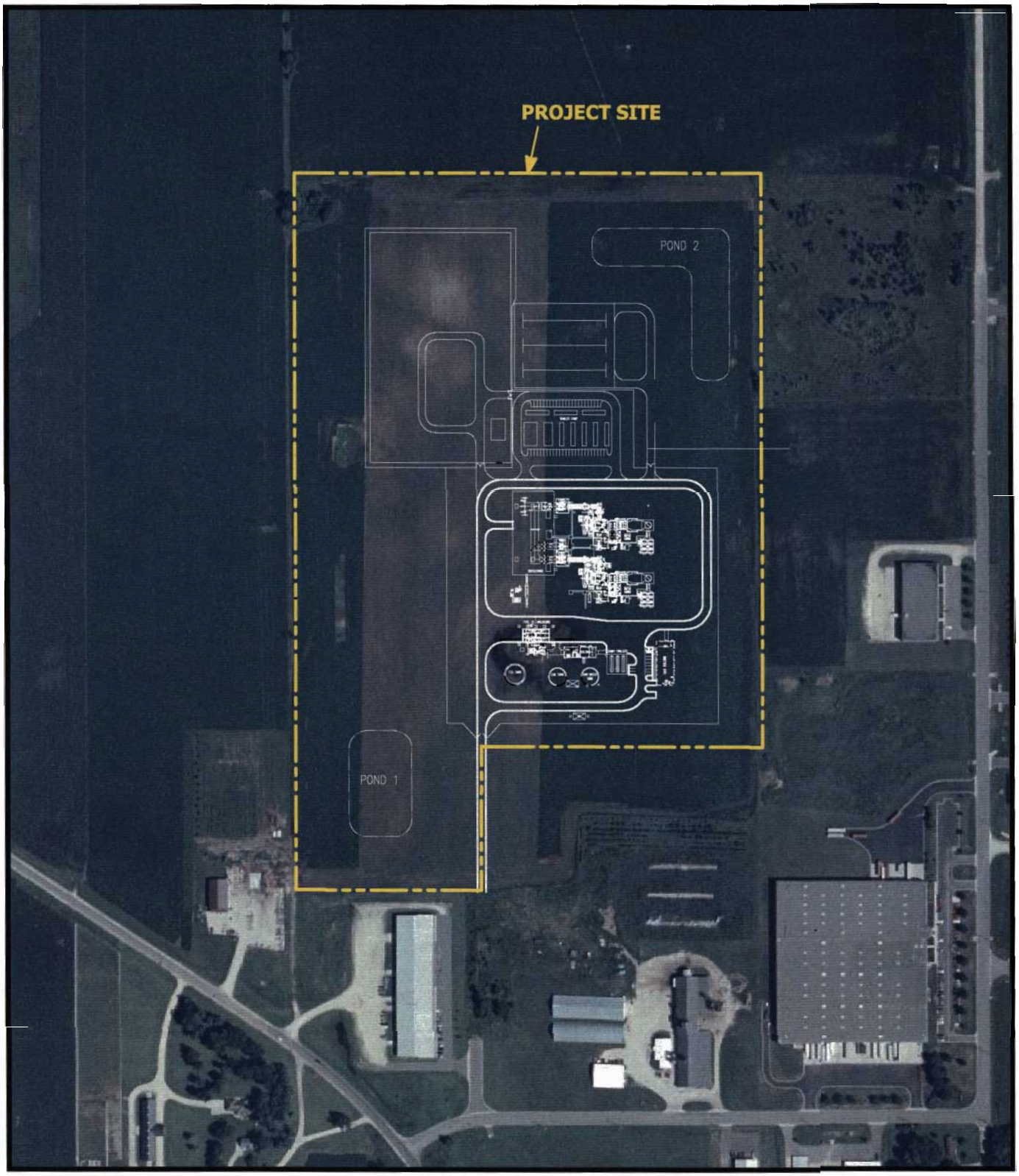
SCALE: 1"=200'-0"

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 4
PROJECT LAYOUT

DATE: JULY 30, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008-4227
PHONE: 847.228.0707
FAX: 847.228.1115



AERIAL MAP REFERENCE:

PORTION OF MINNESOTA DEPARTMENT OF NATURAL RESOURCE;
FARM SERVICES AGENCY (FSA) COLOR ORTHOPHOTOS (DOQs) DATED 2002
CANNON FALLS, DAKOTA COUNTY, MINNESOTA

NORTH

200 0 200 400

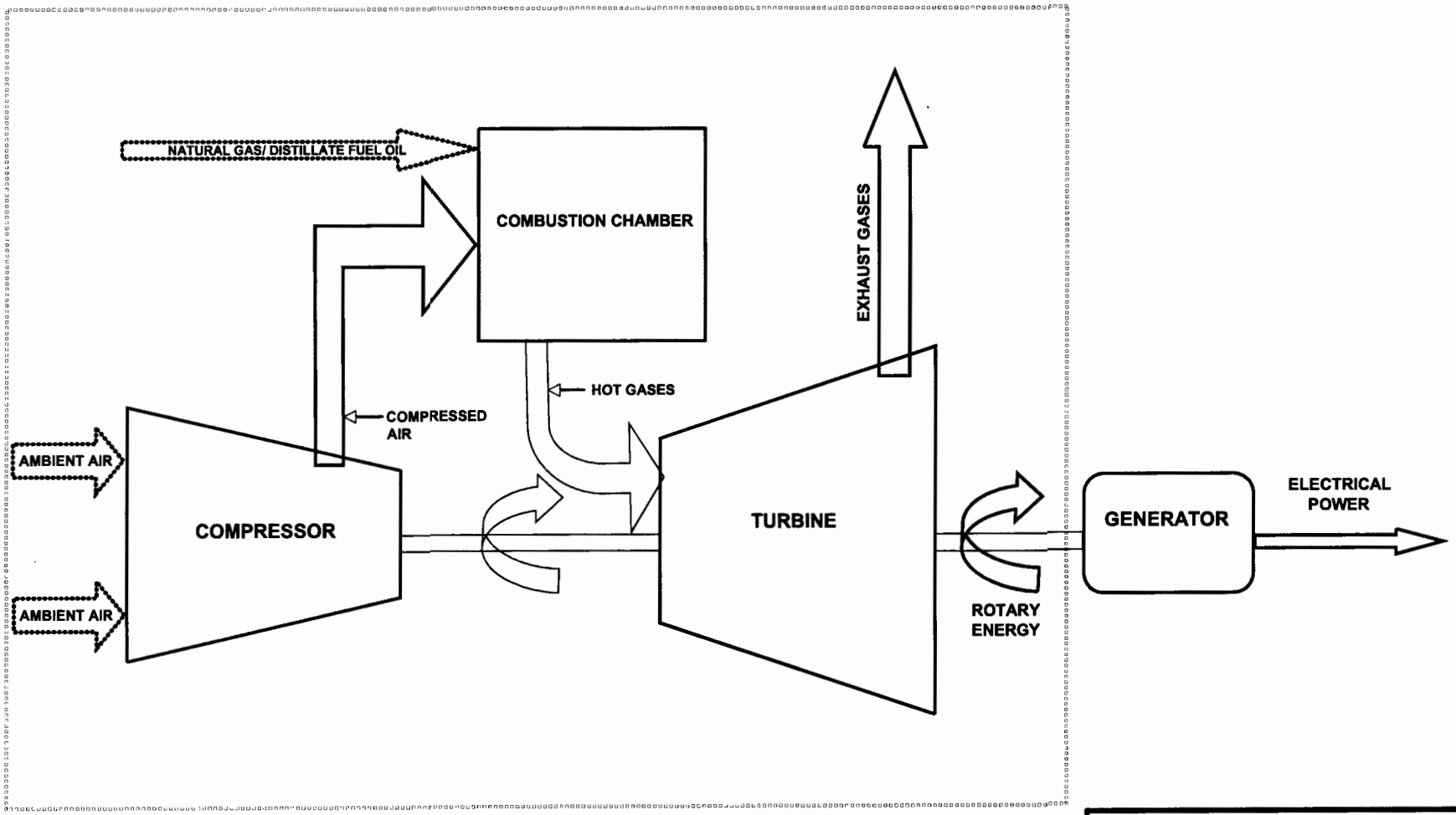
SCALE IN FEET

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 5
PROJECT LAYOUT AERIAL OVERLAY

DATE: JULY 31, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115

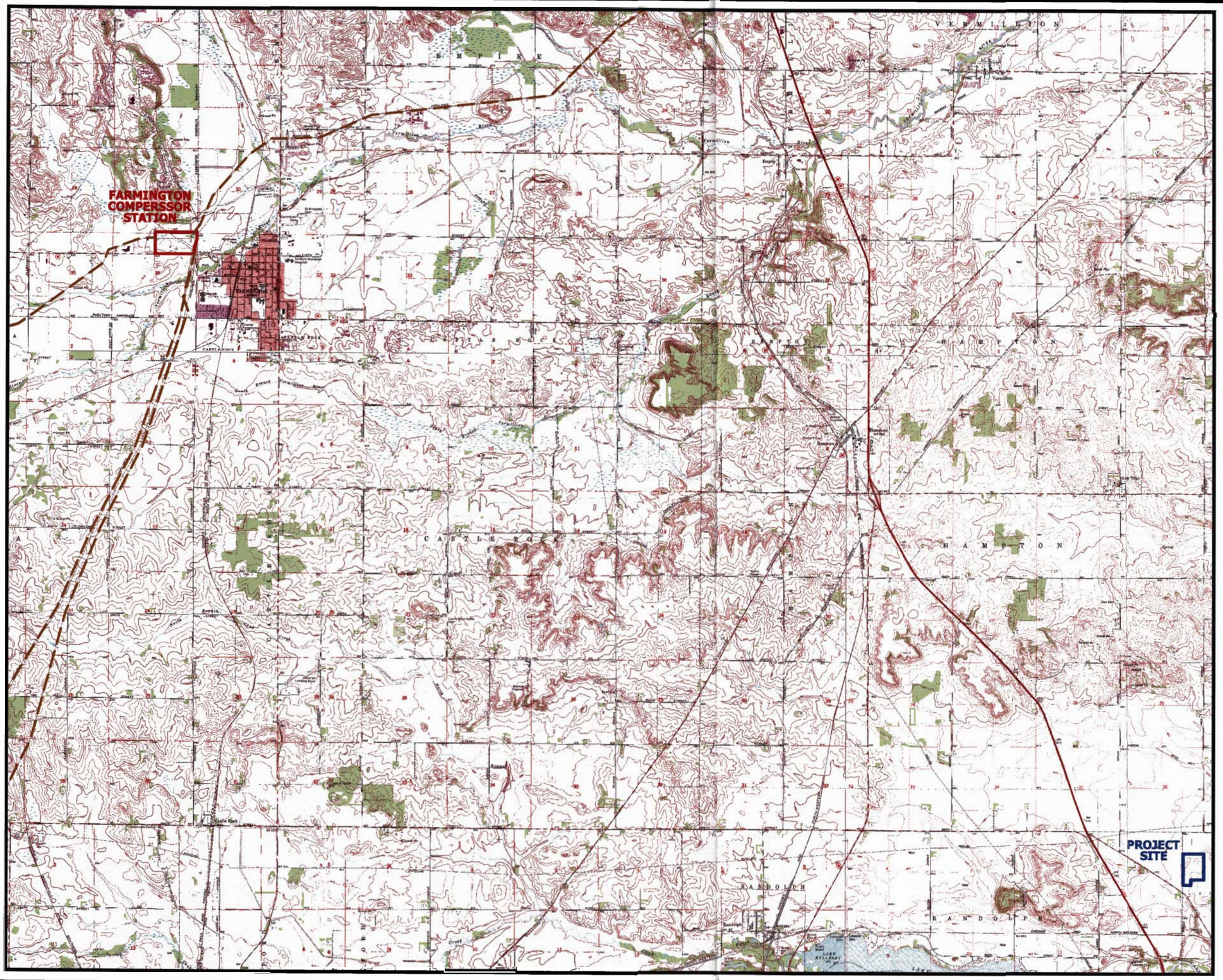


CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 6
PROCESS FLOW DIAGRAM - COMBUSTION TURBINE GENERATOR

DATE: JULY 12, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: NOT TO SCALE	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008-4227
PHONE: 847.228.0707
FAX: 847.228.1115



NORTH

SCALE:

1 1.5 3 MILE

3000 0 3000 6000 FEET

0 1.5 3 KILOMETER

LEGEND:

= NATURAL GAS PIPELINE ROUTE

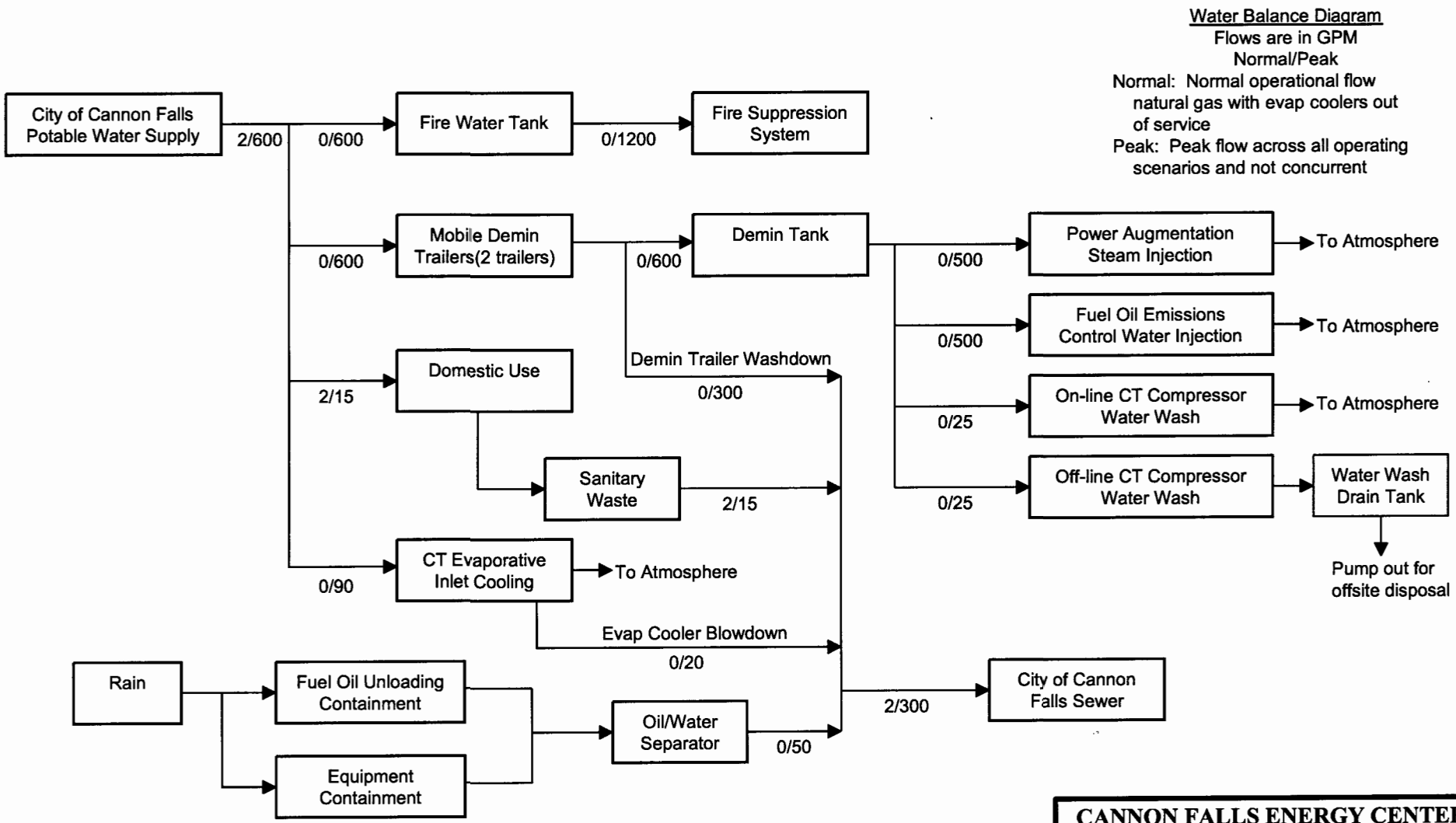
QUADRANGLE LOCATION

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 7
EXISTING NORTHERN NATURAL GAS PIPELINE

DATE: AUGUST 16, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 8
FACILITY WATER USE DIAGRAM

DATE: JULY 12, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: NOT TO SCALE	

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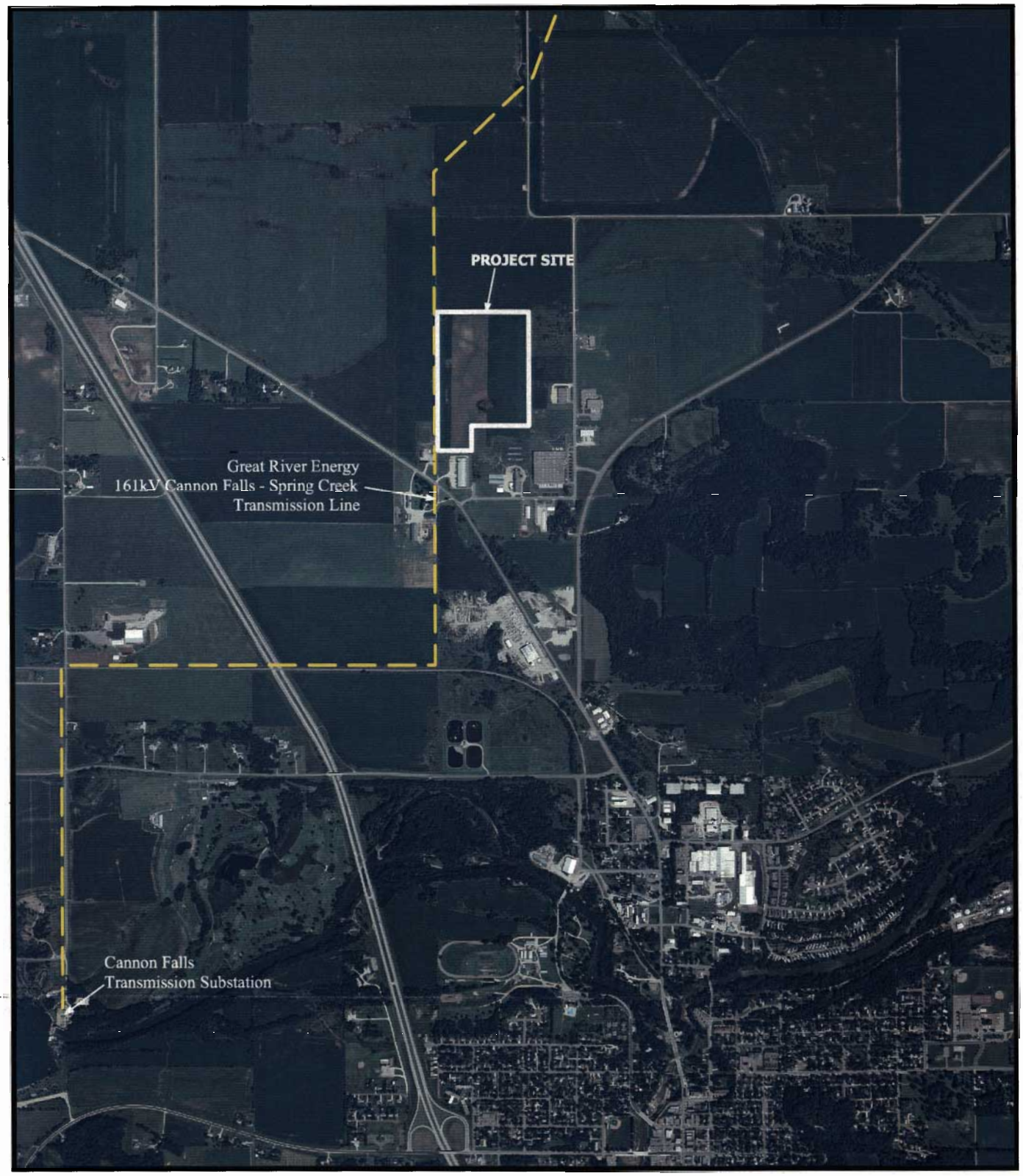
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008-4227
PHONE: 847.228.0707
FAX: 847.228.1115



LEGEND:

= TRANSMISSION LINE

NORTH

1000 0 1000 2000

SCALE IN FEET

AERIAL MAP REFERENCE:

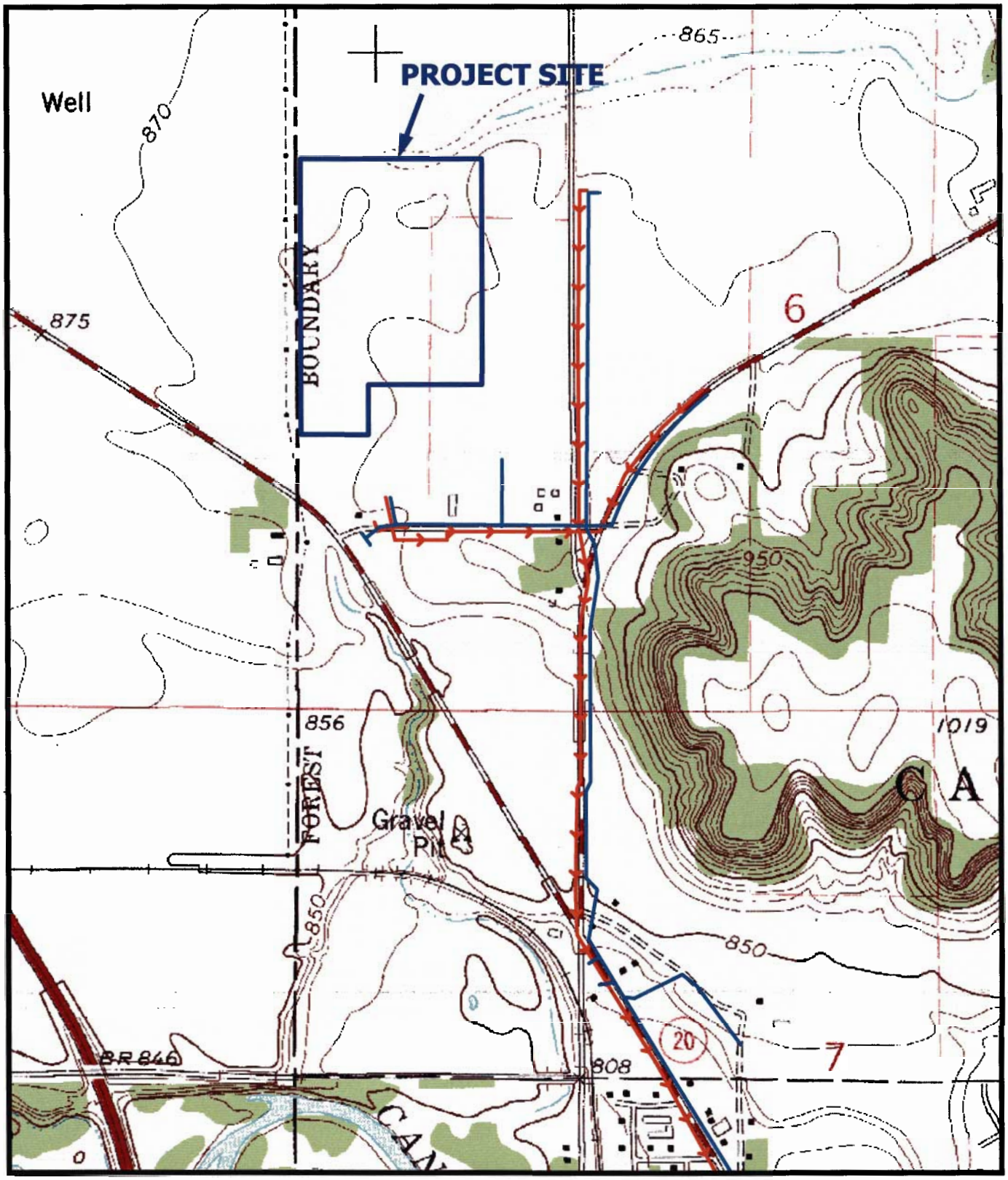
PORTION OF MINNESOTA DEPARTMENT OF NATURAL RESOURCE;
FARM SERVICES AGENCY (FSA) COLOR ORTHOPHOTOS (DOQs) DATED 2002
CANNON FALLS, DAKOTA COUNTY, MINNESOTA

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 9
PROPOSED ELECTRIC INTERCONNECTION

DATE: JULY 31, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



LEGEND:

= SANITARY SEWER LINE

= WATER LINE

NORTH

1000 0 1000 2000

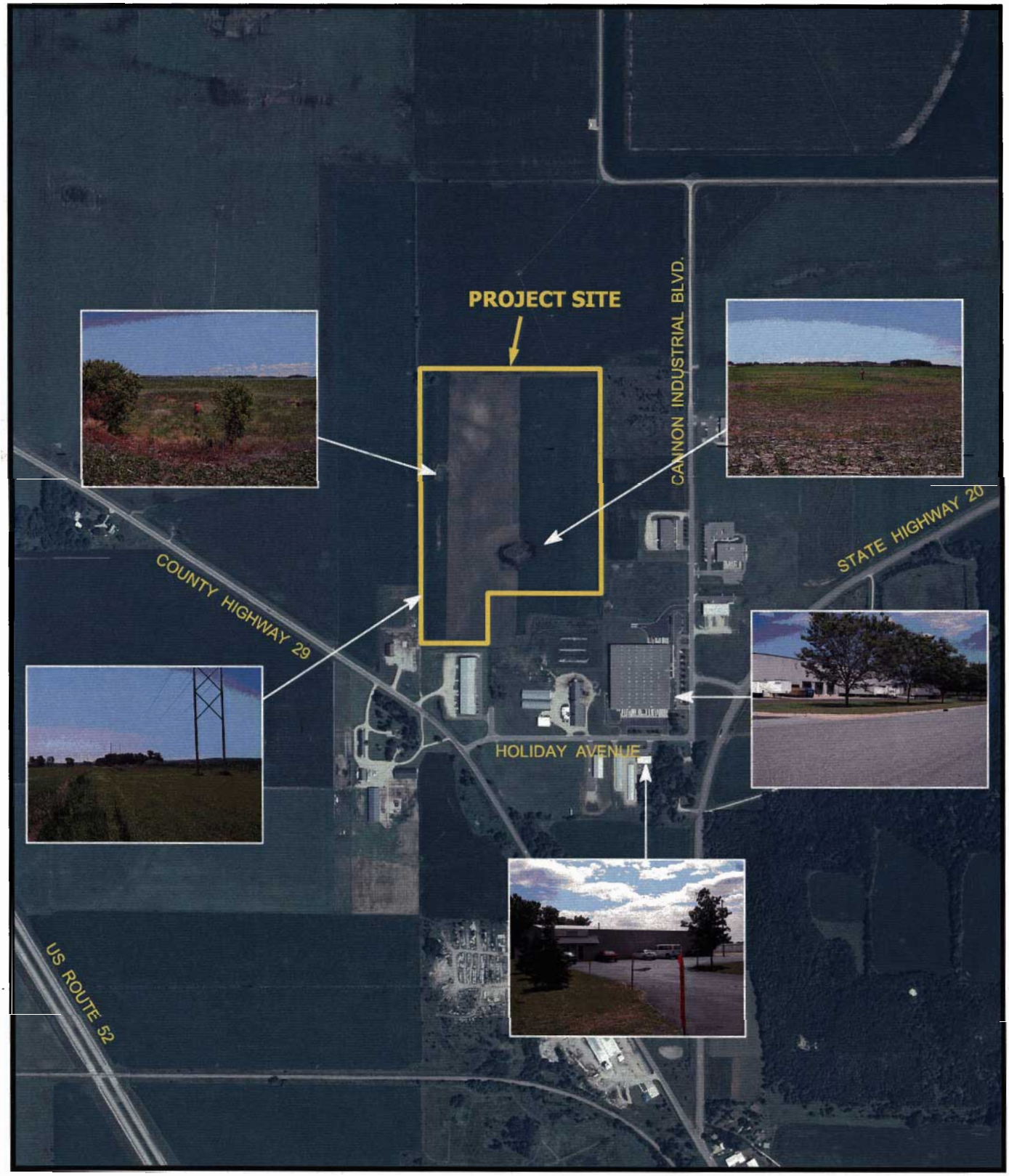
SCALE IN FEET

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 10
WATER AND SANITARY SEWER LINES

DATE: JULY 26, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



AERIAL MAP REFERENCE:

PORTION OF MINNESOTA DEPARTMENT OF NATURAL RESOURCE;
FARM SERVICES AGENCY (FSA) COLOR ORTHOPHOTOS (DOQs) DATED 2002
CANNON FALLS, DAKOTA COUNTY, MINNESOTA

NORTH

500 0 500 1000

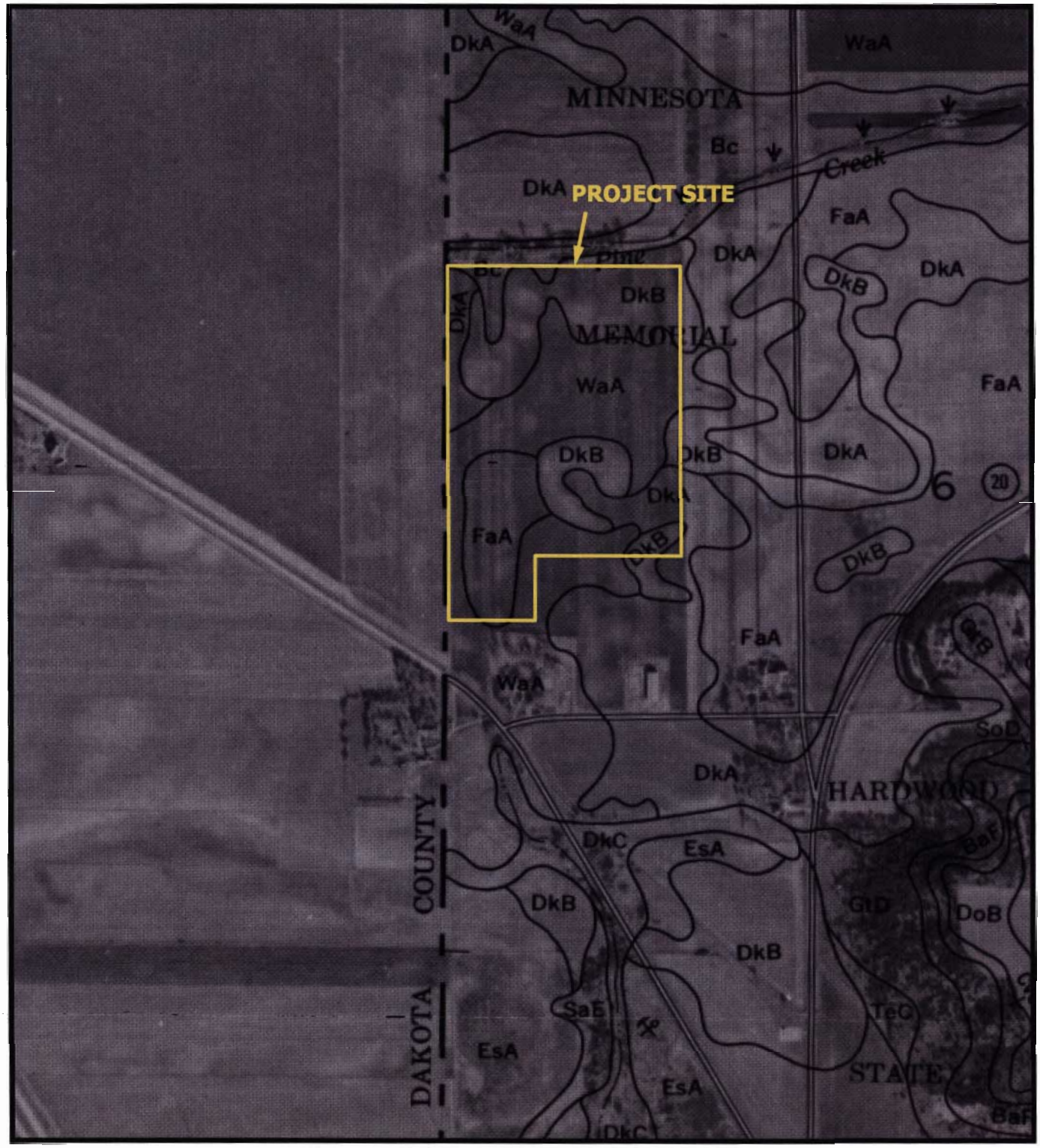
SCALE IN FEET

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 11
VIEWS OF EXISTING SITE CONDITIONS

DATE: JUNE 28, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



NORTH

400 0 400 800

SCALE IN FEET

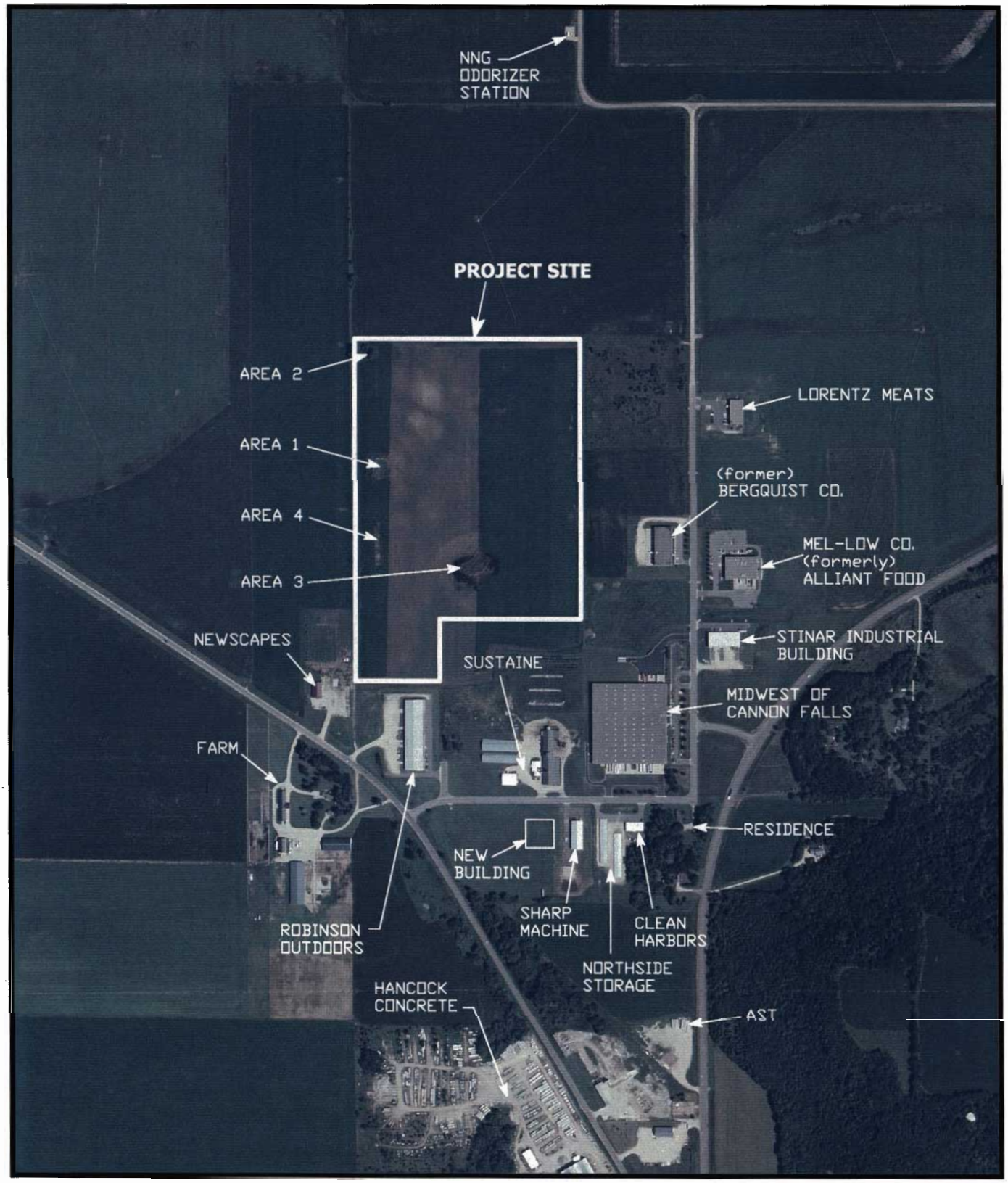
CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 12
PROJECT SITE SOIL TYPES

DATE: JULY 26, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS

1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



AERIAL MAP REFERENCE:

PORTION OF MINNESOTA DEPARTMENT OF NATURAL RESOURCE;
FARM SERVICES AGENCY (FSA) COLOR ORTHOPHOTOS (DOQs) DATED 2002
CANNON FALLS, DAKOTA COUNTY, MINNESOTA

NORTH

400 0 400 800

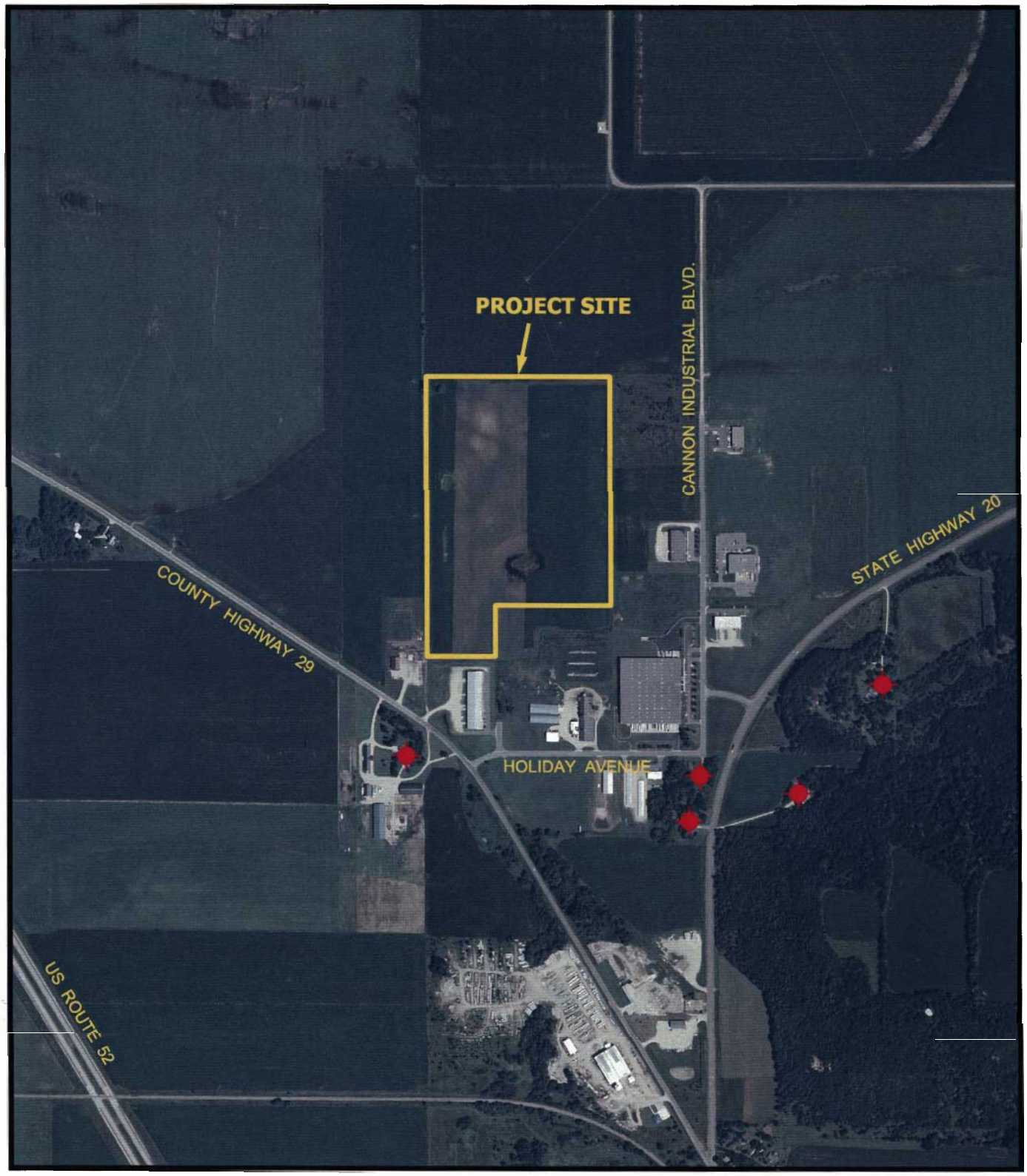
SCALE IN FEET

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 13
DEPRESSION AREAS AND STRUCTURES

DATE: JULY 26, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



LEGEND:

= SENSITIVE RESIDENTIAL NOISE RECEPTOR LOCATION

NORTH

500 0 500 1000

SCALE IN FEET

AERIAL MAP REFERENCE:

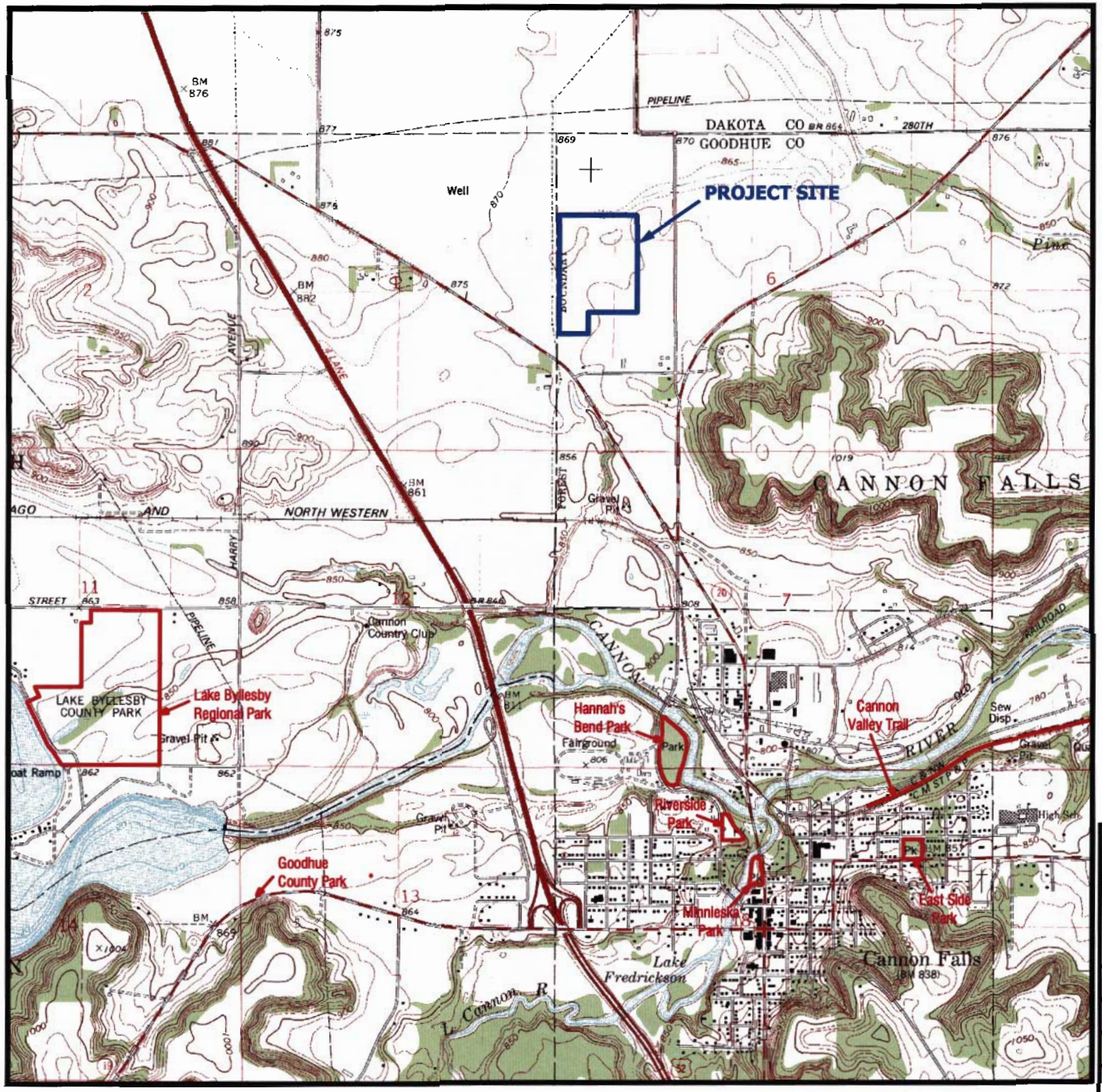
PORTION OF MINNESOTA DEPARTMENT OF NATURAL RESOURCE;
FARM SERVICES AGENCY (FSA) COLOR ORTHOPHOTOS (DOQs) DATED 2002
CANNON FALLS, DAKOTA COUNTY, MINNESOTA

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 14
SENSITIVE NOISE RECEPTORS - PROJECT AREA RESIDENCES

DATE: JUNE 28, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



NORTH

1250 0 1250 2500

SCALE IN FEET

QUADRANGLE LOCATION

MAP REFERENCE:

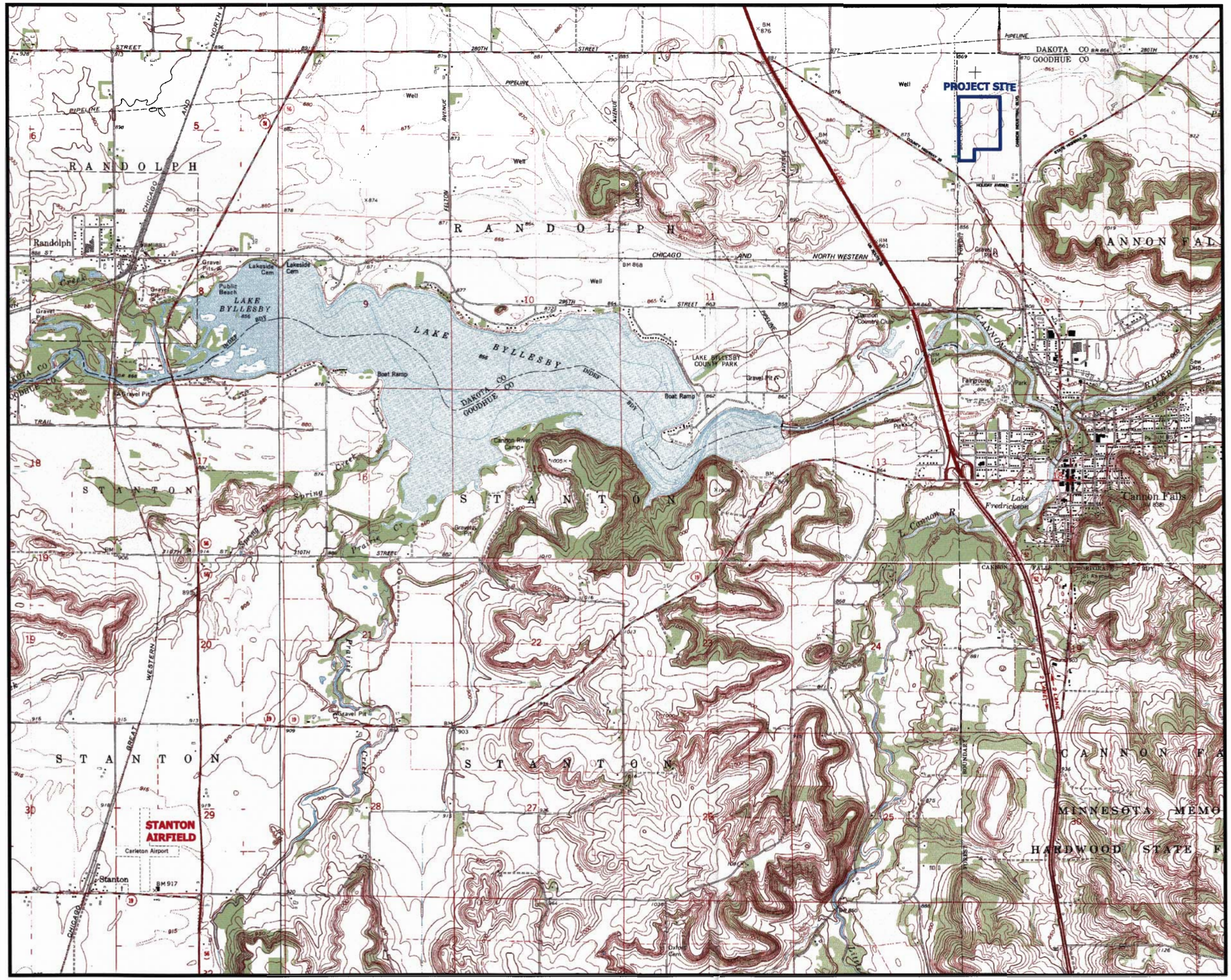
PORTION OF U.S.G.S. QUADRANGLE MAP
7 ½ MINUTE SERIES (TOPOGRAPHIC)
CANNON FALLS, MINNESOTA 1974

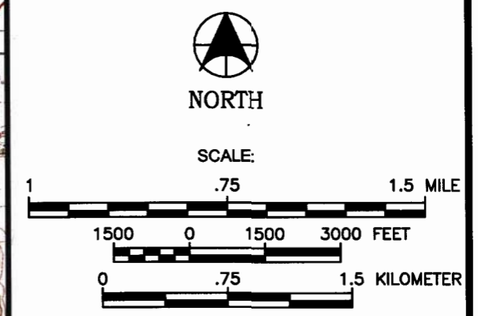
CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 15
RECREATION AREAS NEAR PROJECT SITE

DATE: JULY 8, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115





MAP REFERENCE:

PORTION OF U.S.G.S. QUADRANGLE MAP
7 ½ MINUTE SERIES (TOPOGRAPHIC)
RANDOLPH, MINNESOTA 1974;
CANNON FALLS, MINNESOTA 1974;
SOGN, MINNESOTA 1968
PHOTOREVISED 1980 and
DENNISON, MINNESOTA 1960

QUADRANGLE LOCATION

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 16
AIRPORTS NEAR PROJECT SITE

DATE: JULY 12, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115

LEGEND:

= 100 yr FLOODPLAIN

= 500 yr FLOOPLAIN

= WETLAND

NORTH

500 0 500 1000

SCALE IN FEET

AERIAL MAP REFERENCE:

PORTION OF MINNESOTA DEPARTMENT OF NATURAL RESOURCE;
FARM SERVICES AGENCY (FSA) COLOR ORTHOPHOTOS (DOQs) DATED 2002
CANNON FALLS, DAKOTA COUNTY, MINNESOTA

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 17
PROJECT AREA
FLOODPLAINS AND WETLANDS

DATE: JULY 31, 2004	
JOB NO.: 25365157	
DRAWN BY: MAR	CHK'D BY: EM
SCALE: AS SHOWN	

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115

APPENDIX A

NOISE LEVEL EVALUATION FOR THE CANNON FALLS ENERGY CENTER

Noise Level Evaluation for the Cannon Falls Energy Center

July 2004
Report No. 1725

Prepared for: **Invenergy, L.L.C.**
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(312) 224-1417 Office
(312) 707-9045 Fax

Prepared by: **Michael Theriault Acoustics, Inc.**
3 Worcester Square, Suite 6
Boston, MA 02118
(617) 437-9887
(617) 437-9343 Fax

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2.0 Site Description....1

3.0 Applicable Noise Regulations....2

4.0 Acoustical Modeling....2

5.0 Noise Level Assessment....5

6.0 Conceptual Noise Controls....5

Figures:

Figure 1 – Site Area Map
Figure 2 – Residential Receiver Locations
Figure 3 – Three Dimensional Acoustical Model View
Figure 4 – Predicted Noise Level Contours

Appendix:

- Minnesota Rules, Chapter 7030.0040
- Modeling Results
- General Information on Noise

1.0 Executive Summary

Invenergy Cannon Falls, L.L.C. proposes to construct and operate the Cannon Falls Energy Center (Facility), a nominal 357-megawatt combustion turbine power generation facility, in Cannon Falls, Minnesota. In support of Invenergy's permit applications to construct and operate the Facility, an evaluation was conducted to examine noise emissions from the Project. The assessment consisted of: (1) predicting Facility noise levels at nearby residences potentially affected by noise using three-dimensional computer modeling techniques; and (2) comparing projected Facility noise levels at nearby homes to State of Minnesota noise standards.

Results of the analysis showed that given the proposed acoustical design of the Facility, noise emissions are expected to fully comply with performance standards established by the State of Minnesota. Although the specific type and amount of noise control needed to achieve compliance with Minnesota standards will be selected during the detailed design phase of the Facility, a successful mitigation program that maintains an adequate design margin will likely consist of the following components:

- Combustion Turbine Exhaust Silencers
- Combustion Turbine Air Intake Silencers
- Low-Noise Fuel Gas Metering Station

2.0 Site Description

The proposed site is located along Cannon Industrial Boulevard, between County Highway 29 and State Highway 20, in Cannon Falls, Minnesota. A topographic map of the site is shown in Figure 1. Surrounding land use consists of industrial, agricultural and residential properties. The nearest noise sensitive receiver is a residence approximately 1400 feet southwest of the proposed Facility's operating equipment. Additional residential properties lie to the southeast of the site, near State Highway 20, as identified in Table 1 and shown in Figure 2.

Table 1
Nearest Residential Noise-Sensitive Properties

[illegible]	[illegible]
Residence 1	Intersection of County Highway 29 and Holiday Avenue
Residence 2	West Side of State Highway 20
Residence 3	Intersection of Holiday Avenue and Cannon Industrial Boulevard
Residence 4	Southeast Side of State Highway 20
Residence 5	Southeast Side of State Highway 20

3.0 Applicable Noise Regulations

The State of Minnesota Rules, Chapter 7030.0040, limits noise levels resulting from new land uses according to Noise Area Classification (NAC). The most stringent standard applies to land use classifications (NAC 1) that include the most sensitive noise receptors: households, medical service providers, cultural and recreational activities, etc. The least stringent standard applies to land use classifications (NAC 3) that would include the proposed Facility and other industrial activities such as manufacturing, transportation, and agriculture. Table 2 summarizes these noise standards by class. Note that because noise emissions from the Facility will generally be steady-state (non-fluctuating), the predicted L_{10} and L_{50} sound levels will be equivalent to each other. Therefore, the L_{50} represents a more restrictive performance criteria.

Table 2
Minnesota Noise Performance Standards (dBA)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

4.0 Acoustical Modeling

A three-dimensional acoustical model of the proposed Project was developed using SoundPlan® 6.2, based on site plan and general arrangement drawings provided by Invenergy and URS (*see Figure 3*) to predict noise levels at off-site residential receivers. Sound power levels (PWL) for all major pieces of equipment were estimated using octave band data from manufacturers, in-house field data, and data from industry-standard prediction algorithms.[1] (Sound power levels provide a convenient means to describe the total amount of noise radiated by a piece of equipment).

Equipment power levels were adjusted for the reduction of sound by distance (*geometrical spreading);* the molecular absorption of sound by air (*air absorption*); and the absorption and reflection of sound by the ground (*ground effect).* Sound power levels were further modified by the effects of shielding, (i.e., tank farms, buildings, equipment, etc.) and by changes in source levels with direction (*directivity)* to estimate off-site noise levels.

---

[2] *Electric Power Plant Environmental Noise Guide*, Edison Electric Institute, N.Y., N.Y.

4.1 Modeling Parameters

The acoustical model used for the analysis is based on ISO 9613-2, "Attenuation of Sound during Propagation Outdoors" adopted by the International Standardization Organization (ISO) in 1996. This standard provides a widely-accepted engineering method for the calculation of outdoor environmental noise levels from sources of known sound emission. The following sections briefly describe the conditions under which the predictions are considered valid.

4.1.1 Meteorology

The absorption (attenuation) of sound by air is strongly dependent on frequency, temperature and relative humidity, but only weakly on atmospheric pressure. In general, low temperatures and low humidity increase high-frequency sound absorption, which tends to reduce far-field predicted noise levels. For this analysis, mean annual atmospheric conditions near the project site for the period of record from 1961 through 1990 were obtained from the National Climatic Data Center (NCDC). Specifically, mean annual temperature, relative humidity and barometric pressure values used in the analysis were 43 °F, 70% RH, and 1017 mbars, respectively.

ISO 9613 is designed to estimate far-field noise levels under favorable sound-propagation conditions, (that is, when wind is blowing from the Facility towards receivers, at a speed roughly between 2 and 11 mph, when measured at a height of 10 to 36 feet above the ground) or under well-developed temperature inversions, which commonly occur on clear, calm nights.[2] For other weather conditions, such as during crosswind or upwind situations, or for ground based temperature lapses, *(see Footnote 2)* observed noise levels would generally be less than predicted.

---

[2] Temperature inversions typically develop during calm, cloudless nights, when the ground is no longer being heated by the sun. As a result, air near the ground begins to cool, forming a thicker and thicker "blanket" as the evening progresses. In practical terms, this means that temperature is ***increasing*** with elevation, (i.e., the air is actually warmer at higher elevations, as compared to near the ground) and hence the term "temperature inversion." The effect of temperature inversion on sound propagation is to "bend" sound waves back towards the ground, producing near worse-case noise levels at a receiver. In contrast, "temperature lapse" commonly develops during calm, cloudless ***daytime*** periods, when the ground is being heated by the sun, which in turn produces a warm layer of air next to the ground, as opposed to at higher elevations. This means that temperature ***decreases*** with elevation, causing sound waves to bend upwards and reducing noise levels observed at a far-field observer.

4.1.2 Ground Effect

Noise level predictions are largely dependant on both the type and extent of "ground" condition assumed for the site and receiver areas. Areas of ground at the Project site were modeled as "hard" or completely reflective, which is typical of paving, concrete, tamped ground, water, and other ground surfaces commonly found at industrial sites. Ground areas near receivers were assumed to be 50% absorptive, which is characterized as semi-porous ground.

4.1.3 Reflections

For complex installations with a large number of buildings and obstacles, reflected energy components can be considerable. Therefore, the number of reflections for the model was set at two (2). This means that two reflections from buildings and obstacles were allowed for individual acoustic rays.

4.1.4 Model Accuracy

ISO 9613 predictions are expected to agree with field measurements within a $\pm$ 3 dBA range, out to a distance of 1000 meters, for the meteorological and environmental conditions described above. This implies that actual levels observed in the field might be up to three (3) decibels lower than predicted, or three (3) decibels higher. Due to this accuracy limitation, all calculations include a design margin of three (3) decibels, which is the minimum recommended to account for: 1) inherent modeling inaccuracies and meteorological changes in sound propagation; 2) addition and/or changes to Facility equipment at later design changes; 3) equipment supplied louder than specified; 4) measurement uncertainty in determining source emissions; 5) lack of vender octave band data, (which is required for accurate sound propagation calculations); and 6) inability to secure commercial noise emission guarantees from equipment suppliers.

4.2 Modeling Results

Noise levels are expected to range from about 45 to 50 dBA at the nearest receivers given the proposed acoustical design of the Facility, as shown in Table 3. Analysis results are also presented as a series of noise level contours in Figure 4, and a complete set of modeling calculations can be found in the Appendix. Note that although minor changes to the general arrangement of the Facility may occur as the detailed design is finalized, significant changes in predicted noise levels are not expected.

Table 3
Predicted Facility Noise Levels (with Controls)

[illegible]	[illegible]	[illegible]
Residence 1	Intersection of County Highway 29 and Holiday Avenue	47.4
Residence 2	West Side of State Highway 20	44.6
Residence 3	Intersection of Holiday Avenue and Cannon Industrial Boulevard	45.4
Residence 4	Southeast Side of State Highway 20	48.3
Residence 5	Southeast Side of State Highway 20	49.5

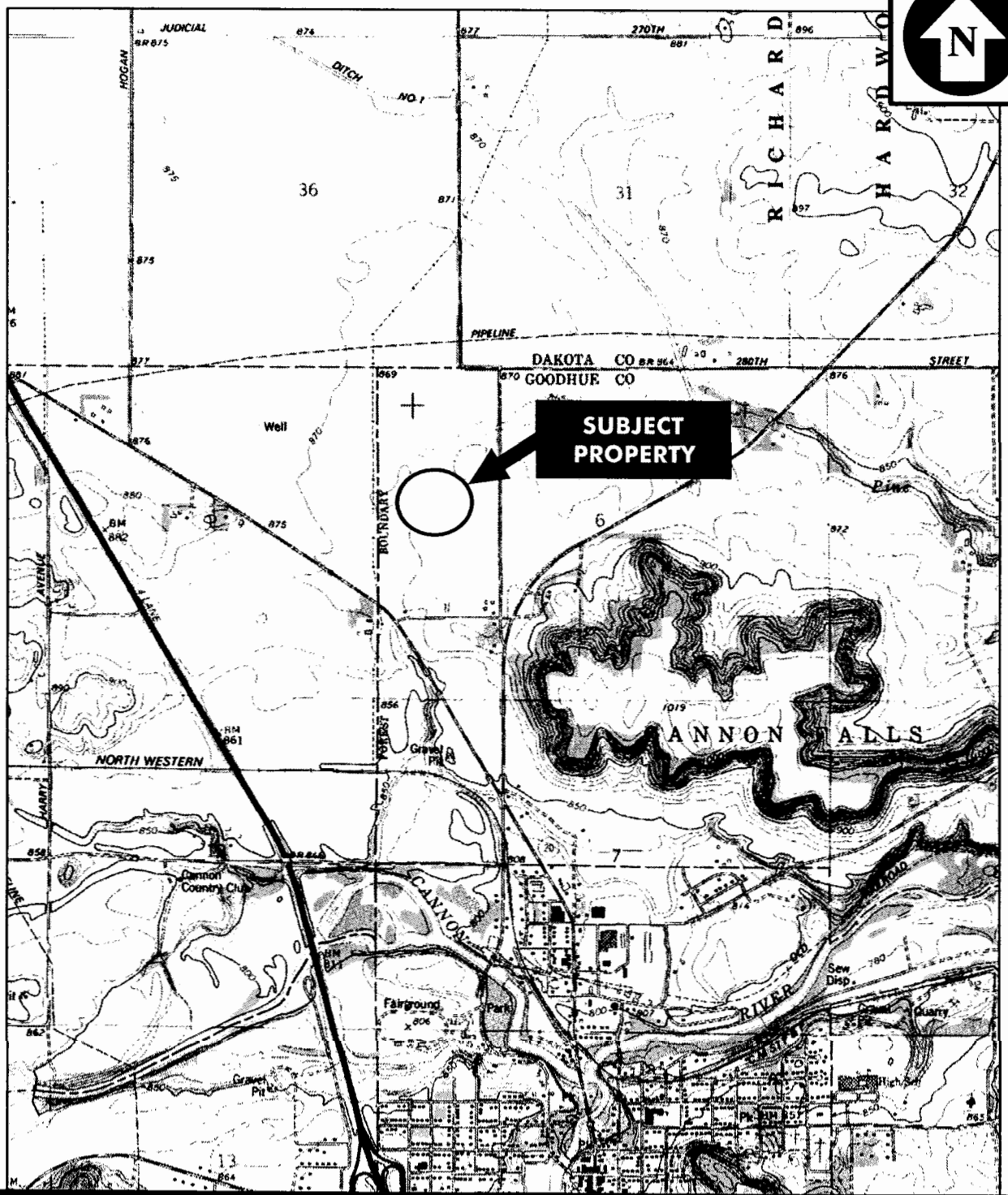
5.0 Noise Level Assessment

Noise emissions at the nearest receptors are expected to range from 45 dBA to 50 dBA, given the proposed acoustical design of the plant, as shown in Table 3. Therefore, Facility noise levels are expected to fully comply with limits established by the State of Minnesota, (60 dBA during daytime hours; 50 dBA during nighttime hours).

6.0 Conceptual Noise Controls

The specific type and amount of noise control needed to achieve compliance with the State of Minnesota noise control standards will be selected during the detailed design phase of the Facility. A successful mitigation program will likely consist of the following components:

- Combustion Turbine Exhaust Silencers
- Combustion Turbine Air Intake Silencers
- Low-Noise Fuel Gas Metering Station



0 1000 2000 3000

Scale in Feet

QUADRANGLE LOCATION

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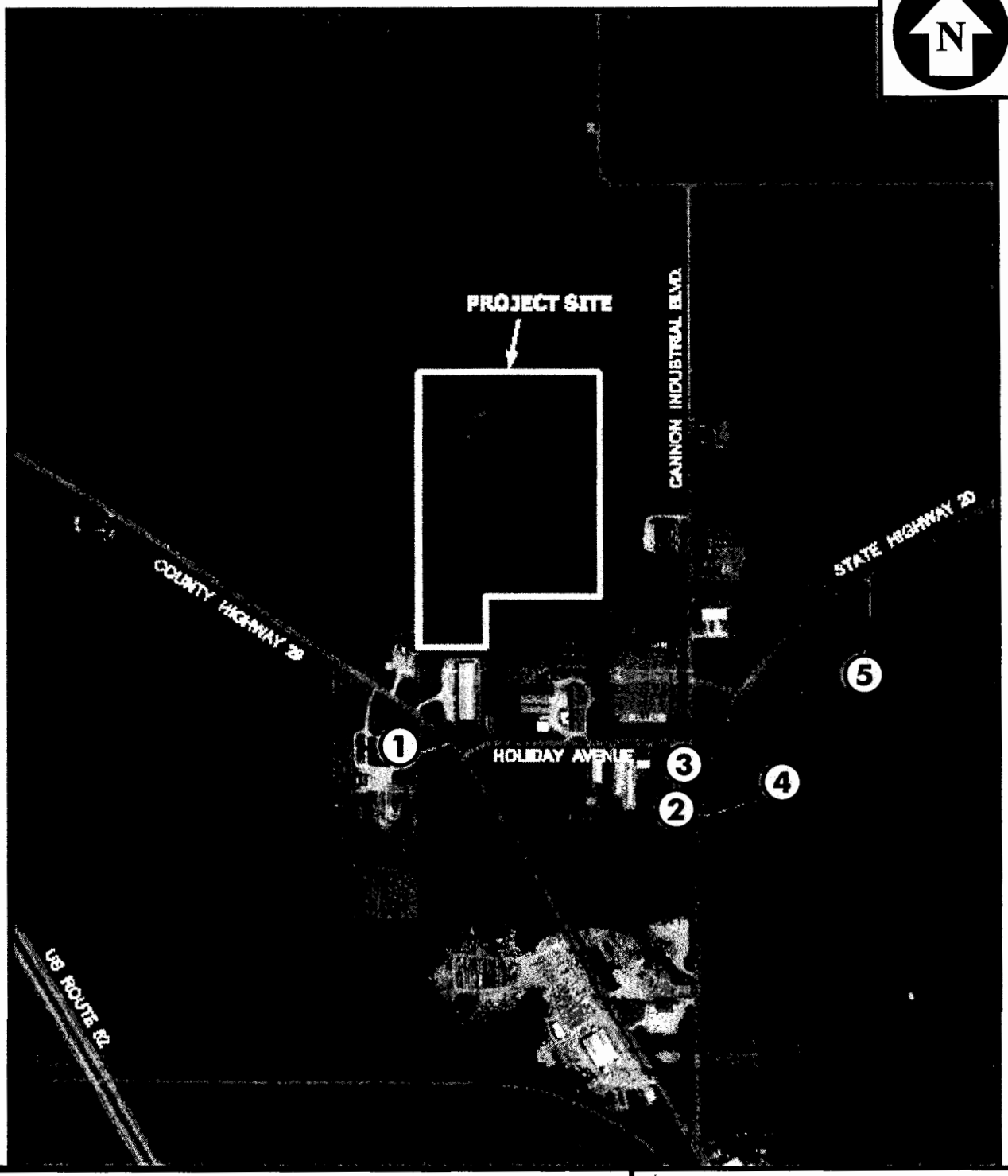
NOISE CONTROL CONSULTING SERVICES

SITE AREA MAP

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 1	PROJ. NO. 1725



0 1000 2000 3000

Scale in Feet

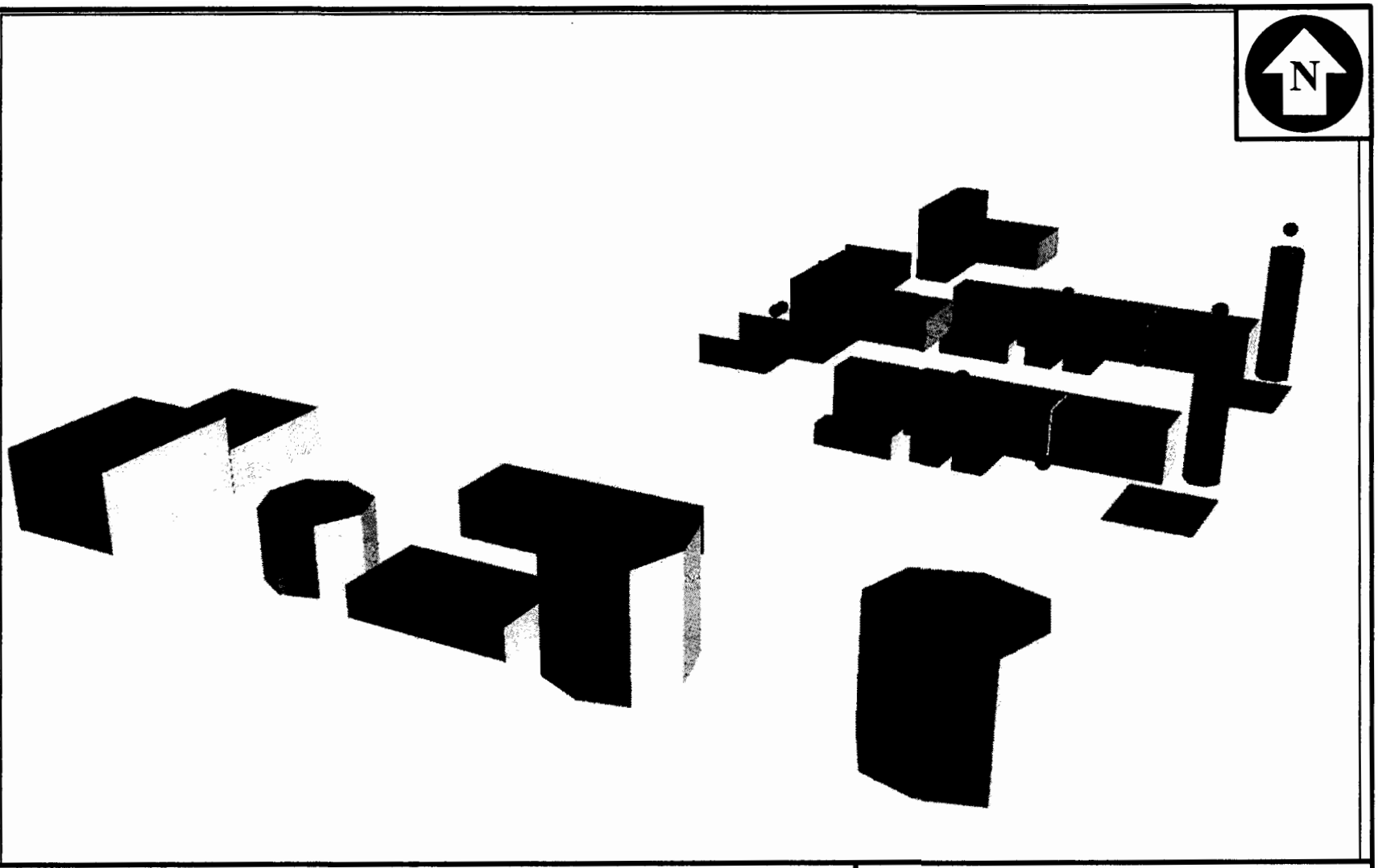
Michael Theriault Acoustics Inc

NOISE CONTROL CONSULTING SERVICES

RESIDENTIAL RECEIVER LOCATIONS

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 2	PROJ. NO. 1725



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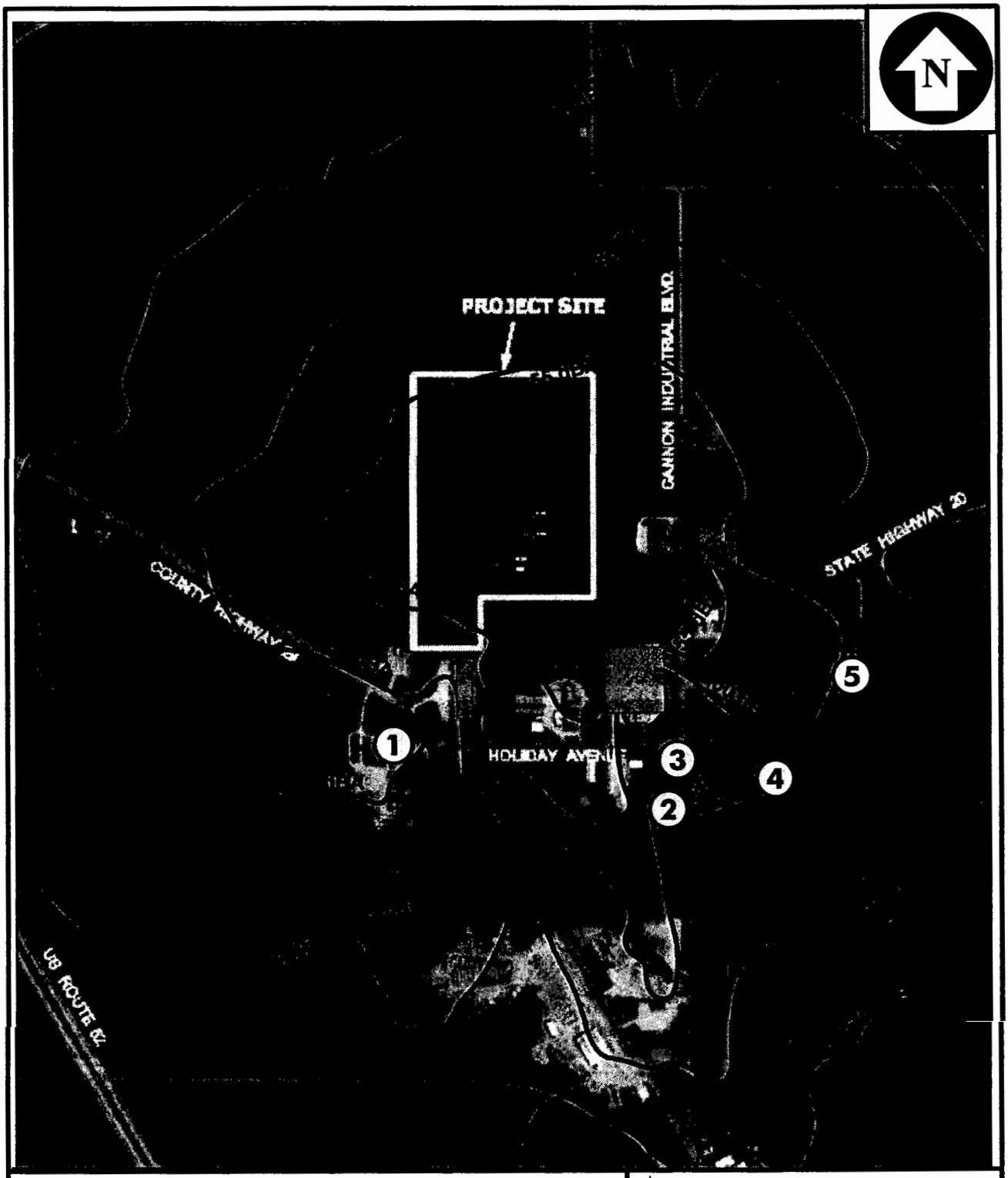
NOISE CONTROL CONSULTING SERVICES

THREE DIMENSIONAL ACOUSTICAL MODEL VIEW

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 3	PROJ. NO. 1725



CONTOURS INCLUDE 3 dBA DESIGN MARGIN

0 1000 2000 3000

Scale in Feet

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NOISE CONTROL CONSULTING SERVICES

PREDICTED NOISE LEVEL CONTOURS

CANNON FALLS ENERGY CENTER
CANNON FALLS, MINNESOTA

FIGURE 4	PROJ. NO. 1725

Appendix

- Minnesota Rules, Chapter 7030.0040
- Acoustical Modeling Results
- General Information on Noise

Minnesota Rules, Chapter 7030.0040

Minnesota Rules, Table of Chapters

Table of contents for Chapter 7030

7030.0040 NOISE STANDARDS.

Subpart 1. **Scope.** These standards describe the limiting levels of sound established on the basis of present knowledge for the preservation of public health and welfare. These standards are consistent with speech, sleep, annoyance, and hearing conservation requirements for receivers within areas grouped according to land activities by the noise area classification (NAC) system established in part 7030.0050. However, these standards do not, by themselves, identify the limiting levels of impulsive noise needed for the preservation of public health and welfare. Noise standards in subpart 2 apply to all sources.

Subp. 2. **Noise standards.**

Noise Area Classification	Daytime		Nighttime	
	L_{50}	L_{10}	L_{50}	L_{10}
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

STAT AUTH: MS s 116.07 subds 2,4

HIST: 11 SR 43; 18 SR 614

Current as of 12/12/03

Acoustical Modeling Results

Cannon Falls - Receiver Sound Levels
Base Analysis - A-Weighted - Optimized

Name	Point Lev. dB(A)	SPL dB(A)	
Receiver 1	47	44.4	
Receiver 2	47	41.6	
Receiver 3	47	42.4	
Receiver 4	47	45.3	
Receiver 5	47	46.5	

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Cannon Falls - Receiver Spectra
Base Analysis - Linear - Optimized

31 Hz dB	63 Hz dB	125 Hz dB	250 Hz dB	500 Hz dB	1 kHz dB	2 kHz dB	4 kHz dB	8 kHz dB
Receiver 1 SPL 62.2 dB(A)								
59.62	57.26	52.32	44.68	42.13	38.31	33.65	12.55	-46.55
Receiver 2 SPL 59.1 dB(A)								
56.55	53.64	49.73	42.40	39.29	36.10	28.80	5.12	
Receiver 3 SPL 59.5 dB(A)								
57.00	53.92	50.40	42.75	40.08	37.16	30.69	9.03	-49.61
Receiver 4 SPL 62.4 dB(A)								
60.30	56.88	50.48	43.46	41.61	42.13	34.23	7.99	
Receiver 5 SPL 66.0 dB(A)								
62.71	60.07	52.68	44.76	43.92	42.51	34.82	7.71	

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Cannon Falls - Source List
Base Analysis - A-Weighted - Optimized

Source	Lw(dB)	Source Type	Size	Ko	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Auxiliary Transformer	89.4	Point		0.0	46.6	65.8	77.9	80.4	85.8	83.0	79.2	74.0	64.9
Auxiliary Transformer	89.4	Point		0.0	46.6	65.8	77.9	80.4	85.8	83.0	79.2	74.0	64.9
CTG 1 Inlet Plenum - 1	96.2	Area	18.87	3.0	43.6	59.8	66.9	76.4	80.8	85.0	95.2	85.0	71.9
CTG 1 Inlet Plenum - 1	96.2	Area	18.87	3.0	43.6	59.8	66.9	76.4	80.8	85.0	95.2	85.0	71.9
CTG 1 Inlet Plenum - 2	96.2	Area	18.87	3.0	43.6	59.8	66.9	76.4	80.8	85.0	95.2	85.0	71.9
CTG 1 Inlet Plenum - 2	96.2	Area	18.87	3.0	43.6	59.8	66.9	76.4	80.8	85.0	95.2	85.0	71.9
CTG Accessory 1-1	97.4	Area	38.24	3.0	58.6	74.8	78.9	83.4	87.8	91.0	94.2	88.0	79.9
CTG Accessory 1-1	97.4	Area	38.24	3.0	58.6	74.8	78.9	83.4	87.8	91.0	94.2	88.0	79.9
CTG Accessory 1-2	97.4	Area	38.29	3.0	58.6	74.8	78.9	83.4	87.8	91.0	94.2	88.0	79.9
CTG Accessory 1-2	97.4	Area	38.29	3.0	58.6	74.8	78.9	83.4	87.8	91.0	94.2	88.0	79.9
CTG Air Intake	95.7	Area	190.82	0.0	64.6	80.8	83.9	87.4	88.8	90.0	89.2	82.0	70.9
CTG Air Intake	95.7	Area	190.82	0.0	64.6	80.8	83.9	87.4	88.8	90.0	89.2	82.0	70.9
CTG Exhaust Diffuser 1-1	90.9	Area	74.60	3.0	68.6	80.8	82.9	84.4	84.8	83.0	79.2	75.0	67.9
CTG Exhaust Diffuser 1-1	90.9	Area	74.60	3.0	68.6	80.8	82.9	84.4	84.8	83.0	79.2	75.0	67.9
CTG Exhaust Diffuser 1-2	90.9	Area	74.54	3.0	68.6	80.8	82.9	84.4	84.8	83.0	79.2	75.0	67.9
CTG Exhaust Diffuser 1-2	90.9	Area	74.54	3.0	68.6	80.8	82.9	84.4	84.8	83.0	79.2	75.0	67.9
CTG Generator 1-1	101.0	Area	83.96	3.0	59.6	72.8	81.9	86.4	93.8	96.0	96.2	91.0	79.9
CTG Generator 1-1	101.0	Area	83.96	3.0	59.6	72.8	81.9	86.4	93.8	96.0	96.2	91.0	79.9
CTG Generator 1-2	101.0	Area	83.96	3.0	59.6	72.8	81.9	86.4	93.8	96.0	96.2	91.0	79.9
CTG Generator 1-2	101.0	Area	83.96	3.0	59.6	72.8	81.9	86.4	93.8	96.0	96.2	91.0	79.9
CTG Inlet Ducting 1-1	95.0	Area	61.05	0.0	56.9	72.1	80.2	90.7	85.1	81.3	91.5	63.3	27.2
CTG Inlet Ducting 1-1	95.0	Area	61.05	0.0	56.9	72.1	80.2	90.7	85.1	81.3	91.5	63.3	27.2
CTG Inlet Ducting 1-2	95.0	Area	61.02	0.0	56.9	72.1	80.2	90.7	85.1	81.3	91.5	63.3	27.2
CTG Inlet Ducting 1-2	95.0	Area	61.02	0.0	56.9	72.1	80.2	90.7	85.1	81.3	91.5	63.3	27.2
CTG Load 1-1	98.4	Area	7.09	3.0	60.6	75.8	85.9	88.4	88.8	90.0	94.2	91.0	81.9
CTG Load 1-1	98.4	Area	7.09	3.0	60.6	75.8	85.9	88.4	88.8	90.0	94.2	91.0	81.9
CTG Load 1-2	98.4	Area	7.09	3.0	60.6	75.8	85.9	88.4	88.8	90.0	94.2	91.0	81.9
CTG Load 1-2	98.4	Area	7.09	3.0	60.6	75.8	85.9	88.4	88.8	90.0	94.2	91.0	81.9
CTG Turbine 1-1	104.2	Area	55.11	3.0	65.6	80.8	84.9	91.4	93.8	95.0	101.2	97.0	89.9
CTG Turbine 1-1	104.2	Area	55.11	3.0	65.6	80.8	84.9	91.4	93.8	95.0	101.2	97.0	89.9
CTG Turbine 1-2	104.2	Area	55.11	3.0	65.6	80.8	84.9	91.4	93.8	95.0	101.2	97.0	89.9
CTG Turbine 1-2	104.2	Area	55.11	3.0	65.6	80.8	84.9	91.4	93.8	95.0	101.2	97.0	89.9
Demin Pump	98.1	Point		0.0	51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9

Cannon Falls - Source List
Base Analysis - A-Weighted - Optimized

Source	PWL	Source Type	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Fin-Fan Cooler 1	109.0	Area	133.94	0.0	22.2	74.4	98.5	98.0	103.4	105.6	96.8	91.6	91.5
Fin-Fan Cooler 2	109.0	Area	133.94	0.0	22.2	74.4	98.5	98.0	103.4	105.6	96.8	91.6	91.5
Fuel Gas Metering Area	98.0	Point		0.0	-50.0	-36.8	-26.7	68.8	76.2	84.4	95.6	93.4	83.3
LFAA Module 1-1	101.7	Area	37.75	3.0	71.6	86.8	84.9	88.4	90.8	94.0	99.2	91.0	78.9
LFAA Module 1-1	101.7	Area	37.75	3.0	71.6	86.8	84.9	88.4	90.8	94.0	99.2	91.0	78.9
LFAA Module 1-2	101.7	Area	37.64	3.0	71.6	86.8	84.9	88.4	90.8	94.0	99.2	91.0	78.9
LFAA Module 1-2	101.7	Area	37.64	3.0	71.6	86.8	84.9	88.4	90.8	94.0	99.2	91.0	78.9
LFAA Ventilation Fan	108.3	Point		0.0	64.6	78.8	92.9	92.4	94.8	87.0	100.2	106.0	99.9
LFAA Ventilation Fan	108.3	Point		0.0	64.6	78.8	92.9	92.4	94.8	87.0	100.2	106.0	99.9
Mechanical Building - 1	86.1	Area	170.05	3.0	60.9	77.1	81.2	82.7	74.1	68.3	62.5	56.3	53.2
Mechanical Building - 2	81.4	Area	57.52	3.0	56.2	72.4	76.5	78.0	69.4	63.6	57.8	51.6	48.5
Mechanical Building - 3	86.1	Area	170.03	3.0	60.9	77.1	81.2	82.7	74.1	68.3	62.5	56.3	53.2
Mechanical Building - 4	81.4	Area	57.52	3.0	56.2	72.4	76.5	78.0	69.4	63.6	57.8	51.6	48.5
Mechanical Building - Roof	88.0	Area	264.96	0.0	62.8	79.0	83.1	84.6	76.0	70.2	64.4	58.2	55.1
Rooftop Vent Fan	87.8	Point		0.0	55.6	68.8	74.9	78.4	80.8	82.0	81.2	77.0	74.9
Rooftop Vent Fan	87.8	Point		0.0	55.6	68.8	74.9	78.4	80.8	82.0	81.2	77.0	74.9
Rooftop Vent Fan	87.8	Point		0.0	55.6	68.8	74.9	78.4	80.8	82.0	81.2	77.0	74.9
Stack Exhaust	106.3	Point		0.0	85.6	93.8	96.9	101.4	98.8	101.0	88.2	66.0	46.9
Stack Exhaust	106.3	Point		0.0	85.6	93.8	96.9	101.4	98.8	101.0	88.2	66.0	46.9
Stack Walls 1 - 1	88.5	Area	50.60	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 1	88.5	Area	50.60	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 2	88.5	Area	43.39	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 2	88.5	Area	43.39	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 3	88.5	Area	43.23	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 3	88.5	Area	43.23	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 4	88.5	Area	46.66	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 4	88.5	Area	46.66	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 5	88.5	Area	44.52	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 5	88.5	Area	44.52	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 6	88.5	Area	49.28	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Stack Walls 1 - 6	88.5	Area	49.28	3.0	66.6	74.8	86.9	81.4	76.8	63.0	60.2	52.0	32.9
Step Up Transformer	102.0	Point		0.0	59.2	78.4	90.5	93.0	98.4	95.6	91.8	86.6	77.5
Step Up Transformer	102.0	Point		0.0	59.2	78.4	90.5	93.0	98.4	95.6	91.8	86.6	77.5

Cannon Falls - Source List
Base Analysis - A-Weighted - Optimized

Source	[illegible]	Source type	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Turbine Compartment Fan 1	108.3	Point		0.0	64.6	78.8	92.9	92.4	94.8	87.0	100.2	106.0	99.9	
Turbine Compartment Fan 1	108.3	Point		0.0	64.6	78.8	92.9	92.4	94.8	87.0	100.2	106.0	99.9	
Water Injection Skid	98.1	Point		0.0	51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9	
Water Injection Skid	98.1	Point		0.0	51.6	75.8	79.9	87.4	89.8	92.0	92.2	91.0	84.9	

Cannon Falls - Source List
Base Analysis - Linear - Optimized

Source	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Auxiliary Transformer	98.0	Point		0.0	86.0	92.0	94.0	89.0	89.0	83.0	78.0	73.0	66.0
Auxiliary Transformer	98.0	Point		0.0	86.0	92.0	94.0	89.0	89.0	83.0	78.0	73.0	66.0
CTG 1 Inlet Plenum - 1	96.5	Area	18.87	3.0	83.0	86.0	83.0	85.0	84.0	85.0	94.0	84.0	73.0
CTG 1 Inlet Plenum - 1	96.5	Area	18.87	3.0	83.0	86.0	83.0	85.0	84.0	85.0	94.0	84.0	73.0
CTG 1 Inlet Plenum - 2	96.5	Area	18.87	3.0	83.0	86.0	83.0	85.0	84.0	85.0	94.0	84.0	73.0
CTG 1 Inlet Plenum - 2	96.5	Area	18.87	3.0	83.0	86.0	83.0	85.0	84.0	85.0	94.0	84.0	73.0
CTG Accessory 1-1	104.6	Area	38.24	3.0	98.0	101.0	95.0	92.0	91.0	91.0	93.0	87.0	81.0
CTG Accessory 1-1	104.6	Area	38.24	3.0	98.0	101.0	95.0	92.0	91.0	91.0	93.0	87.0	81.0
CTG Accessory 1-2	104.6	Area	38.29	3.0	98.0	101.0	95.0	92.0	91.0	91.0	93.0	87.0	81.0
CTG Accessory 1-2	104.6	Area	38.29	3.0	98.0	101.0	95.0	92.0	91.0	91.0	93.0	87.0	81.0
CTG Air Intake	109.7	Area	190.82	0.0	104.0	107.0	100.0	96.0	92.0	90.0	88.0	81.0	72.0
CTG Air Intake	109.7	Area	190.82	0.0	104.0	107.0	100.0	96.0	92.0	90.0	88.0	81.0	72.0
CTG Exhaust Diffuser 1-1	110.9	Area	74.60	3.0	108.0	107.0	99.0	93.0	88.0	83.0	78.0	74.0	69.0
CTG Exhaust Diffuser 1-1	110.9	Area	74.60	3.0	108.0	107.0	99.0	93.0	88.0	83.0	78.0	74.0	69.0
CTG Exhaust Diffuser 1-2	110.9	Area	74.54	3.0	108.0	107.0	99.0	93.0	88.0	83.0	78.0	74.0	69.0
CTG Exhaust Diffuser 1-2	110.9	Area	74.54	3.0	108.0	107.0	99.0	93.0	88.0	83.0	78.0	74.0	69.0
CTG Generator 1-1	105.9	Area	83.96	3.0	99.0	99.0	98.0	95.0	97.0	96.0	95.0	90.0	81.0
CTG Generator 1-1	105.9	Area	83.96	3.0	99.0	99.0	98.0	95.0	97.0	96.0	95.0	90.0	81.0
CTG Generator 1-2	105.9	Area	83.96	3.0	99.0	99.0	98.0	95.0	97.0	96.0	95.0	90.0	81.0
CTG Generator 1-2	105.9	Area	83.96	3.0	99.0	99.0	98.0	95.0	97.0	96.0	95.0	90.0	81.0
CTG Inlet Ducting 1-1	104.1	Area	61.05	0.0	96.3	98.3	96.3	99.3	88.3	81.3	90.3	62.3	28.3
CTG Inlet Ducting 1-1	104.1	Area	61.05	0.0	96.3	98.3	96.3	99.3	88.3	81.3	90.3	62.3	28.3
CTG Inlet Ducting 1-2	104.1	Area	61.02	0.0	96.3	98.3	96.3	99.3	88.3	81.3	90.3	62.3	28.3
CTG Inlet Ducting 1-2	104.1	Area	61.02	0.0	96.3	98.3	96.3	99.3	88.3	81.3	90.3	62.3	28.3
CTG Load 1-1	107.2	Area	7.09	3.0	100.0	102.0	102.0	97.0	92.0	90.0	93.0	90.0	83.0
CTG Load 1-1	107.2	Area	7.09	3.0	100.0	102.0	102.0	97.0	92.0	90.0	93.0	90.0	83.0
CTG Load 1-2	107.2	Area	7.09	3.0	100.0	102.0	102.0	97.0	92.0	90.0	93.0	90.0	83.0
CTG Load 1-2	107.2	Area	7.09	3.0	100.0	102.0	102.0	97.0	92.0	90.0	93.0	90.0	83.0
CTG Turbine 1-1	111.1	Area	55.11	3.0	105.0	107.0	101.0	100.0	97.0	95.0	100.0	96.0	91.0
CTG Turbine 1-1	111.1	Area	55.11	3.0	105.0	107.0	101.0	100.0	97.0	95.0	100.0	96.0	91.0
CTG Turbine 1-2	111.1	Area	55.11	3.0	105.0	107.0	101.0	100.0	97.0	95.0	100.0	96.0	91.0
CTG Turbine 1-2	111.1	Area	55.11	3.0	105.0	107.0	101.0	100.0	97.0	95.0	100.0	96.0	91.0
Demin Pump	105.0	Point		0.0	91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0

Cannon Falls - Source List
Base Analysis - Linear - Optimized

Source	[illegible]	Source Type	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Fin-Fan Cooler 1	116.4	Area	133.94	0.0	61.6	100.6	114.6	106.6	106.6	105.6	95.6	90.6	92.6
Fin-Fan Cooler 2	116.4	Area	133.94	0.0	61.6	100.6	114.6	106.6	106.6	105.6	95.6	90.6	92.6
Fuel Gas Metering Area	97.1	Point		0.0	-10.6	-10.6	-10.6	77.4	79.4	84.4	94.4	92.4	84.4
LFAA Module 1-1	115.5	Area	37.75	3.0	111.0	113.0	101.0	97.0	94.0	94.0	98.0	90.0	80.0
LFAA Module 1-1	115.5	Area	37.75	3.0	111.0	113.0	101.0	97.0	94.0	94.0	98.0	90.0	80.0
LFAA Module 1-2	115.5	Area	37.64	3.0	111.0	113.0	101.0	97.0	94.0	94.0	98.0	90.0	80.0
LFAA Module 1-2	115.5	Area	37.64	3.0	111.0	113.0	101.0	97.0	94.0	94.0	98.0	90.0	80.0
LFAA Ventilation Fan	113.2	Point		0.0	104.0	105.0	109.0	101.0	98.0	87.0	99.0	105.0	101.0
LFAA Ventilation Fan	113.2	Point		0.0	104.0	105.0	109.0	101.0	98.0	87.0	99.0	105.0	101.0
Mechanical Building - 1	105.9	Area	170.05	3.0	100.3	103.3	97.3	91.3	77.3	68.3	61.3	55.3	54.3
Mechanical Building - 2	101.2	Area	57.52	3.0	95.6	98.6	92.6	86.6	72.6	63.6	56.6	50.6	49.6
Mechanical Building - 3	105.9	Area	170.03	3.0	100.3	103.3	97.3	91.3	77.3	68.3	61.3	55.3	54.3
Mechanical Building - 4	101.2	Area	57.52	3.0	95.6	98.6	92.6	86.6	72.6	63.6	56.6	50.6	49.6
Mechanical Building - Roof	107.8	Area	264.96	0.0	102.2	105.2	99.2	93.2	79.2	70.2	63.2	57.2	56.2
Rooftop Vent Fan	99.4	Point		0.0	95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0
Rooftop Vent Fan	99.4	Point		0.0	95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0
Rooftop Vent Fan	99.4	Point		0.0	95.0	95.0	91.0	87.0	84.0	82.0	80.0	76.0	76.0
Stack Exhaust	126.5	Point		0.0	125.0	120.0	113.0	110.0	102.0	101.0	87.0	65.0	48.0
Stack Exhaust	126.5	Point		0.0	125.0	120.0	113.0	110.0	102.0	101.0	87.0	65.0	48.0
Stack Walls 1 - 1	108.6	Area	50.60	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 1	108.6	Area	50.60	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 2	108.6	Area	43.39	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 2	108.6	Area	43.39	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 3	108.6	Area	43.23	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 3	108.6	Area	43.23	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 4	108.6	Area	46.66	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 4	108.6	Area	46.66	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 5	108.6	Area	44.52	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 5	108.6	Area	44.52	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 6	108.6	Area	49.28	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Stack Walls 1 - 6	108.6	Area	49.28	3.0	106.0	101.0	103.0	90.0	80.0	63.0	59.0	51.0	34.0
Step Up Transformer	110.7	Point		0.0	98.6	104.6	106.6	101.6	101.6	95.6	90.6	85.6	78.6
Step Up Transformer	110.7	Point		0.0	98.6	104.6	106.6	101.6	101.6	95.6	90.6	85.6	78.6

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Cannon Falls - Source List
Base Analysis - Linear - Optimized

Source	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Turbine Compartment Fan 1	113.2	Point		0.0	104.0	105.0	109.0	101.0	98.0	87.0	99.0	105.0	101.0
Turbine Compartment Fan 1	113.2	Point		0.0	104.0	105.0	109.0	101.0	98.0	87.0	99.0	105.0	101.0
Water Injection Skid	105.0	Point		0.0	91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0
Water Injection Skid	105.0	Point		0.0	91.0	102.0	96.0	96.0	93.0	92.0	91.0	90.0	86.0

Cannon Falls - Mean Propogation
Base Analysis - A-Weighted - Optimized

Source	PWL dB(A)	PWL/unit dB(A)	Non-Sphere dB	Distance m	Spreading dB	Ground Effct. dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB(A)	SPL dB(A)
Receiver 5 SPL 46.8 dB(A)											
Auxiliary Transformer	89.4	89.4	0.0	823.95	69.3	-2.5	4.6	1.8	0.0		16.1
Auxiliary Transformer	89.4	89.4	0.0	823.03	69.3	-2.5	5.4	1.9	0.0		15.2
CTG 1 Inlet Plenum - 1	96.2	83.4	3.0	780.85	68.8	-3.2	21.7	6.6	0.0		5.2
CTG 1 Inlet Plenum - 1	96.2	83.4	3.0	798.60	69.0	-3.3	21.8	6.7	0.0		4.9
CTG 1 Inlet Plenum - 2	96.2	83.4	3.0	777.09	68.8	-3.1	2.8	7.8	0.0		22.9
CTG 1 Inlet Plenum - 2	96.2	83.4	3.0	795.33	69.0	-3.2	5.1	8.0	0.0		20.2
CTG Accessory 1-1	97.4	81.6	3.0	771.27	68.7	-3.3	14.0	3.6	0.0	16.5	20.0
CTG Accessory 1-1	97.4	81.6	3.0	788.38	68.9	-3.3	13.8	3.6	0.0	11.0	18.3
CTG Accessory 1-2	97.4	81.6	3.0	775.49	68.8	-3.2	15.1	3.0	0.0	21.1	22.4
CTG Accessory 1-2	97.4	81.6	3.0	792.93	69.0	-3.2	16.7	2.9	0.0	19.8	21.0
CTG Air Intake	95.7	72.9	0.0	796.35	69.0	-1.5	2.8	3.0	0.0		22.4
CTG Air Intake	95.7	72.9	0.0	813.76	69.2	-1.6	2.8	3.1	0.0		22.1
CTG Exhaust Diffuser 1-1	90.9	72.1	3.0	768.32	68.7	-2.4	11.5	0.5	0.0		15.5
CTG Exhaust Diffuser 1-1	90.9	72.1	3.0	783.16	68.9	-2.3	11.2	0.6	0.0		15.5
CTG Exhaust Diffuser 1-2	90.9	72.1	3.0	765.54	68.7	-2.3	2.0	1.5	0.0	19.1	25.2
CTG Exhaust Diffuser 1-2	90.9	72.1	3.0	783.21	68.9	-2.4	1.9	1.5	0.0		23.9
CTG Generator 1-1	101.0	81.7	3.0	787.76	68.9	-3.0	20.9	3.1	0.0		14.1
CTG Generator 1-1	101.0	81.7	3.0	805.30	69.1	-3.0	20.9	3.2	0.0		13.8
CTG Generator 1-2	101.0	81.7	3.0	785.81	68.9	-3.0	5.0	4.5	0.0		28.6
CTG Generator 1-2	101.0	81.7	3.0	803.09	69.1	-3.0	5.0	4.6	0.0		28.3
CTG Inlet Ducting 1-1	95.0	77.1	0.0	786.77	68.9	-1.1	0.1	3.9	0.0		23.2
CTG Inlet Ducting 1-1	95.0	77.1	0.0	804.45	69.1	-1.1	0.1	3.9	0.0		23.0
CTG Inlet Ducting 1-2	95.0	77.1	0.0	783.23	68.9	-1.1	2.9	3.9	0.0	19.3	22.9
CTG Inlet Ducting 1-2	95.0	77.1	0.0	800.45	69.1	-1.1	2.9	3.9	0.0	18.7	22.5
CTG Load 1-1	98.4	89.9	3.0	782.50	68.9	-2.9	20.1	2.7	0.0		12.7
CTG Load 1-1	98.4	89.9	3.0	800.21	69.1	-2.9	20.1	2.7	0.0		12.4
CTG Load 1-2	98.4	89.9	3.0	779.77	68.8	-2.9	5.2	5.4	0.0		24.8
CTG Load 1-2	98.4	89.9	3.0	797.12	69.0	-2.9	5.2	5.5	0.0		24.5
CTG Turbine 1-1	104.2	86.8	3.0	776.29	68.8	-3.1	18.4	3.4	0.0		19.6
CTG Turbine 1-1	104.2	86.8	3.0	794.14	69.0	-3.1	18.8	3.5	0.0		19.0
CTG Turbine 1-2	104.2	86.8	3.0	773.53	68.8	-3.0	5.3	6.4	0.0	14.4	29.9

Cannon Falls - Mean Propogation
Base Analysis - A-Weighted - Optimized

Source	PWL dB(A)	PWL/unit dB(A)	Non-Sphere dB	Distance m	Spreading dB	Ground Effct. dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB(A)	SPL dB(A)
CTG Turbine 1-2	104.2	86.8	3.0	791.02	69.0	-3.1	5.3	6.6	0.0		29.5
Demin Pump	98.1	98.1	0.0	764.91	68.7	-3.1	21.0	1.9	0.0	15.1	16.2
Fin-Fan Cooler 1	109.0	87.7	0.0	754.12	68.5	-2.4	0.0	2.5	0.0	21.8	40.4
Fin-Fan Cooler 2	109.0	87.7	0.0	738.29	68.4	-2.4	0.0	2.4	0.0	31.7	41.1
Fuel Gas Metering Area	98.0	98.0	0.0	653.62	67.3	-2.7	0.0	8.9	0.0		24.5
LFAA Module 1-1	101.7	86.0	3.0	764.82	68.7	-3.3	0.0	5.2	0.0	29.8	35.5
LFAA Module 1-1	101.7	86.0	3.0	781.78	68.9	-3.3	0.0	5.3	0.0	26.5	34.6
LFAA Module 1-2	101.7	86.0	3.0	769.28	68.7	-3.3	16.3	1.8	0.0	21.2	24.2
LFAA Module 1-2	101.7	86.0	3.0	786.35	68.9	-3.4	16.3	1.9	0.0	15.6	22.1
LFAA Ventilation Fan	108.3	108.3	0.0	766.89	68.7	-2.8	0.0	11.2	8.5	17.8	23.8
LFAA Ventilation Fan	108.3	108.3	0.0	784.21	68.9	-2.8	0.0	11.3	8.5		22.3
Mechanical Building - 1	86.1	63.8	3.0	779.63	68.8	-1.9	5.1	0.3	0.0	14.4	18.7
Mechanical Building - 2	81.4	63.8	3.0	767.18	68.7	-1.9	4.0	0.4	0.0	-2.9	13.3
Mechanical Building - 3	86.1	63.8	3.0	789.20	68.9	-1.8	10.0	0.3	0.0	-2.1	11.8
Mechanical Building - 4	81.4	63.8	3.0	794.47	69.0	-2.0	13.9	0.3	0.0	6.0	7.8
Mechanical Building - Roof	88.0	63.8	0.0	781.05	68.8	-1.4	3.5	0.4	0.0	10.7	17.6
Rooftop Vent Fan	87.8	87.8	0.0	782.45	68.9	-2.3	9.1	1.6	0.0	8.6	12.7
Rooftop Vent Fan	87.8	87.8	0.0	833.34	69.4	-2.6	7.7	2.0	0.0		11.3
Rooftop Vent Fan	87.8	87.8	0.0	827.90	69.4	-2.1	5.2	4.7	0.0		10.7
Stack Exhaust	106.3	106.3	0.0	745.02	68.4	-0.4	0.0	1.4	6.1		30.7
Stack Exhaust	106.3	106.3	0.0	764.25	68.7	-0.5	0.0	1.5	6.1		30.5
Stack Walls 1 - 1	88.5	71.5	3.0	746.02	68.4	-0.3	6.1	0.3	0.0		17.0
Stack Walls 1 - 1	88.5	71.5	3.0	765.24	68.7	-0.3	5.9	0.4	0.0	-0.7	17.0
Stack Walls 1 - 2	88.5	72.1	3.0	743.93	68.4	-0.6	0.0	0.4	0.0		23.3
Stack Walls 1 - 2	88.5	72.1	3.0	763.13	68.6	-0.6	0.0	0.4	0.0	-10.6	23.1
Stack Walls 1 - 3	88.5	72.1	3.0	742.58	68.4	-0.6	0.0	0.4	0.0		23.3
Stack Walls 1 - 3	88.5	72.1	3.0	761.87	68.6	-0.6	0.0	0.4	0.0		23.1
Stack Walls 1 - 4	88.5	71.8	3.0	743.14	68.4	-0.5	0.0	0.4	0.0		23.2
Stack Walls 1 - 4	88.5	71.8	3.0	762.53	68.6	-0.6	0.0	0.4	0.0		23.0
Stack Walls 1 - 5	88.5	72.0	3.0	745.09	68.4	-0.4	4.7	0.4	0.0		18.3
Stack Walls 1 - 5	88.5	72.0	3.0	764.50	68.7	-0.3	5.0	0.4	0.0		17.8
Stack Walls 1 - 6	88.5	71.6	3.0	746.62	68.5	-0.3	7.6	0.3	0.0		15.4

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Cannon Falls - Mean Propogation
Base Analysis - A-Weighted - Optimized

Source	PWL dB(A)	PWL/unit dB(A)	Non-Sphere dB	Distance m	Spreading dB	Ground Effct. dB	Ins. Loss dB	Air dB	Directivity dB	Reflection dB(A)	SPL dB(A)
Stack Walls 1 - 6	88.5	71.6	3.0	765.95	68.7	-0.4	7.5	0.3	0.0	-6.1	15.4
Step Up Transformer	102.0	102.0	0.0	838.32	69.5	-2.5	6.2	1.9	0.0		26.8
Step Up Transformer	102.0	102.0	0.0	819.58	69.3	-2.5	6.4	1.9	0.0		26.8
Turbine Compartment Fan 1	108.3	108.3	0.0	775.17	68.8	-2.5	0.2	13.0	9.3		19.5
Turbine Compartment Fan 1	108.3	108.3	0.0	792.84	69.0	-2.5	0.2	13.0	9.3		19.4
Water Injection Skid	98.1	98.1	0.0	756.88	68.6	-2.9	0.0	4.9	0.0	24.6	29.3
Water Injection Skid	98.1	98.1	0.0	775.37	68.8	-2.9	0.0	4.9	0.0		27.3

Cannon Falls - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
Receiver 1 SPL 41.4 dB(A)	
Gas Turbine	40.3
Transformers	37.2
Fin-Fan Cooler	35.6
Stack Exhausts	34.6
SCR/Stack Walls	30.6
Air Intake Filter	29.7
Demin Pump	27.5
Turbine Compartment Fan	26.0
LFAA Fans	25.8
Water Injection Skids	25.6
Air Intake Duct	25.1
Mechanical Building	24.0
Rooftop Vent Fans	21.9
Aux Transformers	20.2
Fuel Gas Metering Area	20.1
Receiver 2 SPL 41.6 dB(A)	
Fin-Fan Cooler	38.0
Gas Turbine	35.3
Stack Exhausts	32.1
Transformers	30.1
SCR/Stack Walls	28.7
Water Injection Skids	24.6
LFAA Fans	24.3
Air Intake Duct	24.3
Turbine Compartment Fan	22.7
Fuel Gas Metering Area	19.8
Air Intake Filter	18.5
Aux Transformers	17.7
Demin Pump	16.8
Mechanical Building	16.7
Rooftop Vent Fans	14.5

Cannon Falls - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
Receiver 3 SPL 42.4 dB(A)	
Fin-Fan Cooler	39.3
Gas Turbine	36.8
Stack Exhausts	31.2
Transformers	29.4
SCR/Stack Walls	29.2
LFAA Fans	25.2
Turbine Compartment Fan	24.1
Water Injection Skids	23.5
Fuel Gas Metering Area	21.6
Air Intake Duct	21.4
Rooftop Vent Fans	17.5
Mechanical Building	17.1
Aux Transformers	16.1
Air Intake Filter	15.7
Demin Pump	5.9
Receiver 4 SPL 45.3 dB(A)	
Fin-Fan Cooler	42.4
Gas Turbine	39.3
Stack Exhausts	33.4
SCR/Stack Walls	31.1
Water Injection Skids	31.1
Transformers	29.5
Air Intake Duct	28.2
Air Intake Filter	27.5
LFAA Fans	24.8
Turbine Compartment Fan	24.3
Mechanical Building	20.5
Fuel Gas Metering Area	19.7
Aux Transformers	17.4
Rooftop Vent Fans	16.5
Demin Pump	12.9

Cannon Falls - Source Contribution
Base Analysis - A-Weighted - Optimized

Group	Lr dB(A)
Receiver6 SPL 48.3 dB(A)	
Fin-Fan Cooler	43.8
Gas Turbine	40.9
Stack Exhausts	33.7
SCR/Stack Walls	31.9
Water Injection Skids	31.5
Transformers	29.9
Air Intake Duct	29.0
LFAA Fans	26.1
Air Intake Filter	25.3
Fuel Gas Metering Area	24.5
Turbine Compartment Fan	22.4
Mechanical Building	22.4
Aux Transformers	18.7
Rooftop Vent Fans	16.4
Demin Pump	16.2

General Information on Noise

General Information on Noise

To facilitate a review of this analysis, the following sections briefly discuss how environmental noise levels are described, measured and reported.

Sound Level Meters

Noise is measured using a standardized instrument called the "sound level meter." All sound level meters are equipped with small microphones that detect minute changes in atmospheric pressure caused by the mechanical vibration of air molecules. Healthy human hearing can detect pressures as low as 0.00002 Pascals (threshold of hearing) to as high as 20 Pascals (threshold of pain).[1] Since this represents an enormous dynamic range (one million to one) sound pressures are instead reported using a logarithmic scale, which compresses the numbers to keep them more manageable. Once converted, they are referred to as sound pressure *levels*, followed by "decibels" (abbreviated dB) as the unit of measure. On a logarithmic scale, the threshold of hearing and threshold of pain become 0 decibels and 120 decibels, respectively.

A-Weighted Levels

Noise can be measured using various "apparent" scales, similar to reporting temperature in terms of wind chill or heat index, or humidity in terms of dewpoint. The latter are better indicators of perceived cold, warmth, or dampness, respectively. Similarly, sound level measurements are often reported using the "A-weighting" scale of a sound level meter. A-weighting slightly boosts high frequency sound, while reducing low frequency levels (similar to the way stereo bass and treble controls work) providing a better indicator of perceived loudness at relatively modest volumes. These sound level measurements are called A-weighted levels and are reported in units of dBA. Figure 1 illustrates ranges of A-weighted levels for common noise sources.

Frequency Analysis

To further approximate the response of human hearing, sound level meters are often equipped with octave band filters. As shown in Table 1, octave band filters divide the audible range of sound into nine separate "frequency-bins" much like a prism separates white-light into bands of different color or wavelengths. Sound levels are sometimes measured using one-third (1/3rd) octave band filters. As the name implies, one-third octave band filters divide octaves into three additional "bins" for greater resolution.

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[1] As pounds are a measure of weight, Pascals are a measure of pressure, equivalent to about 0.02 lbs/ft^2. A single Pascal of pressure will produce a *sound pressure level* of 94 dB.

Table 1
Octave Band Filter Frequency Ranges

[illegible]	[illegible]
31.5 Hz	22 Hz - 44 Hz
63 Hz	44 Hz - 88 Hz
125 Hz	88 Hz - 177 Hz
250 Hz	177 Hz - 355 Hz
500 Hz	355 Hz - 710 Hz
1000 Hz	710 Hz - 1420 Hz
2000 Hz	1420 Hz - 2840 Hz
4000 Hz	2840 Hz - 5680 Hz
8000 Hz	5680 Hz - 11360 Hz

Percentile Levels

Because community noise levels constantly fluctuate over time, percentile or "exceedance" measurements are used to quantify them. These measures help describe the average noise level as well as the range of highs to lows. Equally important, they allow us to separate loud, short-duration noises from quiet, constant-level background sounds. As shown in Figure 2:

L_{10} ("L-Ten") is the level exceeded 10% of the time, that is, levels are higher than this value only 10% of the measurement time. The L_{10} typically represents the loudest and shortest duration noise events occurring in the environment, such as car and truck pass-bys.

L_{50} ("L-Fifty") is the sound level exceeded 50% of the time. Levels will be above and below this value exactly one-half of the measurement time, and therefore the L_{50} is sometimes referred to as the "median" sound level.

L_{90} ("L-Ninety") is the sound level exceeded 90% of the time and is often called the "background" sound level. Ninety percent of the time, measured levels are higher than this value, and therefore the L_{90} represents the environment at its quietest periods.

Equivalent Energy Level

Noise levels may also be reported in terms of "equivalent energy levels" or L_{EQ}. An L_{EQ} is a hypothetical number that is "equivalent" in energy to the actual fluctuating noise for any given measurement period. As shown in Figure 2, a noise level of 50 dBA (L_{EQ}) for a period of 1-minute is equivalent in energy to the fluctuating noise level for the same period, produced by the car and truck passes, which range in level from less than 30 dBA to more than 60 dBA. The L_{EQ} typically falls between the L_{10} and L_{50} and is the "base" metric used to establish other measures of environmental noise, such as the Day-Night Level or the Community Noise Exposure Level.

Sound Power Levels & Sound Pressure Levels

Sound power level (PWL) is a single number that describes how much sound energy is radiated by a piece of equipment, independent of the surroundings or environment. Sound power level allows one piece of equipment to be directly compared with another, and then source-ranked to determine which should be attenuated first.

Sound power level is analogous to the wattage of a light bulb, whereas sound level is analogous to brightness. Sound power is *independent* of the environment, sound pressure is *dependant* on the environment. When a 75-watt light bulb is placed in a room painted white or black, it still radiates the same amount of energy. However, the apparent brightness of the light bulb does not remain the same; it changes as the environment changes. In the room painted white, many reflections are causing the apparent brightness of the bulb to increase, and in the room painted black, much of the light is being absorbed, so the apparent brightness decreases.

For sound, a room painted white is analogous to a contemporary home with sparse furnishings and hardwood floors, i.e., little absorbing material and many reflections. A room painted black is analogous to a colonial home with overstuffed chairs, carpets and paintings on the wall, i.e, many absorbing materials and fewer reflections. A blender or vacuum cleaner would have a higher sound level in the contemporary home versus the colonial one. Similar to the light bulb wattage however, the sound power level of the source would remain the same.

For the most part, no meter "directly" measures sound power. Instead, it is calculated from sound level measurements corrected for reflections, distance to the source, directivity, etc. Sound intensity meters can be used to determine the in-situ sound intensity level of a source, (power/unit area). Since these meters measure sound level and the direction that the sound comes from, they inherently account for reflections and other environmental factors. An adjustment for distance or area is then applied to the levels, to derive the sound power level of the equipment.

With respect to the relationship between sound power levels and sound pressure levels, the conversions are provided below. Note that the technique does not include air absorption effects, which can be significant at large distances. Moreover, the calculations are valid for free-field conditions only, (i.e., outdoors).

$$PWL = SPL + 20 \text{ Log } (R) - 2$$

or

$$SPL = PWL - 20 \text{ Log } (R) + 2$$

Where R is the distance in feet from the source to the receiving point.

Examples:

A small power plant is reported to have a sound power level of 114 dBA. What is the sound level at 250 feet?

$$SPL = 114 \text{ dBA} - 20 \text{ Log } (250) + 2$$

$$SPL = 68 \text{ dBA}$$

The sound level of a diesel pay loader is 85 dBA at 50 feet. What is the sound power level?

$$PWL = 85 + 20 \log (50) - 2$$

$$PWL = 117 \text{ dBA}$$

If instead, one has a sound pressure level (SPL_1) at a given distance (R_1) and wants to know what the sound pressure level (SPL_2) will be at another distance (R_2), then the formula becomes:

$$SPL_2 = SPL_1 - 20 \log (R_2/R_1)$$

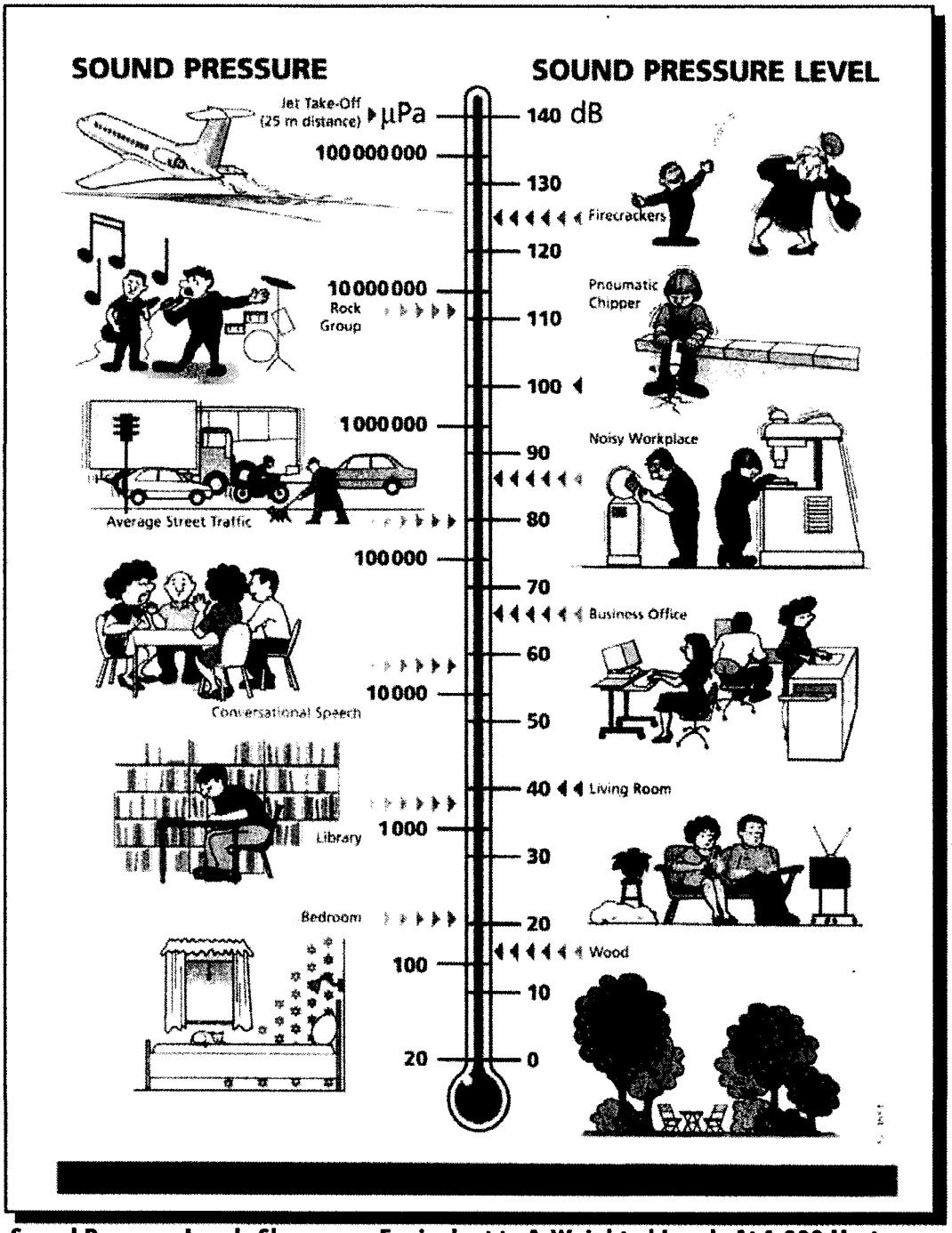
The sound level of a transformer is given as 80 dBA at 50 feet. What is the sound level at 300 feet?

$$SPL_{300} = SPL_{50} - 20 \log (300/50)$$

$$SPL_{300} = 80 - 16$$

$$SPL_{300} = 64 \text{ dBA}$$

Note: Do no use these formulas to convert 3-foot sound levels from equipment manufacturers, to levels at further distances. The equations are only valid when both locations are significantly removed from the source.



Sound Pressure Levels Shown are Equivalent to A-Weighted Levels At 1,000 Hertz

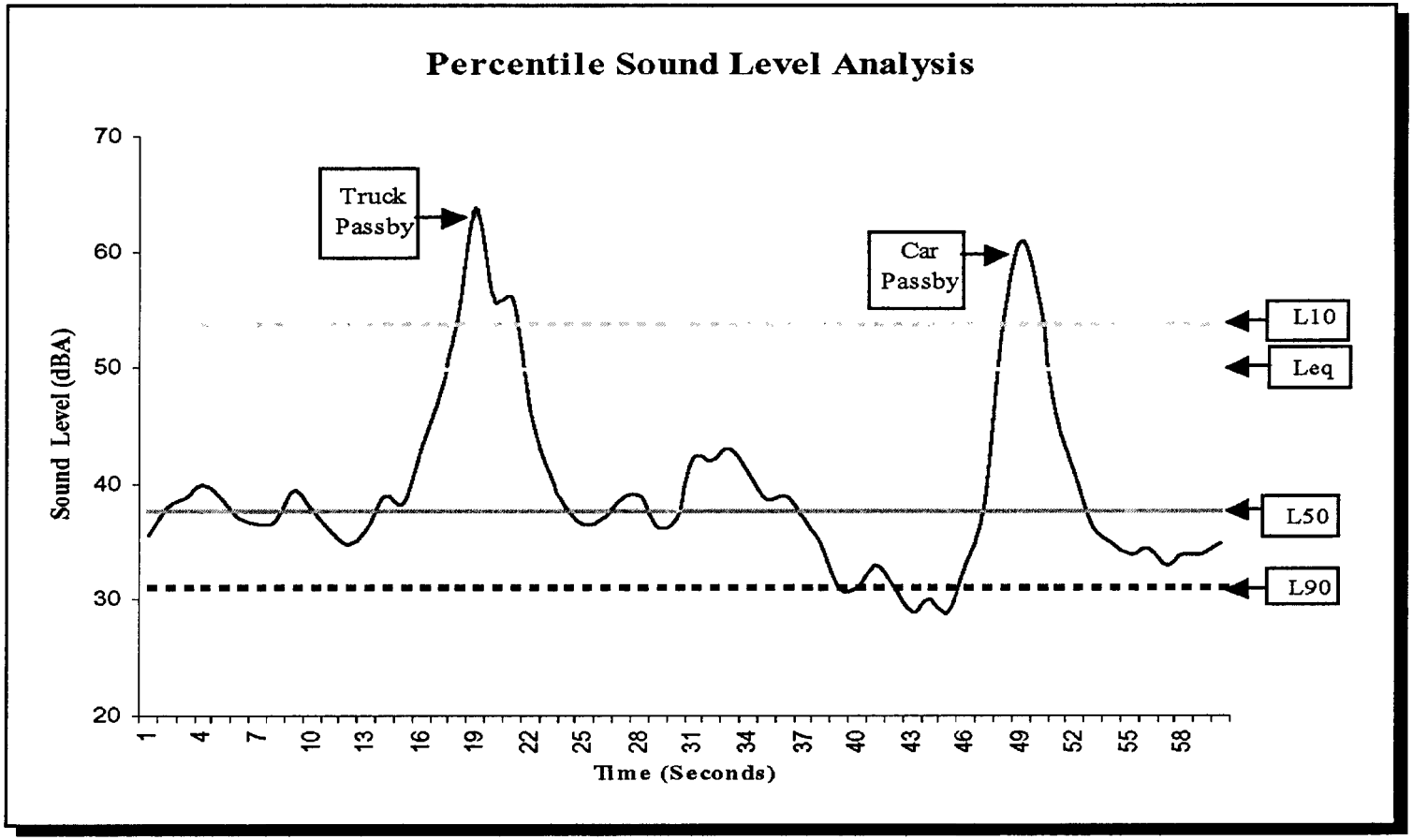
SOURCE: BRÜEL & KJÆR, DENMARK

Michael Theriault Acoustics Inc

NOISE CONTROL CONSULTING SERVICES

TYPICAL SOUND PRESSURE LEVELS

FIGURE 1



Michael Theriault Acoustics Inc

NOISE CONTROL CONSULTING SERVICES

EXAMPLE PERCENTILE ANALYSIS

FIGURE 2

APPENDIX B

ARCHAEOLOGICAL AND HISTORIC RESOURCES CORRESPONDENCE

Minnesota State Historical Society Response Letter

Letters to Tribal Organizations and the Bureau of Indian Affairs

MINNESOTA HISTORICAL SOCIETY

STATE HISTORIC PRESERVATION OFFICE

July 20, 2004

Ms. Julie Spapperi
URS Corporation
One Continental Towers
1701 Golf Road, Suite 100
Rolling Meadows, IL 60008

RE: Proposed Cannon Falls Energy Center
T112 R17 S6 NW, Cannon Falls, Goodhue County
SHPO Number: 2004-2589

Dear Ms. Spapperi:

Thank you for the opportunity to review and comment on the above project. It has been reviewed pursuant to the responsibilities given the Minnesota Historical Society by the Minnesota Historic Sites Act and the Minnesota Field Archaeology Act.

Based on our review of the project information, we conclude that there are no properties listed on the National or State Registers of Historic Places, and no known or suspected archaeological properties in the area that will be affected by this project.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36CFR800, Procedures of the Advisory Council on Historic Preservation for the protection of historic properties. If this project is considered for federal assistance, or requires a federal permit or license, it should be submitted to our office with reference to the assisting federal agency.

Please contact Dennis Gimmestad at (651) 296-5462 if you have any questions regarding our review of this project.

Sincerely,

Britta L. Bloomberg
Deputy State Historic Preservation Officer

URS

June 18, 2004

Mr. Terrance Virden
Regional Director
Bureau of Indian Affairs
Midwest Regional Office
One Federal Drive, Room 550
Fort Snelling, Minnesota 55111

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Virden:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and we will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi /KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invenergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Robert Peacock, Chairperson
Fond Du Lac Reservation
Fond Du Lac Business Committee
105 University Rd.
Cloquet, Minnesota 55720

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Peacock:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi /KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invenergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Norman DesChampe, Chairperson
Grand Portage Reservation
Grand Portage Business Committee
P.O. Box 428
Grand Portage, Minnesota 55606

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. DesChampe:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.
Sincerely,

URS Corporation

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invenergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Alfred "Tig" Pemberton, Chairperson
Leech Lake Reservation
Business Tribal Council
Route 3, Box 100
Cass Lake, Minnesota 56633

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Pemberton:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi/KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invenergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Joseph Goodthunder, President
Lower Sioux Indian Community
Lower Sioux Indian Community Council
RR 1, Box 308
Morton, Minnesota 56270

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Goodthunder:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invenergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Ms. Marjorie Anderson, Chairperson
Mille Lacs Reservation
Mille Lacs Business Committee
HCR 67 Box 194
Onamia, Minnesota 56359

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Ms. Anderson:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi/KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invnergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Darrell Wadena
President
Minnesota Chippewa Tribe
Tribal Executive Committee
P.O. Box 217
Cass Lake, Minnesota 56633

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Wadena:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi /KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invnergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Gary Donald
Chairperson
Nett Lake Reservation
Bois Forte Tribal Business Committee
P.O. Box 16
Nett Lake, MN 55772

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Donald:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi /KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invnergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Curtis Campbell, Sr.
President
Prairie Island Reservation
Prairie Island Community Council
1158 Island Boulevard.
Welch, Minnesota 55089

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Campbell:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi/KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invnergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Bobby Whitefeather
Chairperson
Red Lake Reservation
Red Lake Tribal Council
P.O. Box 550
Red Lake, Minnesota 56671

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Whitefeather:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi/KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invnergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Stanley Crooks
Chairperson
Skakopee Sioux Community
Shakopee Sioux Community Council
2330 Sioux Trail, NW
Prior Lake, Minnesota 55372

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Crooks:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi/KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invnergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Ms. Lorraine Gouge
Chairperson
Mr. Upper Sioux Indian Community
Upper Sioux Board of Trustees
P.O. Box 147
Granite Falls, Minnesota 56241

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Ms. Gouge:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi/KS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invnergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

URS

June 18, 2004

Mr. Darrell Wadena
Chairperson
White Earth Reservation
White Earth Business Committee
Hwy. 224, Box 418
White Earth, Minnesota 56591

Re: Native American Cultural Resources Consultation
Proposed Cannon Falls Energy Center
Goodhue County, Minnesota

Dear Mr. Wadena:

URS Corporation (URS) is assisting Invenergy LLC in obtaining approval from the Minnesota Environmental Quality Board for construction and operation of a proposed generating plant with a capacity of approximately 350 megawatts. The proposed Cannon Falls Energy Center will be located on an approximately 55-acre site in Cannon Falls, Minnesota in Goodhue County. The site is located within Township 112 North, Range 17 West, in the northwestern ¼ of Section 6. Although previously used as farm land, the site is now zoned for industrial use. Figure 1 shows the location of the proposed generating plant.

The proposed Cannon Falls Energy Center will consist of two natural gas-fired simple cycle combustion turbines, with the capacity to fire low-sulfur distillate oil as a backup fuel. The project will also include electrical and mechanical auxiliary systems necessary for operation, including water and oil storage tanks.

URS requests a determination from you regarding the effect of this project on Native American tribes or reservations. This includes citations to any permitting/approval authority that your office may have over the site chosen for the project. Please note that if we do not receive a response from you by August 4, 2004, we will assume that you have no concerns about this project and will proceed without benefit of your input.

If you have any questions, please contact me at (312) 697-7257. We appreciate your assistance.

Sincerely,

URS Corporation

Julie Spapperi /KLS

Julie Spapperi
Principal

Attachment

cc: Bryan Schueler, Invnergy LLC

URS Corporation
One Continental Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008
Tel: 847.228.0707
Fax: 847.228.1115

APPENDIX C

WETLAND DETERMINATION DATA FORMS

75 365157 . 00002

DATA FORM

ROUTINE WETLAND DETERMINATION
1987 COE Wetlands Determination Manual

Project/Site: CANNON FALLS — Date: 6-30-4
Applicant/Owner: INVENERGY — County: GOODHUE
Investigator: BK — State: MN
Do Normal Circumstances exist on this site? (Yes) No — Community ID: AREA 1
Is the site significantly disturbed (Atypical Situation?) Yes (No) — Transect ID:
Is the area a potential Problem Area? Yes (No) — Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 grass	H	FAC-	9		
2. Giant ragweed	H	FAC+	10. Boxelder	T	FUT
3 Cinquefoil-yellow	H	FW	11. Top of bank - 2 small	trees	
4 Brome	H	FU	12.		
5			13.		
6.			14.		
7			15.		
8			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FACU): 2/4

Remarks: AREA OBVIOUSLY EXCAVATED - NOT NATURAL

HYDROLOGY

RECORDED DATA (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☑ No Recorded Data Available

FIELD OBSERVATIONS:
Depth of Surface Water — (in.)
Depth to Free Water in Pit: (in.)
Depth to Saturated Soil: 8 (in.)

WETLAND HYDROLOGY INDICATORS:
pit at bottom of basin

PRIMARY INDICATORS:
- ☐ Inundated
- ☑ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

SECONDARY INDICATORS (2 or more required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks: EXCAVATED PIT 4-5' deep, SIZE of area 80' x 50'

SOILS

Map Unit Name (Series and Phase): DICKINSON SANDY LOAM — Field Observations Confirm Mapped Type? Yes No

Taxonomy (Subgroup):

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell M.)	Mottle Abundance/Size	Mottle Contrast	Texture, Structure, etc.
0-6		10YR 3/2	10YR 4/4	MANY	DISTINCT	CLAY
6+H		10YR 5/2	—	—		SAND

HYDRIC SOIL INDICATORS

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Streaking in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (explain in Remarks)

Hydric Soil Present? Yes (No)

Remarks: EXCAVATED DEPRESSION
NO A HORIZON - DISTURBED SOIL

WETLAND DETERMINATION

Hydrophytic Vegetation Present? MARGINAL — Yes No
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? Yes (No)
Is this sampling point a Wetland? Yes (No)

Remarks:

DATA FORM

ROUTINE WETLAND DETERMINATION
1987 COE Wetlands Determination Manual

Project/Site: Cannon Falls — Date: 6-30-4
Applicant/Owner: Innovenergy — County: GOODHUE
Investigator: BK — State: MN
Do Normal Circumstances exist on this site? (Yes) No — Community ID: AREA 2
Is the site significantly disturbed (Atypical Situation?) Yes (No) — Transect ID:
Is the area a potential Problem Area? Yes (No) — Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. WOOD NETTLE	H	FACW	9. BOXELDER	T	FACW+
2. STING NETTLE	H	FAC+	10.		
3. PARTH. QUINQUEFOLIA	H	FAC-	11. T. HONEYSUCKLE	S	FACU
4.			12. C BUCKTHORN	S	FAC-
5.			13.		
6.			14.		
7.			15. 3/6		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FACU): LEONURUS CARDIACA - not listed

Remarks (MINT) MOTHERWORT 20
RGG 10 FACW
Giant Ragweed 10 FAC+
Evening Primrose FACU 10
WILD GRAPE VINES 20%
(Beans/Corn old infield)
VEG AROUND DEPRESSION

HYDROLOGY

RECORDED DATA (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☑ Aerial Photographs
- ☑ Other NWI
- ☐ No Recorded Data Available

FIELD OBSERVATIONS:
- Depth of Surface Water ___ (in.)
- Depth to Free Water in Pit ___ (in.)
- Depth to Saturated Soil ___ (in.)

WETLAND HYDROLOGY INDICATORS:

PRIMARY INDICATORS:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

SECONDARY INDICATORS (2 or more required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks: NO INDICATION OF HYDROLOGY
SOIL DRY to 20"
SOIL HARD - NO DEEPER W/ AUGER

(2)

SOILS

Mapped Unit Name (Series and Phase): BISCAY LOAM
Taxonomy (Subgroup): — Field Verified? Yes No

PROFILE DESCRIPTION

Depth	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A1	10YR 2/1	—	—	CLAY LOAM
12-20	A2	10YR 3/1	10YR 3/4	FEW FAINT	LOAM

HYDRIC SOIL INDICATORS

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Acidic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low Chroma Colors
- ☐ Concretions
- ☐ High Organic Streaking in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Hydric Soil Present? Yes X No

Remarks: Could be mollisol w/ thick dark A

WETLAND DETERMINATION

Hydrophytic Vegetation Present? MARGINAL (Yes) X No
Wetland Hydrology Present? TILED Yes (No)
Hydric Soils Present? Yes X No
Is this sampling point a Wetland? Yes (No)

Remarks: BASED ON LAND USE AND TILING OF OLD CREEK CHANNEL - HYDROLOGY NO LONGER PRESENT

DATA FORM

ROUTINE WETLAND DETERMINATION
1987 COE Wetlands Determination Manual

Project/Site: CANNON FALLS — Date: 6-30-4
Applicant/Owner: INVENERGY — County: GOODHUE
Investigator: BK — State: MN
Do Normal Circumstances exist on this site? (Yes) No — Community ID: AREA 3
Is the site significantly disturbed (Atypical Situation?) Yes (No) — Transect ID: CENTER
Is the area a potential Problem Area? Yes (No) — Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. SMARTWEED	H	W	9.		
2 SOYBEAN	H	U	10. 1/3		
3. QUACKGRASS	H	FU	11.		
△4 BURREED (TAOC)	H	W	12.		
5			13.		
6.			14.		
7.			15.		
8			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FACU): 1/3

Remarks: SOYBEANS STRESSED FROM TEMP. INUNDATION

HYDROLOGY

RECORDED DATA (Describe in Remarks)
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☑ No Recorded Data Available

FIELD OBSERVATIONS:
- Depth of Surface Water — (in.)
- Depth to Free Water in Pit — (in.)
- Depth to Saturated Soil — (in.)

WETLAND HYDROLOGY INDICATORS:

PRIMARY INDICATORS:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☑ Water Marks — INUNDATED AREA PLANTED
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

SECONDARY INDICATORS (2 or more required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks: 30" no sign of water — 1997 PHOTO SHOWS GRADING

85 pacs & few 30 pacs N/S

#3

SOILS

Series or Phase: DICKINSON SANDY LOAM

Taxonomy (Subgroup)

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottles (Munsell Moist)	Texture	Structure
0-18	A1	10YR 3/2	10YR 3/3, 4/4	MANY FAINT	SAND LOAM
18-24	A2	10YR 3/3	—	FEW	"
24-30	B	10YR 4/4	—	—	SAND LOAM

HYDRIC SOIL INDICATORS

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low Chroma Colors
- ☐ Concretions
- ☐ High Organic Streaking in Surface Layer in Sandy Soils
- ☐ Organic Streaks in Subsurface Horizons
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Hydric Soil Present? Yes (X)

Remarks: AREA WAS SMALL SANDY KNOLL WAS MINED IN LATE 90'S FOR SAND LEAVING SHALLOW DEPRESSION

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	(X)
Wetland Hydrology Present?	Yes	(X)
Hydric Soils Present?	Yes	(X)
Is this sampling point a Wetland?	Yes	(X)

Remarks

DATA FORM

ROUTINE WETLAND DETERMINATION
1987 COE Wetlands Determination Manual

Project/Site: Cannon Falls — Date: 6-30-4
Applicant/Owner: INVENERGY — County: GOODHUE
Investigator: BK — State: MN
Do Normal Circumstances exist on this site? (Yes) No — Community ID: AREA 4
Is the site significantly disturbed (Atypical Situation?) Yes (No) — Transect ID.
Is the area a potential Problem Area? Yes (No) — Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Soybeans	H	FACU	9		
2.			10.		
3.			11		
4.			12.		
5			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FACU): 1/1 upland

Remarks: excavated depression 1-2' below surrounding surface - no change in veg from adjacent field

HYDROLOGY

RECORDED DATA (Describe in Remarks).
- ❑ Stream, Lake, or Tide Gauge
- ❑ Aerial Photographs
- ❑ Other
- ☑ No Recorded Data Available

FIELD OBSERVATIONS:
Depth of Surface Water: — (in.)
Depth to Free Water in Pit: ____ (in.)
Depth to Saturated Soil: ____ (in.)

WETLAND HYDROLOGY INDICATORS:

PRIMARY INDICATORS:
- ❑ Inundated
- ❑ Saturated in Upper 12 Inches
- ❑ Water Marks
- ❑ Drift Lines
- ❑ Sediment Deposits
- ❑ Drainage Patterns in Wetlands

SECONDARY INDICATORS (2 or more required):
- ❑ Oxidized Root Channels in Upper 12 Inches
- ❑ Water Stained Leaves
- ❑ Local Soil Survey Data
- ❑ FAC-Neutral Test
- ❑ Other (Explain in Remarks)

Remarks: (RLS 22044 - survey marker to SE of area)
- no sign of hydrology

#4

SOILS

Map Unit Name (Series and Phase): FAIRHAVEN SILT LOAM — Drainage:
Field Observation Confirm Mapped Type? Yes No
Taxonomy (Subgroup): ____

PROFILE DESCRIPTION

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Mottle Size/Location
	DID NOT CHECK - NO VEG OR HYDROL				

HYDRIC SOIL INDICATORS

- ❑ Histosol
- ❑ Histic Epipedon
- ❑ Sulfidic Odor
- ❑ Aquic Moisture Regime
- ❑ Reducing Conditions
- ❑ Gleyed or Low Chroma Colors
- ❑ Concretions
- ❑ High Organic Streaking in Surface Layer in Sandy Soils
- ❑ Organic Streaking in Sandy Soils
- ❑ Listed on Local Hydric Soils List
- ❑ Listed on National Hydric Soils List
- ❑ Other (Explain in Remarks)

Hydric Soil Present? Yes No

Remarks

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes (No)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes No
Is This sampling point a Wetland? Yes (No)

Remarks

APPENDIX D

RARE AND UNIQUE NATURAL RESOURCES CORRESPONDENCE

Minnesota Department of Natural Resources Response Letter

U.S. Fish & Wildlife Service Response Letter

Minnesota Department of Natural Resources

Natural Heritage and Nongame Research Program, Box 25
500 Lafayette Road
St. Paul, Minnesota 55155-40__

Phone: (651) 296-7863 Fax: (651) 296-1811 E-mail: sarah.hoffmann@dnr.state.mn.us

July 6, 2004

Julie Spapperi
URS Corporation
122 South Michigan Avenue
Chicago, IL 60603

Re: Request for Natural Heritage information for vicinity of proposed Cannon Falls Energy Center, T112N R17W Section 6, Goodhue County
NHNRP Contact #: ERDB 20040948

Dear Ms. Spapperi,

The Minnesota Natural Heritage database has been reviewed to determine if any rare plant or animal species or other significant natural features are known to occur within an approximate one-mile radius of the area indicated on the map enclosed with your information request. Based on this review. there are 6 known occurrences of rare species or natural communities in the area searched (for details, see enclosed database printout and explanation of selected fields). However, based on the nature and location of the proposed project I do not believe it will affect any known occurrences of rare features.

The Natural Heritage database is maintained by the Natural Heritage and Nongame Research Program, a unit within the Division of Ecological Services, Department of Natural Resources. It is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, natural communities, and other natural features. Its purpose is to foster better understanding and protection of these features.

Because our information is not based on a comprehensive inventory, there may be rare or otherwise significant natural features in the state that are not represented in the database. A county-by-county survey of rare natural features is now underway, and has been completed for Goodhue County. Our information about natural communities is, therefore, quite thorough for that county. However, because survey work for rare plants and animals is less exhaustive, and because there has not been an on-site survey of all areas of the county, ecologically significant features for which we have no records may exist on the project area.

The enclosed results of the database search are provided in two formats: index and full record. To control the release of locational information which might result in the damage or destruction of a rare element, both printout formats are copyrighted.

The index provides rare feature locations only to the nearest section, and may be reprinted, unaltered, in an Environmental Assessment Worksheet, municipal natural resource plan, or report compiled by your company for the project listed above. If you wish to reproduce the index for any other purpose, please contact me to request written permission. Copyright notice for the index should include the following disclaimer:

> "Copyright (year) State of Minnesota, Department of Natural Resources. This index may be reprinted, unaltered, in Environmental Assessment Worksheets, municipal natural resource plans, and internal reports. For any other use, written permission is required."

The full-record printout includes more detailed locational information, and is for your personal use

only. **If you wish to reprint the full-record printouts for any purpose, please contact me to request written permission.**

Please be aware that review by the Natural Heritage and Nongame Research Program focuses only on *rare natural features*. It does not constitute review or approval by the Department of Natural Resources as a whole. If you require further information on the environmental review process for other wildlife-related issues, you may contact your Regional Environmental Assessment Ecologist, Shannon Fisher, at (507) 359-6073.

An invoice for the work completed will be mailed to you under separate cover within two weeks of the date of this letter. You are being billed for map and database search and staff scientist review. Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

Sarah D. Hoffmann
Endangered Species Environmental Review Coordinator

encl: Database search results
Rare Feature Database Print-Outs: An Explanation of Fields

Minnesota Natural Heritage Database
Element Occurrence Records

CANNON FALLS ENERGY CENTER
T112N R17W SECTION 6, GOODHUE COUNTY
MnDNR, Natural Heritage and Nongame Research Program

11:33 Monday, JUNE 21, 2004
Copyright 2004 State of Minnesota DNR

TWP	RNG	PRIMARY SECTION	FED STATUS	MN STATUS	S RANK	ELEMENT and OCCURRENCE NUMBER	MANAGED AREA
T112N	R17W	05				MUSSEL SAMPLING SITE #279	
T112N	R17W	05			S2	WHITE PINE-HARDWOOD FOREST (SOUTHEAST) DRY SUBTYPE #3	
T112N	R17W	06		NON		ELAPHE VULPINA (FOX SNAKE) #70	
T112N	R17W	06		NON		HIERACIUM LONGIPILUM (LONG-BEARDED HAWKWEED) #75	
T112N	R17W	06				MUSSEL SAMPLING SITE #279	
T112N	R17W	07		THR		BESSEYA BULLII (KITTEN-TAILS) #72	

RECORDS PRINTED = 6

FROM THE DESK OF:

GARY J. WEGE
U.S. FISH & WILDLIFE SERVICE
TWIN CITIES FIELD OFFICE, 4101 E. 80TH STREET
BLOOMINGTON, MINNESOTA 55425-1665

COMM. 612/725-3548, ext. 207
FAX 612/725-3609
Gary_Wege@fws.gov

DATE: 7-21-04

PAGE: 1 of 1

PHONE: 847-228-1115

TO: Julie Spapperi, URS, Rolling Meadows, IL

SUBJECT: Cannon Falls Energy Center, Goodhue County, MN, (T112N, R17W, S6)

Dear Julie:

This responds to your letter dated June 18, 2004, requesting information on federally threatened and endangered species for the above referenced project.

There are currently no federally endangered or threatened species known to occur at the specific locations identified in your letter and accompanying materials. Consequently, we concur with your determination that the proposed project will not affect any federally listed or proposed threatened or endangered species or adversely modify their critical habitat. This precludes the need for further action on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. However, if the project is modified or new information becomes available which indicates that listed species may occur in the affected area, consultation with this office should be reinitiated.

We appreciate the opportunity to comment and look forward to working with you in the future. If you have questions regarding our comments, please call me at (612) 725-3548, extension 207.

Gary J. Wege
Fish & Wildlife Biologist

FWS ID # 10801

APPENDIX E

PERMIT AND APPROVAL REQUIREMENTS

APPENDIX E
PERMIT AND APPROVAL REQUIREMENTS
Cannon Falls Energy Center
(Updated August 24, 2004)

Permit/Issue	Agency	Application Timing	Comments	Anticipated Approval Timeframe and Permit Status
Certificate of Need (CON)	Minnesota Public Utilities Commission (PUC) 121 7th Place E. Suite 350 St. Paul, MN 55101-2147 General Ph: (651) 296-7124 http://www.puc.state.mn.us/	Prior to site development activities	CON not needed for this project because Xcel Energy has already proven the need for the project in previous submittals to the PUC.	Status: NSP will purchase all of the electricity generated by the Cannon Falls Energy Center according to terms negotiated under the Power Purchase Agreement. The PUC has ruled that the electricity sold under these terms is not subject to CON filing requirements. Invenergy will therefore not be required to file for a CON pursuant to Minnesota Statutes 216B.243; 216B.2422, subd.5(c).
Site Permit	Minnesota Environmental Quality Board (MEQB) Environmental Review 658 Cedar Street Centennial Office Bldg. Room 300 St. Paul, MN 55155 Ph: (651) 296-8253 http://www.eqb.state.mn.us/	Prior to site development activities	The MEQB has the responsibility to site power plants over 50 megawatts. Under the Power Plant Siting Act (Minnesota Statutes §§ 116C.51-.697) a site permit from the MEQB is required to build a large electric power generating plant (LEPGP). The MEQB has adopted rules for the administration of power plant site permits (Minnesota Rules Chapter 4400). Because the plant will be fueled by natural gas, the project is eligible for review under the alternative permitting process, following the procedures of Minnesota Rules 4400.2000 through 4400.2950.	**Timeframe:** A final decision will be made by the EQB within six months of receiving a complete application **Status:**
Permit to Construct – Minor Source	Minnesota Pollution Control Agency (MPCA) 520 Lafayette Road St. Paul, MN 55155-4194 Ph: 651-296-6300 Ph: 800-657-3864 http://www.pca.state.mn.us/	Prior to site development activities	Minnesota Rules Chapter 7007. If a facility has the potential to release more than the threshold amounts of criteria pollutants it will require either a state or federal air permit. State limits are slightly lower than federal thresholds. The permit is issued by the MPCA.	**Timeframe:** 60 day Completeness review. Allow at least 3-5 months for the permit to be placed on public notice and 6-8 months for permit issuance from date of receipt by the MPCA. If the project is complex or potentially controversial, allow at least 9-14 months for permit issuance from time of receipt. **Status:** The proposed Cannon Falls Energy Center will not trigger Prevention of Significant Deterioration (PSD) applicability for any individual regulated criteria air pollutant.
Title V Operating Permit - Part 70	Minnesota Pollution Control Agency (MPCA) 520 Lafayette Road St. Paul, MN 55155-4194 Ph: 651-296-6300 Ph: 800-657-3864 http://www.pca.state.mn.us/	Submitted jointly with Permit to Construct	Required for all sources that have potential to emit 100 tons per year (tpy) of a regulated pollutant. The proposed power plant will not be required to obtain a Title V operating permit because emissions will be less than 100 tpy. Renewed every 5 years. Typically, 6- to 8-month review period if not complex or controversial.	**Timeframe:** 12 months **Status:** Cannon Falls Energy Center permit to construct will be submitted as joint Title V Operating Permit.
Title IV Acid Rain Permit	Minnesota Pollution Control Agency (MPCA) 520 Lafayette Road St. Paul, MN 55155-4194 Ph: 651-296-6300 Ph: 800-657-3864 http://www.pca.state.mn.us/	Submitted jointly with Permit to Construct	Submit forms to MPCA. Application process typically takes 30 days	**Timeframe:** Drafted during Permit to Construct application review **Status:**

APPENDIX E
PERMIT AND APPROVAL REQUIREMENTS
Cannon Falls Energy Center
(Updated August 24, 2004)

Permit/Issue	Agency	Application Timing	Comments	Anticipated Approval Timeframe and Permit Status
Transmission Line Route Permit	Minnesota Environmental Quality Board (MEQB) Environmental Review 658 Cedar Street Centennial Office Bldg. Room 300 St. Paul, MN 55155 Ph: (651) 296-8253 http://www.eqb.state.mn.us/	Prior to site development activities	The MEQB has the responsibility for routing transmission lines capable of operation at 100 kilovolts or more, under the Power Plant Siting Act (Minnesota Statutes §§ 116C.51 to 116C.69). Prior to the issuance of a route permit, a certificate of need from the Minnesota Public Utilities Commission is required for a proposed HVTL.	**Timeframe:** The EQB has up to one year from the time the application is accepted to complete the process and make a decision on the permit. An alternative permitting process is available for certain smaller-size transmission lines identified in Minn. Stat. § 116C.575. This alternative process does not require the preparation of an Environmental Impact Statement or the holding of a contested case hearing conducted by an administrative law judge or the identification of an alternative site. This alternative process must be completed within six months from the time the application is accepted. **Status:** This application will be prepared by either GRE or NSP and submitted to the MEQB for their review.
Soil Erosion and Sediment Control Plan	U.S. Department of Agriculture Natural Resource Conservation Service Goodhue Service Center 104 East Third Avenue Goodhue, MN 55027 Ph: (651) 923-5300 Fax: (651) 923-5304	Prior to site development activities	A Soil Erosion Control Plan is required as part of the Stormwater Construction Permit (NPDES/SDS).	**Timeframe:** Approval from the NRCS is not required, however they are available to assist in the development of the plan. **Status:**
Cultural and Archaeological Resources	Mr. Dennis A. Gimmestad Government Programs and Compliance Officer Minnesota Historical Society State Historic Preservation Office 345 West Kellogg Boulevard. Saint Paul, Minnesota 55102-1906 Ph: (651) 296-5434 http://www.mnhs.org/	Prior to site development activities	National Historic Preservation Act of 1966 requires a Section 106 review for any construction project in which any federal government agency plays a role such as project review, funding, oversight, etc. In a consultation request letter provide site descriptions, site maps and information on any existing structures. SHPO generally requires a Phase I archaeological study to be conducted on parcels of property that have not been significantly disturbed.	**Timeframe:** 3-6 weeks for response to initial consultation letter **Status:** In a letter dated 6/18/04 the Minnesota Historical Society State Historic Preservation Office (SHPO) was requested to determine the effect of the project on cultural resources, including historic or archaeological resources, for compliance with the Minnesota Statutes, 138.40, Subdivision 3. A response was received dated 7/20/04 indicating there are no properties listed on the National or State Registers of Historic Places and no known or suspected archaeological properties in the area that will be affected by the Project.

APPENDIX E
PERMIT AND APPROVAL REQUIREMENTS
Cannon Falls Energy Center
(Updated August 24, 2004)

Permit/Issue	Agency	Application Timing	Comments	Anticipated Approval Timeframe and Permit Status
Cultural and Archaeological Resources	Bureau of Indian Affairs and local tribal authorities Terrance Virden, Regional Director Bureau of Indian Affairs Midwest Regional Office One Federal Drive, Room 550 Fort Snelling, MN 55111 Ph: (202) 208-3710	Prior to all site development activities	In consultation request letter provide site description, site map and information on any existing structures.	**Timeframe:** 30 to 45 days from initial consultation letter. **Status:** Initial consultation letter was submitted to the Bureau of Indian Affairs and local tribal authorities dated 6/18/04. The letter indicated that if a response was not received by 8/4/04 it would be assumed that they had no concerns about the project and the project would proceed without benefit of their input. To date a response has not been received.
Threatened and Endangered Species	Mr. Dan Stinnett Field Supervisor United States Fish and Wildlife Service Ecological Services Field Office 4101 East 80th Street Bloomington, Minnesota 55425 Ph: 612-725-3548 Fax: 612-725-3609 http://midwest.fws.gov/TwinCities/	Prior to all site development activities	USFWS informal consultation precedes formal consultation. Discussions during this phase may indicate which species may occur in the proposed action area and what effects the action may have on the listed species or critical habitats. Formal consultation requires submittal of a formal written request to the agency.	**Timeframe:** 30 to 45 days from initial consultation letter. Clearance letters are received from the agencies once it has been determined that there will be no impacts to listed species or critical habitats. **Status:** Initial consultation letter was submitted to the agency dated 6/18/04. A response was received dated 7/21/04 [FWS ID# 10801] indicating there are no federally endangered or threatened species known to occur at the project site. Consultation with this agency is complete.
Threatened and Endangered Species	Ms. Mindy Breva Steere Endangered Species Environmental Review Technician Minnesota Department of Natural Resources Natural Heritage and Nongame Research Program P.O. Box 25 500 Lafayette Road Saint Paul, Minnesota 55155 Ph: (651) 297-2276	Prior to all site development activities	DNR reviews state-listed species and habitats.	**Timeframe:** Response to request generally within 3 months. **Status:** Initial consultation letter dated 6/18/04 was submitted to the agency. A response was received dated 7/6/04 [NHNRP Contact # ERDB 20040948]. MDNR searched the Minnesota Natural Heritage database for known occurrences of rare species and natural communities within a one-mile radius of the project site. Although MDNR found six such occurrences, none of the six are located on the proposed project site and concluded that none are likely to be adversely affected by the project. Consultation with this agency is complete.
Stack Height Review and Approval	Federal Aviation Administration Headquarters Great Lakes Regional Office Flight Standards Division 2300 East Devon Avenue Des Plaines, IL 60018 Ph: (847) 294-7252	Notify FAA 30 days prior to beginning construction or filing for a construction permit.	Required for construction of structures greater than 200 feet tall or possibly for shorter structures within 5 miles of airport runways greater then 3,200 feet in length. See 14 CAR Part 77. Complete form 7460-1 and submit to a regional FAA office.	**Timeframe:** 30 Days **Status:** Cannon Falls Energy Center is not expected to need permits from state or federal aviation authorities for tall structures

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Permit/Issue	Agency	Application Timing	Comments	Anticipated Approval Timeframe and Permit Status
Notification of Underground Storage Tank (UST) Installation	Minnesota Pollution Control Agency (MPCA) 520 Lafayette Road St. Paul, MN 55155-4194 Ph: 651-296-6300 Ph: 800-657-3864 http://www.pca.state.mn.us/	After Installation of UST's	No permits required. Tank owners and operators must comply with both state and federal regulations for underground storage tanks. At the state level, owners and operators must comply with Minn. Rules, Chapter 7150. Owners and operators of petroleum or hazardous substance USTs larger than 110 gallons must notify the MPCA of the existence of these tanks within 30 days. The owner or operator must also provide a 10-day advance notice for any UST install or closure project to be conducted. If the installation or closure date changes by more than 48 hours, the owner or operator must re-notify the MPCA of the new date. In addition, tank owners are required to notify the MPCA within 30 days of change of product or change of status of USTs. Notification requirements can be met by completing a "Notification/Change in Status for Underground Storage Tanks" Form and submitting it to the MPCA.	**Status:** The development of the Energy Center will not include the installation of a UST. Therefore this requirement does not apply to this project.
Aboveground Storage Tank (AST) Permit	Minnesota Pollution Control Agency (MPCA) 520 Lafayette Road St. Paul, MN 55155-4194 Ph: 651-296-6300 Ph: 800-657-3864 http://www.pca.state.mn.us/	After Installation of AST's	Facilities that have more than one million gallons of total capacity must obtain an individual permit from the MPCA according to Minnesota Rules Chapter 7001.4205-4250. These facilities must create a standard for safe operation of AST facilities. Also, these facilities are required to use industry standards for tank construction and maintenance activities. These permits need to be reissued every five years. Facilities storing less than one million gallons of liquid substances shall follow Minnesota Rules Chapter 7151. AST's that contain certain flammable products are subjected to the State Fire Marshall requirements. Owners of ASTs larger than 110 gallons must notify the MPCA of the existence of these tanks. In addition, tank owners are required to notify the MPCA within 30 days of change of product or change of status of ASTs. Notification requirements can be met by completing an AST Facility Notification Form and submitting it to the MPCA.	**Timeframe:** Is it recommended that the MPCA be notified of AST's larger than 110 gallons within 30 days of installation. **Status:** Notification not required prior to construction. Cannon Falls Energy Center will provide post-construction notice.
Spill Prevention Control & Countermeasures Plan (SPCC)	U.S. Environmental Protection Agency (USEPA) Region 5 77 W. Jackson Blvd. Chicago, IL 60604 Ph: (312) 353-2000	Prior to facility operation	At the federal level, the Environmental Protection Agency requires non-transportation related facilities with a total aboveground oil storage capacity of greater than 1,320 gallons (or greater than 660 gallons capacity in a single aboveground container), or total underground (i.e., buried) oil storage capacity greater than 42,000 gallons to meet Spill Prevention, Control, and Countermeasure (SPCC) requirements. A copy of the entire SPCC Plan must be maintained at the facility if the facility is normally attended for at least eight hours per day. Otherwise, it must be kept at the nearest field office. Refer to 40 CFR 112 for further information	**Timeframe:** Prepare plan prior to facility operation. **Status:** Cannon Falls Energy Center will be required to prepare SPCC plan. Will prepare during construction for implementation prior to operation.

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Permit/Issue	Agency	Application Timing	Comments	Anticipated Approval Timeframe and Permit Status
Noise Restrictions	Minnesota Pollution Control Agency (MPCA) 520 Lafayette Road St. Paul, MN 55155-4194 Ph: 651-296-6300 Ph: 800-657-3864 http://www.pca.state.mn.us/	Prior to site development activities	Standards established by the State of Minnesota (Minnesota Rules 7030.0040) limit increases in sound levels resulting from new land uses. These standards are grouped by Noise Area Classification (NAC), as listed in Minnesota Rule 7030.0050. The noise rules require that a municipality with authority to regulate land use prevent new land uses defined in the NAC categories from being established where the noise standards would be exceeded if the new land use is permitted.	**Timeframe:** **Status:** Noise analysis completed and included in site permit application
Stormwater Permit for Industrial Activities (NPDES/SDS)	Minnesota Pollution Control Agency (MPCA) 520 Lafayette Road St. Paul, MN 55155-4194 Ph: 651-296-6300 Ph: 800-657-3864 http://www.pca.state.mn.us/	Prior to operation of facility	A stormwater pollution prevention plan (SWPPP) for industrial activities will be prepared for the project in compliance with coverage under the NPDES/SDS Stormwater Permit for Industrial Activity.	**Timeframe:** Prepare plan prior to facility operation. **Status:**
Stormwater Construction Permit (NPDES/SDS)	Minnesota Pollution Control Agency (MPCA) 520 Lafayette Road St. Paul, MN 55155-4194 Ph: 651-296-6300 Ph: 800-657-3864 http://www.pca.state.mn.us/	Prior to site development activities	Construction activities that disturb one acre or more of land must obtain a combined National Pollutant Discharge Elimination System (NPDES) State Disposal System (SDS) permit from the Minnesota Pollution Control Agency (MPCA). Prepare an erosion control plan. Storm Water Pollution Prevention Plan (SWPPP) is also required and must be kept on-site.	**Timeframe:** Prepare plan prior to site development activities. **Status:**
Permit to construct and operate utility facilities on state and federal highway rights of way	Minnesota Department of Transportation (MinDOT) District 6 2900 48th Street NW Rochester, MN 55901-5848 Ph: (507) 285-7350 Fax: (507) 285-7355	Prior to all site development activities	Required to construct and operate a utility on a state or interstate highway right of way.	**Timeframe:** It is recommended to submit the application 3 months prior to commencing construction. **Status:**
Conditional Use Permit	Cannon Falls City Hall 306 West Mill Street Ph: (507) 263-3954 Fax: (507) 263-5843 http://www.cfalls.net/	Prior to site development activities	A Conditional Use Permit may be required for the development of the energy center. According to Section 11.40 of the Cannon Falls Zoning Ordinance, a public hearing will be held by the Planning Commission. Within 30 days after the public hearing, the Planning Commission will provide a report indicating its recommendation to the City Council. Thirty days after the receipt of the Planning Commission report, the Council will grant or deny the Conditional Use or refer the matter back to the Planning Commission for further consideration. Approval of the Conditional Use requires approval from the majority of members of the Planning Commission or 2/3 of all the elected members of the Council.	**Timeframe:** It is recommended to submit the application 3 to 6 months prior to commencing construction. **Status:**

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Permit/Issue	Agency	Application Timing	Comments	Anticipated Approval Timeframe and Permit Status
Local Permits	Cannon Falls City Hall 306 West Mill Street Ph: (507) 263-3954 Fax: (507) 263-5843 Goodhue County Soil and Water Conservation District Goodhue Service Center 104 East Third Avenue, PO Box 335 Goodhue, MN 55027 Ph: (651) 923-5286 Fax: (651) 923-5304 http://www.cfalls.net/	Prior to site development activities	Permits that may be required from the local municipality include Site Development/Construction Permit, Building Permit, Plumbing Plan Review/Inspection, Electrical Inspection, Wetland Exemption, Stack Height Approval, and/or Set-Back Requirements.	**Timeframe:** It is recommended to submit the application(s) 3 to 6 months prior to commencing construction. **Status:**