Appendix A

Mankato Energy Center Noise Assessment

Hessler Associates, Inc.
WORLDWIDE CONSULTING IN ENGINEERING ACOUSTICS

3862 Clifton Manor Place
Haymarket, Virginia 20169 USA
703-753-1602 (O)
703-753-1522 (F)
www.hesslernoise.com

TECHNICAL MEMORANDUM

Title: Assessment of Compliance with Regulatory Noise Limits after Plant Expansion

Project: Mankato Energy Center Expansion
Location: Mankato, MN
Prepared For: Calpine
Prepared By: David M. Hessler, P.E., INCE
Revision: 0
Issue Date: June 22, 2015
Reference No: TM-2018-061915-0

Attachments: -

1.0 Introduction

The planned expansion of the Mankato Energy Center, which is currently a 1 on 1 combined cycle plant, to a 2 on 1 configuration has raised the question of whether the built-out facility will naturally remain in compliance with State of Minnesota noise regulations or whether additional noise controls might be required to meet the applicable noise limits. In order to definitively understand the plant's current sound emissions and determine if additional noise from the second CTG powertrain would jeopardize compliance, a field monitoring survey was carried out from May 21 to June 9, 2015 to measure the existing operational sound levels at several key property line positions where current or future sound levels will be maximum. Given the surroundings and circumstances of this site, the State noise regulations effectively apply at the site boundaries. A somewhat lengthy survey using automated monitors was required to capture intermittent and largely unpredictable periods of operation. Four typical runs of roughly 17 hours each were measured, including two cold starts and two warm starts.

In general, the test results confirm that the existing facility is in full compliance the applicable noise limits and the measured levels indicate that sufficient headroom exists for the additional equipment to be installed without the need for any special or non-standard noise controls.

2.0 Regulatory Noise Limits

Minnesota Noise Pollution Statute and Rule 7030.0040 "Noise Standards" essentially limits the permissible daytime and nighttime sound levels at the boundaries of adjoining land uses based on their Noise Area Classifications, as detailed in Subpart 2 of Section 7030.0050 of the Rule. In this instance, the plant is completely surrounded by industrial land uses (Noise Area Classification 3) for quite some distance in all directions. For example, there is another power plant immediately to the east, a capped landfill to the north and light manufacturing in other directions. Consequently, operational noise from the facility is effectively limited to **80 dBA L10(1 hr)** and **75 dBA L50(1 hr)** at the site property line, irrespective of time of day.

No receptors that might actually be sensitive to noise, such as residences, schools, churches, etc., are evident from current aerials of the site vicinity nor were any observed during a ground inspection of the site environs out to about a half a mile. The facility currently receives no noise complaints, nor has received any for some time.

Somewhat unusually the Minnesota noise limits are expressed as the L10 and L50 statistical sound levels. These metrics are the sound levels exceeded 10 and 50%, respectively, of each hourly measurement period, or for 6 and 30 minutes. The L10 sound level tends to measure the near-maximum sound level that occurred only briefly during the measurement interval and the L50 sound level largely measures the "average" level. The L10 limit is of relevance to short-duration, high amplitude noise, such as can be produced during normal start-ups and shutdowns.

3.0 Survey Methodology

3.1 Measurement Locations

Figure 3.1.1 on the following page shows the site area and the monitoring positions.

The control position inside the ST building was on the mezzanine level near where the HRH and LP bypass lines enter the condenser. This meter was set up to record when the plant was generally operational and, specifically, when ST bypass was occurring during start-up.

Position 1 was due north of the existing CTG at the northern fence line. This and the remaining site boundary positions were intended to measure existing noise at the points where it is currently maximum or where it will be maximum after the build-out.

Position 2 was on the northern fence line close to the end of the cooling tower

Position 3 was near but not on the southern property line in the area where the cooling tower is going to be extended. Once completed the expanded cooling tower will generally approach the southern property line in a manner similar to how it currently approaches the northern boundary.

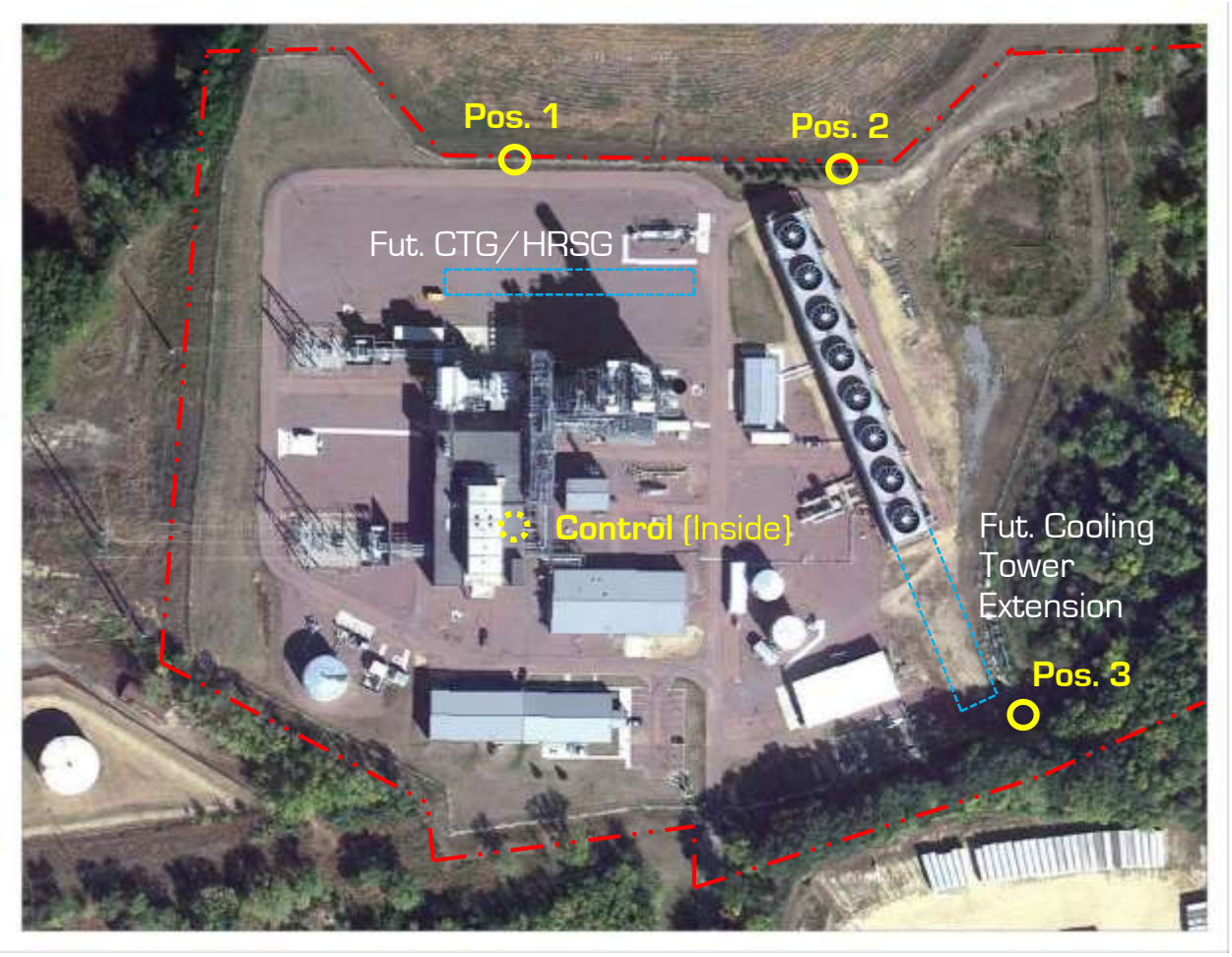

Figure 3.1.1
Site Area Showing Approx. Property Line and Survey Monitor Positions

3.2 Measurement Equipment and Parameters

Rion Model NL-22, ANSI Type 2 sound level data loggers, were used at each position and set to record and store a variety of statistical measures, including the L10 and L50 levels, on an hourly basis over the entire survey period. The instruments were field calibrated and synchronized at the beginning of the survey and checked at the end. The calibration drift was within the -0.2/+0.3 dB range on all instruments. At Positions 1 through 3 the microphone was mounted on the property line chain link fence at a height of about 5 ft. above grade. The meter and batteries were in weather-tight cases on the ground. The control position inside the steam turbine building was on the mezzanine level near where to the HRH and LP steam turbine bypass lines entered the condenser.

3.3 Survey Conditions

During the survey period the plant ran over the following four intervals:

Table 3.3.1
Plant Operations during the Survey Period

Plant Start		Plant Shutdown	
Date	Time	Date	Time
5/26	4:09 a.m.	5/26	10:25 p.m.
5/27	6:07 a.m.	5/27	10:23 p.m.
6/8	5:04 a.m.	6/8	11:25 p.m.
6/9	5:07 a.m.	6/9	10:25 p.m.

Consequently, the starts on 5/26 and 6/8 were cold, while the starts on 5/27 and 6/9 occurred after outages of only a few hours and were warm/hot restarts.

The general weather parameters during the two operational periods are plotted below.

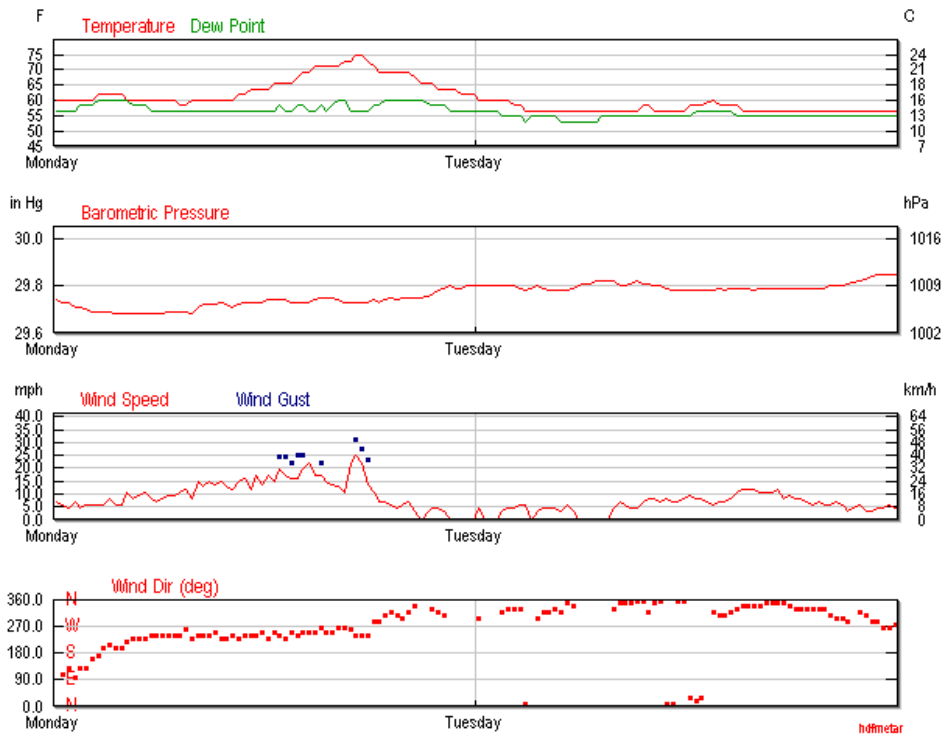

Figure 3.3.1
Weather Conditions in Mankato, MN May 26 to 27

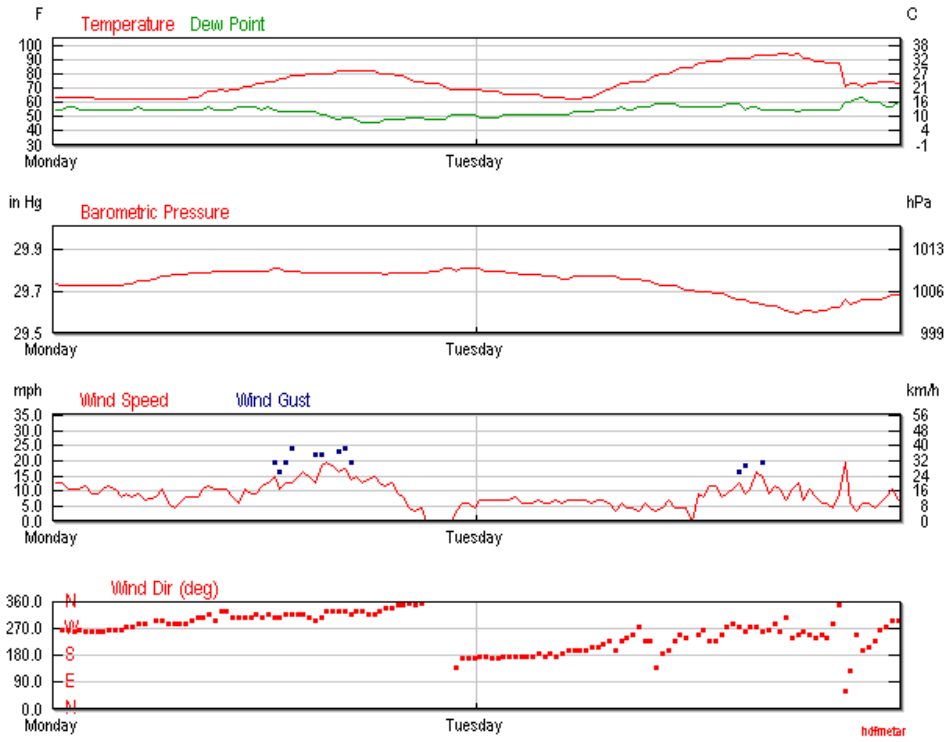

Figure 3.3.2
Weather Conditions in Mankato, MN June 8 to 9

During the first run on May 26 it was overcast and fairly windy. A thunderstorm occurred around 6:30 p.m. On May 27th the winds subsided considerably.

Over the June operational period (June 8 and 9) it was generally clear with moderate winds.

4.0 Survey Results

4.1 Control Position

The L10 and L50 sound levels measured inside the ST building near the condenser and bypass lines are plotted below for the entire survey period.

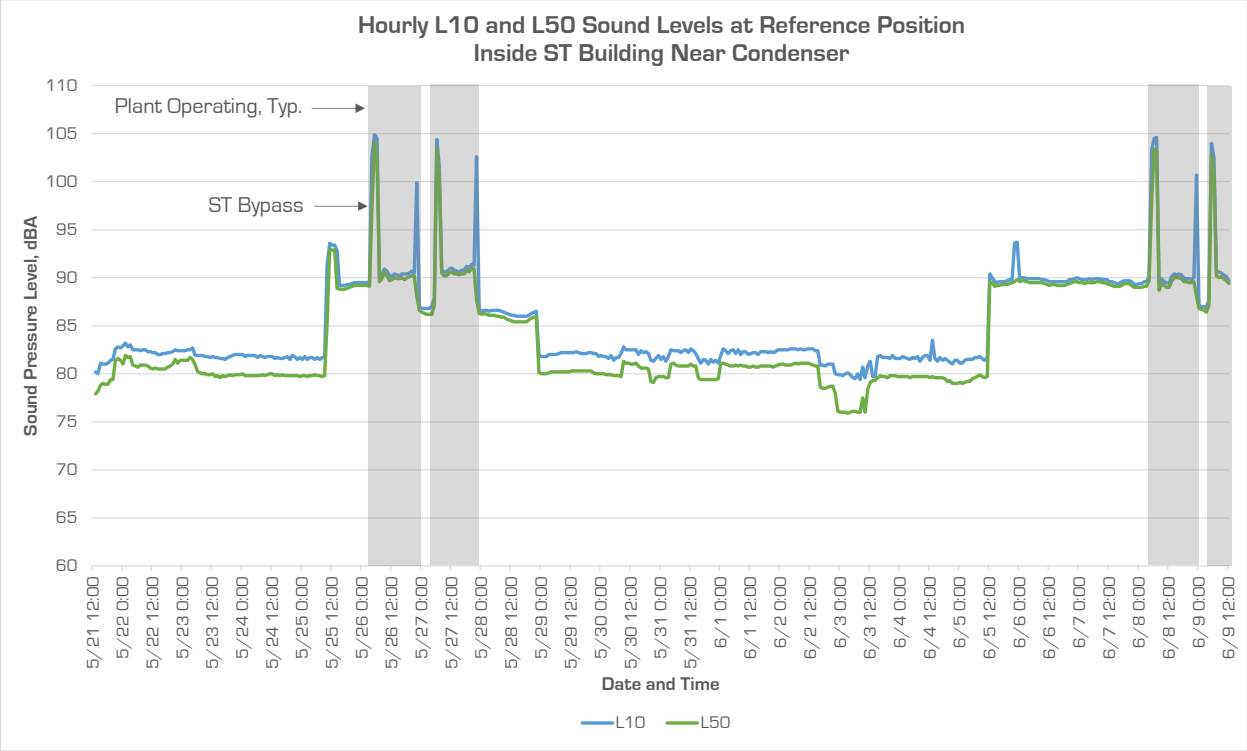

Figure 4.1.1

This plot provides a graphic history of plant operation and agrees with the on/off times obtained from plant operations after the survey. The noise spikes at the beginning of each run are ST bypass activity, which was bit longer (about 3 hours) during the cold starts than during the subsequent warm starts (about 2 hours). The sound level at this particular monitoring location was sustained at about 104 dBA during bypass. The blue (L10) spikes at end of each run are brief noise events at shutdown apparently lasting only a few minutes.

4.2 Position 1 – Boundary North of Existing CTG

The hourly L10 and L50 sound levels measured at Position 1 are plotted below along with the permissible noise limits.

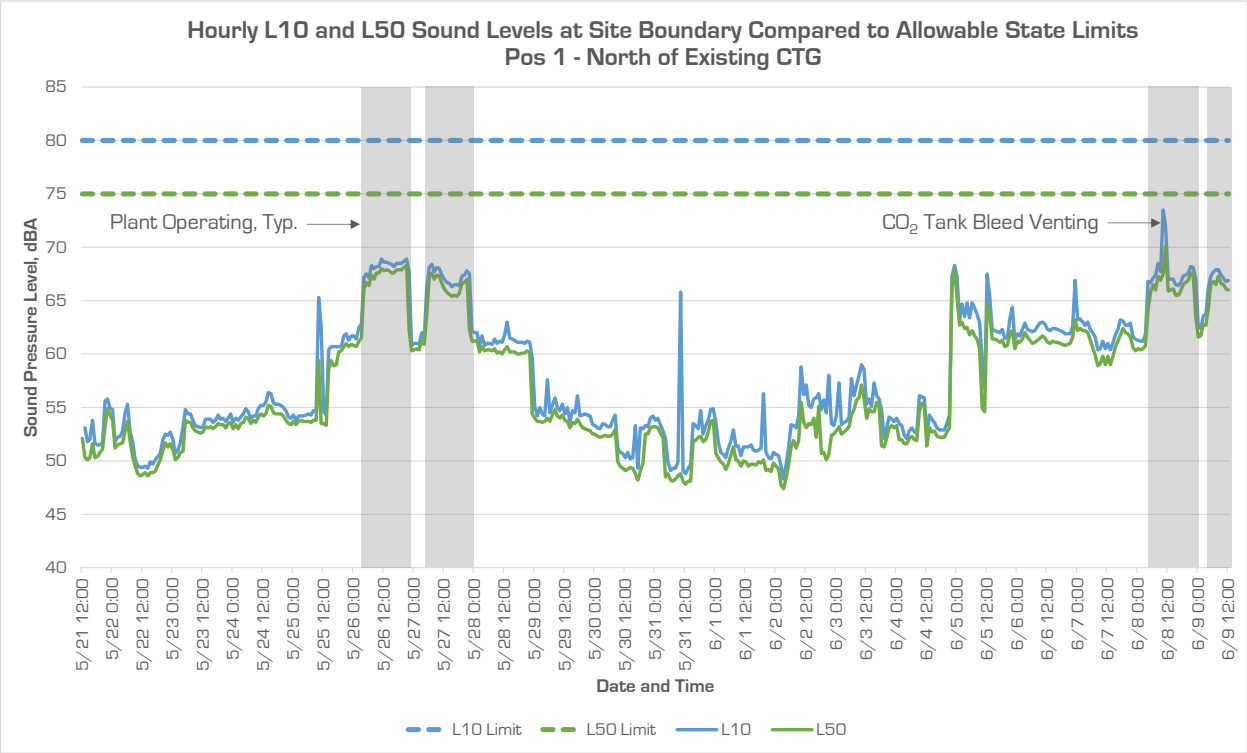

Figure 4.2.1

In general, these results show that the existing plant is certainly in compliance with the allowable sound levels at the northern site boundary. Neglecting the results on 5/26, which may have been elevated by high winds and a thunderstorm, the measured level during the other three runs generally fluctuates around 67 dBA with little difference between the L10 and L50 statisticals. This is well below the respective limits of 80 and 75 dBA. The noise spike on 6/8 around 10:45 a.m. is associated with some short duration venting noise to draw down the pressure in the CTG fire protection CO_2 tank during the offloading of more gas. This plot also shows that, despite the sound levels of 104 dBA observed inside the ST building, transient noise during start-up and shutdown has no significant influence on the overall facility level at this position.

What these results suggest in terms of regulatory compliance is that an increase in the L50 facility sound emissions of about 8 dBA can be tolerated before the level would exceed the permissible limit of 75 dBA. The installation of the second turbine to the north of the existing unit would essentially have the effect of moving the principal noise source closer to this measurement position by about 120 ft. Most of the noise from the existing powertrain would be blocked and replaced by the new powertrain. The contribution from the cooling tower would remain unchanged. This

translation in the main noise source from about 250 ft. away to roughly 130 ft. would theoretically result in an increase of about 6 dBA. Consequently, an L50 sound level after build-out of about 73 dBA is expected. While this is fairly close to the limit it would still be compliant. A similar L10 level of roughly 74 dBA would probably go along with this, so no issue is anticipated with maintaining the L10 limit of 80 dBA.

4.3 Position 2 – Boundary North of Existing Cooling Tower

The hourly L10 and L50 sound levels measured at Position 2 at the northern end of the cooling tower are plotted below.

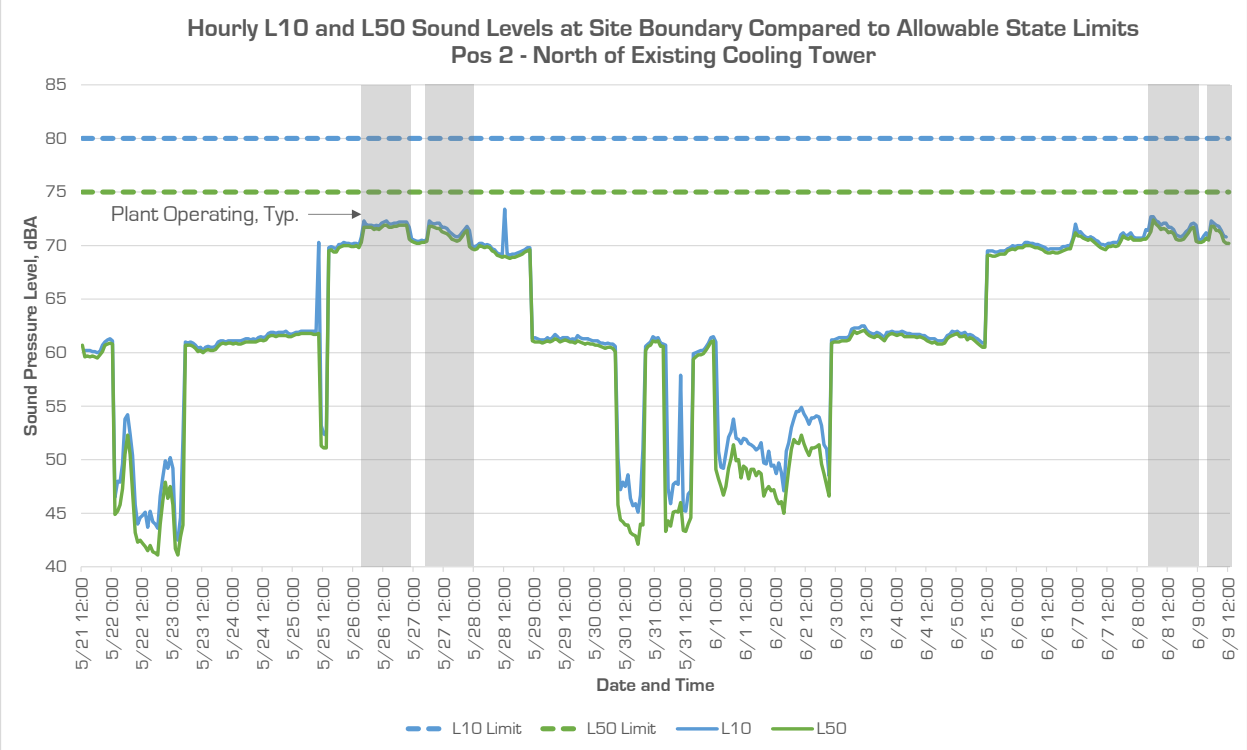

Figure 4.3.1

This position is dominated by cooling tower noise; principally water fall and basin splash. A fairly constant L10/L50 level of about 72 dBA occurs at this location during operation demonstrating compliance with the State noise limits. The sound level at this location is not expected to change in any meaningful way after the build-out. Additional noise from the new CTG powertrain should be significantly less than 72 dBA at this location and therefore should not have any real influence on the total sound level.

4.4 Position 3 – Boundary South of Future Cooling Tower Extension

The hourly L10 and L50 sound levels measured at Position 3 beyond the southern end of the cooling tower are plotted below.

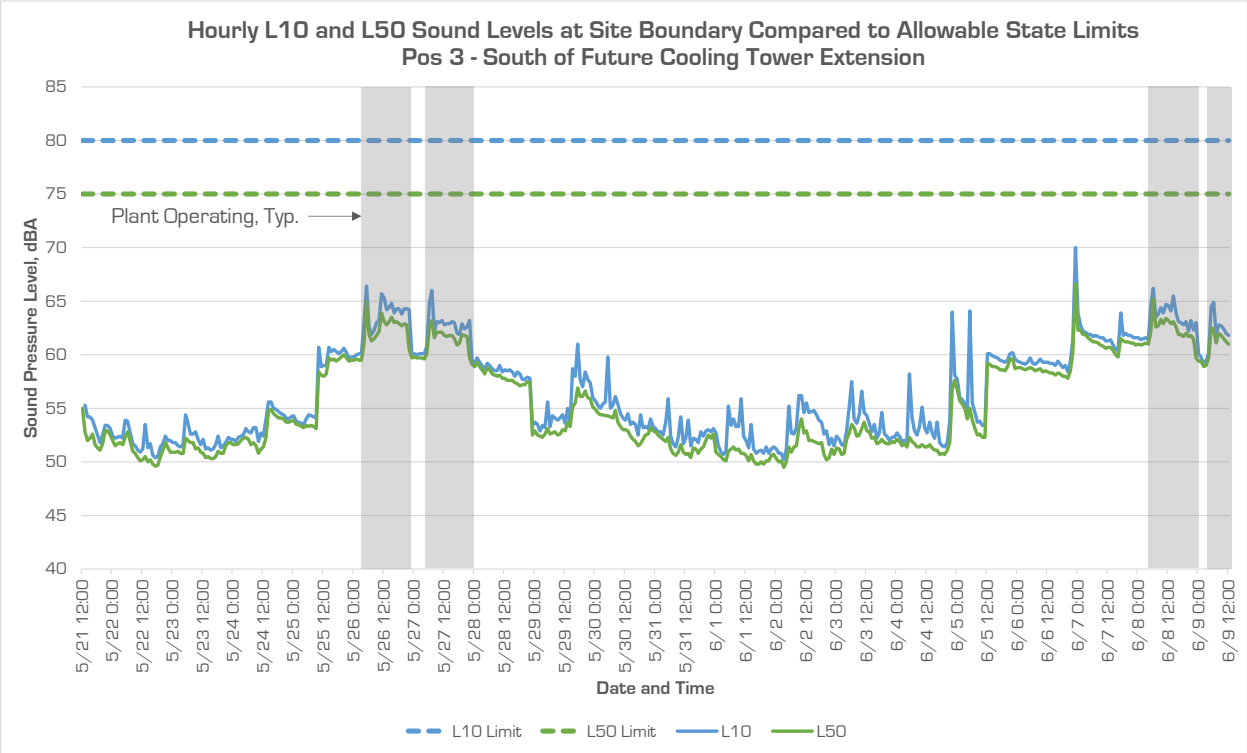

Figure 4.4.1

While the existing sound level at this location is fairly low during plant operation in the 63 to 65 dBA range, it is expected to increase substantially once four more cells are added to the cooling tower. Once the build-out is complete the sound level at the property line beyond Position 3 is likely to be somewhat similar to the existing sound level at Position 2 but probably a little lower due to the slightly greater distance from the tower to the property line. A conservative estimate of the future sound level during normal plant operation can be made by adding the current L50 level of about 63 dBA to the 72 dBA measured at Position 2 to get a total of 72.5 dBA. This suggests that compliance will be maintained after the cooling tower is extended.

One additional comment on Figure 4.4.1 is that steam turbine bypass noise during each plant start-up is clearly evident at this location, which is more or less exposed to the east side of the ST building where the many ventilation louvers allow interior noise to escape. The L50 sound level during this operating mode reaches a maximum of 65 dBA during cold starts. Combined with the Position 2 level, this would put the total estimated level at the southern boundary during start-up at about 73 dBA. While this is close to the L50 limit compliance is still expected.

4.0 Conclusions

A due diligence survey of the existing property line sound levels at the Mankato Energy Center was carried out to determine how much, if any, headroom was left between the current sound emissions of the plant and the permissible State noise limits to accommodate additional noise from the planned expansion. The survey, which was executed using automated continuously recording sound monitors over a 19 day period at key fence line positions, captured four typical plant runs, including two cold starts and two warm starts.

The results unequivocally demonstrate that the plant is currently in compliance with the noise limits of 75 dBA L50 and 80 dBA L10, which apply to the industrial land uses surrounding the site property. Measurements at the points of maximum current or future noise show that sufficient margin exists at all points to accommodate the estimated increase in noise associated with the addition of a second CTG/HRSG powertrain and four more cells to the cooling tower. The estimated maximum L50 sound level after expansion at each of the three worst-case test points is, coincidentally, about 73 dBA. While close to the effective L50 limit of 75 dBA compliance is anticipated during both normal and transient operation. Only slightly higher L10 levels (say 74 to 75 dBA) are expected at the design points based on the survey results so compliance is also anticipated with the L10 noise limit of 80 dBA.

Appendix B

Mankato Energy Center SHPO Results

From: Thomas Cinadr
To: Meaghan E. Watson
Subject: Re: Calpine – Mankato Energy Center SHPO Request
Date: Thursday, April 02, 2015 8:21:01 AM
Attachments: image003.jpg
Historic.rtf

THIS EMAIL IS NOT A PROJECT CLEARANCE.

This message simply reports the results of the cultural resources database search you requested. The database search produced results for only previously known archaeological sites and historic properties. Please read the note below carefully.

No archaeological sites were identified in a search of the Minnesota Archaeological Inventory and Historic Structures Inventory for the search area requested. **A report containing the history/architecture properties identified is attached.**

The result of this database search provides a listing of recorded archaeological sites and historic architectural properties that are included in the current SHPO databases. Because the majority of archaeological sites in the state and many historic architectural properties have not been recorded, important sites or structures may exist within the search area and may be affected by development projects within that area. Additional research, including field survey, may be necessary to adequately assess the area's potential to contain historic properties.

Properties that are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP are indicated on the reports you have received. The following codes on the reports you received are:

NR – National Register listed. The properties may be individually listed or may be within the boundaries of a National Register District.

CEF – Certified Eligible to the National Register findings are usually made during the federal review process, these properties have been evaluated as being eligible for listing in the National Register.

SEF – Staff eligible findings to the National Register are properties that have been determined eligible by SHPO staff.

DOE – Determination of Eligibility is made by the National Park Service and typically refers to properties deemed eligible but the owner objects to the listing.

CNEF – Certified Not Eligible to the National Register. SHPO has begun to record properties that have been evaluated as **not eligible** for listing in the National Register. If the box on the form has a check the property has been determined to be **not eligible.**

Properties without **NR, CEF, SEF, DOE, or CNEF** designations in the reports you received may not have been evaluated and therefore no assumption to their eligibility can be made.

If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic

architectural properties, you may need to hire a qualified archaeologist and/or historian. If you need assistance with a project review, please contact Kelly Gragg-Johnson in Review and Compliance @ 651-259-3455 or by email at kelly.graggjohnson@mnhs.org.

The Minnesota SHPO Survey Manuals and Database Metadata can be found at http://www.mnhs.org/shpo/survey/inventories.htm

SHPO research hours are 8:30 AM – 4:00 PM Tuesday-Friday.

The Office is closed on Mondays.

Tom Cinadr
Survey and Information Management Coordinator
Minnesota State Historic Preservation Office
Minnesota Historical Society
345 Kellogg Blvd. West
St. Paul, MN 55102

651-259-3453

On Tue, Mar 31, 2015 at 11:25 AM, Meaghan E. Watson <mwatson@wenck.com> wrote:

> Good morning,
>
> Please see the attached SHPO request letter for Mankato Energy Center. Please let me know if you have any questions.
>
> Thank you,
>
>
> **Meaghan Watson**
>
> *Environmental Scientist*
>
> **mwatson@wenck.com** | D **763.479.4253** | C **612.590.2620**
>
> 1800 Pioneer Creek Center | Maple Plain, MN 55311
>

History/Architecture Inventory

PROPERTY NAME	ADDRESS	Twp	Range	Sec	Quarters	USGS	Report	NRHP	CEF	DOE	Inventory Number
COUNTY: Blue Earth											
CITY/TOWNSHIP: Lime Twp.											
Widell House	off Co. Hwy. 5	109	26	31	NE-NW-NE	Mankato East	BE-80-1H				BE-LIM-001
house		109	26	31	SW-NW-NE	Mankato East	BE-80-1H				BE-LIM-002
farmstead		109	26	31	NW-SW-NE	Mankato East	BE-80-1H				BE-LIM-003
Mendota-Big Sioux River Military Rd.: Lime Section	Co. Hwy. 5	109	26	31	NE	Mankato East	xx-89-4H				BE-LIM-013
CITY/TOWNSHIP: Mankato											
Mendota-Big Sioux River Road: Mankato Section	Mn. Hwy. 5	109	26	31	SW	Mankato East	BE-80-1H				BE-MKC-337

Appendix C

Mankato Energy Center NHIS Results

Minnesota Department of Natural Resources
Division of Ecological and Water Resources, Box 25
500 Lafayette Road
St. Paul, Minnesota 55155-4025
Phone: (651) 259-5091 E-mail: samantha.bump@state.mn.us

May 19, 2015 **Correspondence # ERDB 20150324**

Mr. Jeff Madejczyk
Wenck Associates, Inc.
1800 Pioneer Creek Center, PO Box 249
Maple Plain, MN 55359

RE: Natural Heritage Review of the proposed Mankato Energy Center,
T109N R26W Section 31; Blue Earth County

Dear Mr. Madejczyk,

As requested, the Minnesota Natural Heritage Information System has been queried to determine if any rare species or other significant natural features are known to occur within an approximate one-mile radius of the proposed project. Based on this query, rare features have been documented within the search area (for details, see the enclosed database reports; please visit the Rare Species Guide at http://www.dnr.state.mn.us/rsg/index.html for more information on the biology, habitat use, and conservation measures of these rare species). Please note that the following **rare features *may* be adversely affected** by the proposed project:

- The North American racer (*Coluber constrictor*), a state-listed species of special concern, and the western fox snake (*Pantherophis vulpina*), a Species in Greatest Conservation Need as identified in Minnesota's State Wildlife Action Plan (http://www.dnr.state.mn.us/cwcs/index.html), have been documented in the vicinity of the proposed project and may be encountered on site. For more information about these rare snakes please visit http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ARADB07010 and http://www.dnr.state.mn.us/snapshots/snakes_turtles/foxsnake.html. Given the presence of these rare snakes, the DNR recommends that the use of erosion control mesh, if any, be limited to wildlife-friendly materials (see enclosed fact sheet).

- The northern long-eared bat (*Myotis septentrionalis*), found throughout Minnesota, is state-listed as a species of special concern. During the winter this species hibernates in caves and mines, and during the active season (approximately April-October) it roosts underneath bark, in cavities, or in crevices of both live and dead trees. Activities that may impact this species include, but are not limited to, wind farm operation, any disturbance to hibernacula, and destruction/degradation of habitat (including tree removal).

  Effective May 4, 2015, the U.S. Fish and Wildlife Service (USFWS) listed the northern long-eared bat as threatened under the Endangered Species Act (ESA) and implemented an interim 4(d) rule. The ESA prohibits take of this species without a permit unless the take is exempt under the interim 4(d) rule. If you believe that your project may adversely affect

("take") the northern long-eared bat, you should determine whether the "take" is exempt under the interim 4(d) rule or whether you need a Federal permit. To make this determination, please refer to the USFWS Key to the Interim 4(d) Rule available at http://www.fws.gov/midwest/endangered/mammals/nleb/Interim4dRuleKeyNLEB.html. Please note that the NHIS does not contain any known occurrences of northern long-eared bat roosts or hibernacula within an approximate one-mile radius of the proposed project.

- Please include a copy of this letter in any DNR license or permit application.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. **If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.**

The enclosed results include an Index Report of records in the Rare Features Database, the main database of the NHIS. To control the release of specific location data, the report is copyrighted and only provides rare features locations to the nearest section. The Index Report may be reprinted, unaltered, in any environmental review document (e.g., EAW or EIS), municipal natural resource plan, or report compiled by your company for the project listed above. If you wish to reproduce the Index Report for any other purpose, please contact me to request written permission.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location (noted above) and the project description provided on the NHIS Data Request Form. Please contact me if project details change or for an updated review if construction has not occurred within one year.

The Natural Heritage Review does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. To determine whether there are other natural resource concerns associated with the proposed project, please contact your DNR Regional Environmental Assessment Ecologist (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,

Samantha Bump

Samantha Bump
Natural Heritage Review Specialist

enc. Rare Features Database: Index Report
Wildlife Friendly Erosion Control
Map

cc: Kevin Mixon

Printed April 2015
Data valid for one year

Minnesota Natural Heritage Information System
Index Report of records within 1 mile radius of:
ERDB# 20150324 - Mankato Energy Center
T109N R26W Section 31
Blue Earth County

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	Draft Status	SGCN Status	State Rank	Global Rank	Last Obs Date	EO ID #
Vertebrate Animal								
Coluber constrictor (North American Racer) #50 T108N R26W S6, T109N R26W S31; Blue Earth County		SPC		SGCN	S3	G5	1997-06-12	30107
Cycleptus elongatus (Blue Sucker) #90 T109N R27W S36, T109N R27W S11, T108N R27W S1, T109N R27W S13, T [...]; Blue Earth, Le Sueur, Nicollet County		SPC		SGCN	S3	G3G4	2010-08-10	28244
Pantherophis ramspotti (Western Foxsnake) #164 T109N R27W S36; Blue Earth, Nicollet County		Watchlist		SCGN	S4	G5	1997-06-11	30650
Pantherophis ramspotti (Western Foxsnake) #165 T109N R27W S36, T108N R27W S1, T108N R26W S6; Blue Earth, Nicollet County		Watchlist		SCGN	S4	G5	1998-05-25	30664
Polyodon spathula (Paddlefish) #4 T115N R38W S30, T115N R23W S4, T115N R23W S10, T114N R24W S12, T [...]; Blue Earth, Carver, Hennepin, [...] County		THR		SGCN	S2	G4	2004-12-04	16501
Scaphirhynchus platorynchus (Shovelnose Sturgeon) #12 T109N R27W S36, T109N R26W S30, T109N R27W S25, T109N R26W S31; Blue Earth, Nicollet County		Watchlist		SGCN	S4	G4	1990-09-06	16559
Invertebrate Animal								
Arcidens confragosus (Rock Pocketbook) #26 T114N R24W S30, T110N R26W S10, T111N R26W S33, T110N R26W S29, T [...]; Blue Earth, Carver, Hennepin, [...] County		END		SGCN	S1	G4	2006-11-PRE	33200
Lampsilis teres (Yellow Sandshell) #10 T114N R24W S12, T115N R23W S10, T112N R25W S7, T110N R26W S29, T [...]; Blue Earth, Carver, Hennepin, [...] County		END		SGCN	S1	G5	1989-10-09	17146
Ligumia recta (Black Sandshell) #403 T108N R26W S34, T108N R27W S23, T109N R27W S36, T108N R27W S35, T [...]; Blue Earth, Nicollet County		SPC		SGCN	S3	G4G5	2003-08-13	33848
Obovaria olivaria (Hickorynut) #151 T109N R27W S36; Blue Earth, Nicollet County		Watchlist		SGCN	S3	G4	1998-10-29	34815

Printed April 2015
Data valid for one year

Minnesota Natural Heritage Information System
Index Report of records within 1 mile radius of:
ERDB# 20150324 - Mankato Energy Center
T109N R26W Section 31
Blue Earth County

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	Draft Status	SGCN Status	State Rank	Global Rank	Last Obs Date	EO ID #
Invertebrate Animal								
Pleurobema sintoxia (Round Pigtoe) #141 T109N R27W S36, T108N R27W S26; Blue Earth, Nicollet County		SPC		SGCN	S3	G4G5	1998-10-29-PRE	31725
Quadrula metanevra (Monkeyface) #66 T109N R27W S36, T108N R27W S16; Blue Earth, Nicollet County		THR		SGCN	S2	G4	1998-10-PRE	34276
Animal Assemblage								
Freshwater Mussel Concentration Area (Mussel Sampling Site) #121 T109N R27W S36; Blue Earth, Nicollet County		N/A			SNR	G3	1989-08-01	2914
Vascular Plant								
Berula erecta () #3 T109N R26W S30, T109N R27W S25; Blue Earth County		THR			S2	G4G5	2013-08-13	38108
Rhynchospora capillacea (Hair-like Beak-rush) #5 T109N R26W S29, T109N R26W S30, T109N R26W S28, T109N R26W S33, T [...]; Blue Earth County		THR			S2	G4	1892-PRE	5431
Native Plant Community (This may not represent a complete list. Also see MCBS Native Plant Communities at http://deli.dnr.state.mn.us.)								
Mesic Prairie (Southern) Type #434 T109N R27W S36, T109N R26W S31; Blue Earth County	(NPC Code: UPs23a)	N/A			S2	GNR	1998-06-10	24469

Records Printed = 16

Minnesota's endangered species law (*Minnesota Statutes*, section 84.0895) and associated rules (*Minnesota Rules*, part 6212.1800 to 6212.2300 and 6134) prohibit the taking of threatened or endangered species without a permit. For plants, taking includes digging or destroying. For animals, taking includes pursuing, capturing, or killing.

An Explanation of Fields:

Element Name and Occurrence Number: The Element is the name of the rare feature. For plant and animal species records, this field holds the scientific name followed by the common name in parentheses; for all other elements it is solely the element name. Native plant community names correspond to Minnesota's Native Plant Community Classification (Version 2.0). The Occurrence Number, in combination with the Element Name, uniquely identifies each record.

Federal Status: The status of the species under the U.S. Endangered Species Act: LE = endangered; LT = threatened; LE,LT = listed endangered in part of its range, listed threatened in another part of its range; LT,PDL = listed threatened, proposed for delisting; C = candidate for listing. If null or 'No Status,' the species has no federal status.

Printed April 2015
Data valid for one year

Minnesota Natural Heritage Information System
Index Report of records within 1 mile radius of:
ERDB# 20150324 - Mankato Energy Center
T109N R26W Section 31
Blue Earth County

MN Status: The legal status of the plant or animal species under the Minnesota Endangered Species Law: END = endangered; THR = threatened; SPC = special concern; NON = tracked, but no legal status. Native plant communities, geological features, and colonial waterbird nesting sites do not have any legal status under the Endangered Species Law and are represented by a N/A.

Draft Status: Proposed change to the legal status of the plant or animal species under the Minnesota Endangered Species Law: END = endangered; THR = threatened; SPC = special concern; Watchlist = tracked, but no legal status.

SGCN Status: SGCN = The species is a Species in Greatest Conservation Need as identified in Minnesota's State Wildlife Action Plan (http://www.dnr.state.mn.us/cwcs/index.html). This designation applies to animals only.

State Rank: Rank that best characterizes the relative rarity or endangerment of the taxon or plant community in Minnesota. The ranks do not represent a legal status. They are used by the Minnesota Department of Natural Resources to set priorities for research, inventory and conservation planning. The state ranks are updated as inventory information becomes available. S1 = Critically imperiled in Minnesota because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. S2 = Imperiled in Minnesota because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. S3 = Vulnerable in Minnesota either because rare or uncommon, or found in a restricted range, or because of other factors making it vulnerable to extirpation. S4 = Apparently secure in Minnesota, usually widespread. S5 = Demonstrably secure in Minnesota, essentially ineradicable under present conditions. SH = Of historical occurrence in the state, perhaps having not been verified in the past 20 years, but suspected to be still extant. An element would become SH without the 20-year delay if the only known occurrences in the state were destroyed or if it had been extensively and unsuccessfully looked for. SNR = Rank not yet assessed. SU = Unable to rank. SX = Presumed extinct in Minnesota. SNA = Rank not applicable. S#S# = Range Rank: a numeric range rank (e.g., S2S3) is used to indicate the range of uncertainty about the exact status of the element. S#B, S#N = Used only for migratory animals, whereby B refers to the breeding population of the element in Minnesota and N refers to the non-breeding population of the element in Minnesota.

Global Rank: The global (i.e., range-wide) assessment of the relative rarity or imperilment of the species or community. Ranges from G1 (critically imperiled due to extreme rarity on a world-wide basis) to G5 (demonstrably secure, though perhaps rare in parts of its range). Global ranks are determined by NatureServe, an international network of natural heritage programs and conservation data centers.

Last Observed Date: Date that the Element Occurrence was last observed to be extant at the site in format YYY-MM-DD.

EO ID #: Unique identifier for each Element Occurrence record.

Element Occurrence: An area of land and/or water in which an Element (i.e., a rare species or community) is, or was, present, and which has practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location. Specifications for each species determine whether multiple observations should be considered 1 Element Occurrence or 2, based on minimum separation distance and barriers to movement.