

Attachment A

*Natural Heritage Information and
Botanical Survey Report*



Minnesota Department of Natural Resources

Division of Ecological Resources, Box 25

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July 30, 2009

Correspondence # ERDB 20100053

Mr. Nick Bonow
McCain and Associates, Inc.
5300 Highway 12, PO Box 429
Maple Plain, MN 55359

RE: Natural Heritage information in the vicinity of the proposed Proposed Sand and Gravel Mine,
T114N R23W Sections 8&17, Scott County

Dear Mr. Bonow,

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, please see the enclosed database reports). However, given the project details that were provided with the data request form, I do not believe the proposed project will negatively affect any known occurrences of rare features.

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 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.

The enclosed results include an Index Report and a Detailed Report of records in the Rare Features Database, the main database of the NHIS. To control the release of specific location information, which might result in the destruction of a rare feature, both reports are copyrighted.

The Index Report provides rare feature locations only to the nearest section, and may be reprinted, unaltered, in an 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. **The Detailed Report is for your personal use only as it may include specific location information that is considered nonpublic data under *Minnesota Statutes*, section 84.0872, subd. 2. If you wish to reprint or publish the Detailed Report for any purpose, please contact me to request written permission.**

This letter 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. Additional rare features for which we have no data may be present in the project area, or there may be other natural resource concerns associated with the proposed project. For these concerns, please contact your DNR Regional Environmental Assessment Ecologist, Melissa Doperalski at (651-259-5738). 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,

Lisa Joyal
Endangered Species Environmental Review Coordinator

enc.

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	State Rank	Global Rank	Last Observed Date	EO ID #
Vertebrate Animal						
<u>Pituophis catenifer</u> (Gophersnake) #91 T114N R23W S18 ; Scott County		SPC	S3	G5	1997-07-10	22476
<u>Pituophis catenifer</u> (Gophersnake) #103 T114N R23W S7, T114N R23W S18, T114N R24W S12, T114N R24W S13 ; Carver, Scott County		SPC	S3	G5	1997-06-23	22516
<u>Pituophis catenifer</u> (Gophersnake) #110 T114N R23W S19, T114N R23W S18 ; Scott County		SPC	S3	G5	2002-09-05	30624
<u>Polyodon spathula</u> (Paddlefish) #4 T27N R24W S23, T115N R23W S16, T115N R23W S17, T115N R38W S28, T [...] ; Blue Earth, Brown, Carver, Chippewa, [...] County		THR	S2	G4	2004-12-04	16501
<u>Scaphirhynchus platyrhynchus</u> (Shovelnose Sturgeon) #93 T114N R23W S7 ; Carver, Scott County		NON	S4	G4	1998-08-14	30743
Invertebrate Animal						
<u>Actinonaias ligamentina</u> (Mucket) #90 T114N R23W S7, T114N R24W S12 ; Carver, Scott County		THR	S2	G5	1989-08-11	17129
<u>Arcidens confragosus</u> (Rock Pocketbook) #26 T114N R25W S35, T109N R29W S7, T109N R30W S12, T114N R24W S30, T [...] ; Blue Earth, Brown, Carver, Dakota, [...] County		END	S1	G4	2006-11-PRE	33200
<u>Cicindela macra macra</u> (Sandy Stream Tiger Beetle) #1 T114N R23W S7, T114N R24W S12 ; Carver, Scott County		SPC	S3	G5T5	2002-06-29	27231
<u>Lampsilis teres</u> (Yellow Sandshell) #10 T109N R27W S36, T111N R26W S22, T111N R26W S21, T115N R23W S20, T [...] ; Blue Earth, Brown, Carver, Dakota, [...] County		END	S1	G5	1989-10-09	17146
<u>Ligumia recta</u> (Black Sandshell) #92 T114N R23W S7, T114N R24W S12 ; Carver, Scott County		SPC	S3	G5	1989-08-11	17157
Animal Assemblage						
<u>Freshwater Mussel Concentration Area</u> (Mussel Sampling Site) #132 T114N R23W S7 ; Carver, Scott County		N/A	SNR	G3	1989-08-11	14974

Minnesota Natural Heritage Information System
Index Report of records within 1 mile radius of:
ERDB #20100053 - Proposed Sand and Gravel Mine
T114N R23W Sections 8&17
Scott County

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	State Rank	Global Rank	Last Observed Date	EO ID #
Vascular Plant						
<u>Baptisia alba</u> (White Wild Indigo) #30 T114N R23W S7, T114N R23W S18 ; Scott County		SPC	S3	G5	1996-09-03	20484
<u>Besseyia bullii</u> (Kitten-tails) #40 T114N R23W S7, T114N R23W S18, T114N R24W S13 ; Scott County		THR	S2	G3	1996-09-03	10781
<u>Cypripedium candidum</u> (Small White Lady's-slipper) #104 T114N R23W S9, T114N R23W S8 ; Scott County		SPC	S3	G4	1998-05-14	4386
<u>Desmodium cuspidatum</u> var. <u>longifolium</u> (Big Tick-trefoil) #1 T114N R23W S19, T114N R23W S17, T114N R23W S20, T114N R23W S18, T [...] ; Scott County		SPC	S3	G5T5?	1946-09-14	4446
Terrestrial Community - Other Classification						
<u>Dry Sand - Gravel Prairie (Southern) Type</u> #232 T114N R23W S7, T114N R23W S18 ; Scott County		N/A	S2	GNR	1996-09-03	20498
<u>Native Plant Community, Undetermined Class</u> #2325 T114N R23W S9 ; Scott County		N/A	SNR	GNR	1995-08-24	21773
<u>Native Plant Community, Undetermined Class</u> #2330 T114N R23W S17, T114N R23W S9, T114N R23W S8, T114N R23W S16 ; Scott County		N/A	SNR	GNR	1995-08-09	21772

Records Printed = 18

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.

The Division of Ecological Resources recently adopted a new database system called Biotics. As a result of this change, the layout and contents of the database reports have been revised. Many of the fields included in the new reports are the same or similar to the previous report fields, however there are several new fields and some of the field definitions have been slightly modified. We recommend that you familiarize yourself with the latest field explanations.

Rare Features Database Reports: An Explanation of Fields

The Rare Features Database (Biotics) is part of the Natural Heritage Information System, and is maintained by the Division of Ecological Resources, Minnesota Department of Natural Resources (DNR).

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Field Name: [Full (non-abbreviated) field name, if different]. Further explanation of field.

-E-

Element Name and Occ #: [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 (such as native plant communities, which have no scientific name) 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.

EO Data: [Element Occurrence Data]. For species elements, this field contains data collected on the biology of the Element Occurrence* (EO), including the number of individuals, vigor, habitat, soils, associated species, peculiar characteristics, etc. For native plant community elements, this field is a summary text description of the vegetation of the EO, including structure (strata) and composition (dominant/characteristic species), heterogeneity, successional stage/dynamics, any unique aspects of the community or additional noteworthy species (including animals). Note that this is a new field and it has not been filled out for many of the records that were collected prior to conversion to the new database system. Some of the information meeting the field definition may be found in the General Description field.

EO ID#: [Element Occurrence Identification Number]. Unique identifier for each Element Occurrence record.

EO Rank: [Element Occurrence Rank]. An evaluation of the quality and condition of an Element Occurrence (EO) from A (highest) to D (lowest). Represents a comparative evaluation of: 1) quality as determined by representativeness of the occurrence especially as compared to EO specifications and including maturity, size, numbers, etc. 2) condition (how much has the site and the EO itself been damaged or altered from its optimal condition and character). 3) viability (the long-term prospects for continued existence of this occurrence - used in ranking species only). EO Ranks are assigned based on recent fieldwork by knowledgeable individuals.

Extent Known?: A value that indicates whether the full extent of the Element is known (i.e., it has been determined through field survey) at that location. If null, the value has not been determined.

-F-

Federal Status: Status of 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.

First Observed Date: Date that the Element Occurrence was first reported at the site in format YYYY-MM-DD. A year followed by "Pre" indicates that the observed date was sometime prior to the date listed, but the exact date is unknown.

-G-

General Description: General description or word picture of the area where the Element Occurrence (EO) is located (i.e., the physical setting/context surrounding the EO), including a list of adjacent communities. When available, information on surrounding land use may be included. Note that the information tracked in this field is now more narrowly defined than it was in the old database system, and some of the information still in this field more accurately meets the definition of the new EO Data field. We are working to clean up the records so that the information in the two fields corresponds to the current field explanations described herein. Also note that the use of uppercase in sentences in this field is not significant but rather an artifact of transferring data from the old database system to the new system.

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.

-L-

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

Last Survey Date: Date of the most recent field survey for the Element Occurrence, regardless of whether it was found during the visit. If the field is blank, assume the date is the same as the Last Observed Date.

Location Description: County or Counties in which the Element Occurrence was documented followed by Township, Range, and Section information (not listed in any particular order). Each unique Township, Range, and Section combination is separated by a comma. In some cases, there are too many Township, Range, and Section combinations to list in the field, in which case, the information will be replaced with, "Legal description is too lengthy to fit in allotted space".

-M-

Managed Area(s): Name of the federally, state, locally, or privately managed park, forest, refuge, preserve, etc., containing the occurrence, if any. If this field is blank, the element probably occurs on private land. If "(Statutory Boundary)" occurs after the name of a managed area, the location may be a private inholding within the statutory boundary of a state forest or park.

MN Status: [Minnesota Status]. Legal status of plant and 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.

-N-

NPC Classification (v1.5): Native plant community name in Minnesota's Native Vegetation: A Key to Natural Communities (Version 1.5). This earlier classification has been replaced by Minnesota's Native Plant Community Classification (Version 2.0).

-O-

Observed Area: The total area of the Element Occurrence, in acres, which is measured or estimated during fieldwork. If null, the value has not been determined.

Ownership Type: Indicates whether the land on which the Element Occurrence was located was publicly or privately owned; for publicly owned land, the agency with management responsibility is listed, if known.

-S-

Site Name: The name of the site(s) where the Element Occurrence is located. Sites are natural areas of land with boundaries determined and mapped according to biological and ecological considerations.

Survey Site #/Name: The name of the survey site, if applicable, where the Element Occurrence is located. Survey sites are sites that provide a geographic framework for recording and storing data, but their boundaries are not based on biological and ecological considerations. Minnesota County Biological Survey site numbers, if applicable, are also listed in this field.

Survey Type: Information on the type of survey used to collect information on the Element Occurrence.

Surveyor(s): Name(s) of the person(s) that collected survey information on the Element Occurrence.

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.

-V-

Vegetation Plot: Code(s) for any vegetation plot data that have been collected within this Element Occurrence (i.e., either Releve Number or the word "RELEVE" indicates that a releve has been collected).

* 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.

Data Security

Locations of some rare features must be treated as sensitive information because widespread knowledge of these locations could result in harm to the rare features. For example, wildflowers such as orchids and economically valuable plants such as ginseng are vulnerable to exploitation by collectors; other species, such as bald eagles, are sensitive to disturbance by observers. For this reason, we prefer that publications not identify the precise locations of vulnerable species. We suggest describing the location only to the nearest section. If this is not acceptable for your purposes, please call and discuss this issue with the Endangered Species Environmental Review Coordinator at (651) 259-5109.



Graham Environmental Services, Inc.

GES

S.M. Hentges and Sons Sand Creek Sensitive Species Survey



**Prepared for: McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359**

**Prepared by: Graham Environmental Services, Inc.
1119 Horseshoe Lane SE
New Prague, MN 56071
September 11, 2009**

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S.M. HENTGES AND SONS SAND AND GRAVEL MINE SENSITIVE SPECIES SURVEY

SUMMARY OF FINDINGS

Graham Environmental Services, Inc. (GES) was contracted by McCain and Associates to conduct a survey for sensitive plant species identified by the state of Minnesota as “sensitive species” on a parcel where sand and gravel mining is proposed. This parcel is located in portions of Sections 7, 8, 17, and 18, T114N, R23W, Sand Creek Township in Scott County, Minnesota (**Figure 1**). Minnesota Department of Natural Resources (MDNR) endangered and threatened species databases show historic records for kitten-tails (*Besseya bullii*), James’ polania (*Cristatella jamesii*), Louisiana broomrape (*Orobanche ludoviciana*), gopher snake (*Pituophis melanoleucus*), and rhombic-petaled evening primrose (*Oenothera rhombipetala*) within one-mile of the portion of the parcel where the proposed mining is to occur. James’ polania is considered endangered, Kitten-tails and Louisiana broomrape are and will be listed as threatened, and gopher snake, lark sparrow, and rhombic-petaled evening primrose are listed by the State of Minnesota special concern. In this report the terms “Listed species” and “sensitive species” have been used interchangeably and refer to species with MDNR status designations.

GES conducted surveys for sensitive species on July 21 and August 28, 2009. No sensitive species were identified on the site.

INTRODUCTION

The purpose of the survey is to conduct a systematic review of habitats within a parcel where S.M. Hentges and Sons, Inc. propose to conduct sand and gravel mining operations. The parcel was evaluated for habitats utilized by sensitive plant species listed by the Minnesota Department of Natural Resources – Bureau of Endangered Resources (MDNR) as endangered, threatened, and special concern. Minnesota’s Endangered Species Statute (Minnesota Statutes, Section 84.0895) requires the Minnesota Department of Natural Resources (DNR) to adopt rules designating species meeting the statutory definitions of endangered, threatened, or species of special concern (TES). The resulting List of Endangered, Threatened, and Special Concern

Species is codified as Minnesota Rules, Chapter 6134. The Endangered Species Statute also authorizes the DNR to adopt rules that regulate treatment of species designated as endangered and threatened. These regulations are codified as Minnesota Rules, Parts 6212.1800 to 6212.2300. TES species, as defined by the DNR as endangered, threatened, and special concern and are defined as:

Minnesota Endangered Species: is a plant or animal species that is threatened with extinction throughout all or a significant portion of its range in Minnesota.

Minnesota Threatened Species: is a plant or animal species that is likely to become Endangered within the foreseeable future throughout all or a significant portion of its range in Minnesota.

Minnesota Special Concern Species are species that are not endangered or threatened, but are extremely uncommon in Minnesota, or have unique or highly specific habitat requirements and deserve careful monitoring of their status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations.

Table 1 is a list of potential terrestrial endangered, threatened, and special concern species and unique natural communities within the project area Natural Heritage Inventory for Sand Creek Township (T114N, R23W). The list was compiled using the MDNR Natural Heritage Inventory online database and known occurrences within one-mile of the project boundaries.

Table 1.

Group	Scientific Name	Common Name	State
COMMUNITY	Dry Barrens Prairie (Southern) (Ups13a)	Dry-Prairie (southeast) Sand Gravel subtype	None
COMMUNITY	Native plant community undetermined class	Maple-Basswood Forest	None
PLANT	<i>Besseya bullii</i>	Kitten-tails	Threatened
BIRD	<i>Chondestes grammacus</i>	Lark sparrow	"Special Concern"
PLANT	<i>Cristatella jamesii</i>	James' polanisia	Endangered
PLANT	<i>Cypripedium candidum</i>	Small white lady's slipper	Special Concern
SNAKE	<i>Pituophis melanoleucus</i>	Gopher snake	Special Concern
PLANT	<i>Oenothera rhombipetala</i>	Rhombic-petaled evening primrose	Special concern
PLANT	<i>Orobanche ludoviciana</i>	Louisiana broomrape	"Threatened"
PLANT	<i>Desmodium cuspidatum</i> <i>var. longifolium</i>	Big tick trefoil	Special Concern

Ranking in parenthesis depicts DNR revisions that are pending.

SURVEY AREA

The S.M. Hentges and Sons Project area lies within the Minnesota and Northeast Iowa Morainal Section of the Eastern Broadleaf Forest Province. This ecological section lies in a band of deciduous forest, woodland and prairie from Polk County in northwest Minnesota to the Iowa border. This ecological land type consists of moraines deposited along the eastern margin of the Des Moines ice lobe and till deposited as drumlins during the last glaciations. Small sand plains occur within these moraines and were dominated by prairie, savanna, and oak or aspen woodland prior to settlement. Floodplain and terrace forests also occurred along

major rivers such as the Minnesota River. These forested areas were dominated by silver maple, cottonwood, box-elder, elm, and green ash.

Currently, the site reflects little of the historic natural character. The site is planted to corn and wheat over most of the site with a few fencelines, floodplain wetland, and isolated wetlands. The remaining portions of the site are characterized as a single-family residence, a pine dominated woodlot, and a hillside dominated by pioneering grasses with scattered forbs.

METHODOLOGY

Botanical Elements Methodology

The site was assessed for sensitive plants using a modified meander search method. Goff et al. (1982) utilized a time meander search to catalogue plants in a variety of plant communities and statistically illustrated through species area curves that this method adequately samples a given vegetative community for rare plants. A qualitative assessment of the effectiveness of using the transect versus meander-search method conducted by Penskar (1991) in the Ottawa National Forest, Michigan, indicated that the meander-search method is in all probability the best technique to adequately sample for rare taxa in both small and large sample areas. The meander method was deemed to be the best approach to maximizing coverage and the potential for identifying populations of rare plants. No sampling or search methods are absolute and any search may involve error or variables that reduce the effectiveness of searches.

The purpose of the meander search method is to catalogue all the vascular plants in a given plant community type by systematically visiting all potential microhabitat sites that comprise the larger community type. Upon entering the plant community type all vascular plants visible at that point are catalogued. This process continues at additional points within the community type that supports plants not yet recorded until all the plants occurring in the community type are catalogued or, based on the surveyor's experience with the community type, it is determined that the basin had been adequately sampled for rare taxa. Sampling rigor increases in specific microhabitats or plant community types that support habitat considered potentially optimal for specific rare taxa. Microhabitats are typically defined by topographic relief and /or soil moisture gradients.

GES modified the meander search method by identifying potentially suitable habitats and screening out obviously unsuitable habitats. This modification allowed us to conduct even more intensive surveys in the areas most likely to harbor target species and eliminate the timed survey intervals described by Goff (1982). Quantitative analysis of the vegetation was not the principal goal of the survey. The meander search method, without the use of timed intervals, was deemed appropriate for qualitatively assessing the presence/absence of rare

taxa.

GES reviewed information about target species including; local known populations of target species to assess phenology, herbarium specimens, historic records, and the results of previous surveys on the site including soil survey information and historic aerial photographs. Areas deemed most likely to provide suitable habitat for targeted species were identified and then evaluated in the field. Target search areas for sensitive plants include the following characteristics:

1. Areas with little observable disturbance areas that contain an abundance of native species or suitable habitat for sensitive species listed above (i.e. Native prairie communities),
2. Wooded edges adjacent to native prairie areas,
3. Areas with little potential for harboring target species were also evaluated to assess plant communities and disturbance history of the site.

GES classified plant community types according to the *Field Guide to the Native Plant Communities of Minnesota The Eastern Broadleaf Forest Province* descriptions (MDNR 2005).

RESULTS

Two general plant community types were identified within the parcel on the S.M. Hentges and Sons site (**Figure 2**) and are described as: Upland disturbed grassland and Southern Floodplain Forest (FFs68). Plant communities in both of the community types exhibit varying levels of disturbance and abundant invasion by pioneering and non-native species. Non-native species such as smooth brome (*Bromus inermis*), quackgrass (*Agropyron repens*), Kentucky bluegrass (*Poa pratensis*), reed canary grass (*Phalaris arundinacea*), common buckthorn (*Rhamnus cathartica*), Tartarian honeysuckle (*Lonicera tartarica*), Siberian elm (*Ulmus pumila*), and garlic mustard (*Allaria petiolata*) are most abundant along edges or land unit borders but occur throughout the area.

Historically, portions of the upland areas were probably Dry Barrens Prairie (Southern). However, most of these areas were cultivated and planted in corn, wheat, or pines that are part of the residence on the site. However the soils are characteristic of this community type that was typically a grass-dominated herbaceous community. Relic dry prairie plants that occur along the driveway

and on an un-cropped hillside exhibit small patches of Schweinitz's nut sedge (*Cyperus schwienitzii*), sand dropseed (*Sporobolus cryptandrus*), and mock pennyroyal (*Hedoma hispidum*).

Southern Floodplain Forest are described as "Deciduous riparian forests on sandy or silty alluvium on low, level, annually flooded sites along medium and large rivers in the southern half of Minnesota." This floodplain forest occurs along the southern boundary of the site and contains several isolated wetlands that are part of the Sand Creek floodplain and are connected by ditches dominated by reed canary grass. The floodplain forest observed on the S.M. Hentges site is also characterized by an abundance of invasive species in the herbaceous layer. Reed canary grass (*Phalaris arundinacea*) and common buckthorn (*Rhamnus cathartica*) occur in abundance in the topographic lows of the floodplain and on wooded slopes adjacent the floodplain. The isolated wetlands are characterized by a canopy dominated by silver maple (*Acer saccharinum*) and an herbaceous layer dominated by wood nettle (*Laportea canadensis*) and white snakeroot (*Eupatorium rugosum*).

The **appendix** lists the plant species observed during our survey of the parcel at the S.M. Hentges and Sons Sand Creek site. No occurrences of state listed species were observed on the site.

CONCLUSIONS

GES found no occurrences of *Besseyia bullii*, *Cristatella jamesii*, *Orobancha ludoviciana*, or other sensitive species on the S.M. Hentges and Sons Sand Creek site. The southern floodplain forest community on the site occurs as fragments on the property but retain native plants consistent with the FFs68 type. The information contained herein represents my findings during the S.M. Hentges and Sons sensitive species survey activities conducted on July 21 and August 28, 2009 at the above referenced site.

Graham Environmental Services, Inc.



09-11-2009

Scott Krych
Biologist/Professional Wetland Scientist No. 000303

Date

Enclosures

Literature Cited

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- Ownbey, B. G. and T. Morley. 1991. Vascular Plants of Minnesota: A Checklist and Atlas. University of Minnesota, Minneapolis, MN. 307 pp.
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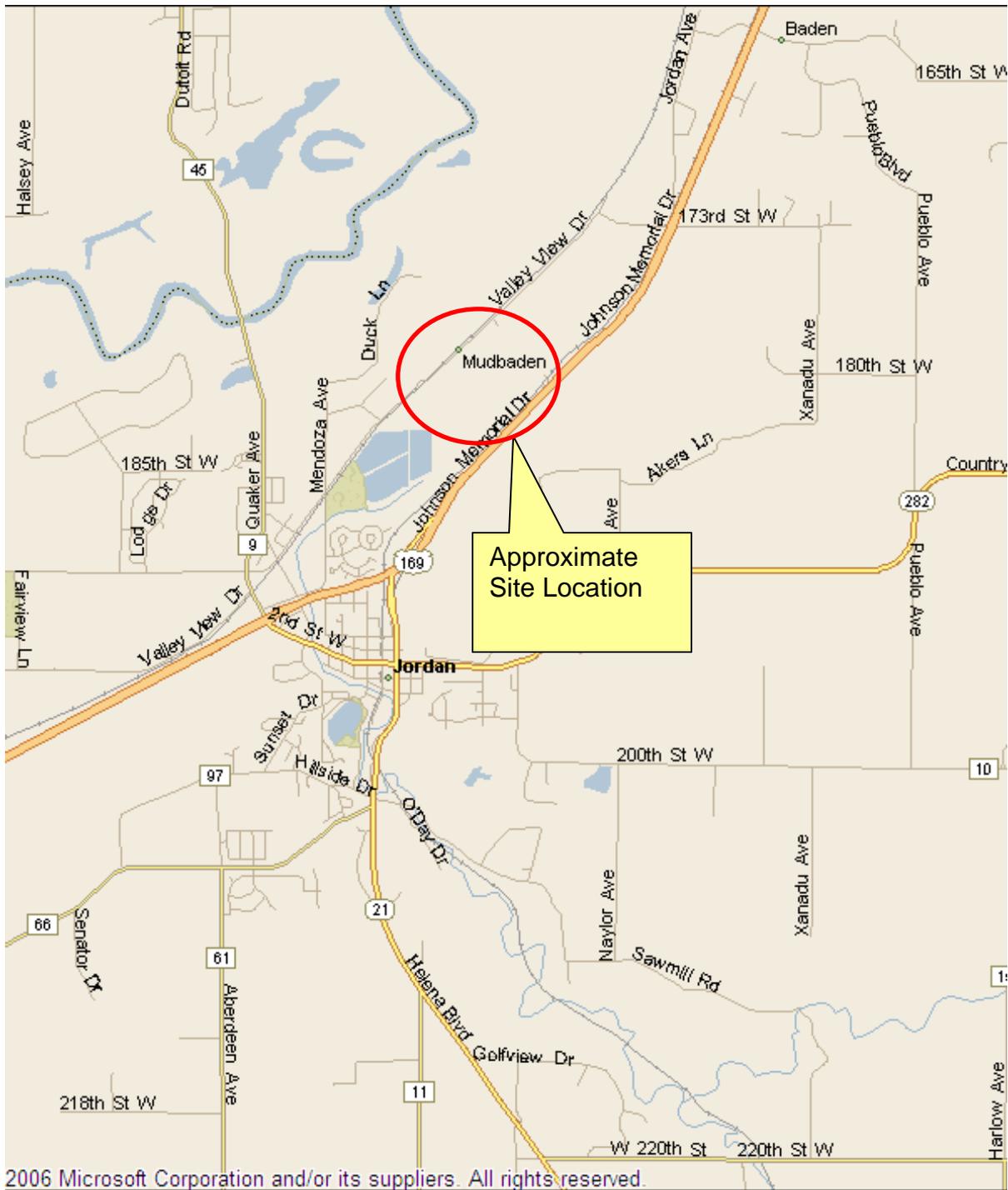


Figure 1. Project Location Map

S.M. Hentges and Sons Site
 Sand Creek Township, Minnesota

GES Project No. 2009.024



GES

Graham Environmental Services, Inc.

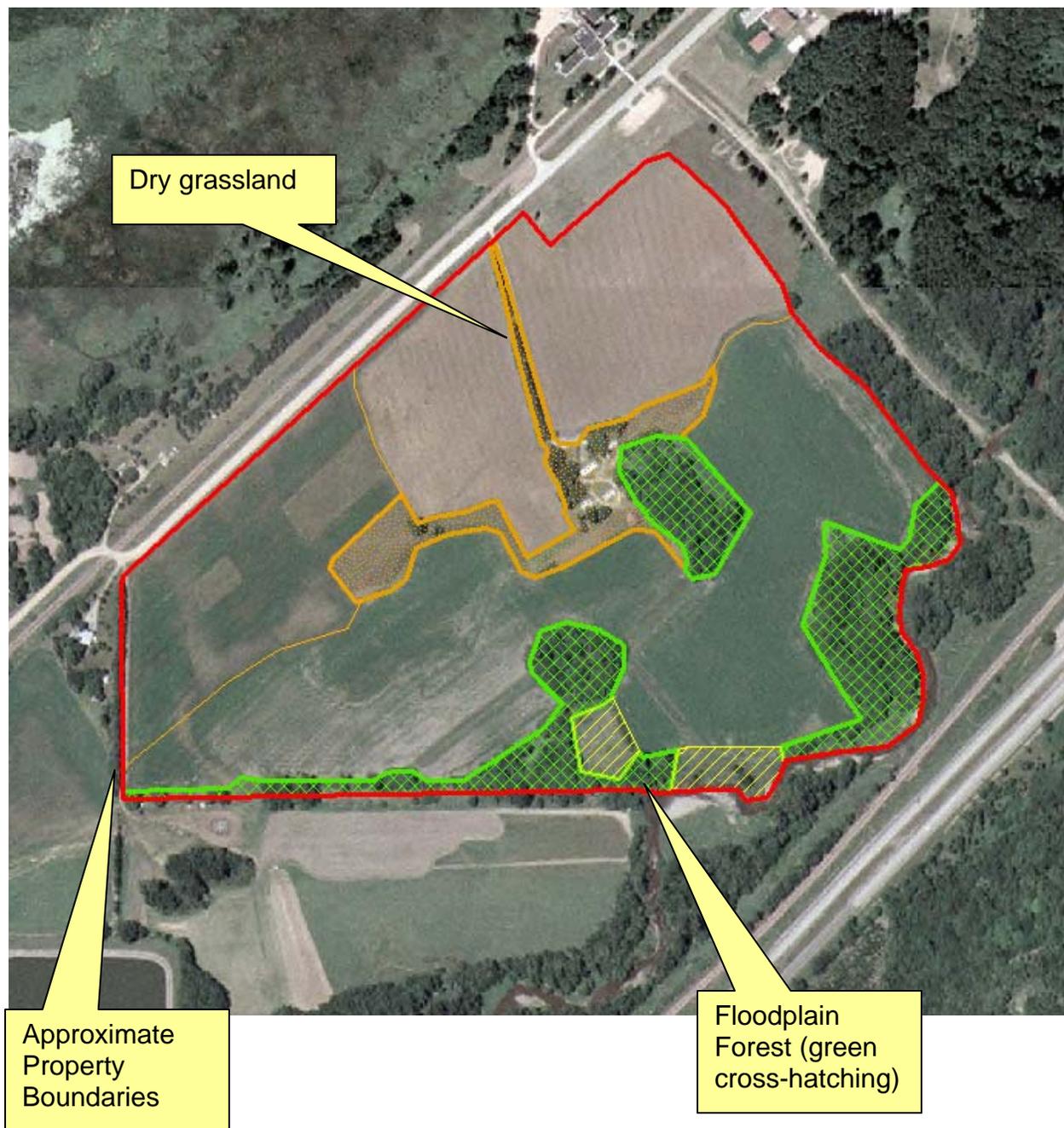


Figure 2. Natural Community Map



GES

S.M. Hentges and Sons Site
Sand Creek Township, Minnesota

GES Project No. 2009.024

Graham Environmental Services, Inc.



Appendix

(Plant List)

Appendix: Species Observed on S.M. Hentges and Sons Sand Creek Site

Genus	Species	Species Author	Common Name	Grass uplands	FFs68
Understory Trees					
<i>Acer</i>	<i>negundo</i>		Box-elder		X
<i>Acer</i>	<i>saccharinum</i>	L.	Silver maple		X
<i>Celtis</i>	<i>occidentalis</i>		Hackberry		X
<i>Fraxinus</i>	<i>pennsylvanica</i>	Marsh.	Green ash		X
<i>Quercus</i>	<i>elipsoidalis</i>		Northern pin oak	X	
<i>Quercus</i>	<i>macrocarpa</i>		Bur oak	X	
<i>Juniperus</i>	<i>virginiana</i>	L.	Eastern red cedar	X	
<i>Populus</i>	<i>deltoides</i>		Eastern cottonwood		X
<i>Pinus</i>	<i>banksiana</i>		Jack pine	X	
<i>Pinus</i>	<i>resinosa</i>		Red pine	X	
<i>Salix</i>	<i>nigra</i>		Black willow		X
<i>Ulmus</i>	<i>americana</i>	L.	American elm		X
<i>Ulmus</i>	<i>pumila</i>		Russian elm	X	
Shrubs					
<i>Cornus</i>	<i>stolonifera</i>		Red-osier dogwood		X
<i>Lonicera</i>	<i>tartarica</i>		Tartarian honeysuckle	X	X
<i>Rhamnus</i>	<i>cathartica</i>		Common buckthorn		X
<i>Rhus</i>	<i>glabra</i>		Smooth sumac	X	
<i>Rosa</i>	<i>arkansana</i>	Porter	Prairie rose	X	
<i>Ribes</i>	<i>americanum</i>		American black currant		X
<i>Ribes</i>	<i>cynosbati</i>		Field current	X	
<i>Salix</i>	<i>nigra</i>		Black willow	X	X
Low Shrubs					
<i>Toxicodendron</i>	<i>radicans</i>		Poison ivy	X	X
<i>Rubus</i>	<i>occidentalis</i>		Red raspberry	X	
Forbs					
<i>Ambrosia</i>	<i>artemisiifolia</i>		Common ragweed	X	
<i>Ambrosia</i>	<i>psilostachya</i>		Western ragweed	X	
<i>Ambrosia</i>	<i>trifida</i>		Giant ragweed		X
<i>Anemone</i>	<i>caroliniana</i>		Prairie anemone	X	
<i>Anemone</i>	<i>cylindrica</i>	A.Gray	Thimbleweed	X	
<i>Arctium</i>	<i>minus</i>		Common burdock		X
<i>Allaria</i>	<i>petiolata</i>	(M. Bieb.) Cavara & Grande	Garlic mustard		X
<i>Apocynum</i>	<i>androsaemifolium</i>	L.	Spreading dogbane	X	
<i>Artemisia</i>	<i>biennis</i>		Biennial sage		X
<i>Artemisia</i>	<i>ludoviciana</i>	Nutt.	Prairie sage	X	
<i>Artemisia</i>	<i>dracunculoides</i>		wormwood	X	
<i>Asclepias</i>	<i>syriaca</i>	L.	Common milkweed	X	
<i>Asclepias</i>	<i>viridiflora</i>	Raf.	Green milkweed	X	
<i>Asclepias</i>	<i>virgata</i>		Whorled milkweed	X	

<i>Aster</i>	<i>ontarionis</i>		Ontario aster		X
<i>Berteroa</i>	<i>incana</i>	(L.)DC.	Hoary false madwort	X	X
<i>Campanula</i>	<i>americana</i>		American bellflower		X
<i>Cerastium</i>	<i>arvense</i>		Field chickweed	X	
<i>Chrysopsis</i>	<i>villosa</i>		Golden aster	X	
<i>Comandra</i>	<i>umbellata</i>		Bastard toadflax	X	
<i>Convolvulus</i>	<i>sepium</i>		Hedge bindweed	X	
<i>Conyza</i>	<i>canadensis</i>	L.	Canadian horseweed	X	
<i>Cryptotania</i>	<i>canadensis</i>	L.	Honewort	X	
<i>Dalea</i>	<i>villosa</i>	(Nutt.) Sprengel	Silky Prairie-clover	X	
<i>Erigeron</i>	<i>strigosus</i>		Daisy fleabane	X	
<i>Eupatorium</i>	<i>rugosum</i>	Houtt.	White snakeroot		X
<i>Euphorbia</i>	<i>esula</i>		Leafy spurge	X	
<i>Euphorbia</i>	<i>dauidii</i>	Subils	David's spurge	X	
<i>Euthamia</i>	<i>graminifolia</i>		Flat-topped goldenrod		X
<i>Fragaria</i>	<i>virginiana</i>		Strawberry	X	X
<i>Galium</i>	<i>aparine</i>		bedstraw		X
<i>Geum</i>	<i>canadense</i>		Avens		X
<i>Glechoma</i>	<i>hederacea</i>		Creeping Charlie		X
<i>Hackelia</i>	<i>deflexa</i>		Stickweed		X
<i>Hedeoma</i>	<i>hispidia</i>	Pursh	Mock pennyroyal	X	
<i>Hesperis</i>	<i>matronalis</i>		Dame's rocket		X
<i>Heterotheca</i>	<i>villosa</i>		Hairy false golden aster	X	
<i>Impatiens</i>	<i>capensis</i>		Spotted jewelweed		X
<i>Laportea</i>	<i>canadense</i>	L. (Wedd.)	Wood nettle		X
<i>Leonurus</i>	<i>cardiaca</i>		Motherwort		X
<i>Lepidium</i>	<i>densiflorum</i>		Peppergrass	X	
<i>Liatriis</i>	<i>punctata</i>		Dotted gayfeather	X	
<i>Lithospermum</i>	<i>caroliniense</i>	(Walt.) MacM.	Hairy puccoon	X	
<i>Lycopus</i>	<i>americanus</i>		Bugleweed	X	X
<i>Medicago</i>	<i>sativa</i>	L.	Medic	X	
<i>Melilotus</i>	<i>officinalis</i>	L.	Yellow sweet clover	X	
<i>Melilotus</i>	<i>alba</i>	Medik.	White sweet clover	X	
<i>Mirabilis</i>	<i>nyctaginea</i>	Michx	Four o'clock	X	
<i>Mollugo</i>	<i>verticellata</i>		Carpet weed	X	
<i>Parthenocissus</i>	<i>quiquefolia</i>		Virginia creeper	X	X
<i>Petalostemon</i>	<i>purpureum</i>	Vent.	Purple prairie clover	X	
<i>Physalis</i>	<i>virginiana</i>	Mill.	Ground cherry	X	
<i>Pilea</i>	<i>Spp.</i>		Clearweed		X
<i>Plantago</i>	<i>aristida</i>	Michx.	Poor Joe	X	
<i>Polygonum</i>	<i>amphibium</i>		Water smartweed	X	
<i>Polygonum</i>	<i>convolvulus</i>	L.	Black bindweed		X
<i>Polygonum</i>	<i>persicaria</i>		Lady thumb		X
<i>Rudbeckia</i>	<i>laciniata</i>		Cut-leaved coneflower		X
<i>Rumex</i>	<i>crispus</i>	L.	Curly dock		X

<i>Scrophularia</i>	<i>lanceolatum</i>	Pursh	American figwort		X
<i>Silene</i>	<i>antirrhina</i>	L.	Sleepy catchfly	X	
<i>Smilicina</i>	<i>racemosa</i>		False-solomon's seal	X	
<i>Solidago</i>	<i>gigantea</i>		Giant goldenrod	X	
<i>Solidago</i>	<i>nemoralis</i>		Gray goldenrod	X	
<i>Solidago</i>	<i>rigida</i>	L.	Stiff goldenrod	X	
<i>Stellaria</i>	<i>media</i>		Common chickweed	X	X
<i>Tradescanti</i>	<i>occidentalis</i>		Western spiderwort	X	
<i>Tragopogon</i>	<i>pratensis</i>	L.	Goat's beard	X	
<i>Trifolium</i>	<i>campestre</i>		Hop clover	X	
<i>Urtica</i>	<i>dioica</i>		Stinging nettle		X
<i>Verbena</i>	<i>stricta</i>	Vent.	Hoary vervain	X	
<i>Vicea</i>	<i>villosa</i>	Roth	Hairy vetch	X	
<i>Vitis</i>	<i>riparia</i>		Riverbank grape	X	X
Grasses, Rushes and Sedges					
<i>Andropogon</i>	<i>gerardii</i>		Big bluestem	X	
<i>Bromus</i>	<i>inermis</i>		Smooth brome	X	X
<i>Bromus</i>	<i>tectorum</i>		Cheat	X	
<i>Carex</i>	<i>blanda</i>		Bland sedge		X
<i>Cyperus</i>	<i>schweinitzii</i>	Torr.	Sand sedge	X	
<i>Digitalis</i>	<i>sanguinalis</i>		Crab grass	X	
<i>Echinochloa</i>	<i>muricata</i>		Barnyard grass		X
<i>Elytrigia</i>	<i>repens</i>		Quackgrass	X	
<i>Elymus</i>	<i>trachycaulus</i>		Slender wheat grass	X	
<i>Elymus</i>	<i>virginicus</i>		Canada wild rye	X	X
<i>Eragrostis</i>	<i>spectabilis</i>		Purple love grass	X	
<i>Koeleria</i>	<i>macrantha</i>		June grass	X	
<i>Leersia</i>	<i>virginica</i>		Cut grass		X
<i>Panicum</i>	<i>virgatum</i>	Vasey	Panic grass	X	
<i>Phalaris</i>	<i>arundinacea</i>		Reed canary grass	X	X
<i>Poa</i>	<i>pratensis</i>	L.	Kentucky bluegrass	X	
<i>Sporobolis</i>	<i>cryptandrus</i>		Sand dropseed	X	
<i>Stipa</i>	<i>spartea</i>		Porcupine grass	X	
<i>Setaria</i>	<i>verticellata</i>		foxtail	X	X
State listed or rare species	<i>None</i>				