

Sand & Gravel Mining and Accessory Uses Empire Township, Dakota County

APPENDICES

Sand & Gravel Mining and Accessory Uses
Empire Township, Dakota County

APPENDICES

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INTERIM USE AGREEMENT**EMPIRE TOWNSHIP
And
HEDBERG AGGREGATES, INC. / CEMSTONE PRODUCTS COMPANY**

This Agreement, dated _____, is by and between Hedberg Aggregates, Inc., a Minnesota corporation / Cemstone Products Company, a Minnesota corporation (the "Applicant") and Empire Township (the "Township").

The parties agree as follows:

1. The Applicant has requested an Interim Use Permit to operate a ready-mix concrete plant and railroad aggregate unloading facility at the Hedberg Aggregates mineral extraction facility, located in Section 7, Township 114, Range 19.
2. The Applicant has submitted the "Application to Amend Existing Hedberg Aggregates, Inc. Mineral Extraction Permit for the Purpose of Adding Accessory Uses of an Aggregate Railroad Unloading and Distribution Facility and a Ready-mix Concrete Plant", dated May, 2000.
3. The Planning Commission has held a public hearing to consider the request for an Interim Use Permit.
4. The Planning Commission has adopted findings and recommended approval of the Interim Use Permit / Interim Use Agreement.
5. The Applicant agrees to operate the ready-mix plant and railroad unloading facility in conformance with the "May, 2000 Application" referenced above and all federal, state and local laws, rules, ordinance and regulations.
6. The Applicant agrees to operate the facilities consistent with existing and future federal, state and local laws, rules and ordinances, pertaining specifically to environmental conditions, including but not limited to air quality, surface water quality, ground water quality, noise and particulates.
7. The Applicant agrees to allow access to the Township's representatives, upon reasonable notice, to inspect permitted facilities and site conditions, at intervals chosen by the Township.
8. The Applicant agrees to reimburse the Township for all out of pocket expenses incurred in the permit application review and approval, facility inspections and enforcement of this Agreement and local ordinances.
9. The Applicant agrees to pay all permit or license fees established by the Township and as adjusted from time to time.

- 10. This permit will remain valid until one of the following occurs:
 - a. The Applicant changes or expands the nature of the facility operations contrary to the facility operations described in the permit application above.
 - b. The Applicant withdraws the IUP.
 - c. Applicable provisions of Ordinance No. 450 cause a termination of the IUP.
- 11. New or revised facility operations, which are consistent with Township ordinances, may be considered through established review procedures and authorized by the Township by amending the Interim Use Permit.
- 12. This agreement shall serve as the Interim Use Permit.

EMPIRE TOWNSHIP

By: _____
Karen Gerten, Clerk

By: _____
G. E. Stelzel, Chairman

STATE OF MINNESOTA)
)
COUNTY OF DAKOTA) SS

This agreement was executed before me this _____ day of _____, 2000,
by _____ and _____ on behalf of Empire
Township.

Notary Public

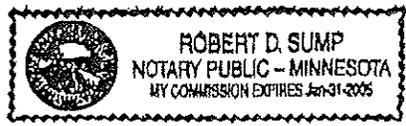
HEDBERG AGGREGATES, INC.

By: _____
Stephen J. Hedberg, President

STATE OF MINNESOTA)
)
COUNTY OF Hennepin) SS

This agreement was executed before me this 9 day of August, 2000, by
Stephen J. Hedberg on behalf of Hedberg Aggregates, Inc.

Robert D. Sump
Notary Public



CEMSTONE PRODUCTS COMPANY

By: Timothy A. Becken
Timothy A. Becken, Senior Vice President

STATE OF MINNESOTA)
COUNTY OF Dakota) SS

This agreement was executed before me this 9 day of August, 2000, by Timothy A. Becken on behalf of Cemstone Products Company.

Alice M. Van Guilder
Notary Public
 ALICE M. VAN GUILDER
NOTARY PUBLIC - MINNESOTA
My Commission Expires Jan. 31, 2005



Minnesota Department of Natural Resources

Natural Heritage and Nongame Research Program, Box 25

500 Lafayette Road

St. Paul, Minnesota 55155-4000

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

June 2, 2003

Kathy Krippnes
Empire Township
3385 197th St. W.
Farmington, MN 55024

Re: Request for Natural Heritage information for vicinity of proposed Empire Township Sand and Aggregate Mine, T114N R19W Sections 5-10 & 16, Dakota County
NHNRP Contact #: ERDB 20031042

Dear Ms. Krippnes,

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 12 known occurrences of rare species or natural communities in the area searched (for details, see enclosed database printout and explanation of selected fields). Following are specific comments for **only those elements that may be impacted** by the proposed project. Rare feature occurrences not listed below are not anticipated to be affected by the proposed project.

- Loggerhead shrikes (*Lanius ludovicianus*), a Threatened bird species, have been documented within the project area. The preferred habitat of this species is open country and dry upland prairie with hedgerows, shrubs, and small trees. Shrikes are also found around shelterbelts, old orchards, pastures, cemeteries, grassy roadsides, and farmsteads. The scattered trees, shrubs, and fencerows in these areas provide places shrikes need to hunt and nest. Red cedar, hawthorn, and plum trees are frequently used for nesting. Shrikes feed by perching on the trees, shrubs, fences, or powerlines, and flying out to catch their prey (large insects, small mammals, birds, frogs etc.) in surrounding open grassy areas. Therefore, areas that are too open and have no trees or shrubs for nesting and perching are unsuitable, as are forested areas or dense brushland, which have no open areas in which to spot prey. It is not uncommon for a particular nesting area to be vacant for one to several years, and then be used again by shrikes in the future. As such, areas containing the habitat characteristics described above should be treated as potential habitat. Please refer to the enclosed fact sheet for additional information regarding habitat use, life history, and reasons for the species' decline, as well as recommendations for protecting and enhancing habitat for this rare bird. Whether the mining project has the potential to impact Loggerhead Shrikes needs to be determined. The determination, its justification, and any proposed avoidance/mitigation measures should be addressed in the EIS.
- A Mesic Prairie Natural Community has been documented near the southeastern edge of the project area in Section 9 (see the enclosed map for details). Because more than 99% of the prairie that was present in the state before settlement has been destroyed, and more than one-third of Minnesota's endangered, threatened, and special concern species are now dependent on the remaining small

EMPIRE TOWNSHIP MINING
 T114N R19W SEC. 5-10 & 16, DAKOTA COUNTY
 MNDNR, Natural Heritage and Nongame Research Program

MANAGED AREA

Minnesota Natural Heritage Database
 Element Occurrence Records

TWP	RNG	PRIMARY SECTION	FED STATUS	MX STATUS	S RANK	ELEMENT and OCCURRENCE NUMBER
T114N	R19W	05		TER		LANIUS LUDOVICIANUS (LOGGERHEAD SHRIKE) #80
T114N	R19W	07		TER		LANIUS LUDOVICIANUS (LOGGERHEAD SHRIKE) #128
T114N	R19W	09			S1	MESIC PRAIRIE (SOUTHEAST) #14
T114N	R19W	11		TER		LANIUS LUDOVICIANUS (LOGGERHEAD SHRIKE) #97
T114N	R19W	14			S4	OAK WOODLAND-BRUSHLAND (SOUTHEAST) #47
T114N	R19W	15		THR		EMYDOIDSA BLANDINGII (BLANDING'S TURTLE) #603
T114N	R19W	15		NON		OXYPOLIS RIGIDIOR (COWBANE) #37
T114N	R19W	15		THR		VALERIANA EDULIS VAR. CILIATA (VALERIAN) #46
T114N	R19W	15			S1	WET PRAIRIE (SOUTHEAST) #11
T114N	R19W	22		NON		BATRACHIA LONGICAUDA (UPLAND SANDPIPER) #367
T114N	R20W	13		NON		OXYPOLIS RIGIDIOR (COWBANE) #36
T114N	R20W	13			S3	WET MEADOW #85

RECORDS PRINTED * 12

T114N R19W NENE05 DAKOTA COUNTY, MN
 Element: LANIUS LUDOVICIANUS (LOGGERHEAD SHRIKE) #80
 State Status: THREATENED
 EO Size: EO Rank: Current Status: Intended Status:
 Site: EMPIRE 5
 Ownership: Owner unknown
 Managed Area(s): not managed or no record
 Source: BARDON, K. (SHRIKE SURVEY OF PROPOSED DAKOTA CO INCINERATOR SITE)
 INFERRED NESTING. FAMILY OF 4 SHRIKES OBSERVED ALONG BISCAYNE AVE, 0.25-0.5 MILE SOUTH OF PROPOSED DAKOTA CO INCINERATOR SITE.
 ON AUG 1, 1 ADULT OBSERVED IN APPROXIMATELY SAME LOCATION & 3 JUVENILES FOUND IN SMALL CONIFERS OF A YARD .75 MILE SOUTH OF 160TH ALONG BISCAYNE AVE. 1991; NO
 SHRIKES FOUND ON 8/8 BY S. KITTELSON DURING SHRIKE SURVEY; 1995: NO BIRDS FOUND 3 JUNE BY M. ETTER DURING SHRIKE SURVEY; POSSIBLE OLD NEST FOUND.

T114N R19W NENE07 DAKOTA COUNTY, MN
 Element: LANIUS LUDOVICIANUS (LOGGERHEAD SHRIKE) #128
 State Status: THREATENED
 EO Size: EO Rank: Current Status: Intended Status:
 Site: EMPIRE 7
 Ownership: Owner unknown
 Managed Area(s): not managed or no record
 Source: LONGLEY, W.; KITTELSON, S. (DNR) & S. KRYCH
 INFERRED BREEDING. 1993: 1 SHRIKE SEEN PERCHED ON UTILITY LINES ALONG RAILROAD R-O-W. APPEARED TO BE AN IMMATURE BIRD. PRIMARILY CULTIVATED FIELDS W/BROME
 ALONG RR R-O-W. SHRIKES ALSO SEEN HERE IN SPRING 1994 BY KRYCH. 1995: NO BIRDS OR NEST FOUND ON 6/8 BY M. ETTER DURING SHRIKE SURVEY. 1996: PAIR OF SHRIKES
 OBSERVED ON UTILITY WIRE AT RR CROSSING ON 170TH ST, WEST OF HWY 3 REST STOP. NEST SEARCHED FOR BUT NOT FOUND. NO BIRDS OBS ON 2 OTHER VISITS (6/28, 7/30).

T114N R19W SESE09 DAKOTA COUNTY, MN
 Element: MESIC PRAIRIE (SOUTHEAST) #14
 S Rank: S1
 EO Size: 12 acres EO Rank: 5 Current Status: Intended Status:
 Site: EMPIRE 15
 Ownership: Private
 Managed Area(s): not managed or no record
 Source: MORLEY, T. (CO BIOL SURVEY 1992)
 SMALL PRAIRIE REMNANT ON THE STEEPER PARTS OF WEST-FACING SLOPES. BROMUS INERM AND POA PRAT ARE COMMON BUT NATIVES APPEAR TO DOMINATE: ANDROPOGON GER, SPOROBE
 HET, MOHLENBERG CUSP, ASTER ERIC, SOLIDAGO NEM; NOT BEING INVADED BY SHRUBS. SIMILAR REMNANTS IN SERIES OF FOUR SOUTHWEST-FACING SLOPES IN NWNE SEC.15 BUT
 THESE MORE DEGRADED BY PAST GRAZING & WITH MUCH WOODY INVASION. ON STREAM-CUT TILL SLOPES HAVING MANTLE OF LOESS. IN MISS VALLEY OUTWASH REGION.

T114N R19W NNSW11 DAKOTA COUNTY, MN
 Element: LANIUS LUDOVICIANUS (LOGGERHEAD SHRIKE) #97
 State Status: THREATENED
 EO Size: EO Rank: Current Status: Intended Status:
 Site: EMPIRE 11
 Ownership: University of Minnesota
 Managed Area(s): not managed or no record
 Source: KITTELSON, S. (DAKOTA CO SHRIKE SURVEY)
 INFERRED BREEDING. 1992: INCIDENTAL OBSERVATIONS OF 1 BIRD AS FOLLOWS - OBSERVED ON WIRE IN NNE10 ON 26 MAY; OBS IN NNSW11 ON MAY 30 & 31 & JULY 23. 1 BIRD SEEN
 HUNTING & CAPTURING PREY IN SWSW11, NWSW11, & SWSW11 ON JULY 6 (CO BIOL SURVEY 1992). HABITAT: OLD FIELD, GRAZED PASTURE, CULTIVATED FIELDS W/SCATTERED SHRUBS/
 TREES. 1993: 1 AD OBS ON JULY 9 & 14 IN NNE10, ALSO IN SECS 2,3 & 11 DURING SHRIKE SURVEY. 1995: 1 BIRD PERHAPS OBS BY ETTER FLYING NW OVER SEC 10 ON 6/9.

Minnesota Natural Heritage Database
Element Occurrence Records

EMPIRE TOWNSHIP MINING
T114N R19W SEC. 5-10 & 16, DAKOTA COUNTY
MNDNR, Natural Heritage and Nongame Research Program

15:14 Tuesday, MAY 27, 2003
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T114N R19W SESW15 DAKOTA COUNTY, MN
Element: WET PRAIRIE (SOUTHEAST) #11
S Rank: S1

EO Size: 39 acres EO Rank: CD
Site: EMPIRE 15
Ownership: Private
Managed Area(s): not managed or no record
Source: DELANEY, B. (CO BIOL SURVEY 1992)
TRANSITIONAL COMMUNITY THAT MAY BE WET PRAIRIE OVERGROWN WITH POPULUS TREM AND CORNUS SPP. ASPEN MAX DBH 32 CM, DECREASING SIZE AROUND SMALL OPENINGS. NO SUB-CANOPY EXCEPT OCCAS RHAMNUS CATH AT 2-3 M. PATCHY SHRUBS: CORNUS FOEMINA & STOL. COMMON ANDROF, SPARTINA PECT., POA PRAT, SOLIDAGO ALIIS, GALIUM BOR; OCCAS ASTER NOV-ANG, DESMODIUM GLUT, MONARDA PIST, PRENANTHESS RAC. PRESENCE OF VALERIANA SUGGESTS AREA WAS MORE OPEN. THREATS: WOODY COVER, DRAINING. MISS VALLEY OUTFWASH

Last Observed Date: 15 September 1992 DNR Region: 6
Quad Map: COATES (T17A) Wildlife Area: 605
Latitude: 44 40' 40" Long: 93 5' 20" Forestry District: 612
Precision: approx. boundaries have been determined

Voucher: Verification: verified

T114N R19W SWNE22 DAKOTA COUNTY, MN
Element: BARTRAMIA LONGICAUDA (UPLAND SANDPIPER) #367
State Status: No Legal Status

EO Size: EO Rank:
Ownership: Owner unknown
Managed Area(s): not managed or no record
Source: BARDON, K. (CO BIOL SURVEY 1992)
BREEDING SEASON OBSERVATION. INCIDENTAL OBSERVATION OF ONE INDIVIDUAL CALLING (LONG WHISTLE) OVER GRASSY, PASTURED HILLSIDE SURROUNDED BY AGRICULTURAL FIELDS.

Last Observed Date: 06 July 1992 DNR Region: 6
Quad Map: COATES (T17A) Wildlife Area: 605
Latitude: 44 40' 7" Long: 93 4' 58" Forestry District: 612
Precision: within 0.25 mile, confirmed

Voucher: Verification: sight or sound rec.

T114N R20W NWNE13 DAKOTA COUNTY, MN
Element: OXYPOLIS RIGIDIOR (CORBANE) #36
State Status: No Legal Status

EO Size: EO Rank: B
Site: EMPIRE 18
Ownership: Private
Managed Area(s): not managed or no record
Source: MORLEY, T. (1974)
GROWING IN WET MEADOW REMNANTS AT MARGIN OF WETLAND DRAINAGE SYSTEM (DOMINATED BY CATTAILS) ADJACENT TO CULTIVATED LAND. COMMON. WITH ASCLEPIAS INCARNATA, EUPATORIUM MAC, EUP PERE, SALIX BERB, SALIX DISC. APPROX 3 MILES SOUTH AND 0.8 MILES EAST OF INTERSECTION OF HWY 31 AND 42. IN MISSISS VALLEY OUTFWASH REGION.

Last Observed Date: 08 August 1992 DNR Region: 6

Quad Map: FARMINGTON (T17B) Wildlife Area: 605
Latitude: 44 41' 11" Long: 93 9' 38" Forestry District: 612
Precision: within 0.25 mile, confirmed

Voucher: MIN Verification: verified

T114N R20W ONNE13 DAKOTA COUNTY, MN
Element: WET MEADOW #86
S Rank: S3

EO Size: 10 acres approx EO Rank: B
Site: EMPIRE 18
Ownership: Owner unknown
Managed Area(s): not managed or no record
Source: MORLEY, T. (CO BIOL SURVEY 1992)
SMALL GOOD QUALITY MEADOW ADJACENT TO DISTURBED SHRUB-DOMINATED WET MEADOW & CATTAIL MARSH. B-QUALITY AREA WITH HIGH FORB DIVERSITY, FEW GRAMINOIDS. FORBS INCLUDES OXYPOLIS RIGIDIOR, ASCLEPIAS INCARNATA, Pycnanthemum virginiana, CHELONE GLABRA, OTHERS. PHEALARIS, PERENNIUMS OCCASIONAL, CAREX SP PRESENT, NOT DOMINANT. NARROW STRIP OF WETLAND ON WEST SIDE OF STREAM 2 MILES NORTH OF FARMINGTON. SOIL MAPPED AS PALMS MUCK. WETLAND IS SURROUNDED BY CROPLANDS.

Last Observed Date: 08 August 1992 DNR Region: 6

Quad Map: FARMINGTON (T17B) Wildlife Area: 605
Latitude: 44 41' 15" Long: 93 9' 41" Forestry District: 612
Precision: approx. boundaries have been determined

Voucher: Verification: verified

EO Rank: C Current Status: Intended Status: CBS Site #: 59
 Last Observed Date: 14 July 1992
 DNR Region: 6
 Wildlife Area: 605
 Forestry District: 612
 Quad Map: COATES (T17A)
 Latitude: 44 41' 2" Long: 93 3' 30"
 Precision: approx. boundaries have been determined
 Voucher: Verification: verified

State Status: THREATENED
 Element: ERYDIOIDEA BLANDINEII (BLANDING'S TURTLE) #603
 State Status: THREATENED
 EO Rank: B Current Status: Intended Status: CBS Site #: 60
 Ownership: Owner unknown
 Managed Area(s): not managed or no record
 Source: DORFF, C. (CO BIOL SURVEY 1992)
 2 INDIVIDUALS OBSERVED. 1 FEMALE, BASKING ON A LOG, WAS CAPTURED BY HAND. SHALLOW BAY IN NORTHEAST PORTION OF LAKE INFERIOR. CARAPACE LENGTH = 241 MM; CARAPACE WIDTH = 157 MM; PLASTRON LENGTH = 229 MM. THE SECOND INDIVIDUAL WAS SEEN BASKING, BUT NOT CAPTURED. PHOTOS TAKEN.

EO Rank: B Current Status: Intended Status: CBS Site #: 60
 Last Observed Date: 25 June 1992
 DNR Region: 6
 Wildlife Area: 605
 Forestry District: 612
 Quad Map: COATES (T17A)
 Latitude: 44 41' 12" Long: 93 5' 5"
 Precision: within 0.25 mile, confirmed
 Voucher: Verification: photo rec.

EO Rank: B Current Status: Intended Status: CBS Site #: 60
 Last Observed Date: 15 September 1992
 DNR Region: 6
 Wildlife Area: 605
 Forestry District: 612
 Quad Map: COATES (T17A)
 Latitude: 44 40' 36" Long: 93 5' 22"
 Precision: within 0.25 mile, confirmed
 Voucher: MIN Verification: verified

EO Rank: CD Current Status: Intended Status: CBS Site #: 60
 Last Observed Date: 19 July 1992
 DNR Region: 6
 Wildlife Area: 605
 Forestry District: 612
 Quad Map: COATES (T17A)
 Latitude: 44 40' 34" Long: 93 5' 14"
 Precision: within 0.25 mile, confirmed
 Voucher: MIN Verification: verified

EO Rank: CD Current Status: Intended Status: CBS Site #: 60
 Last Observed Date: 19 July 1992
 DNR Region: 6
 Wildlife Area: 605
 Forestry District: 612
 Quad Map: COATES (T17A)
 Latitude: 44 40' 34" Long: 93 5' 14"
 Precision: within 0.25 mile, confirmed
 Voucher: MORLEY, T. (1723)
 GROWING IN UNCLEAR HABITAT: IN YOUNG, UPLAND ASPEN WOODS WITH COMMON MEADOW PLANTS, MUCH RHUS RADICANS, AND WHAT IS PROBABLY ANDROPOGON GER AND SPARTINA PECT (VEGETATIVE). POPULUS TREM MOSTLY 3-15 CM DBH; LIKELY WAS SEMI-OPEN NOT LONG AGO. ONE CLUMP SEEN NEAR SOUTH EDGE WOODS NEAR CULTIVATED FIELD. IN MISSISSIPPI VALLEY OUTFWASH REGION.

EO Rank: CD Current Status: Intended Status: CBS Site #: 60
 Last Observed Date: 19 July 1992
 DNR Region: 6
 Wildlife Area: 605
 Forestry District: 612
 Quad Map: COATES (T17A)
 Latitude: 44 40' 34" Long: 93 5' 14"
 Precision: within 0.25 mile, confirmed
 Voucher: MORLEY, T. (1723)
 GROWING IN UNCLEAR HABITAT: IN YOUNG, UPLAND ASPEN WOODS WITH COMMON MEADOW PLANTS, MUCH RHUS RADICANS, AND WHAT IS PROBABLY ANDROPOGON GER AND SPARTINA PECT (VEGETATIVE). POPULUS TREM MOSTLY 3-15 CM DBH; LIKELY WAS SEMI-OPEN NOT LONG AGO. ONE CLUMP SEEN NEAR SOUTH EDGE WOODS NEAR CULTIVATED FIELD. IN MISSISSIPPI VALLEY OUTFWASH REGION.

Rare Features Database Print-outs: An Explanation of Fields

The Rare Features database is part of the Natural Heritage Information System, and is maintained by the Natural Heritage and Nongame Research Program, a unit within the Division of Ecological Services, Minnesota Department of Natural Resources (DNR).

Please note that the print-outs are copyrighted and may not be reproduced without permission

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

-C-

CBS Site: [County Biological Survey site number]. In each county, the numbering system begins with 1.

CLASS: A code which classifies features by broad taxonomic group: NC = natural community; SA = special animal; SP = special plant; GP = geologic process; GT = geologic time; OT = other (e.g. colonial waterbird colonies, bat hibernacula).

Cty: [County]. Minnesota counties (ordered alphabetically) are numbered from 1 (Aitkin) to 87 (Yellow Medicine).

CURRENT STATUS: Present protection status, from 0 (owner is not aware of record) to 9 (dedicated as a Scientific and Natural Area).

-D-

DNR Region: 1=NW, 2=NE, 3=E Central, 4=SW, 5=SE, 6= Minneapolis/St. Paul Metro.

DNR Quad: [DNR Quadrangle code]. DNR-assigned code of the U.S. Geologic Survey topographic map on which the rare feature occurs.

-E-

ELEMENT or Element: See "Element Name (Common Name)"

Element Name (Common Name): 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 plant communities, which have no scientific name) it is solely the element name.

EO RANK: [Element Occurrence Rank]. An evaluation of the quality and condition of natural communities from A (highest) to D (lowest).

EO Size: [Element Occurrence Size]. The size in acres (often estimated) of natural communities.

-F-

FED STATUS: [Federal Status]. Status of species under the Federal Endangered Species Law: LE=endangered, LT=threatened, C=species which have been proposed for federal listing.

Federal Status: See "FED STATUS"

Forestry District: The Minnesota DNR's Division of Forestry district number.

-G-

GLOBAL RANK: The abundance of an element globally, 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 the Conservation Science Division of The Nature Conservancy.

-I-

INTENDED STATUS: Desired protection status. See also "CURRENT STATUS." If a complete list of protection status codes is needed, please contact the Natural Heritage Program.

-L-

LAST OBSERVED or Last Observed Date or Last Observation: Date of the most recent record of the element at the location.

Latitude: The location at which the occurrence is mapped on Natural Heritage Program maps. NOTE: There are various levels of precision in the original information, but this is not reflected in the latitude/longitude data. For some of the data, particularly historical records, it was not possible to determine exactly where the original observation was made (e.g. "Fort Snelling", or "the south shore of Lake Owasso"). Thus the latitude/longitude reflect the mapped location, and not necessarily the observation location.

Legal: Township, range and section numbers.

Long: [Longitude]. See NOTE under "Latitude"

-M-

MANAGED AREA or Managed Area(s): Name of the federally, state, locally, or privately managed park, forest, 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.

END=endangered, THR=threatened, SPC=special concern, NON=no legal status, but tracked. This field is blank for natural communities and colonial waterbird nesting sites, which have no legal status in Minnesota, but are tracked by the database.

-N-

NC Rank: [Natural Community Rank].

-O-

Occ #: [Occurrence Number]. The occurrence number, in combination with the element name, uniquely identifies each record.

OCCURRENCE NUMBER: See "Occ #"

OF OCCURS: The number of records existent in the database for each element within the area searched.

Ownership: Indicates whether the site is publicly or privately owned; for publicly owned land, the agency with management responsibility is listed.

-P-

Precision: Precision of locational information of occurrence: C (confirmed) = known within 1/4 mile radius, U (unconfirmed) = known within 1/2 mile, N (non-specific) = known within 1 mile, G (general) = occurs within the general region, X (unmappable)=location is unmappable on USGS topographic quadrangles (often known only to the nearest county), O (obscure/gone)=element no longer exists at the location.

PS: [Primary Section]. The section containing all or the greatest part of the occurrence.

-Q-

Quad Map: See "DNR Quad"

-R-

Rec #: [Record number].

RNG or Rng: [Range number].

-S-

SECTION or Section: [Section number(s)]. Some records are given only to the nearest section (s), but most are given to the nearest quarter-section or quarter-quarter-section (e.g., SWNW32 denotes the SW1/4 of the NW1/4 of section 32). A "0" is used as a place holder when a half-section is specified (e.g., 0N03 refers to the north 1/2 of section 3). When an occurrence crosses section boundaries, both sections are listed, without punctuation (e.g., the NE1/4 of section 19 and NW1/4 of section 20 is displayed as "NE19NW20").

Site: A name which refers to the geographic area within which the occurrence lies. If no name for the area exists (a locally used name, for example), one is assigned by the County Biological Survey or the Natural Heritage Program.

Source: The collector or observer of the rare feature occurrence.

S RANK: [State Rank]. A rank assigned to the natural community type which reflects the known extent and condition of that community in Minnesota. Ranks range from 1 (in greatest need of conservation action in the state) to 5 (secure under present conditions). A "?" following a rank indicates little information is available to rank the community. Communities for which information is especially scarce are given a "U", for "rank undetermined". 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.

State Status: See "MN STATUS"

-T-

TWP or Twp: [Township number].

-V-

Verification: A reflection of the reliability of the information on which the record is based. The highest level of reliability is "verified," which usually indicates a collection was made or, in the case of bird records, nesting was observed. Plant records based on collections made before 1970 are unverified.

Voucher: The museum or herbarium where specimens are maintained, and the accession number assigned by the repository. In the case of bald eagles, this is the breeding area number.

-W-

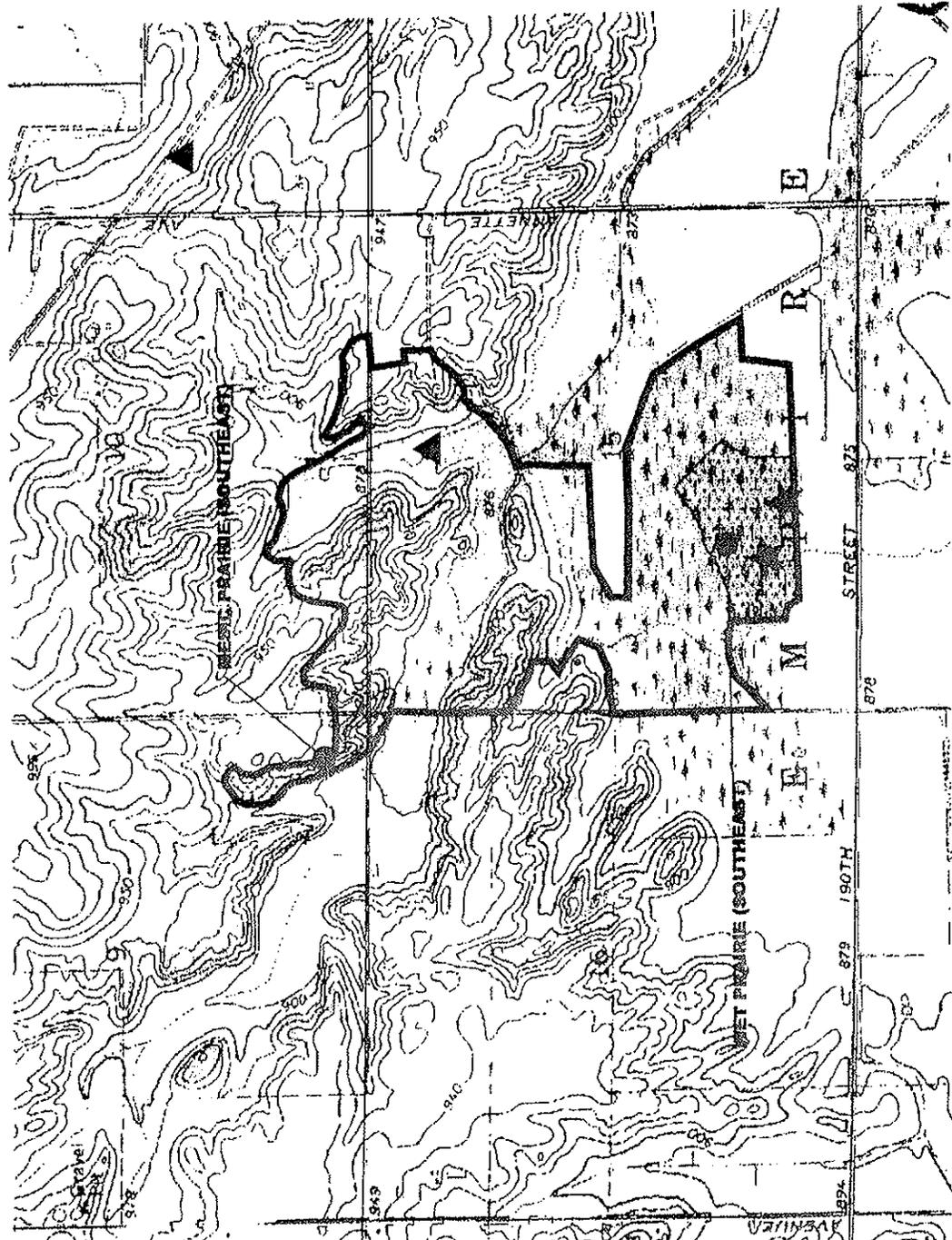
Wildlife Area: The Minnesota DNR's Division of Wildlife administrative number.

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 Environmental Review Specialist for the Natural Heritage and Nongame Research Program at 651/296-7863.

Revised 9/2002

"Site of High Biodiversity Significance" in the Vicinity of the proposed Empire Township Mining Area



- Rare Features**
- ★ Rare Plants
 - ▲ Rare Animals
 - Animal Aggregations
 - Natural Community
 - ▨ Natural Community Polygons
- Sites of Biodiversity Significance**
- OUTSTANDING
 - HIGH
 - MODERATE
 - BELOW

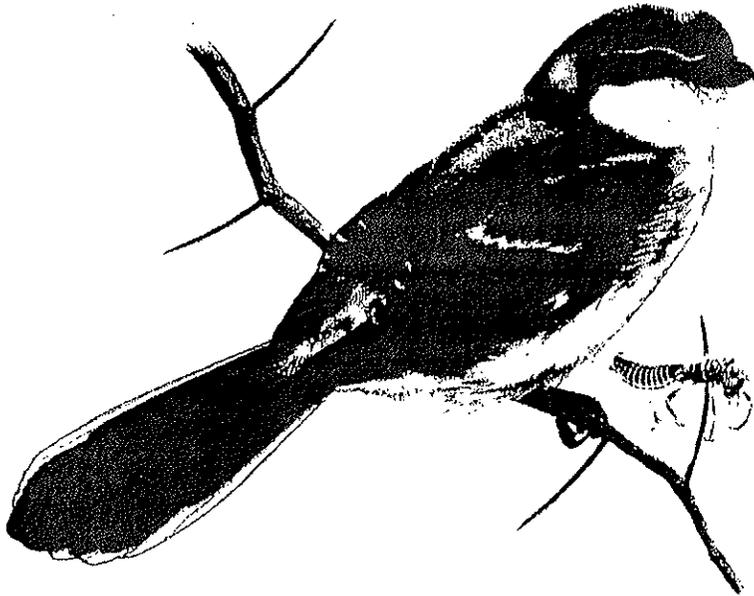


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 May Not Be Reproduced Without Permission
 Rare Features, Natural Community, and Sites of Biodiversity
 Significance data are from the Natural Heritage and Neoglacio
 Research Program's (NHREP) Natural Heritage Information Syst
 The absence of rare features for a particular location should not be
 construed to mean that the NHREP is confident rare features are
 absent from that location



Landowners Guide for Maintaining and Encouraging Loggerhead Shrikes

Loggerhead shrikes are in trouble – *but you may be able to help*. Throughout the United States, and particularly in the Midwest, loggerhead shrikes are disappearing at an alarming rate. So serious is the decline that the loggerhead shrike is one of six bird species considered threatened in Minnesota.



What is a loggerhead shrike?

Loggerhead shrikes are special birds – an interesting cross between songbird and hawk. They feed on large insects such as grasshoppers and beetles, mice, small birds, frogs and toads. Shrikes spend much of their time perched on powerlines, fences or the top-most branches of trees and shrubs, scouting for prey and then swooping down to catch it. Then the bird either eats its prey, impales it on a nearby thorn or barbed wire fence or wedges it into the fork of a branch. Because shrikes lack the strong, sharp claws and feet of hawks, impaling food holds it in place as the bird tears at it with its bill. Your first clue that loggerhead shrikes are on your property may be finding an animal impaled on a fence barb or a thorn. This habit has earned the loggerhead shrike the nickname “butcher bird.”

What do loggerhead shrikes look like?

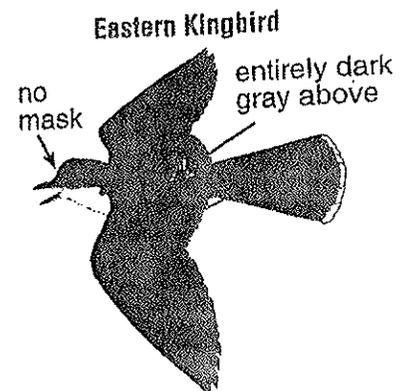
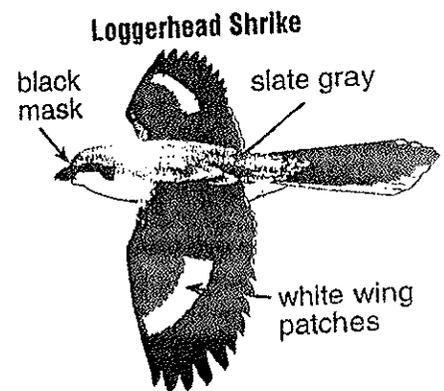
The robin-sized loggerhead shrike has a slate-gray back with a light breast. The most distinguishing markings of this bird are the black mask, which extends across the eye, and the black and white wing and tail patches which flash when the bird flies. Males and females are similar in size and color.

In Minnesota, loggerhead shrikes are most easily confused with eastern kingbirds and northern shrikes. However, eastern kingbirds have no mask, their heads are entirely dark, and they do not have white patches on their wings. The northern shrike looks very similar to the loggerhead shrike, but occurs in Minnesota from October through April, whereas the loggerhead shrike is here from March to October. During the early spring and fall, when both shrikes are in the state, they can be told apart by the loggerhead shrike’s completely black bill and its mask which extends across the top of the bill.

Where do they live?

Loggerhead shrikes were once found throughout much of the unforested region of the state. Today, their numbers are very low. Recent surveys have located fewer than 30 nests in the state (Fig. 1). It is very important that we try to maintain habitat for the few shrikes that still breed in Minnesota.

Shrikes use grassy, open areas with scattered trees and shrubs such as pastures, prairie patches and grassy roadsides. A few trees and shrubs, along with fences and powerlines provide nesting sites and perches from



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Loggerhead Shrike

(*Lanius ludovicianus*)

Cool fact: Loggerhead Shrikes are capable of carrying more than their own weight in flight. They have been observed lifting off with such large prey as a Mourning Dove and a 16" long rattlesnake.

[Loggerhead Shrike wave file \[105k\]](#)

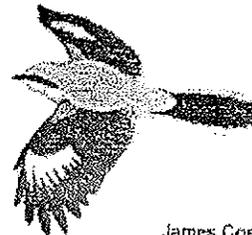


Loggerhead Shrike by James Coe

Shrikes are unique among passerine birds because they regularly prey on vertebrates, including other birds. They dispatch their victims with their strong bills, severing the vertebrae with a 'toothed' bill structure similar to that of falcons. Loggerhead Shrikes carry large items in their bill and small items with their feet. Shrikes have strong feet and sharp claws but they lack the talons of hawks and owls. To compensate, they wedge their prey in branches or hang it on thorns, sharp twigs, or barbed wire to make it easier to handle. They sometimes leave their prey wedged or hanging for future use.

[about James Coe](#)

Loggerheads perch conspicuously on shrubs, trees and utility wires to scan for food. They are often observed hunting along roadsides. Loggerhead Shrikes have phenomenally good vision and can spot a grasshopper from 70 yards away. Like the Northern Shrike (*L. excubitor*), the Loggerhead consumes vertebrate prey more often in winter than in summer. Vertebrate prey includes mice, lizards, and small birds such as warblers and sparrows. By August and September insects, especially grasshoppers, comprise about 70% of the Loggerheads' prey. Loggerhead Shrikes disarm stinging wasps by using their bills to squeeze the abdomen and rubbing the stinger off against a hard surface. Some studies indicate that Loggerhead Shrikes detoxify unpalatable prey such as monarch butterflies and toads by impaling them and leaving them exposed for several days before eating them.



James Coe
shrike in flight

For its nest site, the Loggerhead Shrike usually selects thick shrubs or trees between three and fifteen feet high. The male may help collect twigs and stems but the female constructs the nest. Females lay four to six eggs as early as late February in the southern parts of the range, and in late April or May in Canada. The female incubates the eggs and the male feeds her.

Loggerhead Shrikes inhabit open country, typically lowland plains or gently sloping hillsides with short grass. Good habitat includes scattered low shrubs or trees for perching and nesting. Most of the range is temperate, but Loggerhead Shrikes also breed in subtropical habitats and deserts. Agricultural land, including unimproved pastures and orchards, are also important breeding areas. Habitat loss has been implicated in a severe decline in Loggerhead Shrike populations since the early twentieth century. This decline accelerated during the 1960's and 1970's especially in the Northeast. Other proposed causes include increased pesticide use and automobile-caused mortality because of the shrike's propensity for hunting along roadways.

Loggerhead Shrikes occur throughout most of Mexico, most of the United States except the Northeast, northern Rocky Mountains and Cascade Range, and southern Manitoba, Saskatchewan and Alberta. A remnant of the northeastern population hangs on in southern Ontario. Northern populations occurring in areas that receive more than 10 to 30 days of snow cover per year are migratory, while southern populations tend to be resident.

Description: The Loggerhead Shrike is 9" long, slightly smaller than an American Robin. The short hooked bill is entirely dark. The head and back are bluish gray. Underparts are white or grayish white. A broad black mask starting at the nape extends to and just above the bill, surrounding the eye. The wings are black with a white patch at the tops of the primary feathers, while the tail is black with white feather tips. Juveniles are paler, with fine barring over the body, slightly brownish gray upperparts, and buffy rather than white wing patches. Sexes are alike.

The range of the very similar Northern Shrike overlaps with that of the Loggerhead Shrike in the winter. With careful attention the Northern Shrike can be distinguished based on its slightly larger size, paler, more silvery upperparts, and longer, more hooked two-toned bill. The Northern Shrike has a narrow mask which does not completely surround the eye or extend above the bill. The white supercilium above the eye is more prominent in Northern Shrikes. Both adults and juveniles show heavier and more distinct barring of the underparts than in juvenile Loggerheads.

Recording credits:

Loggerhead Shrike vocalizations recorded by G. B. Reynard, LNS# 08924. Longer version included on *Peterson Field Guide to Eastern/Central Bird Songs*.

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which to hunt. Red cedar, hawthorn and plum trees are often used for nesting. A pair may range over 2.5 - 3.0 acres.

Loggerhead shrikes are early nesters, arriving in Minnesota from their wintering areas in the southern U.S. and Mexico in early spring. Shrikes lay 4-6 eggs that hatch after about 16 days. The young birds remain with their parents for about 4 weeks after leaving the nest. It is at this time that the birds are most conspicuous. Shrikes tend to nest in the same general areas from year to year, although they may be absent for a year or two and then return again, as long as the habitat remains.

Why is the loggerhead shrike population declining?

The decline of the loggerhead shrike is likely the result a combination of factors, including loss of habitat resulting from the conversion of pasture and grasslands to houses or cropland and the encroachment of forest and brush on pastures and grasslands. In addition, changes in farming

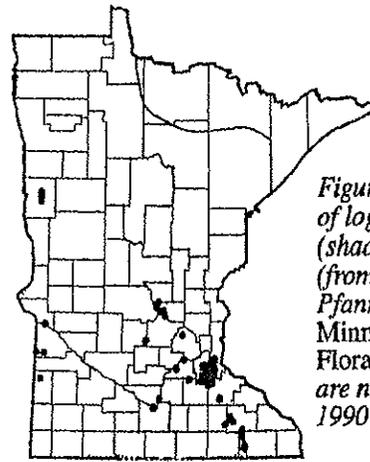


Figure 1. Historical range of loggerhead shrikes (shaded) in Minnesota. (from Coffin and Pfannmüller, 1988. Minnesota's Endangered Flora and Fauna). Dots are nests found between 1990 and 1996.

practices have resulted in larger fields and fewer trees, shrubs and fences scattered about. The increasing use of pesticides may also play a role in the decline of shrikes because these chemicals affect many animals that shrikes eat.

WHAT CAN YOU DO TO HELP LOGGERHEAD SHRIKES?

If there are shrikes nesting on your property, congratulations! You are one of a very few Minnesotans fortunate to share your property with such a unique bird. We hope you will want to help this bird continue its presence in your neighborhood. Obviously your land management practices and land use are already compatible if the birds have selected your land for nesting. While biologists continue to investigate the decline of the shrike there are things you can do on your property to encourage shrikes.

1. Leave fences standing for shrikes to use for perching and impaling food. If a fence must be removed, or if there are no fences near your grassland or pasture, you can create perch and impaling posts. To do this, wrap barbed wire near the top of a post. Place these posts along the edges of pastures and fields for shrikes to use. Your local nongame wildlife biologist can help you select the best locations for the posts.

2. Keep brush from encroaching upon grasslands by removal or burning, but only to the extent that the shrubs and trees don't dominate the grassland. A few scattered shrubs and trees are necessary to maintain the best shrike habitat.

3. Maintain existing pastures and grasslands. Pastures and grasslands are more attractive to shrikes than are row crops. Investigate the Conservation Reserve Program (CRP) which pays farmers to retire highly erodible farmlands from production and to establish permanent grassland. Contact your local Natural Resources Conservation Service office (formerly the Soil Conservation Service) for more information about this program.

4. Take advantage of financial incentives for maintaining compatible land uses. In many counties, the Agricultural Preserve Program and/or the Green Acres Program provide tax adjustments and/or deferments to farmers to help them maintain their land for agricultural use. Contact your county assessor's office for more information about these programs.

5. Minimize use of pesticides. Pesticides can reduce the supply of large insects and other animals that shrikes need. Also, because shrikes feed on animals at which pesticides are directed, these chemicals can build up in the birds and impair their ability to reproduce and reduce the survival of their young.

For more information about shrikes or to report loggerhead shrikes on your property please contact:

Nongame Wildlife Program

500 Lafayette Rd.

St. Paul, MN 55155

(612) 297-3764

1-800-766-6900

or locally contact:

Empire Township, Dakota County

Environmental Impact Statement (EIS) - Aggregate Mining

Appendix Page 17

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March 1, 2005

Prepared by: Bolton & Menk, Inc.



MINNESOTA HISTORICAL SOCIETY

December 23, 2003

Mr. H. Delbert Jackman
Bolton & Menk
1960 Premier Drive
Mankato, MN 56001-5900

Re: Scoping EAW – Sand & Gravel Mine in Empire Township
T114 R19 S5-10, S16, Empire Twp., Dakota County
SHPO Number: 2003-2404

Dear Mr. Jackman:

Thank you for providing our office with a copy of the Scoping Environmental Assessment Worksheet for the above referenced project.

We appreciate the discussion under item 25a of the document. However, we have discovered an error in the materials we sent you earlier. The discussion indicates that the referenced property included in our inventory was 2 ½ miles south of the project site. Indeed, the inventory form that we forwarded to you was for a property some distance from the project site. However, that form was sent in error. Another inventoried property, located at 16700 Highway 3, is proximate to the project site. This property has not been formally evaluated, and its current status is unknown.

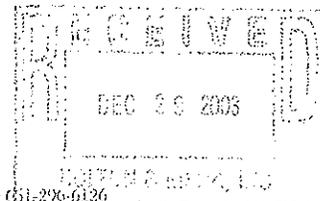
A copy of the inventory form is attached.

We apologize for the confusion caused by our error. Contact us at 651-296-5462 with questions or concerns.

Sincerely,


 Dennis A. Gimmestad
Government Programs & Compliance Officer

Enc: inventory form for DK-EMP-001



315 Kellogg Boulevard West / Saint Paul, Minnesota 55102-1906 / Telephone (651) 296-5426

DAKOTA COUNTY, MINNESOTA
HISTORIC RESOURCES INVENTORY

IDENTIFICATION

STREET ADDRESS: 16700 Highway 3

SHPO INVENTORY NUMBER: DK-EMP-001

HISTORIC NAME: Fairview Stock Farm
CURRENT NAME: Lauer Farmstead

SURVEY NUMBER: 94
PIN NUMBER:

PUBLIC ACCESSIBILITY: Yes: No: Limited:

TOWNSHIP: 114
RANGE: 192
SECTION: 05

USGS QUAD: Farmington, Minn.
UTM COORD: 15:489300:4950245

CITY/TOWNSHIP: Empire

INTERRELATIONSHIP OF PROPERTY AND SURROUNDINGS:

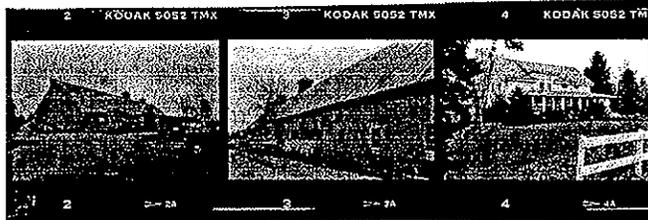
This farmstead lies east of a busy paved highway in northwestern Empire Township. The house faces south; the barn and small sheds are east and southeast of the house.

BACKGROUND AND SIGNIFICANCE

HISTORIC CONTEXT(S): Railroad and Agricultural Settlement, 1870-1940

HISTORIC BACKGROUND:

In 1896, this was the location of the Fairview Stock Farm, owned by Thomas Irvine. The existing barn and the house, however, were built in the 1920s and 1930s, according to the owner. The general architectural character of the buildings seems compatible with these dates. The barn is now part of a nursery operation.



HISTORIC AND ARCHITECTURAL IMPORTANCE:

The architectural integrity of this farmstead has been compromised by numerous alterations.

ELIGIBLE FOR THE NATIONAL REGISTER:

Eligible?: No	District:	Contributing:	SIGNIFICANCE: Local:
Need Info.:	Individual:	Non-contributing:	State:
On Register:			National:

Contributing Buildings:

DOCUMENTATION

SOURCES OF INFORMATION:

(A) Plat Book of Dakota County, Minnesota 1896 (Philadelphia: Union Publishing Company, 1896).

PHOTOGRAPH NUMBERS:	Roll 1: 011671	Roll 2:
	Frame(s): 2, 3, 4	Frame(s):
SURVEYED BY: Deanne Zibell Weber		DATE SURVEYED: 5/03/93
Hess Roise		
Minneapolis, Minnesota		

DESCRIPTION: House

CONSTRUCTION DATE: c. 1925

RESOURCE TYPE: Building

ORIGINAL USE: Dwelling
CURRENT USE: Dwelling

BUILDER/CONTRACTOR:
ARCHITECT/ENGINEER:

STYLE: 1-1/2-story, Gable-roofed, Rectangular-plan

STORIES: 1-1/2
ROOF STYLE: Gable
STRUCTURE: Frame
WINDOWS: 6/6 sash

MATERIALS: FOUNDATION: Concrete Block
ROOF: Composition Shingle
EXTERIOR: Weatherboard

INTEGRITY: Excellent: Good: X Fair: Poor:

DESCRIPTION OF PHYSICAL APPEARANCE:

This house displays characteristics typical of the Colonial Revival style. The house has a gabled roof with cornice returns, a shed-roofed dormer on the south elevation, and a semicircular louver in the gable end. Windows are 6/6 sash. A single-story, hip-roofed addition has been made on the east elevation, and a hip-roofed porch with large, 8-pane hinged windows has been added to the front. Corners are trimmed with pilasters.

DESCRIPTION: Barn

CONSTRUCTION DATE: c. 1930/c. 1960

RESOURCE TYPE: Building

ORIGINAL USE: Barn
CURRENT USE: Barn

BUILDER/CONTRACTOR:
ARCHITECT/ENGINEER:

STYLE/Form: Wisconsin Dairy

STORIES: 1-1/2
ROOF STYLE: Gable
STRUCTURE: Frame
WINDOWS: Single-pane

MATERIALS: FOUNDATION: Poured Concrete
ROOF: Metal
EXTERIOR: Wood board and batten

INTEGRITY: Excellent: Good: Fair: X Poor:

DESCRIPTION OF PHYSICAL APPEARANCE:

This large barn appears to have been constructed in two stages. The gable roof, oriented on an east-west axis, has a gable-roofed wall dormer in the middle of each side elevation. Two pyramidal-hipped cupolas with louvers lie close together near the middle of the roof ridge. The western third of the building appears to be a later addition; this end has a hanging gable protecting the loft doors, and two brick chimneys rise out of the roof slope. A shed-roofed, concrete-block extension has been added to the south elevation.



mstead has been compromised by numerous alterations.

PAGE 1

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DK-EMP-001

①

MINNESOTA HISTORIC PROPERTIES INVENTORY FORM

HISTORIC NAME: _____ COUNTY: DAKOTA
 CURRENT NAME: LAUER FARM CITY/TWP.: EMPIRE
 LEGAL DESC.: NW 1/4 OF SW 1/4, SEC. 5 ADDRESS: HWY. 3
 T114N, R19W

CLASSIFICATION:	CONDITION:	SIGNIFICANCE:	THEME/S:
Building <u>X</u>	Excellent <u>X</u>	Local <u>X</u>	Primary _____
Structure _____	Good _____	State _____	Secondary _____
Object _____	Fair _____	National _____	Others _____
District _____	Deteriorated _____		

OPEN TO THE PUBLIC: Yes _____ No X Restricted _____ PRESENT USE: RESIDENCE
 VISIBLE FROM THE ROAD: Yes X No _____
 OCCUPIED: Yes X No _____

DATE CONSTRUCTED: _____ ORIGINAL USE: RESIDENCE

ORIGINAL OWNER: _____ ARCHITECT/BUILDER: _____

OWNER'S NAME AND ADDRESS: _____ ACREAGE: Less than one acre _____

LOCAL CONTACT/ORG.: _____ UTM REFERENCE: _____

FORM PREPARED BY: SUSAN P. REYNOLDS
 DATE: _____

DESCRIPTION:
 Farm house



02929

List of Wells Selected

Unit No	Co	T-S-R	Width	Depth	Elev	Use	Quad	D2brk	Fbrk	Lstrat	Aq	St	Address	Name
100962	19	114 - 19 - 5 - DDDAAB	155	955	DO	88A	65	OSTP	OPDC	OPD	Y	Y	16869 BISCAYNE AV FARMINGTON	WILLARD MEYERS
179702	19	114 - 19 - 5 - DCDCDC	145	942	DO	88A	119	OSTP	OSTP	OST	Y	Y	2831 170 ST FARMINGTON	WALTER TREVIS
407103	19	114 - 19 - 5 - CBCBDD	218	950	DO	88B	163	OSTP	OPDC	MTP	Y	Y	16700 3 HY ROSEMOUNT	ALBERT LAUER
W00006	19	114 - 19 - 5 - CB			DO								16700 CHIPPENDALE AV ROSEMOUNT	LAUER, ALBERT

Unique No. 00407103	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>		Update Date 1991/08/14																																																																						
County Name Dakota			Entry Date 1990/03/30																																																																						
Township Name Township Range Dir Section Subsection 114 19 W 5 CBCBDD	Well Depth 218 ft.	Depth Completed 218 ft.	Date Well Completed 1984/07/23																																																																						
Well Name ALBERT LAUER	Drilling Method																																																																								
Contact's Name ALBERT LAUER 16700 3 HY ROSEMOUNT MN	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.																																																																							
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License Business Name Hartmann Well Co.		Aquifer: MTPL Alt Id:																																																																							
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Report Copy

Unique No. 00179702	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD Minnesota Statutes Chapter 1031			Update Date 1991/08/14																																																												
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Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> N		Hole Diameter																																																														
Casing Diameter 4 in. to 120 ft		Weight(lbs/ft)																																																														
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>SOIL</td> <td>BLACK</td> <td></td> <td>1</td> <td></td> </tr> <tr> <td>CLAY</td> <td>YELLO</td> <td></td> <td>1</td> <td>5</td> </tr> <tr> <td>CLAY</td> <td>YELLO</td> <td></td> <td>5</td> <td>29</td> </tr> <tr> <td>COARSE GRAVEL</td> <td></td> <td></td> <td>29</td> <td>44</td> </tr> <tr> <td>SAND</td> <td></td> <td></td> <td>44</td> <td>60</td> </tr> <tr> <td>CLAY</td> <td>YELLO</td> <td></td> <td>60</td> <td>64</td> </tr> <tr> <td>GRAVEL</td> <td></td> <td></td> <td>64</td> <td>68</td> </tr> <tr> <td>CLAY</td> <td>YELLO</td> <td></td> <td>68</td> <td>73</td> </tr> <tr> <td>CLAY</td> <td>BLUE</td> <td></td> <td>73</td> <td>115</td> </tr> <tr> <td>SAND GRAVEL</td> <td></td> <td></td> <td>115</td> <td>119</td> </tr> <tr> <td>SANDSTONE</td> <td>WHITE</td> <td></td> <td>119</td> <td>145</td> </tr> </tbody> </table>					GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	SOIL	BLACK		1		CLAY	YELLO		1	5	CLAY	YELLO		5	29	COARSE GRAVEL			29	44	SAND			44	60	CLAY	YELLO		60	64	GRAVEL			64	68	CLAY	YELLO		68	73	CLAY	BLUE		73	115	SAND GRAVEL			115	119	SANDSTONE	WHITE		119	145
GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																																																												
SOIL	BLACK		1																																																													
CLAY	YELLO		1	5																																																												
CLAY	YELLO		5	29																																																												
COARSE GRAVEL			29	44																																																												
SAND			44	60																																																												
CLAY	YELLO		60	64																																																												
GRAVEL			64	68																																																												
CLAY	YELLO		68	73																																																												
CLAY	BLUE		73	115																																																												
SAND GRAVEL			115	119																																																												
SANDSTONE	WHITE		119	145																																																												
Screen N	Open Hole From 120 ft. to 145 ft.																																																															
Make	Type																																																															
Static Water Level 46 ft from Land surface		Date 82/05/20																																																														
PUMPING LEVEL (below land surface)																																																																
46 ft. after		hrs. pumping	12 g.p.m.																																																													
Well Head Completion																																																																
Pitless adapter mfr		Model																																																														
Casing Protection		<input type="checkbox"/> 12 in. above grade																																																														
<input type="checkbox"/> At-grade(Environmen al Wells and Borings ONLY)																																																																
Grouting Information		Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																																																														
Nearest Known Source of Contamination																																																																
78 ft. direction		type SDF																																																														
Well disinfected upon completion?		<input type="checkbox"/> Yes <input type="checkbox"/> No																																																														
Pump <input type="checkbox"/> Not Installed		Date Installed y																																																														
Mfr name FAIRBANKS MORSE																																																																
Model 5008		HP 0.5	Volts 230																																																													
Drop Pipe Length 84 ft.		Capacity 10 g.p.m																																																														
Type S																																																																
Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No																																																																
Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No																																																																
Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 19163																																																																
License Business Name Corcoran Well Co.																																																																
Name of Driller																																																																
USGS Quad: Coates Elevation 942 Aquifer: OSTP Alt Id:																																																																
Report Copy																																																																

Unique No. 00100962	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD Minnesota Statutes Chapter 1031				Update Date 1991/08/14
County Name Dakota					Entry Date 1990/10/19
Township Name Township Range Dir Section Subsection	Well Depth	Depth Completed	Date Well Completed		
114 19 W 5 DDDAAB	155 ft.	155 ft.	1975/03/12		
Well Name WILLARD MEYERS	Drilling Method				
Contact's Name WILLARD MEYERS 16869 BISCAYNE W AV FARMINGTON MN	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.			
Use Domestic					
GEOLOGICAL MATERIAL COLOR HARDNESS FROM TO		Casing Drive Size? <input type="checkbox"/> Yes <input type="checkbox"/> No	Hole Diameter		
GRAVEL					
SANDROCK					
LIME AND SANDROCK					
	Casing Diameter	Weight(lbs/ft)			
	4 in. to 110 ft				
Screen	Open Hole	From	ft. to	ft.	
Make	Type				
Static Water Level 60 ft from Land surface Date 75/03/12					
PUMPING LEVEL (below land surface)					
0 ft. after hrs. pumping 30 g.p.m.					
Well Head Completion					
Pitless adapter mfr		Model			
Casing Protection		<input type="checkbox"/> 12 in. above grade			
<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)					
Grouting Information		Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Nearest Known Source of Contamination					
ft.		direction		type	
Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Pump <input type="checkbox"/> Not Installed		Date Installed			
Mfr name					
Model		HP	0	Volts	
Drop Pipe Length 90 ft.		Capacity 20 g.p.m.			
Type S					
Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No					
USGS Quad: Coates		Elevation 955			
Aquifer: OPDC		Alt Id:			
Report Copy					
Well CONTRACTOR CERTIFICATION		Lic. Or Reg. No. 19556			
License Business Name		John F. Ryan			
Name of Driller					

List of Wells Selected

Well No	Co	T-S-R	Width	Elev	Use	Quad	D2brk	Fbrk	Lstrat	Aq	St	Address	Name
07602	19	114 - 19 - 6	180	955		88B	135	OSTP	OPDC	MTP	Y	16275 CHIPPENDALE AV ROSEMOUNT	
07879	19	114 - 19 - 6	204	945	DO	88B	165	OPDC	OPDC	OPD	Y		BOYD MARANELL
53561	19	114 - 19 - 6	160		DO							400 160TH ST ROSEMOUNT	COMMERCIAL ASPHA
51944	19	114 - 19 - 6	200		DO		157				Y	3724 160TH ST ROSEMOUNT	GERONIME, TOM

Unique No. 651944	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>		Update Date 2002/01/04															
County Name Dakota			Entry Date 2001/08/17															
Township Name Township Range Dir Section Subsection 114 19 W 6 AAB	Well Depth 200 ft.	Depth Completed 200 ft.	Date Well Completed 2000/11/29															
Well Name GERONIME, TOM	Drilling Method Non specified Rotary																	
Well Owner's Name GERONIME, TOM 3724 160TH W ST ROSEMOUNT MN	Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From ft. to ft.																
Contact's Name GERONIME, TOM 3567 160TH W ST ROSEMOUNT MN 55068	Use Domestic																	
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>SAND & GRAVEL</td> <td>BROW</td> <td>SOFT</td> <td>0</td> <td>157</td> </tr> <tr> <td>LIMEROCK</td> <td>BLUE</td> <td>HARD</td> <td>157</td> <td>200</td> </tr> </tbody> </table>	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	SAND & GRAVEL	BROW	SOFT	0	157	LIMEROCK	BLUE	HARD	157	200	Casing Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Hole Diameter in. to 157 ft in. to 200 ft	
	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO													
	SAND & GRAVEL	BROW	SOFT	0	157													
	LIMEROCK	BLUE	HARD	157	200													
Casing Diameter 4 in. to 157 ft	Weight(lbs/ft) 10.79																	
Screen N	Open Hole From 157 ft. to 200 ft. Make Type																	
Static Water Level 80 ft from Land surface Date 00/11/21																		
PUMPING LEVEL (below land surface) 180 ft. after 2 hrs. pumping 200 g.p.m.																		
Well Head Completion Pitless adapter mfr WHI FEWATER Model SU4X5.5 Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																		
Grouting Information Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																		
<table border="1"> <thead> <tr> <th>Material</th> <th>From</th> <th>To (ft.)</th> <th>Amount(yds/bags)</th> </tr> </thead> <tbody> <tr> <td>H</td> <td>0</td> <td>157</td> <td>22 S</td> </tr> </tbody> </table>				Material	From	To (ft.)	Amount(yds/bags)	H	0	157	22 S							
Material	From	To (ft.)	Amount(yds/bags)															
H	0	157	22 S															
Nearest Known Source of Contamination 100 ft. direction E type SDF Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																		
Pump <input type="checkbox"/> Not Installed Date Installed Mfr name GRUNDFOS Model 16S10-10 HP 1 Volts 230 Drop Pipe Length 84 ft. Capacity 16 g.p.m. Type S																		
Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																		
Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																		
Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 19521																		
License Business Name <u>Kimmes-bauer</u> Name of Driller <u>OTTO, F.</u>																		
USGS Quad: Aquifer:	Elevation Alt Id:																	

Report Copy

Unique No. 00437879	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD Minnesota Statutes Chapter 1031			Update Date 1991/08/14																				
County Name Dakota				Entry Date 1990/03/30																				
Township Name Township Range Dir Section Subsection 114 19 W 6 AAABBD	Well Depth 204 ft.	Depth Completed 204 ft.	Date Well Completed 1987/08/26																					
Well Name BOYD MARANELL	Drilling Method																							
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>GRAVEL</td> <td>BROW</td> <td>SOFT</td> <td></td> <td>90</td> </tr> <tr> <td>CLAY</td> <td>BROW</td> <td>HARD</td> <td>90</td> <td>165</td> </tr> <tr> <td>LIME</td> <td>BLUE</td> <td>HARD</td> <td>165</td> <td>204</td> </tr> </tbody> </table>	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	GRAVEL	BROW	SOFT		90	CLAY	BROW	HARD	90	165	LIME	BLUE	HARD	165	204	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.		
	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																			
	GRAVEL	BROW	SOFT		90																			
	CLAY	BROW	HARD	90	165																			
	LIME	BLUE	HARD	165	204																			
	Use Domestic																							
	Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> N	Hole Diameter																						
	Casing Diameter 4 in. to 165 ft	Weight(lbs/ft)																						
	Screen N	Open Hole From 165 ft. to 204 ft.																						
	Make	Type																						
Static Water Level 80 ft from Land surface	Date 87/08/26																							
PUMPING LEVEL (below land surface) 150 ft. after hrs. pumping 50 g.p.m.																								
Well Head Completion Pitless adapter mfr Model Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmen al Wells and Borings ONLY)																								
Grouting Information	Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																							
Nearest Known Source of Contamination 100 ft. direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																								
Pump <input type="checkbox"/> Not Installed Date Installed y Mfr name GRUNDFOS Model SP44.14 HP 1.5 Volts 230 Drop Pipe Length 147 ft. Capacity 20 g.p.m. Type S																								
USGS Quad: Farmington Elevation 945 Aquifer: OPDC Alt Id:	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No																							
	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No																							
	Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 19521 License Business Name <u>Kimmes-bauer</u> Name of Driller																							

Report Copy

Unique No. 00207602	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>	Update Date 1991/08/14																				
County Name Dakota		Entry Date 1990/10/19																				
Township Name Township Range Dir Section Subsection 114 19 W 6 ADAAAA	Well Depth 180 ft.	Depth Completed 130 ft.																				
		Date Well Completed 1967/02/14																				
Well Name	Drilling Method																					
Contact's Name 16275 CHIPPENDALE AV ROSEMOUNT MN <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align:left;">GEOLOGICAL MATERIAL</th> <th style="text-align:left;">COLOR</th> <th style="text-align:left;">HARDNESS</th> <th style="text-align:left;">FROM</th> <th style="text-align:left;">TO</th> </tr> </thead> <tbody> <tr> <td>GRAVEL</td> <td></td> <td></td> <td></td> <td>135</td> </tr> <tr> <td>SANDSTONE</td> <td></td> <td></td> <td>135</td> <td>175</td> </tr> <tr> <td>LIMESTONE</td> <td></td> <td></td> <td>175</td> <td>180</td> </tr> </tbody> </table>	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	GRAVEL				135	SANDSTONE			135	175	LIMESTONE			175	180	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																	
	GRAVEL				135																	
	SANDSTONE			135	175																	
	LIMESTONE			175	180																	
		Use																				
		Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> N	Hole Diameter																			
		Casing Diameter 0 in. to 162 ft	Weight(lbs/ft)																			
		Screen	Open Hole From ft. to ft.																			
		Make	Type																			
	Static Water Level 70 ft from Land surface	Date 67/02/14																				
	PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.																					
	Well Head Completion Pitless adapter mfr Model Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmen al Wells and Borings ONLY)																					
	Grouting Information	Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																				
	Nearest Known Source of Contamination ft. d rection type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																					
	Pump <input type="checkbox"/> Not installed	Date Installed																				
	Mfr name																					
	Model	HP 0 Volts																				
	Drop Pipe Length ft.	Capacity g.p.m																				
	Type																					
	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No																					
	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No																					
USGS Quad: Farmington Elevation 955	Well CONTRACTOR CERTIFICATION Lic. Or Reg. No.																					
Aquifer: MTPL Alt Id:	License Business Name																					
	Name of Driller																					

Report Copy

List of Wells Selected

Well No	Co	T-S-R	Width	Depth	Elev	Use	Quad	D2brk	Fbrk	Lstrat	Aq	St	Address	Name
85969	19	114 - 19 - 7 - ADADAA	230	955	DO	88B	44	OPVL	OSTP	OST	Y		17295 CHIPPENDALE AV FARMINGTON	HAEFS BROS.
07603	19	114 - 19 - 7 - DADDCC	275	992	DO	88B	65	OPVL	OPDC	OPD	Y		1773 CHIPPENDALE AV FARMINGTON	JOE FIGURA
62149	19	114 - 19 - 7 -	300		DO	88B							4375 170TH ST FARMINGTON	HEADBURG, STEVE
30272	19	114 - 19 - 7 - BAB	230		DO	88B							4272 170TH ST LAKEVILLE	LJEWski, THOMAS
85196	19	114 - 19 - 7 -	240		DO	88B							4375 170TH ST FARMINGTON	HEDBERG AGGREGA

Unique No. 00207603	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>			Update Date 1991/08/14																									
County Name Dakota				Entry Date 1990/10/19																									
Township Name Township Range Dir Section Subsection 114 19 W 7 DADDCC	Well Depth 275 ft.	Depth Completed 275 ft.	Date Well Completed 1974/03/28																										
Well Name JOE FIGURA	Drilling Method																												
Contact's Name JOE FIGURA 1773 CHIPPENDALE AV FARMINGTON MN	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.																											
Use Domestic																													
Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> N		Hole Diameter																											
Casing Diameter Weight(lbs/ft) 4 in. to 210 ft																													
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>CLAY</td> <td></td> <td></td> <td></td> <td>65</td> </tr> <tr> <td>LIMESTONE</td> <td></td> <td></td> <td>65</td> <td>80</td> </tr> <tr> <td>SANDSTONE</td> <td></td> <td></td> <td>80</td> <td>205</td> </tr> <tr> <td>LIMESTONE</td> <td></td> <td></td> <td>205</td> <td>275</td> </tr> </tbody> </table>					GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	CLAY				65	LIMESTONE			65	80	SANDSTONE			80	205	LIMESTONE			205	275
GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																									
CLAY				65																									
LIMESTONE			65	80																									
SANDSTONE			80	205																									
LIMESTONE			205	275																									
Screen	Open Hole	From	ft. to	ft.																									
Make	Type																												
Static Water Level 95 ft from Land surface Date 74/03/28																													
PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.																													
Well Head Completion Pitless adapter mfr Model Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																													
Grouting Information Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																													
Nearest Known Source of Contamination ft. direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																													
Pump <input type="checkbox"/> Not Installed Date Installed y Mfr name MCDONALD Model HP 1 Volts Drop Pipe Length 126 ft. Capacity g.p.m Type																													
Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No																													
Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No																													
USGS Quad: Farmington Elevation 992 Aquifer: OPDC Alt Id:		Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. License Business Name Name of Driller																											

Report Copy

Unique No. 00185969	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>	Update Date 1991/08/14																				
County Name Dakota		Entry Date 1990/03/30																				
Township Name Township Range Dir Section Subsection 114 19 W 7 ADADAA	Well Depth 230 ft. Depth Completed 230 ft. Date Well Completed 1982/06/30																					
Well Name HAEFS BROS.	Drilling Method																					
Contact's Name HAEFS BROS. 17295 CHIPPENDALE AV FARMINGTON MN	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.																				
<table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align:left;">GEOLOGICAL MATERIAL</th> <th style="text-align:left;">COLOR</th> <th style="text-align:left;">HARDNESS</th> <th style="text-align:left;">FROM</th> <th style="text-align:left;">TO</th> </tr> </thead> <tbody> <tr> <td>SAND + GRAVEL</td> <td>BROW</td> <td>MEDIUM</td> <td></td> <td>44</td> </tr> <tr> <td>LIMEROCK</td> <td>YELLOW</td> <td>HARD</td> <td>44</td> <td>54</td> </tr> <tr> <td>SANDROCK</td> <td>GRAY</td> <td>MEDIUM</td> <td>54</td> <td>230</td> </tr> </tbody> </table>	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	SAND + GRAVEL	BROW	MEDIUM		44	LIMEROCK	YELLOW	HARD	44	54	SANDROCK	GRAY	MEDIUM	54	230	Use Domestic	
	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																	
	SAND + GRAVEL	BROW	MEDIUM		44																	
	LIMEROCK	YELLOW	HARD	44	54																	
	SANDROCK	GRAY	MEDIUM	54	230																	
	Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No	Hole Diameter																				
	Casing Diameter 8 in. to 44 ft.	Weight(lbs/ft)																				
	4 in. to 200 ft.																					
	Screen N	Open Hole From 200 ft. to 230 ft.																				
	Make	Type																				
Static Water Level 58 ft from Land surface	Date 82/06/30																					
PUMPING LEVEL (below land surface)	58 ft. after hrs. pumping 15 g.p.m.																					
Well Head Completion	Pitless adapter mfr Model Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																					
Grouting Information	Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
Nearest Known Source of Contamination	75 ft. direction type SDF Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																					
Pump <input type="checkbox"/> Not Installed	Date Installed Y																					
Mfr name FAIRBANKS	Model 4D5009 HP 0.5 Volts 230																					
Drop Pipe Length 84 ft.	Capacity 10 g.p.m.																					
Type S																						
REMARKS, ELEVATION, SOURCE OF DATA, etc.	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No																					
17295 CHIPPENDALE AVE.	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No																					
CASING: 8 TO 44; 4 TO 200.	Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 19301																					
USGS Quad: Farmington Elevation 955	License Business Name Maher Well Co.																					
Aquifer: OSTP Alt Id:	Name of Driller																					

Report Copy

List of Wells Selected

Unit No	Co	T-S-R	Width	Depth	Elev	Use	Quatd	D2brk	Fbrk	Lstrat	Aq	St	Address	Name		
140157	19	114	19	8	CBBCCA	245	978	DO	88B	80	OSTP	OPDC	OPD	Y	17604 KITTSENDALE AV FARMINGTON	GILBERT AND EMMA
141915	19	114	19	8	AAABBD	150	938	DO	88A	63	OSTP	OSTP	OST	Y		BRET BERG
181484	19	114	19	8	AAAD	140		DO	88A				17373 BISCAYNE AV FARMINGTON		FEATHERSTONE, GR	

Unique No. 00441915	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD Minnesota Statutes Chapter 1031		Update Date 1991/08/14																				
County Name Dakota			Entry Date 1990/03/30																				
Township Name Township Range Dir Section Subsection 114 19 W 8 AAABBD	Well Depth 150 ft.	Depth Completed 150 ft.	Date Well Completed 1987/11/25																				
Well Name BRET BERG	Drilling Method																						
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>GRAVEL</td> <td>BROW</td> <td>MEDIUM</td> <td>63</td> <td></td> </tr> <tr> <td>SANDROCK</td> <td>YELLOW</td> <td>SOFT</td> <td>63</td> <td>105</td> </tr> <tr> <td>SANDROCK</td> <td>BLUE</td> <td>HARD</td> <td>105</td> <td>150</td> </tr> </tbody> </table>	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	GRAVEL	BROW	MEDIUM	63		SANDROCK	YELLOW	SOFT	63	105	SANDROCK	BLUE	HARD	105	150	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.	
	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																		
	GRAVEL	BROW	MEDIUM	63																			
	SANDROCK	YELLOW	SOFT	63	105																		
	SANDROCK	BLUE	HARD	105	150																		
	Use Domestic																						
	Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No	Hole Diameter																					
	Casing Diameter 4 in. to 111 ft.	Weight(lbs/ft)																					
	Screen N	Open Hole From 111 ft. to 150 ft.																					
	Make	Type																					
Static Water Level 60 ft from Land surface	Date 87/11/25																						
PUMPING LEVEL (below land surface)	90 ft. after hrs. pumping 20 g.p.m.																						
Well Head Completion	Pitless adapter mfr Model																						
Casing Protection <input type="checkbox"/> 12 in. above grade	<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																						
Grouting Information	Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																						
Nearest Known Source of Contamination	50 ft. direction S type																						
Well disinfected upon completion?	<input type="checkbox"/> Yes <input type="checkbox"/> No																						
Pump <input type="checkbox"/> Not Installed	Date Installed y																						
Mfr name GRUNDFOS	Model SP-2-12 HP 0.5 Volts 230																						
Drop Pipe Length 84 ft.	Capacity 10 g.p.m.																						
Type S																							
Any not in use and not sealed well(s) on property?	<input type="checkbox"/> Yes <input type="checkbox"/> No																						
Was a variance granted from the MDH for this Well?	<input type="checkbox"/> Yes <input type="checkbox"/> No																						
USGS Quad: Coates	Elevation 938																						
Aquifer: OSTP	Alt Id:																						
Report Copy																							
Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 19521		License Business Name <u>Kimmes-bauer</u>																					
Name of Driller																							

Unique No. 00240157	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>				Update Date 1991/08/14																				
County Name Dakota					Entry Date 1990/03/30																				
Township Name Township Range Dir Section Subsection 114 19 W 8 CBBCCA	Well Depth 245 ft.	Depth Completed 245 ft.	Date Well Completed 1974/08/23																						
Well Name GILBERT AND EMMA	Drilling Method																								
Contact's Name GILBERT AND EMMA 17604 KITTSENDALE W AV FARMINGTON MN	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.																							
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>CLAY</td> <td></td> <td></td> <td>80</td> <td></td> </tr> <tr> <td>SANDSTONE</td> <td></td> <td></td> <td>80</td> <td>190</td> </tr> <tr> <td>LIMESTONE</td> <td></td> <td></td> <td>190</td> <td>245</td> </tr> </tbody> </table>	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	CLAY			80		SANDSTONE			80	190	LIMESTONE			190	245	Use Domestic				
	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																				
	CLAY			80																					
	SANDSTONE			80	190																				
	LIMESTONE			190	245																				
Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> N	Hole Diameter																								
Casing Diameter 4 in. to 195 ft	Weight(lbs/ft)																								
Screen N	Open Hole From 195 ft. to 245 ft.																								
Make	Type																								
Static Water Level 75 ft from Land surface	Date 74/08/23																								
PUMPING LEVEL (below land surface)																									
ft. after	hrs. pumping	g.p.m.																							
Well Head Completion																									
Pitless adapter mfr	Model																								
Casing Protection	<input type="checkbox"/> 12 in. above grade																								
<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																									
Grouting Information Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																									
Nearest Known Source of Contamination																									
ft.	direction	type																							
Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																									
Pump <input type="checkbox"/> Not Installed	Date installed Y																								
Mfr name STA-RITE																									
Model	HP	1	Volts																						
Drop Pipe Length	ft.	Capacity		g.p.m.																					
Type S																									
REMARKS, ELEVATION, SOURCE OF DATA, etc.																									
17604 CHIPPENDALE AVE. (?)																									
USGS Quad: Farmington	Elevation 978																								
Aquifer: OPDC	Alt Id:																								
Report Copy																									
Well CONTRACTOR CERTIFICATION Lic. Or Reg. No.																									
License Business Name																									
Name of Driller																									

HE-01205-06 (Rev. 9/96)

List of Wells Selected

UniqNo	Co	T-S-R	Wdepth	Elev	Use	Quad	D2brk	Fbrk	Lstrat	Aq	Sl	Address	Name		
216240	19	114 . 19 .	9 -	ABBCAD	182	955	DO	88A	70	OSTP	OPDC	OPD	Y	RT. 1 FARMINGTON	CHAS HEIKES
435223	19	114 . 19 .	9 -	DBA	320		IR	88A						1960 170TH ST ROSEMOUNT	HEIGH, CHUCK
506604	19	114 . 19 .	9 -		356		DO	87A						17500 KIRBY AV HASTINGS	COBIAN, RON
626625	19	114 . 19 .	9 -	ABB	160		DO		126			Y	1920 170TH ST FARMINGTON	HEIMAN, MIKE	
629447	19	114 . 19 .	9 -	AAB	177		DO		117			Y	1850 170TH ST FARMINGTON	PETERSON, D. L.	

Unique No. 629447	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD Minnesota Statutes Chapter 1031				Update Date 2002/01/04
County Name Dakota					Entry Date 2000/10/12
Township Name Township Range Dir Section Subsection	Well Depth	Depth Completed	Date Well Completed		
114 19 W 9 AAB	177 ft.	177 ft.	1999/05/26		
Well Name PETERSON, D. L.	Drilling Method Non specified Rotary				
Well Owner's Name PETERSON, D. L. 1850 170TH ST FARMINGTON MN	Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From ft. to ft.			
Contact's Name PETERSON, D. L. 13780 BLAINE AV ROSEMOUNT MN 55068	Use Domestic				
GEOLOGICAL MATERIAL COLOR HARDNESS FROM TO		Casing Drive Shoe? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Hole Diameter		
CLAY BROW 0 3	Casing Diameter Weight(lbs/ft)		in. to 117 ft		
SAND & GRAVEL BROW 3 16	4 in. to 117 ft		in. to 177 ft		
CLAY BROW 16 18	Screen N Open Hole From 117 ft. to 177 ft.				
CLAY GRAY 18 21	Make Type				
CLAY & SAND BROW 21 31	Static Water Level 54 ft from Land surface Date 99/05/26				
SANDSTONE TAN 31 107	PUMPING LEVEL (below land surface) 120 ft. after 3 hrs. pumping 35 g.p.m.				
LIMESTONE SANDSTONE VARIE 107 177	Well Head Completion Pitless adapter mfr Model Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmen al Wells and Borings ONLY)				
		Grouting Information Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
		Material	From	To (ft.)	Amount(yds/bags)
		H	0	30	3 S
		G	30	117	10 S
Nearest Known Source of Contamination ft. direction type Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Pump <input type="checkbox"/> Not Installed Date Installed Mfr name GRUNDFOS Model 10507-12 HP 0.75 Volts 230 Drop Pipe Length 100 ft. Capacity g.p.m Type S					
Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
USGS Quad: Elevation	Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 71536				
Aquifer: Alt Id:	License Business Name Traut M.i. Well Co. Name of Driller BRUCE & LYLE				

Report Copy

Unique No. 00626625	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD Minnesota Statutes Chapter 1031				Update Date 2002/01/04																				
County Name Dakota					Entry Date 2001/05/18																				
Township Name Township Range Dir Section Subsection 114 19 W 9 ABB	Well Depth 160 ft.	Depth Completed 150 ft.	Date Well Completed 1999/06/29																						
Well Name HEIMAN, MIKE	Drilling Method Non specified Rotary																								
Contact's Name HEILMAN, MIKE 1920 170TH ST FARMINGTON MN 55068	Drilling Fluid Bentonite	Well Hydrofractured? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No From ft. to ft.																							
Use Domestic																									
Casing Drive Shoe? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N		Hole Diameter in. to 126 ft																							
Casing Diameter 4 in. to 126 ft		Weight(lbs/ft) 10.79		in. to 160 ft																					
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>CLAY</td> <td>BROW</td> <td>MEDIUM</td> <td>0</td> <td>40</td> </tr> <tr> <td>CLAY</td> <td>BLUE</td> <td>MEDIUM</td> <td>40</td> <td>126</td> </tr> <tr> <td>LIME</td> <td>YELLO</td> <td>HARD</td> <td>126</td> <td>160</td> </tr> </tbody> </table>						GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	CLAY	BROW	MEDIUM	0	40	CLAY	BLUE	MEDIUM	40	126	LIME	YELLO	HARD	126	160
GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																					
CLAY	BROW	MEDIUM	0	40																					
CLAY	BLUE	MEDIUM	40	126																					
LIME	YELLO	HARD	126	160																					
Screen N	Open Hole From 126 ft. to 160 ft.																								
Make	Type																								
Static Water Level 60 ft from		Date 99/06/07																							
PUMPING LEVEL (below land surface) 100 ft. after 2 hrs. pumping 20 g.p.m.																									
Well Head Completion Pitless adapter mfr WHITEWATER Model SU4X51/2 Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																									
Grouting Information		Well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																							
Material	From	To (ft.)	Amount(yds/bags)																						
B	0	126	1.5	Y																					
Nearest Known Source of Contamination 100 ft. direction N type SDF Well disinfected upon completion? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																									
Pump <input type="checkbox"/> Not Installed		Date Installed																							
Mfr name	STA-RITE PUMP																								
Model	10P4C02J	HP	0.5	Volts	230																				
Drop Pipe Length	105 ft.	Capacity	10 g.p.m.																						
Type	S																								
Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																									
Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																									
USGS Quad:		Elevation																							
Aquifer:		Alt Id:																							
Report Copy																									
Well CONTRACTOR CERTIFICATION		Lic. Or Reg. No. 19521																							
License Business Name		Kimmes-bauer																							
Name of Driller		ANDERSON, L																							

List of Wells Selected

UniqNo	Co	T-S-R	Width	Elev	Use	Quad	D2brk	Fbrk	Lstrat	Aq	St	Address	Name
224333	19	114 - 19 - 16 -AD	50		DO								U OF M ROSEMOUNT

Unique No. 00216240	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>	Update Date 1991/08/14
County Name Dakota		Entry Date 1990/03/30
Township Name Township Range Dir Section Subsection 114 19 W 9 ABBCAD	Well Depth 182 ft. Depth Completed 132 ft. Date Well Completed /19/74	
Well Name CHAS HEIKES	Drilling Method	
Contact's Name CHAS HEIKES RT. 1 FARMINGTON MN	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.
	Use Domestic	
	Casing Drive Slope? <input type="checkbox"/> Yes <input type="checkbox"/> No	Hole Diameter
GEOLOGICAL MATERIAL COLOR HARDNESS FROM TO	Casing Diameter Weight(lbs/ft)	
CLAY 70	4 in. to 132 ft	
SANDSTONE 70 130		
LIMESTONE 130 182		
	Screen N	Open Hole From 132 ft. to 182 ft.
	Make	Type
	Static Water Level 70 ft from Land surface	Date 74/04/19
	PUMPING LEVEL (below land surface) ft. after hrs. pumping g.p.m.	
	Well Head Completion Pitless adapter mfr Model Casing Protection <input type="checkbox"/> 12 in. above grade <input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)	
	Grouting Information Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Nearest Known Source of Contamination ft. direction type Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Pump <input type="checkbox"/> Not Installed Date Installed Y Mfr name STA-RITE Model HP 0.75 Volts Drop Pipe Length 86 ft. Capacity g.p.m. Type S	
REMARKS, ELEVATION, SOURCE OF DATA, etc. CHAS HEIKES	Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	
USGS Quad: Coates Elevation 955 Aquifer: OPDC Alt Id:	Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. <u>19556</u> License Business Name <u>John F. Ryan</u> Name of Driller	

Report Copy

List of Wells Selected

Unit No	Co	T-S-R	Wdepth	Elev	Use	Quad	D2brk	Fbrk	Lstrat	Aq	St	Address	Name	
24307	19	114 - 19 . 10 -	BADDDD	130	935	DO	88A	54	OSTP	OPDC	OPD	Y	17110 STATION TR FARMINGTON	STEVE OLSON
24315	19	114 - 19 . 10 -	BAABAC	135	937	DO	88A	47	OSTP	OPDC	OPD	Y	1210 170 ST FARMINGTON	GAYLE BRODIL
207609	19	114 - 19 . 10 -	ACBDDD	432	983	PS	88A	125	OPDC	CJDN		Y		SOUTH BEEF FARM
29488	19	114 - 19 . 10 -		52		M	88A						1605 160TH ST ROSEMOUNT	UNIVERSITY OF MINN

Unique No. 00207609		MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>				Update Date 1991/08/14																																																
County Name Dakota						Entry Date 1990/10/19																																																
Township Name	Township	Range	Dir	Section	Subsection	Well Depth	Depth Completed	Date Well Completed																																														
	114	19	W	10	ACBDDD	432 ft.	432 ft.																																															
Well Name SOUTH BEEF FARM						Drilling Method																																																
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>BLACK DIRT</td> <td></td> <td></td> <td></td> <td>3</td> </tr> <tr> <td>CLAY + SOME STONES</td> <td>YELLOW</td> <td></td> <td>3</td> <td>22</td> </tr> <tr> <td>DRY SAND</td> <td></td> <td></td> <td>22</td> <td>25</td> </tr> <tr> <td>CLAY</td> <td>BLUE</td> <td></td> <td>25</td> <td>55</td> </tr> <tr> <td>HARDPAN</td> <td></td> <td></td> <td>55</td> <td>110</td> </tr> <tr> <td>SANDY CLAY</td> <td></td> <td></td> <td>110</td> <td>125</td> </tr> <tr> <td>PRAIRIE DU CHIEN DOLOMI</td> <td></td> <td></td> <td>125</td> <td>350</td> </tr> <tr> <td>JORDAN SANDSTONE</td> <td></td> <td></td> <td>350</td> <td>432</td> </tr> </tbody> </table>						GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	BLACK DIRT				3	CLAY + SOME STONES	YELLOW		3	22	DRY SAND			22	25	CLAY	BLUE		25	55	HARDPAN			55	110	SANDY CLAY			110	125	PRAIRIE DU CHIEN DOLOMI			125	350	JORDAN SANDSTONE			350	432	Drilling Fluid		Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No	
						GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																																												
						BLACK DIRT				3																																												
						CLAY + SOME STONES	YELLOW		3	22																																												
						DRY SAND			22	25																																												
						CLAY	BLUE		25	55																																												
						HARDPAN			55	110																																												
						SANDY CLAY			110	125																																												
						PRAIRIE DU CHIEN DOLOMI			125	350																																												
						JORDAN SANDSTONE			350	432																																												
		From		ft. to		ft.																																																
Use Public Supply/non-community						Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> N Hole Diameter																																																
Screen						Open Hole From																																																
Make						Type																																																
						ft. to																																																
						ft.																																																
Static Water Level						ft from		Date																																														
PUMPING LEVEL (below land surface)																																																						
						ft. after		hrs. pumping																																														
						g.p.m.																																																
Well Head Completion																																																						
Pitless adapter mfr						Model																																																
Casing Protection						<input type="checkbox"/> 12 in. above grade																																																
<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																																																						
Grouting Information						Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																																																
Nearest Known Source of Contamination																																																						
						ft. direction		type																																														
Well disinfected upon completion?						<input type="checkbox"/> Yes <input type="checkbox"/> No																																																
Pump <input type="checkbox"/> Not Installed						Date Installed																																																
Mfr name																																																						
Model						HP		Volts																																														
Drop Pipe Length						ft.		Capacity																																														
						g.p.m.																																																
Type																																																						
Any not in use and not sealed well(s) on property?						<input type="checkbox"/> Yes <input type="checkbox"/> No																																																
Was a variance granted from the MDH for this Well?						<input type="checkbox"/> Yes <input type="checkbox"/> No																																																
USGS Quad: Coates						Elevation 983																																																
Aquifer:						Alt Id:																																																
Report Copy						Well CONTRACTOR CERTIFICATION Lic. Or Reg. No.																																																
						License Business Name																																																
						Name of Driller																																																

Unique No. 00124315	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>		Update Date 1991/08/14																																								
County Name Dakota			Entry Date 1990/03/30																																								
Township Name Township Range Dir Section Subsection 114 19 W 10 BAABAC	Well Depth 135 ft.	Depth Completed 135 ft.	Date Well Completed /19/76																																								
Well Name GAYLE BRODIL	Drilling Method																																										
Contact's Name GAYLE BRODIL 1210 170 ST FARMINGTON MN 55068	Drilling Fluid	Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.																																									
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>SOIL</td> <td>BLACK</td> <td>SOFT</td> <td>1</td> <td></td> </tr> <tr> <td>COARSE GRAVEL</td> <td>BROW</td> <td>HARD</td> <td>1</td> <td>16</td> </tr> <tr> <td>BLUE CLAY</td> <td>BLUE</td> <td>SOFT</td> <td>16</td> <td>39</td> </tr> <tr> <td>CLAY</td> <td>RED</td> <td>SOFT</td> <td>39</td> <td>46</td> </tr> <tr> <td>GRAVEL</td> <td>BROW</td> <td>HARD</td> <td>46</td> <td>47</td> </tr> <tr> <td>SANDSTONE</td> <td>WHITE</td> <td>SOFT</td> <td>47</td> <td>93</td> </tr> <tr> <td>LIMESTONE</td> <td>YELLOW</td> <td>HARD</td> <td>93</td> <td>135</td> </tr> </tbody> </table>	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	SOIL	BLACK	SOFT	1		COARSE GRAVEL	BROW	HARD	1	16	BLUE CLAY	BLUE	SOFT	16	39	CLAY	RED	SOFT	39	46	GRAVEL	BROW	HARD	46	47	SANDSTONE	WHITE	SOFT	47	93	LIMESTONE	YELLOW	HARD	93	135	Use Domestic		
	GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO																																						
	SOIL	BLACK	SOFT	1																																							
	COARSE GRAVEL	BROW	HARD	1	16																																						
	BLUE CLAY	BLUE	SOFT	16	39																																						
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	SANDSTONE	WHITE	SOFT	47	93																																						
	LIMESTONE	YELLOW	HARD	93	135																																						
	Casing Drive Shoe? <input type="checkbox"/> Yes <input type="checkbox"/> No	Hole Diameter																																									
Casing Diameter 4 in. to 99 ft.	Weight(lbs/ft)																																										
Screen N	Open Hole From 99 ft. to 135 ft.																																										
Make	Type																																										
Static Water Level 52 ft from Land surface	Date 76/04/16																																										
PUMPING LEVEL (below land surface)	ft. after hrs. pumping g.p.m.																																										
Well Head Completion	Pitless adapter mfr Model																																										
Casing Protection	<input type="checkbox"/> 12 in. above grade																																										
	<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																																										
Grouting Information	Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																																										
Nearest Known Source of Contamination	116 ft. direction type																																										
	Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																																										
Pump <input type="checkbox"/> Not Installed	Date Installed y																																										
Mfr name FAIRBANKS MORSE																																											
Model 7511	HP 0.75	Volts 230																																									
Drop Pipe Length 84 ft.	Capacity 10 g.p.m.																																										
Type S																																											
Any not in use and not sealed well(s) on property?	<input type="checkbox"/> Yes <input type="checkbox"/> No																																										
Was a variance granted from the MDH for this Well?	<input type="checkbox"/> Yes <input type="checkbox"/> No																																										
USGS Quad: Coates Elevation 937	Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 19163																																										
Aquifer: OPDC Alt Id:	License Business Name Corcoran Well Co.																																										
	Name of Driller																																										

Report Copy

Unique No. 00124307	MINNESOTA DEPARTMENT OF HEALTH WELL AND BORING RECORD <i>Minnesota Statutes Chapter 1031</i>				Update Date 1991/08/14																																		
County Name Dakota					Entry Date 1990/10/19																																		
Township Name	Township	Range	Dir	Section	Subsection	Well Depth	Depth Completed	Date Well Completed																															
	114	19	W	10	BADDDD	130 ft.	130 ft.	1975/06/26																															
Well Name STEVE OLSON						Drilling Method																																	
Contact's Name STEVE OLSON 17110 STATION TR FARMINGTON MN						Drilling Fluid		Well Hydrofractured? <input type="checkbox"/> Yes <input type="checkbox"/> No From ft. to ft.																															
<table border="1"> <thead> <tr> <th>GEOLOGICAL MATERIAL</th> <th>COLOR</th> <th>HARDNESS</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>SOIL</td> <td>BLACK</td> <td>SOFT</td> <td></td> <td>1</td> </tr> <tr> <td>CLAY</td> <td>YELLOW</td> <td>SOFT</td> <td>1</td> <td>19</td> </tr> <tr> <td>CLAY</td> <td>BLUE</td> <td>SOFT</td> <td>19</td> <td>54</td> </tr> <tr> <td>SANDSTONE</td> <td>GRAY</td> <td>SOFT</td> <td>54</td> <td>99</td> </tr> <tr> <td>LIMESTONE</td> <td>YLWB</td> <td>HARD</td> <td>99</td> <td>130</td> </tr> </tbody> </table>						GEOLOGICAL MATERIAL	COLOR	HARDNESS	FROM	TO	SOIL	BLACK	SOFT		1	CLAY	YELLOW	SOFT	1	19	CLAY	BLUE	SOFT	19	54	SANDSTONE	GRAY	SOFT	54	99	LIMESTONE	YLWB	HARD	99	130	Use Domestic			
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4 in. to		99 ft																																					
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Make						Type																																	
Static Water Level 64 ft from Land surface						Date 75/06/26																																	
PUMPING LEVEL (below land surface)						64 ft. after hrs. pumping 15 g.p.m.																																	
Well Head Completion						Pitless adapter mfr Model																																	
						Casing Protection <input type="checkbox"/> 12 in. above grade																																	
						<input type="checkbox"/> At-grade(Environmental Wells and Borings ONLY)																																	
Grouting Information						Well grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No																																	
Nearest Known Source of Contamination						94 ft. direction NW type																																	
						Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																																	
Pump <input type="checkbox"/> Not Installed						Date Installed y																																	
Mfr name FM																																							
Model 5012		HP 0.5		Volts 230																																			
Drop Pipe Length 82 ft.		Capacity		g.p.m																																			
Type S																																							
Any not in use and not sealed well(s) on property? <input type="checkbox"/> Yes <input type="checkbox"/> No																																							
Was a variance granted from the MDH for this Well? <input type="checkbox"/> Yes <input type="checkbox"/> No																																							
USGS Quad: Coates Elevation 935						Well CONTRACTOR CERTIFICATION Lic. Or Reg. No. 19163																																	
Aquifer: OPDC Alt Id:						License Business Name Corcoran Well Co.																																	
						Name of Driller																																	

Report Copy

Empire Township, Prairie Survey

**Completed for
Resource Strategies Corporation**

By Fortin Consulting, Inc.

October 17, 2003

Empire Township, Prairie Survey

Fortin Consulting, Inc. October 2003

Purpose:

Fortin Consulting, Inc. was retained to survey three properties in Empire Township for mesic prairie communities because a "site of high biodiversity significance" was identified in the vicinity of the proposed Empire Township mining area. The survey was prepared for the EAW Scoping document to determine if the mesic prairie exists on the properties proposed for sand and gravel mining.

Methods:

The field survey was conducted on October 17, 2003 by staff of Fortin Consulting, Inc. The survey was conducted in an area previously identified by the Department of Natural Resources as a natural community. The site was surveyed by traversing the area and identifying the prairie fragments present. When an area containing mesic prairie was found, it was marked using an orange flag, photographed and labeled. The prairie fragments were not delineated but a rough estimate of size was made by pacing off the area. Because of the time of year of the survey, some species may not have been visible or identifiable due to lack of seed heads or flowers. However, most of the native grass species were easily identifiable.

Site Map

The surveyed area is shown on the attached map. The survey was conducted in the SE ¼ of Section 9, SW ¼ of Section 10 and NE ¼ of Section 16 Empire Township, Dakota County, Minnesota.

Findings:

General description of survey area

Approximately 30 - 40 acres of rolling hills with a wide variety of prairie, wetland, woodland and farmland was surveyed. The survey area was along a ¾ linear miles along the south and east borders of the proposed mining area and extending another ¼ mile to the northwest from the corner of sections 9 and 10. The surveyed area was approximately 300 – 400' wide.

Nine mesic prairie remnants were found during the survey. They varied in their size, quality and plant diversity. Most of the sites had extensive Brome grass and had been invaded by woody species, especially Sumac. Plant species were not identified during this survey but prairie plant communities were flagged. The following describes in more detail the three properties and the prairie remnants identified. The location of these remnants is shown on the map. Photos of the sites are also included.

Property 1- Peterson

The areas surveyed were in Sections 9 and 10 beyond the soybean fields. Most of the open areas were dominated by Brome Grass, Kentucky Blue Grass, Goldenrods, and Sumac. There were grass openings between several wooded areas. The wooded areas were often dominated by Prickly Ash, Raspberry, and Buckthorn.

The primary areas with undisturbed vegetation were on the steeper slopes not suitable for farming. Some of the hillsides were woodland and some grassland. All grassland areas were surveyed. The farmed areas were not surveyed however it was noted that in one recently disced area, prairie plants still stood in between clumps of dirt. The landowner stated that part of the area had been grazed in the past.

Site A

The most southeastern prairie remnant was labeled Site A. It was a small opening surrounded by woody species. It is located northwest of the deer tower stand on the east edge of the survey area. The area of mesic prairie species was 100'(E-W) by 45'(N-S) in size. The site had a substantial number of native prairie species including, Little Bluestem, Aster, Prairie Dropseed, Hairy Grama, Blazing Star and Lead plant. There was some Spotted Knapweed, Cedar trees and Brome Grass invading the prairie. Sumac is found along the western edge.

Site B

Moving to the west along the south edge of the Peterson Farm was a prairie remnant we labeled Site B. It was a small grassy opening surrounded by woody species. It is located to the west of Site A along the Peterson southern fence line. Two large red pines are on the south edge of this site. The area of mesic prairie species was 100'(E-W) by 100'(N-S) or 10,000 square feet in size. The site had a substantial number of native prairie species including, Little Bluestem, Aster, Prairie Dropseed, Blazing Star and Lead plant. There was some Spotted Knapweed, Sweet clover and Brome Grass invading the prairie. Sumac was coming in on the north end. This site had more invasive species than site A.

Site C

Site C is a prairie remnant located just north and west of site B. It is an approximately 20,000 square foot area with a steep hill down to a wooded floodplain area on its west border. A large multiple-trunk Cottonwood tree is located to the south and west of this site along the Peterson fence line. The site had a number of native prairie species including, Little Bluestem, Aster, Prairie Dropseed, Side Oats Grama, and Lead plant. There was some Sumac, Spotted Knapweed and Brome Grass invading the prairie.

Site D

Site D is a small prairie remnant located west of site C along the Peterson south fence line just to the east of the survey marker at the south section corner of sections 9 and 10. The prairie species are found going up the hill and at the top of the hill in an open area with some Sumac. A second deer tower stand is located at the north edge of this prairie remnant. The area with the most prairie species is in the southwest corner of the grassy opening. The site had a substantial number of native prairie species including, Little Bluestem, Aster, Prairie Dropseed, Goldenrod, and Lead plant. The area was dominated

Fortin Consulting, Inc.

by invasive Brome Grass. Approximately 50' northwest of the deer stand is another small area of prairie similar to that described in Site D above. This site was labeled D-2. The total area with prairie species is approximately 20,000 – 25,000 square feet.

Site E

The eastern most prairie remnant along the south property border was labeled Site E. It is the largest and appeared to be the highest quality prairie remnant found. Site E is located on steep hillsides surrounding a soybean field just above a farm pond and a lower soybean field to the west. The area of mesic prairie species was approximately 60'(E-W) by 75'(N-S) in size along the south edge of the soybean field and 75' (E-W) by 450' (N-S) along the west edge. The site had a substantial number of native prairie species including, Little Bluestem, Aster, Prairie Dropseed, Side Oats Grama, Rough Blazing Star, Prairie Clover, Stiff Goldenrod, and Lead plant. There was Brome Grass invading the prairie.

Site F

North of Site E are 2 very small (20' by 20') patches of prairie we labeled Site F. They are located on the top of the hill and slope of a small area of land extending to the west. Both sites are dominated by invasives including Brome Grass and Chinese Elm. It was a small opening surrounded by woody species. The site had a few native prairie species including, Little Bluestem, Aster, Rough Blazing Star and Lead plant. The area was surrounded by woody species, including Sumac and Buckthorn.

Site G

Site G is another small patch of prairie to the north of site F. It includes a nice mix of short prairie grasses and forbs. It was a small opening surrounded by woody species. The area of mesic prairie species was approximately 65'(E-W) by 65'(N-S) in size. The site had a substantial number of native prairie species including, Little Bluestem, Aster, Prairie Dropseed, Blazing Star and Lead plant.

Site H

Site H is located east of Site G along the western fence line of the soybean field. There is a deer trail going through this area. This area had some tall grass prairie species, including Indian Grass and Big Bluestem, and Aster. The area was dominated by Brome Grass with some Sumac invading. A second small area with Indian grass and Big Bluestem was found just north of this site. Site H was approximately 500 square feet, with most of the tall grass species located within a 10' x 20' area.

Property 2

This is the property to the south of the Peterson property in Section 16. It includes a large wetland. On the south edge of the wetland there is a hillside of grasses and woodland. The area surveyed is on the east edge of the property.

Site I

Site I was located on the property to the south of the Peterson property to the south of the wetland area. This site had a very different native plant community than the other mesic prairie areas found. Species found included Switch grass, Monarda, Goldenrod, an unidentified mint species and Virginia Creeper. The Switch Grass is typical of a wetter site of the mesic prairie. The Switch Grass was found adjacent to the wetland. This site is approximately 7,000 – 10,000 square feet in size. The dominant grass was likely Kentucky Bluegrass. The plant diversity was not high. However, the site had very few invasive species.

Property 3

This property, also in Section 16, is the farthest south property in the proposed gravel mining area. The area surveyed is on the eastern edge of this property. The area has two large hills with a grassy valley in between them. The northernmost hill is wooded with Oaks as the dominant tree species. The grass area between the woods on the north hilltop is dominated by Brome Grasses with some Oak seedlings scattered throughout. On the south of the hill in the valley Brome Grass dominates with some Goldenrod, and a few forb species. Prickly Ash and Reed Canary Grass were also found in this area. The south hill was a Brome Grass and Kentucky Blue Grass dominated area with a few Asters, Goldenrods, Yarrow and Monarda. There were some scattered Chinese Elm and other woody species as well. A wetland was found at the bottom of the hill to the south. No identifiable mesic prairie areas were found on this property.

Mesic Prairie Communities

Based on the information collected during this limited survey, Site E is the highest quality mesic prairie area found due to its size, number of plants species and limited number of invasive species. Roughly 2.5 acres of mesic prairie was found in total. Additional areas of mesic prairie likely existed on the properties historically, but have been destroyed due to farming or invasion by woody species.

Site	Approximate Size in square feet
A	4000
B	10,000
C	20,000
D	25,000
E	38,000
F	800
G	4,000
H	500
I	7000
TOTAL	109,300 (2.5 acres)

Recommendations:

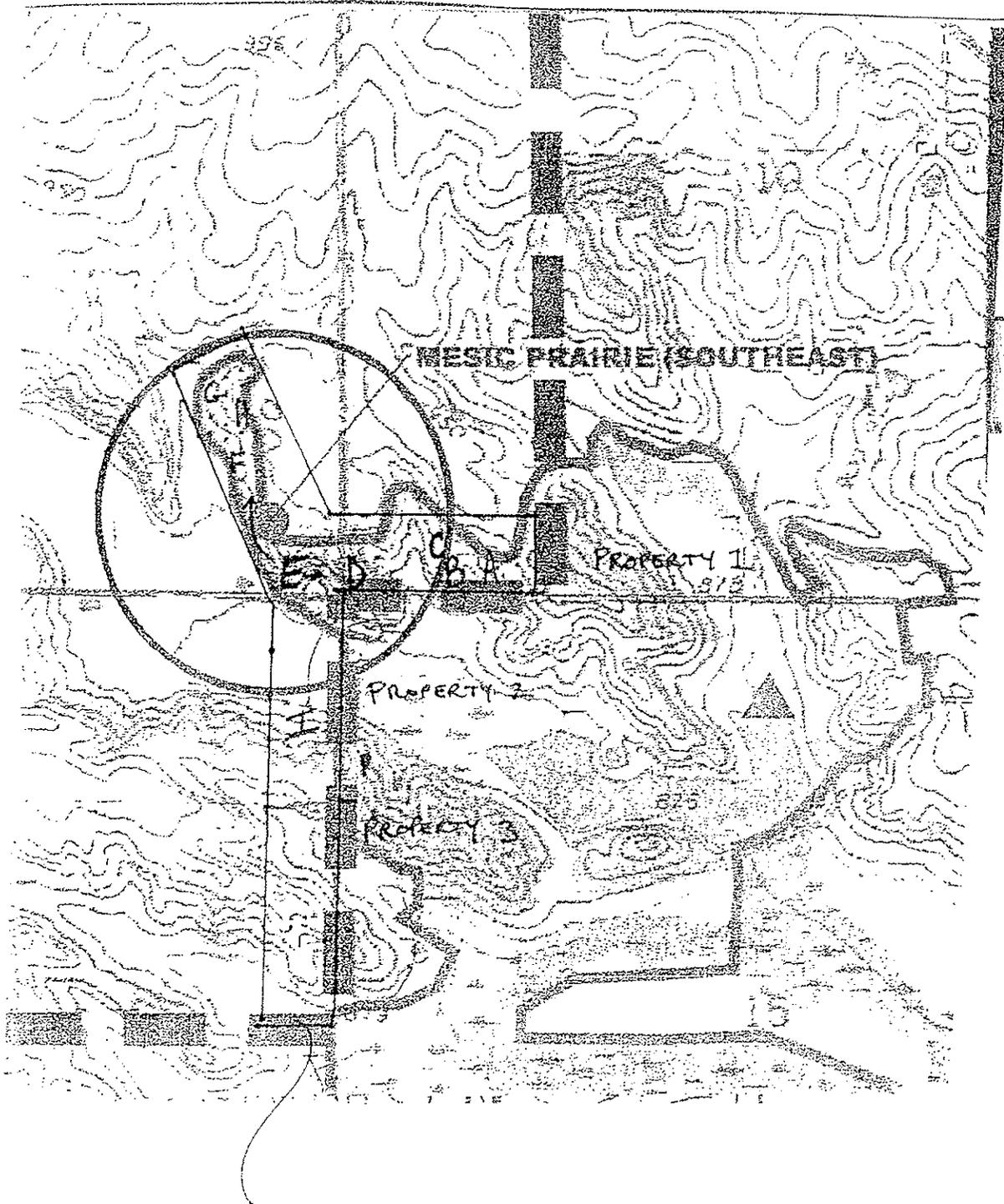
There were 9 sites characterized as mesic prairie communities. Most of the areas were surrounded by invasive plants and also had invasive plants mixed into the prairie. Without management, the small prairie remnants would eventually be overrun with the woody species and other invasives.

Site E is the largest and highest quality of the prairie areas. If some of the smaller isolated remnants were impacted due to gravel mining, a possible method of mitigation would be to enlarge and protect Site E. It could be extended to the north to sites F and G. To manage the area for a prairie, a burn would be beneficial along with spot spraying or selective removal of woody plants. Since there was evidence of native plants within the plowed area, the prairie could also be extended up into the area that is presently a soybean field if desired. Some areas may need to be planted with an appropriate native plant mix if they do not come back after a prescribed burn.

Site I is a different type of native plant community, since it has more of the wet-mesic plants. It did not appear to have a lot of diversity. Additional investigation of the value of this area may be helpful to determine if mitigation would be required.

We have identified the prairie segments based on a late fall survey of the area. This is only accurate to the degree that we can recognize plants that are late season bloomers and in their dormant state. If a more thorough survey of plant species is needed it would be advisable to do a plant survey during the spring to summer to get a more thorough understanding of the prairie plant community. Prairie remnants to be protected should be delineated.

Site Map and Photos



SURVEY AREA WITH SITES OF MESIC PRAIRIE IDENTIFIED

Fortin Consulting, Inc.

Best prairie segment "E"

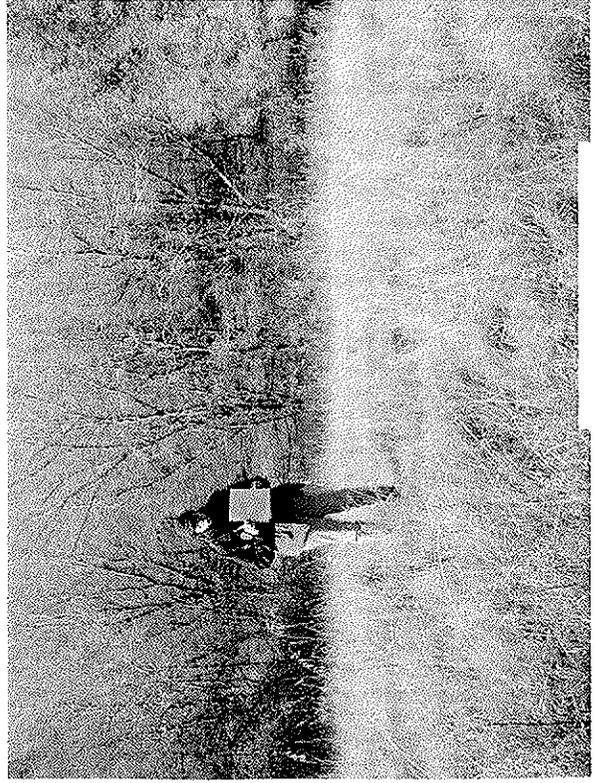


"E" from above





Site "A"



Site "C"

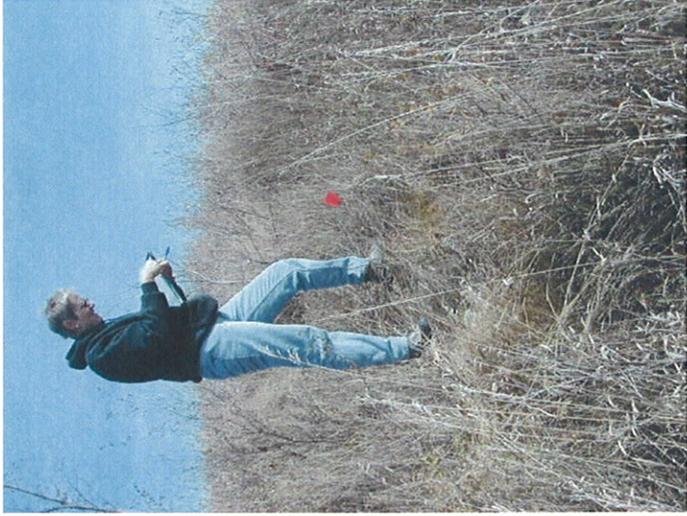
All of these sites had shorter prairie grasses and forbs.

Site "B"



Site "D"

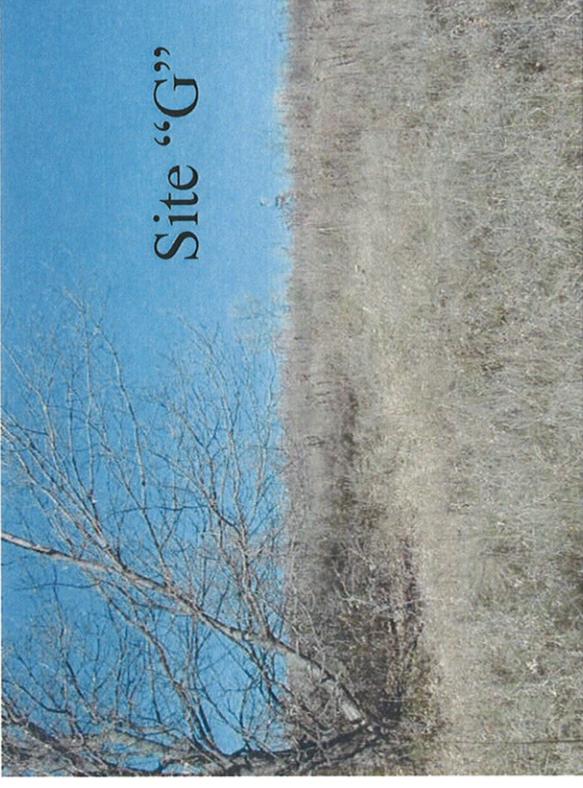




Site "F"

Site F and G had shorter prairie grasses and forbs

No photo of site "H". Just a narrow band of brome grass with big bluestem and indian grass(taller prairie grasses). At top of hill near soybean field.



Site "G"



Site "I" across wetland, Dominated by switch grass. Only site like this surveyed.



