EAW Petition Process

- EQB determines if the petition complies with the requirements of MN Rule 4410.1100 subparts 1 and 2 and forwards the petition to the RGU within 5 days of receipt of the petition. Petition received from EQB 3-12-24.

- RGU has 15 days from the date of receipt to decide on the need for and EAW. If the decision is made by a board, council or other body which meets only on a periodic basis, the time may be extended by the RGU for an additional 15 days. Email sent to EQB 3-13-24 requesting an additional 15 days.

- The RGU reviews the petition and makes a decision to approve or deny the need for preparation of an EAW.

- Within 5 days of the decision the RGU shall notify, in writing the proposer, the EQB staff and the petitioner's representative of its decision.

EAW mandatory threshold

- The mandatory threshold for the extraction or mining of sand, gravel, stone or other nonmetallic minerals, other than peat which will excavate 40 or more acres of land to a mean depth of ten feet or more during its existence.

- The proposed expansion to add an additional 20 acres does not meet the mandatory threshold. If the project is an expansion or additional stage of an existing project, the cumulative total of the proposed project and any existing stages or components of the existing project must be included when determining if a threshold is met or exceeded if construction was begun within 3 years before the date of application for a permit or approval from a governmental unit for the expansion of additional stage per MN Rule 4410.4300 subp. 1. The existing gravel pit has been in existence since the 1960s and received a pre-ordinance permit 43631 in 1994 and a CUP permit for expanded use to include portable hot mix and recycling of asphalt in 2011. The existing extractive use authorizations were permitted before the 3-year timeline and are not required to be included in the mandatory threshold.

Criteria

In deciding whether a project may have the potential for significant environmental effects for the proposed 20 acre parcel, the following factors shall be considered per MN Rule 4400.1700 Subp. 7.

A. type, extent, and reversibility of environmental effects.

B. cumulative potential effects. The RGU shall consider the following factors: whether the cumulative potential effect is significant; whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and the efforts of the proposer to minimize the contributions from the project.

C. the extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority. The RGU may rely only on mitigation measures that are specific and that can be reasonably expected to effectively mitigate the identified environmental impacts of the project; and

D. the extent to which environmental effects can be anticipated and controlled as a result of other available environmental studies undertaken by public agencies or the project proposer, including other EISs.

MINNESOTA
ENVIRONMENTAL QUALITY BOARD

Minnesota Environmental Quality Board
520 Lafayette Road North
Saint Paul, MN 55155

VIA E-MAIL (cover letter & petition)

March 12, 2024

Ryan Logan, Director
St. Louis County Planning and Zoning
Government Services Center
320 West 2nd Street, Suite 301
Duluth, Minnesota 55802
loganr@stlouiscountymn.gov

RE: Petition for an Environmental Assessment Worksheet for the Northland Constructors Borrow Pit Expansion Project

Dear Ryan Logan,

The Environmental Quality Board (EQB) received a petition on March 11, 2024 requesting that an Environmental Assessment Worksheet (EAW) be prepared for the project described in the petition, and on March 12, 2024 the EQB determined that St. Louis County is the appropriate governmental unit to decide the need for an EAW.

All requirements for Minnesota's Environmental Review Program, including when review is required and when review is exempt can be found in Minnesota Rules, chapter 4410. Please note, a project may not be started, and a final governmental decision may not be made to grant a permit, approve a project, or begin a project, until a decision has been made for this petition. Project construction includes any activities which directly affect the environment, including preparation of land.

The procedures to be followed in making the decision on the enclosed petition (EAW need decision) are found in part 4410.1100. Key points in the procedures include:

1. As the designated RGU, you are required to decide the need for preparation of an EAW, considering the evidence presented by the petitioners or otherwise known to you about the nature and location of the project. In making your decision, you should consider the evidence submitted and take into account the factors listed in part 4410.1700, subpart 7. Note that these procedures require that a record of decision, including specific findings of fact, be maintained.

2. You have 15 working days from the date of the receipt of this petition to decide on the need for an EAW. (See part 4410.1100.)
   - For RGU decisions made by a board, council, or other body which meets on a periodic basis, the time period may be extended by the RGU for an additional 15 days.
   - For RGU decisions not made by a board, council, or other body, the RGU may request an extension from the EQB of up to an additional 15 days.

3. You must provide written notification of your final decision to the proposer, the petitioners' representative, and the EQB, within 5 working days of that decision.
    a. To notify the EQB of your decision on the need for an EAW, please email env.review@state.mn.us. The EQB requests that you include a copy of your record of decision, including instances where environmental review is mandatory, voluntary, or exempt.

4. When notices of decision are sent to EQB, please ensure that:
    a. Decisions have undergone all foreseeable and applicable local administrative processes.
    b. The representative providing notices is authorized to do so on behalf of your responsible unit of government.

5. Should you have any concerns about the timelines for final decisions and the timing of any needed processes, please contact the EQB as soon as possible.

6. If for any reason you are unable to act on the petition at this time (e.g., no application has yet been filed or the application has been withdrawn or denied), the petition will remain in effect for a period of one year and must be acted upon prior to any final decision concerning the project identified in the petition. It is recommended that you notify in writing both the petitioners' representative and the EQB if you are unable to act on the petition at the time it is received.

Notice of the petition and its assignment to your unit of government will be published in the *EQB Monitor* on Tuesday, March 19, 2024.

If you have any questions or need any assistance, please do not hesitate to contact us at env.review@state.mn.us or 651-757-2873.

Sincerely,

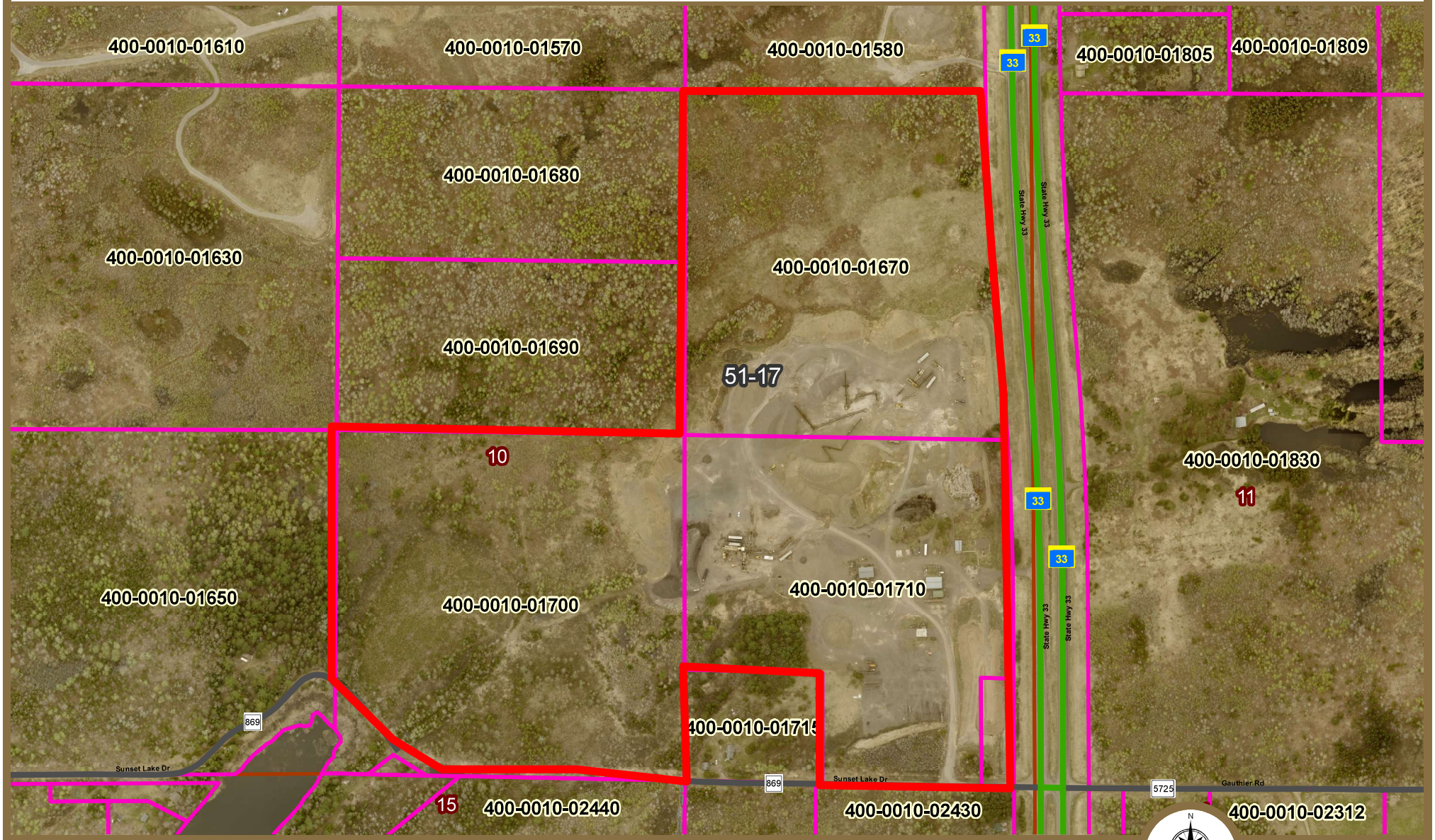
Jesse Krzenski

Jesse Krzenski
Environmental Review Program
Environmental Quality Board

cc: Jo Ann Hoag, Petitioner's Representative

St. Louis County

April PC



Prepared By:	**Planning & Community Development** (218) 725-5000 www.stlouiscountymn.gov
Source:	St. Louis County
Map Created:	3/26/2024

Disclaimer: This is a compilation of records as they appear in the St. Louis County Offices affecting the area shown. This drawing is to be used only for reference purposes and the County is not responsible for any inaccuracies herein contained.

Northland Constructors permitted borrow pit boundary map

N

0 225 450 675

Feet

St. Louis County MN

Environmental Quality Board

520 Lafayette Road North
St. Paul Minnesota 55155
Email: Env.Review@sate.mn.us

Please accept this Citizen's Petition Request for Project review of the Northland Constructors of Duluth (NCD) intended expansion of the Borrow (Gravel) pit within 300 feet of Lake.

Project description:

The Project in question is located at 5529 HWY 33, Saginaw, MN 55779. The property has a conditional use permit (CUP) and is requesting an expansion of an existing general purpose borrow pit as an Extractive Use- Class II to include additional property via a second CUP.

This request is a result of the St. Louis County Planning Department's (RGU) interpretation that the request is to simply add an additional 20 acres to an existing Conditional Use Permit. The Borrow Pit was first recognized in 1960, permits were initiated in 1994, reissued in 2004 and a CUP was approved in 2011.

1994/2004 Permit:
See below – Exhibit A

2011 CUP:
See below – Exhibit B

As a result the County does not intend to require any environmental review. The Extractive Use-General Purpose Borrow (Gravel) Pit Worksheet completed by NCD identifies intent for expansion well beyond the 20 acre parcel.

2024 CUP Application from NCD with County Planning Staff comments:
https://www.stlouiscountymn.gov/LinkClick.aspx?fileticket=U5Wi3bxt36c%3d&tabid=57&portalid=0&mid=1011

Our concerns revolve around the history of the borrow pit existence in 1960, granted a pre-existing permit in 1994 (re-issued in 2004) which was a small operation interacting in a respectful manner with the local community. In the 2011 CUP an addition was allowed for asphalt recycling and a hot mix plant to be added without notification to affected residents. From 1960 to today the residential area in this rural setting has changed substantially. There has been mobile home development on the north and south side of County Highway 7 and the intersection of State Highway 33. So much so that MNDOT restructured the roadway to have J turns at that intersection in an attempt to improve safety. There are 23 properties on or in the immediate vicinity of Sunset Lake. NCD is now an industrial operation that is expected to grow in size, scope and impact. The 1994 permit discussed an annual excavation of approximately 5,000 cubic yards per year. The documents obtained from the County Planning Department do not show any increased authorization of cubic yards from the permit granted in 1994. The current information provided by NCD states intent to extract 100,000 to 150,000 cubic yards annually and expansion to 75 acres of excavation over the life of the operation. Also, NCD states they intend to excavate 40 feet below the existing ground level. The size and scope of this proposed use exceeds the cumulative effect of MN Rule 4410.4300, subpart 12, which requires an Environmental Assessment as the criteria have been met. Additionally there is a request to add recycling concrete and excavate under the water table, neither of which has been authorized by prior permits or Conditional Use Permits. Until this request occurred there has not been notification of neighbors or residents affected to our knowledge.
Link to map illustrating expanded activities of site proposed by NCD, drawn by Sunset Lake Resident Kevin Hedlund on 03/10/2024:
See below – Exhibit C

Environmental effects:

Loon habitat, nesting loons on the northeast section of the lake closest to the industrial operation of the gravel pit preceded our arrival in 1983. The Loons return annually and usually produce one to two chicks annually. Wood ducks, Mallards, and Blue Heron have nesting areas nearby. Waterfowl use Sunset Lake during migration and the following have been seen and recorded in journals: Hooded Mergansers Buffleheads, Red headed Mergansers, Common Golden Eye, Blue-winged Teal, Trumpeter Swans, Horned Grebes, Ring Neck ducks, and Pied Billed Grebes. Species of Birds, to name a few: Chickadees, Hummingbirds, Nut Hatches,, Kingbirds, Purple and other Finches, Blue Jays, Bohemian Wax Wings, a variety of Grosbeaks, Redpolls, Pileated Woodpeckers, Downy Wood Peckers, Robins, Flickers, Kingfishers, Osprey, Bald Eagles, Great Grey Owl and Snowy Owls have appeared from time to time.

Sunset Lake Fish:

https://www.dnr.state.mn.us/lakefind/lake.html?id=69062000

Noise from the following sources: already experienced from back up alarms on the trucks, expected to be 50 in number per day, asphalt plant, digging/crushing gravel, soon to be added concrete recycling. Noise may cause the Loons to leave the area as it is a known fact in many publications that Loons are sensitive to noise and activity when nesting.

Erosion is likely as there is constant presence of water and flooding of the wetlands and road area to the south of the operation at the north end of Sunset Lake. In addition, removal of vegetation to enable gravel mining could contribute to erosion and will disrupt wildlife habitat.

Ground water contamination: is likely due to digging below the surface and below the water table from portable hot mix operations as well as stockpiling of salvaged materials including asphalt and concrete. This also poses a risk to well water. Wetlands are incorporated within the pit property and adjacent to it. Storm runoff will flow from the site over the road and into Sunset Lake, as occurs annually in the spring and with rainfall. Sunset Lake is in the Cloquet River watershed and thus run off will flow to the St. Louis River ending at Lake Superior.

Air Quality: Generation of dust is regulated, and poses a risk of crystalline silica, a known carcinogen. Asphalt operations are regulated and are known to have health hazards. Decreased air quality and odors have already and will continue impact residents, see photo from 9-13-2023, attached below.

County Road 7 is a preferred route to access Highway 53 at Twig will see increased truck traffic. This is a school bus route.

General information about the area:https://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/cwcs/profiles/tamarack_lowlands.pdf

Photo of NCD air emissions taken by Jo Ann R. Hoag on 09/13/2023 9:06 a.m.

PETITIONERS REPRESENTATIVE

Jo Ann R. Hoag
5426 Bear Trap Road
Saginaw, MN 55779
218-729-6302

Exhibit A

PERMIT NO. 43631

ST. LOUIS COUNTY ENVIRONMENTAL SERVICES
BORROW PIT APPLICATION

PROPERTY TAX PARCEL CODE: 400 / 0010 / 01710

NAME OF PROPERTY OWNER Allen & Shelly Anderson PHONE 729-9401
MAILING ADDRESS 5529 Hwy 33 N Sagimaw MN. 55779

NAME OF PRINCIPAL OPERATOR Allen L. Anderson PHONE SAME
MAILING ADDRESS

LEGAL DESCRIPTION: see attached Copy

SECTION TOWNSHIP RANGE

TYPE OF BORROW PIT APPLIED FOR:

-EXISTING PRE ORDINANCE PIT X
DATE PIT ORIGINALLY ESTABLISHED 1960
HAS A MINIMUM OF 100 CUBIC YARDS BEEN REMOVED EVERY TWO YEARS SINCE 1969?
YES X NO

-45 DAY PERMIT
NAME PUBLIC WORKS PROJECT MATERIAL THAT WILL BE USED

ARE THERE RESIDENTIAL PROPERTIES WITHIN 300 FEET OF THE PIT INCLUDING HAUL ROADS, STOCKPILE AREAS, AND RELATED PIT FACILITIES? YES NO X
ARE THERE ANY LAKES, STREAMS, OR RIVER WITHIN 300 FEET OF THE PIT? YES NO X

-TWO YEAR PUBLIC WORKS PIT
NAME PUBLIC WORKS PROJECT MATERIAL THAT WILL BE USED

LIST ALL RESIDENTIAL PROPERTY ADDRESSES WITHIN ONE-QUARTER MILE OF THE PIT, HAUL ROADS, AND PIT FACILITIES. Tim Riley 7545 Sunset Lake Rd.
Melvin Amborn 5489 Hwy 33
Willard Donley 7462 Gauthier Rd
Gary Gill 7480 Gauthier Rd
Elvin Washburn 5602 Hwy 33
Peter Peterson 5547 Hwy 33

LIST THE RESIDENTIAL ADDRESSES WITHIN 300 FEET OF THE PIT None

HAS A PETITION BEEN SUBMITTED CONTAINING THE SIGNATURES OF ADJACENT RESIDENTIAL PROPERTY OWNERS?
YES NO X NOT APPLICABLE

-GENERAL PURPOSE PIT_____
DESCRIBE BORROW PIT OPERATIONS: Currently Pit Run Sand & Gravel are hauled out just like has been for many years

YEARS OR MONTHS PIT WILL BE OPENED Many Years

ESTIMATED VOLUME TO BE EXCAVATED EACH YEAR Approx. 5000 cubic yds

HIGHEST NUMBER OF TRUCKS LEAVING PIT PER DAY 15
AVERAGE NUMBER OF TRUCKS LEAVING PIT PER DAY 10

DESCRIBE HOURS AND DAYS OF OPERATIONS 7:00 AM to 7:00 PM

DESCRIBE THE PIT OPERATIONS INCLUDING DEPTH OF EXCAVATION, LOCATION OF EXCAVATION, AMOUNT BEING EXCAVATED AT ONE TIME, CRUSHING AND WASHING, TYPES OF BUILDINGS ON PARCEL, STORAGE OF MATERIAL, ASPHALT RECYCLING, AND OTHER USES THAT WILL TAKE PLACE IN THE PIT OPERATION

See attached drawing Depth of excavation will be at 1320 ft Elevation Crushing will take place in the furture

STATE ROUTES TYPICALLY TAKEN FOR TRUCKS GOING TO AND FROM PIT Hwy 33 to Hwy 2 or County Rd. 7 or North to Hwy 53

DESCRIBE ALL DUST CONTROL MEASURES Watering of Haul Roads

DESCRIBE ANY HOT MIX PLANT FACILITIES None are Planned

DESCRIBE THE TYPE AND SIZE OF ALL BUFFER AREAS FROM ROADS AND OTHER PROPERTY LINES

See drawing

ARE THERE ANY WETLANDS ON THE PROPERTY? Yes See attached Copy

WHAT IS THE DEPTH TO GROUNDWATER? PRIOR TO START OF EXCAVATION 40 to 50 Ft.
UPON COMPLETION OF EXCAVATION 10 Ft

DESCRIBE ANY ALTERATION IN DRAINAGE OFF THE SITE AS A RESULT OF PIT OPERATIONS.

No Change

DESCRIBE GATES AND OTHER BARRIERS PLACED ON PIT ACCESS ROADS all of the property will be fenced on the property lines, with gate's where necessary

HAVE THE PROPERTY LINES BEEN ESTABLISHED AND AGREED TO BY ADJACENT PROPERTY OWNERS?
YES X NO

IF NO, PLEASE DESCRIBE EFFORTS TO INSURE THE BUFFER AREAS WILL BE MAINTAINED.

DESCRIBE ALL UTILITY LINE EASEMENTS THROUGH PROPERTY AND THE PROXIMITY OF THE PIT OPERATIONS TO THE EASEMENT:

See attached drawing

DESCRIBE CONFORMANCE WITH MINNESOTA POLLUTION CONTROL AGENCY NOISE STANDARDS

all Equipment has properly fitted mufflers

DESCRIBE THE PIT RECLAMATION PLAN most of the pit area is open field I will return the area to open field but at a lower elevation 1320 placing top soil and Seeding

ATTACH TO THE APPLICATION THE REQUIRED INDEX LOCATION MAP AND THE DETAILED SCALE DRAWING CONTAINING THE INFORMATION STATED IN SECTION 25.03, A, 3, OF ARTICLE VI, ST. LOUIS COUNTY ZONING ORDINANCE NUMBER 46. This information includes:

1. Map showing topographic contour intervals of 10 feet.
2. Location of all pit operations.
3. Horizontal dimensions of the pit site.
4. All setbacks from roads and property lines.
5. Location, size and use of all structures on property.
6. Location of all adjacent property structures and uses.
7. Area of excavation.
8. Extent of vegetation buffer area.
9. Location of all utilities.
10. Location of all interior roads and barriers.
11. All lakes, streams, and wetlands on the property.
12. Timing of reclamation effort.

I hereby certify that I am the owner or authorized agent of the owner of the above property and that all uses will conform to the provisions of the County Official Controls. I further certify that I will comply with all conditions placed upon this permit either by the Planning Commission or as stated in the Minimum Standards of the borrow pit regulations. Intentional or unintentional falsification of this application or any attachments thereto will serve to make this application and any resultant permit invalid. I understand that there are significant penalties for violation of the borrow pit regulations and those relating to wetlands. I authorize County staff to inspect the property and pit operations at any time.

APPLICANT _____ DATE 11/20/94

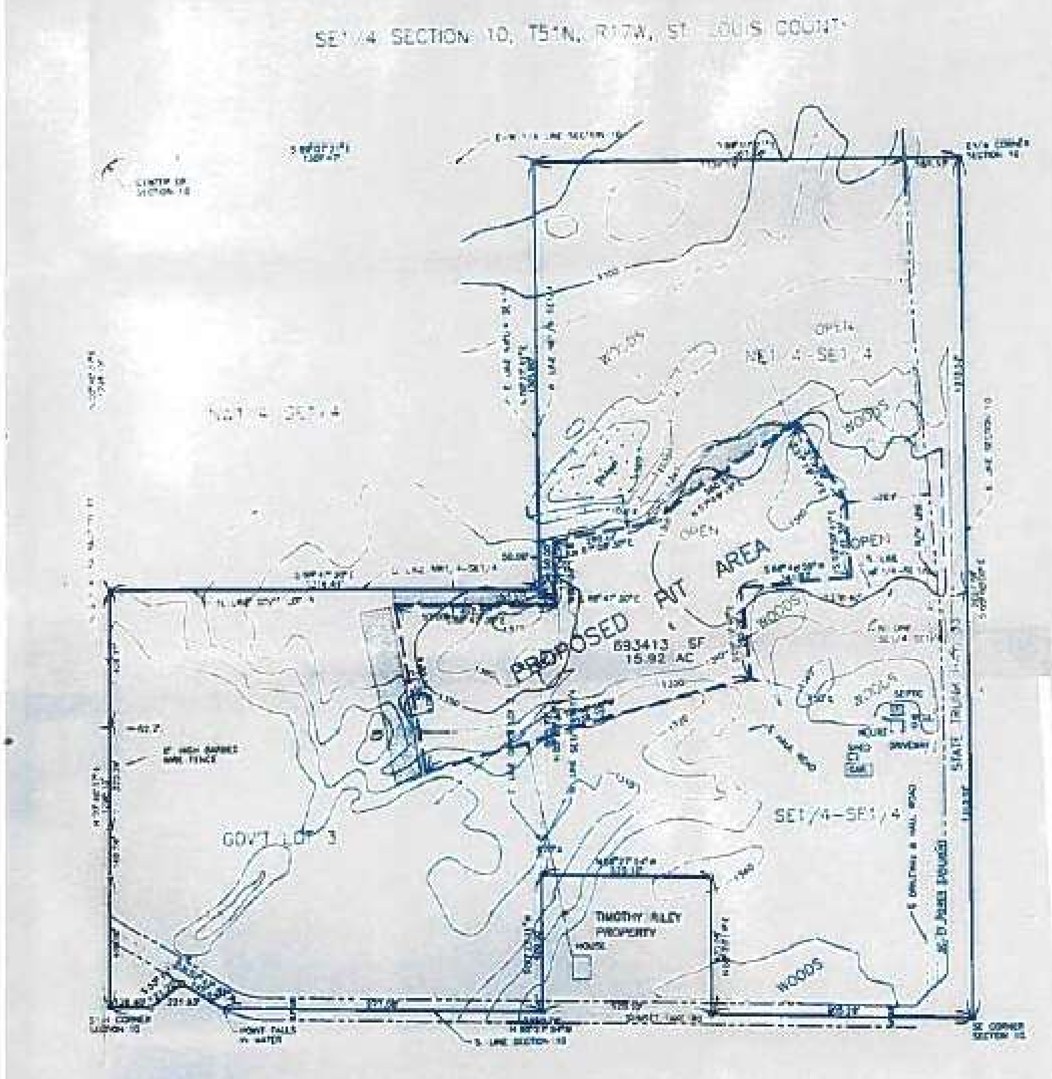
FOR OFFICE USE ONLY

Fee Paid: $_____ Receipt _____ Issued: _____ Date: _____

Zone District _____

Comments _____

_____



LEGAL DESCRIPTION: PROPOSED GRAVEL PIT AREA

That part of the Northeast Quarter of the Southeast Quarter, Southeast Quarter of the Southeast Quarter and Government Lot 3, all in Section 10, Township 51 North, Range 17 West, Saint Louis County, Minnesota, described as follows:

Commencing at the southwest corner of the NE1/4-SE1/4 of said Section 10; [illegible] the point of beginning.

PROPERTY OWNER & PIT OPERATOR
ALLEN ANDERSON
5529 HIGHWAY 33
SAGINAW, MN 55779

LOCATION MAP
SECTION 10, T51N, R17W,
SAINT LOUIS COUNTY, MN
C.S.A.H. NO. 6
10
PIT
AREA
NE1/4-SE1/4
SE1/4-SE1/4
GOVT
LOT 3
STATE HWY NO. 33
SUNSET LAKE RD.
NO SCALE
GRAPHIC SCALE
100
200
400
DENOTES IRON MONUMENT FOUND.
DENOTES 3/4" DIAMETER X 24" LONG REBAR SET W/ RLS#19725 CAP AFFIXED.
BEARINGS SHOWN ARE BASED ON THE EAST LINE OF SECTION 10 HAVING AN ASSUMED BEARING OF S 00°00'00" E.
CONTOURS SHOWN TAKEN FROM USGS QUADRANGLE MAP.
DENOTES TOP SOIL STOCKPILE
DENOTES EXISTING DWELLING
OPENING OF PIT TO BEGIN SPRING OF 1995 AND EXCAVATION WILL CONTINUE FOR YEARS.
APPROXIMATELY 5000 CU. YDS. OF MATERIAL TO BE REMOVED PER YEAR.
I hereby certify that this survey was prepared by me or under my direct supervision and that I am a duly Registered Land Surveyor under the laws of the State of Minnesota.
Date 11/18/94 MN Reg. No. 19725
RAEM, INC.
CONSULTING ENGINEERS & LAND SURVEYORS
DESIGNED BY NBL
DRAWN BY WGA
CHECKED BY NBL
SURVEYED BY RAELM
SCALE 1" = 200FT.
NO. DESCRIPTION DATE
REVISIONS
PROPERTY SURVEY & GRAVEL PIT DESIGN FOR ALLEN ANDERSON
SECTION 10, T51N, R17W
DATE 11/18/94
W.O. No. 94200
SHEET NO 1 OF 1

Exhibit B

Form 65-1

Permit No. 43631

ST. LOUIS COUNTY
LAND USE PERMIT

ISSUED TO Allen & Shelly Anderson

LEGAL DESCRIPTION That part of the NE¼ of SE¼, SE¼ of SE¼ & Government Lot 3, Section 10, Twp. 51N., Range 17W.

ROAD NO. AND NAME Hwy. 33

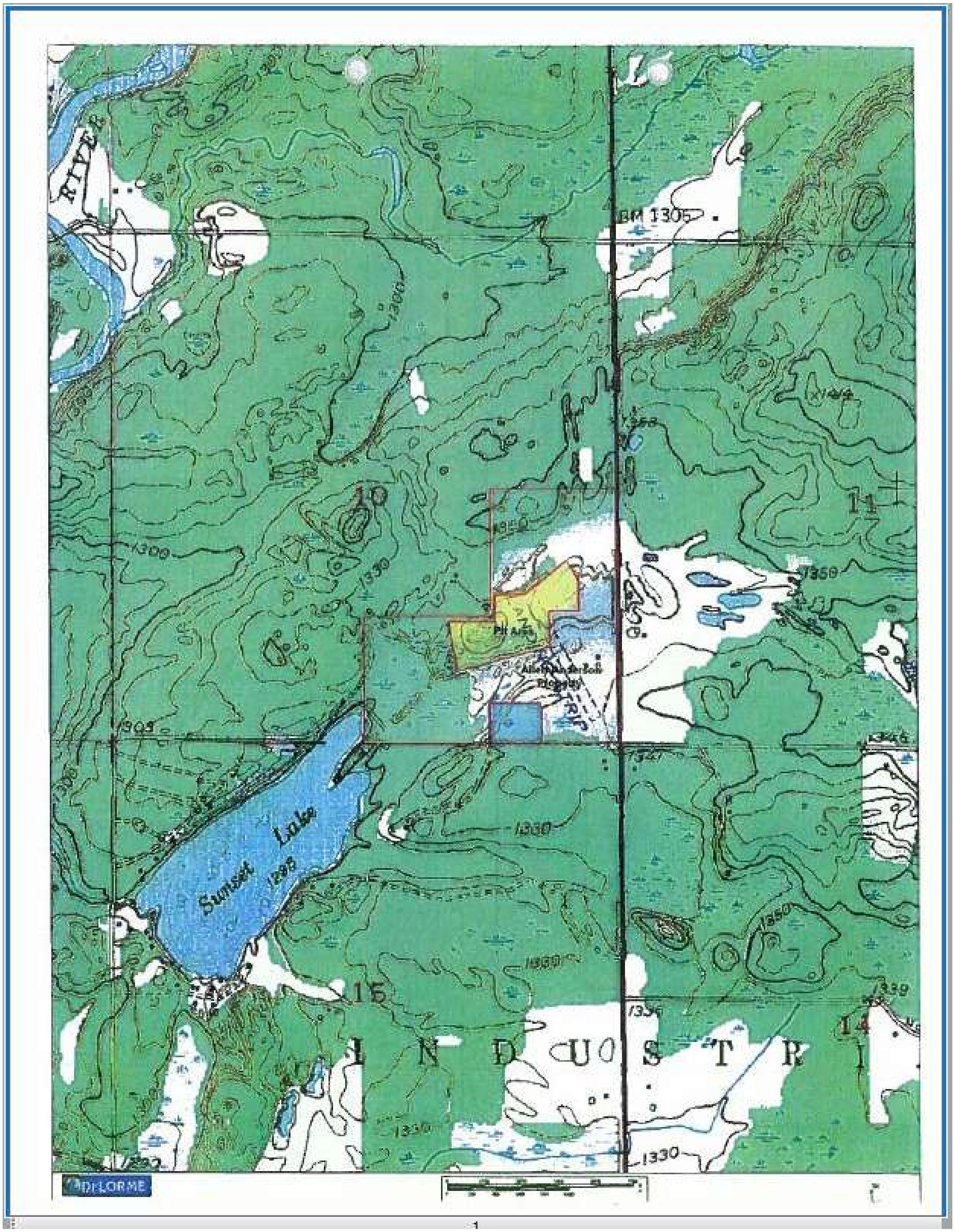
ZONING DISTRICT MUNS-5 **EXISTING USE** Pre-existing Borrow Pit

PROPOSED USE Pre-existing Borrow Pit

DATE Original Date: 11-20-94
Re-issued Date: 7-12-04

COUNTY PLANNING & ZONING DIRECTOR S John Smith
for Barbara Hayden

Post in Conspicuous Place on Premises


RIVER
BM 1305
10
11
1300
1330
1350
Pit Area
Sunset Lake
1288
15
14
I N D U S T R I
DeLORME

Form 65-1

Permit No. 50391

ST. LOUIS COUNTY
LAND USE PERMIT

ISSUED TO Derek Hawkinson / Alan Anderson (owner)

LEGAL DESCRIPTION NE of SE & SE of SE, S10, T51N, R17W

ROAD NO. AND NAME 5529 Hwy 33 N

ZONING DISTRICT MUNS-S **EXISTING USE**

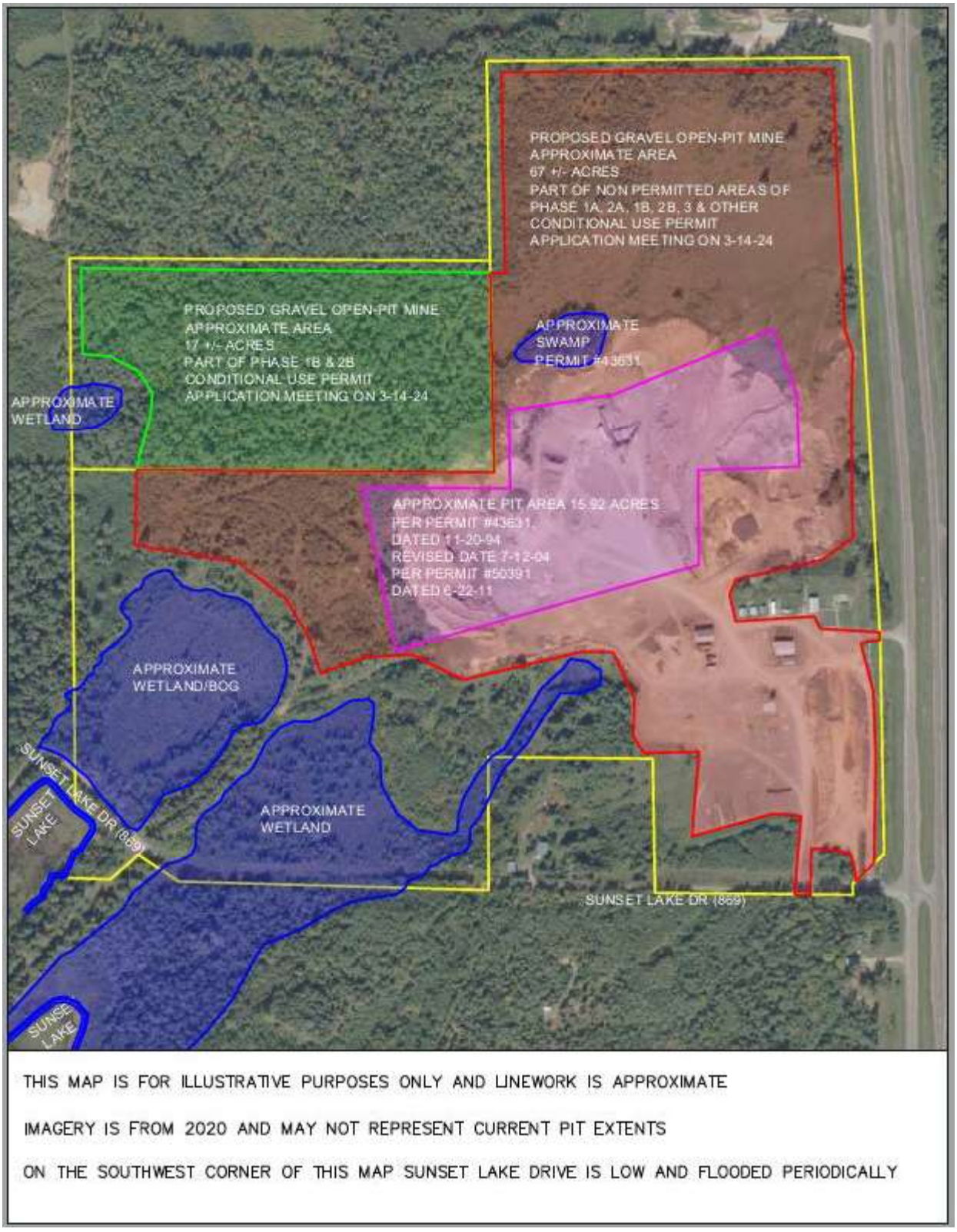
PROPOSED USE Conditional use for Borrow Pit including Asphalt recycling & Portable Hot mix

DATE 6-22-11

COUNTY PLANNING & ZONING DIRECTOR M. Lindhorst
for B. Hayden

Post in Conspicuous Place on Premises

Exhibit C



THIS MAP IS FOR ILLUSTRATIVE PURPOSES ONLY AND LINEWORK IS APPROXIMATE

IMAGERY IS FROM 2020 AND MAY NOT REPRESENT CURRENT PIT EXTENTS

ON THE SOUTHWEST CORNER OF THIS MAP SUNSET LAKE DRIVE IS LOW AND FLOODED PERIODICALLY

Petition for an Environmental Assessment Worksheet for the Northland Constructors CUP Gravel Mine Expansion Project

We, the undersigned, live in and/or own property in the state of Minnesota and request the preparation of an Environmental Assessment Worksheet for Northland Constructors Gravel Mine Expansion Project, located in Saginaw MN (5529 Hwy 33). By signing below, I support the material evidence submitted in the attached petition and believe that, because of the nature or location of the proposed project there may be potential for significant environmental effects including, but not limited to:

- Northland Constructors is proposing to dig below the water table in phase 2a, 2b, and 3 (per their Site Overview Diagram). This pit has wetlands on-site and is ¼ mile from Sunset Lake and associated wetlands, increasing proximity to Cloquet River watershed and groundwater.
- Recycling and storage of asphalt leads to the release of heavy metals and hazardous hydrocarbons into soil and water. Asphalt is a hazardous material with its own Material Data Safety sheet as required by OSHA (made from petroleum products and other materials)
- The pending permit would increase the annual production from 5,000 to 100,000-150,000 cubic yards per year with accompanying pollution increase.
- Air pollution from large amounts of dust containing crystalline silica, a known carcinogen.
- Noise pollution carries past berms, impacting the brain's ability to process sounds and hastening cognitive decline.
- St Louis County is recommending approval with no environmental review.

Minnesota's Environmental Review Program rules require that a citizen petition contain the [legible] signatures and mailing addresses of at least 100 individuals who reside or own property in the state.

Number	Name (Print Clearly)	Address (Full Street, City, State, and Zip Code)	Signature
1	Pamela Hedlund	5442 Bear Trap Rd, Saginaw, MN 55779	Pamela Hedlund
2	Kevin Hedlund	5442 Bear Trap Rd, Saginaw, MN 55779	
3	John Welna	7630 Sunset Lake Drive, Saginaw, MN	
4	Marcia Ramsland	5484 Bear Trap Rd, Saginaw, MN 55779	Marcia Ramsland
5	DONALD HOAG	5426 BEAR TRAP RD, SAGINAW MN 55779	
6	JO ANN R HOAG	5426 BEAR TRAP ROAD SAGINAW MN 55779	
7	Lynn Peterson	7679 Sunset Lake Saginaw MN 55779	

Petition for an Environmental Assessment Worksheet for the Northland Constructors CUP Gravel Mine Expansion Project

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Number	Name (Print Clearly)	Address (Full Street, City, State, and Zip Code)	Signature
8	Tyler Hauge	7643 SUNSET LN SAGINAW, MN 55779	
9	Kelly Duhn	4663 Independence Rd. Saginaw, MN 55779	
10	JOHN LENCOWSKI	4663 INDEPENDENCE RD SAGINAW, MN 55779	
11	Dan Buczynski	3588 Freeman Rd Cloquet MN	
12	Melissa Buczynski	3588- Freeman Road Cloquet, Mn. 55720	
13	Jeff Hedlund	55 Juntunen Rd ESKO, MN 55733	
14	Cindy Hedlund	55 Juntunen Rd ESKO, MN 55733	

Petition for an Environmental Assessment Worksheet for the Northland Constructors CUP Gravel Mine Expansion Project

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Minnesota's Environmental Review Program rules require that a citizen petition contain the [legible] signatures and mailing addresses of at least 100 individuals who reside or own property in the state.

Number	Name (Print Clearly)	Address (Full Street, City, State, and Zip Code)	Signature
15	Anita Anderson	6359 Maple Grove Rd Cloquet, MN 55720	
16	Hadley Randall	7301 Hwy 8 Saginaw, MN 55779	
17	Destiny Gervais	885 State Forest Rd Cromwell, MN 55720	
18	Tayler Balow	2309 Sahlman Ave. Cloquet, MN 55720	
19	HENRY MOELLER	2109 W 6th St. Duluth, MN 55806	
20	Thaddeus Wood	1005 29th St Cloquet, MN 55720	
21	Ashley Ray	2010 14th St #205 Cloquet, MN 55720	

Petition for an Environmental Assessment Worksheet for the Northland Constructors CUP Gravel Mine Expansion Project

We, the undersigned, live in and/or own property in the state of Minnesota and request the preparation of an Environmental Assessment Worksheet for Northland Constructors Gravel Mine Expansion Project, located in Saginaw MN (5529 Hwy 33). By signing below, I support the material evidence submitted in the attached petition and believe that, because of the nature or location of the proposed project there may be potential for significant environmental effects including, but not limited to:

- Northland Constructors is proposing to dig below the water table in phase 2a, 2b, and 3 (per their Site Overview Diagram). This pit has wetlands on-site and is ¼ mile from Sunset Lake and associated wetlands, increasing proximity to Cloquet River watershed and groundwater.
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- St Louis County is recommending approval with no environmental review.

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Number	Name (Print Clearly)	Address (Full Street, City, State, and Zip Code)	Signature
22	Nicole Zenda	17914 Goshawk St. McGregor, MN 55760	Nicole Zenda
23	Samantha Hill	3991 Cty Rd 8, Mooselake, MN 55767	
24	Travis Hill	3991 Cty Rd 8, Mooselake mn 55767 See above	
25	Ken ZeZulka	329 18th ST Cloquet 55720	
26	Austin Dernda	1506 Carlton Ave Cloquet 55720	
27	Ashley Clark	1179 Villa Vista Cir Wright MN 55798	
28	John Peterson	7679 Sunset Lane Saginaw MN 55779	

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29	Katie Zezulka	121 W 9th St Duluth mn 55806	Katie Zezulka
30	Hunter Leon	121 w 9th St Duluth MN 55806	
31	Susan Welna	7696 Sunset Lake Drive Saginaw, MN 55779	Susan M. Welna
32	Laura Engebretsen	3232 Piedmont Ave Duluth MN 55811	Laura Engebretsen
33	Orry Engebretsen	3232 Piedmont Ave Duluth MN 55811	
34	Margaret Engebretsen	5420 Bear Trap Saginaw, MN 55779	Margaret Engebretsen
35	Tracy Engebretsen	5420 Bear Trap Saginaw Mn. 55779	Tracy Engebretsen

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36	Leeanne Sherman	7534 HIGHWAY 8 Saginaw, MN 55779	
37	Christopher Iannaccone	7534 HIGHWAY 8 SAGINAW MN 55779	
38	JENNIFER HALL	1437 GREEN ASH LN CLOQUET. MN 55720	
39	Sean Hall	1437 Green Ash Ln Cloquet, MN 55720	
40	Tyler Kaspar	440 6th St Cloquet, MN 55720	
41	Chad Glass	350 Freeman Rd Cloquet MN 55720	
42	Stacy Alaspa	350 Freeman Rd Cloquet MN 55720	

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43	Frank Layne	4833 Vermilion Rd Duluth, MN. 55811	
44	Frank Vittorio	6712 Hwy # 2 Saginaw, MN 55779	
45	Pete Bergman	224 Paso Fino Ln. Duluth MN. 55810	
46	Robert Tranholt	33972 Chestnut Circle Moose Lake MN 55767	
47	Keith Hulten	9745 Hwy 133 Meadow Lands MN	
48	Jay Zack	630 Kallstrom Rd Cloquet MN 55720	
49	Jan Erickson	1822 County Rd, Carlton, MN 55718	

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Number	Name (Print Clearly)	Address (Full Street, City, State, and Zip Code)	Signature
50	Jean Hammarstedt	7574 Seibert Rd. Embarrass, MN 55732	[signature]
51	Ryan Thompson	3977 Lavaque Rd Hermantown MN 55811	[signature]
52	Tammy Rogers	4050 Hicken Rd, Duluth MN 55808	Tammy Rogers
53	Lisa Clynch	5398 Howard Gnesen Duluth Mn 55803	Lisa Clynch
54	Jerry Beaudry	4085 Reattee RD Hermantown 55803	[signature]
55	Vincent Perfetti	3003 Vernon St Duluth MN 55806	[signature]
56	Fred Mills	29 N 64th Ave. Duluth. MN 55807	[signature]

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Number	Name (Print Clearly)	Address (Full Street, City, State, and Zip Code)	Signature
57	Sergio De Anda.	5958 Birch Point rd Saginaw MN 55779	Sergio De Anda
58	Lynne E Carlson	430 Lakeview Ave Duluth MN 55811	Lynne Carlson
59	Roxanne Bijold	31 S. 64th Ave W. Duluth, MN 55807	Roxanne Bijold
60	KATHY HANNAN	1501 3RD AVE PROCTOR, MN 55810	Kathy Hannan
61	SarahPerry.spears	1326 Brainerd Ave Duluth MN 55811	SarahPerrySpears
62	Melanie Hannan	1210 Birchwood Dr Proctor MN 55810	Melanie Hannan
63	DEL ENOVALL	5550 STARK RD DULUTH MN 55810	Del Enoval

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64	Michelle Sevcro	612-15th Street North Virginia, MN 55792	Michelle Sevcro
65	Zach Horoshak	625 Jones st. Eveleth, MN 55734	
66	MARILYN SZYMAZAK	1616 Cliff Ave Duluth, MN 55811	Marilyn Szymazak
67	Dow L. Szymczak	1616 CLIFF AV Duluth, MN 55811	
68	Jonathan Thornton	5468 Bear Trap Rd - Saginaw MN 55779	(Jonathan Thornton)
69	Jenny Thornton	5468 Bear Trap Rd Saginaw MN 55779	Jenny Thornton
70	Eryn L. Szymczak	3443 Canty Rd. 104 Brimson MN 55707	Eryn L Szymczak
111	Donald A Szymczak	3443 County Rd. 104 Brimson MN 55707	

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71	Merry Wallin	802 Rockview Ct. Duluth, MN 55804	
72	Kathleen Pennington	332 Leicester Ave Duluth, MN 55803	
73	VICKI KAPING	4808 ANDERSON RD HERMANTOWN MN 55811	
74	Kelly Mallory	10898 6th Ave. W. Duluth, MN. 55808	
75	Deb Messer	5567 Lester River Rd Duluth 55804	
76	SUSAN Holt	20 Stillmeadow Court Esko MN 55733	
77	Megan Lorphow	1023 N Central Ave; Duluth, MN 55807	

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78	Aaron Wermimont	119 E Chisholm St, Duluth 55803	
79	Neil Slotness	1622 Linzie Rd. Duluth MN 55811	
80	Brian Walker	5604 Highland st. Duluth, MN 55807	Brian Walker
81	Trygve Rennan	1514 E Lake rd Saginaw, MN 55779	
82	Ann Harrington	5816 Glenwood St. Duluth, MN. 55804	Ann Harrington
83	Steve Harrington	5816 Glenwood St. Duluth MN 55804	
84	Adrianne Osmundson	5801 Glenwood St. Duluth MN 55804	Adrianne Osmundson

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85	Thomas Gavitt	4488 Jay Street, Duluth, MN 55804	Thomas D Gavitt
86	Kara White	310 S. Summit St. Gilbert MN 55741	Kara White
87	Melanie Knoff	500 3rd Ave Biwabik Mn 55708	Melanie Knoff
88	Erinn Riley	402 W Anoka St. Duluth, MN 55803	Erinn Riley
89	Melissa DeVries	11732 West Wegener Rd Hibbing MN 55746	Melissa DeVries
90	Cherisa Buck	109 Dakota Ave. W Gilbert, MN 55741	Cherisa D Buck
91	Lisa Caredd	5704 1st Ave Hibbing MN 55746	Lisa Caredd

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92	AJ Van Klein	5795 Rock N Pine Dr. Avon, MN 55553	
93	Zach Yurczyk	10076 Linn Road Cook MN 55723	
94	SANDRA KOMULA	1618 MERRYVIEW LN, HIBBING, MN 55746	
95	Amber Winters	707 Hanna Location, Buhl, MN. 55713	
96	Christine Pariseau	115 East. Nebraska Ave. Gilbert, MN 55741	
97	Lynda Miller	5250 N. Comstock Lake Rd Cotton, MN 55724	
98	Kelly Dethloff	7257 Brown Rd. Bonft, MN 55710	

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99	Tammy Hedlund	920 Sahlman Ave, Cloquet, Mn 55720	
100	Kathy Hedlund	1505 Concord Ave., Cloquet, MN 55720	
101	Khaledtadjer	920 Sahlman Ave, Cloquet, Mn 55720	
102	Claudia A. Engelmeier	17463 Berg Rd, Saginaw, MN 55779	
103	Zachary Kilpela	7462 Gauthier Rd Saginaw, MN 55779	
104	Dawn Kilpela	7462 Gauthier Rd Saginaw, MN 55779	
105	Tammy Bennett	7480 Gauthier rd Saginaw, MN 55779	

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106	Josh Greenwood	5473 Bear Trap RD Saginaw, MN	
107	Martin Greenwood	5473 Bear Trap Rd Saginaw MN	Martin Greenwood
108	Paul Rumore	5448 Bear Trap Rd Saginaw MN 55779	
109	Susan J Van Loon Runore	5445 Bear Trap Road Saginaw MN 55779	
110	Jeff Enselmeier	7463 Berg Rd Saginaw Mn 55779	
111			
112			

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112	Raymond G Gibson	1730 W. Chub Lk Rd Carlton MN 55718	Raymond G Gibson
113	AMY TALARICO	1730 W Chub Lk Rd Carlton MN 55718	Amy Talarico
114	Lisa Erickson	1822 Canty Rd. 3 Carlton MN. 55718	Lisa Erickson
115	Brigham Erickson	6657 Brookmore Rd Duluth, MN 55803	Brigham Erickson
116	Kim Erickson	6657 Brookmore Rd Duluth, MN 55803	Kim Erickson
117	Jill Schelonka	1362 Carlton Rd Cloquet MN	Jill Schelonka
118	Dennis Schelonka	1362 Carlton Rd Cloquet MN 55720	Dennis Schelonka
119	Jeff Erickson	247 South 2nd Ave Proctor	Jeff Erickson
120	Bonnie Erickson	247 S. 2nd Ave Proctor	Bonnie Erickson
121	Ann Erickson	4465 Aspenway Duluth	Ann Erickson

Petition for an Environmental Assessment Worksheet for the [Project Title] Project

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- [List concerns for environmental effects
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Minnesota's Environmental Review Program rules require that a citizen petition contain the [legible] signatures and mailing addresses of at least 100 individuals who reside or

Petition for an Environmental Assessment Worksheet for the Northland Constructors CUP Gravel Mine Expansion Project

We, the undersigned, live in and/or own property in the state of Minnesota and request the preparation of an Environmental Assessment Worksheet for Northland Constructors Gravel Mine Expansion Project, located in Saginaw MN (5529 Hwy 33). By signing below, I support the material evidence submitted in the attached petition and believe that, because of the nature or location of the proposed project there may be potential for significant environmental effects including, but not limited to:

- Northland Constructors is proposing to dig below the water table in phase 2a, 2b, and 3 (per their Site Overview Diagram). This pit has wetlands on-site and is ¼ mile from Sunset Lake and associated wetlands, increasing proximity to Cloquet River watershed and groundwater.
- Recycling and storage of asphalt leads to the release of heavy metals and hazardous hydrocarbons into soil and water. Asphalt is a hazardous material with its own Material Data Safety sheet as required by OSHA (made from petroleum products and other materials)
- The pending permit would increase the annual production from 5,000 to 100,000-150,000 cubic yards per year with accompanying pollution increase.
- Air pollution from large amounts of dust containing crystalline silica, a known carcinogen.
- Noise pollution carries past berms, impacting the brain's ability to process sounds and hastening cognitive decline.
- St Louis County is recommending approval with no environmental review.

Minnesota's Environmental Review Program rules require that a citizen petition contain the [legible] signatures and mailing addresses of at least 100 individuals who reside or own property in the state.

Number	Name (Print Clearly)	Address (Full Street, City, State, and Zip Code)	Signature
122	Geraldine Erickson	9139 Orchard St Duluth MN	Geraldine Erickson
123	Joseph Brooks	4735 Portland Rd Hermantown MN	
124	Ronald Erickson	4465 Aspenway Dr Duluth MN 55811	
125	Hillary Brooks	4735 Portland Rd Hermantown MN 55811	Hillary Brooks
126	Erin Gunderson	1787 C.R. 3 Carlton	Erin Gunderson
127	BRET GUNDERSON	1787 CTY RD 3, CARLTON, MN 55718	
128	Jazlyn Gunderson	1787 county Road 3, Carlton MN, 55718	Jazlyn Gunderson
129	Steven Purcell	1825 CR 3 Carlton 55718	
130	Ricky Schindler	1545 County Rd 3 Carlton MN	

Petition for an Environmental Assessment Worksheet for the [Project Title] Project

We, the undersigned, live in and/or own property in the state of Minnesota and request the preparation of an Environmental Assessment Worksheet for [Project Title], located in [City/County]. By signing below, I support the material evidence submitted in the attached petition and believe that, because of the nature or location of the proposed project there may be potential for significant environmental effects including, but not limited to:

- [List concerns for environmental effects
- List concerns for environmental effects
- List concerns for environmental effects]

Minnesota's Environmental Review Program rules require that a citizen petition contain the [legible] signatures and mailing addresses of at least 100 individuals who reside or

March 11, 2024

Northland Constructors of Duluth
4843 Rice Lake Road
Duluth, MN 55803

This is letter is the required notification under Minnesota State Rule 4410 that the community of concerned citizens of Sunset Lake are requesting the Minnesota Environmental Quality Board review your submission to St. Louis County Planning Commission for expansion of the Conditional Use Permit application for the borrow pit on Highway 33 in Industrial Township.

It is our contention that the size and scope of your planned expansion far exceed the original intent of the permit originally issued. The environmental threat to Sunset Lake, the Cloquet River watershed and surrounding areas needs further consideration.

Sincerely,

Jo Ann Hoag
5426 Bear Trap Road
Saginaw, MN 55779

A Guide to Noise Control in Minnesota

Acoustical Properties, Measurement, Analysis, and Regulation

Minnesota Pollution Control Agency

November 2015

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This report is available in alternative formats upon request, and online at www.pca.state.mn.us

Document number: p-gen6-01

Foreword

The Minnesota Pollution Control Agency (MPCA) is empowered to enforce the State of Minnesota noise rules. These rules and supporting acoustical information can be viewed in the document, “A Guide to Noise Control in Minnesota.” This publication is intended to provide information on the basics of sound and noise regulation.

Revised 2015

Contents

Introduction

Noise is a pollutant. While its physical and emotional effects are difficult to define quantitatively, the noise level itself can be measured.

Sound: An alteration of pressure that propagates through an elastic medium such as air and produces an auditory sensation.

Noise: Any undesired sound.

The Minnesota Pollution Control Agency (MPCA) is empowered to enforce the State of Minnesota noise rules (Minn. Rules Ch. 7030). Minnesota's primary noise limits are set by "noise area classifications" (NACs) based on the land use at the location of the person that hears the noise. They are also based on the sound level in decibels (dBA) over ten percent (L_{10}), or six minutes, and fifty percent (L_{50}), or thirty minutes, of an hour.

For residential locations (NAC 1), the limits are L_{10} = 65 dBA and L_{50} = 60 dBA during the daytime (7:00 a.m. – 10:00 p.m.) and L_{10} = 55 dBA and L_{50} = 50 dBA during the nighttime (10:00 p.m. – 7:00 a.m.) (Minn. R. 7030.0040). This means that during a one-hour period of monitoring, daytime noise levels cannot exceed 65 dBA for more than 10 percent of the time (six minutes) and cannot exceed 60 dBA more than 50 percent of the time (30 minutes).

1. Noise rules in Minnesota

1.1 The basics

Minnesota's noise pollution rules are based on statistical calculations that quantify noise levels over a one-hour monitoring period. The L_{10} calculation is the noise level that is exceeded for 10 percent, or six minutes, of the hour, and the L_{50} calculation is the noise level exceeded for 50 percent, or 30 minutes, of the hour. There is not a limit on maximum noise.

The statutory limits for a residential location are L_{10} = 65 dBA and L_{50} = 60 dBA during the daytime (7:00 a.m. – 10:00 p.m.) and L_{10} = 55 dBA and L_{50} = 50 dBA during the nighttime (10:00 p.m. – 7:00 a.m.) (Minn. R. 7030.0040). This means that during the one-hour period of monitoring, daytime noise levels cannot exceed 65 dBA for more than 10 percent of the time or 60 dBA more than 50 percent of the time.

The basic noise rules for other noise area classifications are:

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

1.2 Noise area classifications

Noise area classifications (NAC) are based on the land use at the location of the person who hears the noise, which does not always correspond with the zoning of an area. Therefore, noise from an industrial facility near a residential area is held to the NAC 1 standards if it can be heard on a residential property.

Some common land uses associated with the NACs include:

NAC 1: Residential housing, religious activities, camping and picnicking areas, health services, hotels, educational services

NAC 2: Retail, business and government services, recreational activities, transit passenger terminals

NAC 3: Manufacturing, fairgrounds and amusement parks, agricultural and forestry activities

NAC 4: Undeveloped and unused land

Note that, although there is a NAC 4, there are no noise standards for these areas. The full list of NAC land uses can be found starting on page 21 of this guide or in Minnesota Rule 7030.0050.

1.3 Common noise concerns

By Minnesota law, the MPCA is empowered to enforce the state's noise rules. Many other agencies and levels of government, however, have an important role to play in upholding the noise standards. Depending on the source and location of the noise, some agencies may be in a better position than others to help citizens with noise concerns.

Industrial facilities

The MPCA enforces noise standards at facilities for which it has issued an air permit. For complaints about noise at one of these facilities, please use the Online Citizen Complaints Form. If you prefer, you may call the MPCA to make your complaint: 651-296-6300 within the Twin Cities metropolitan area or 1-800-657-3864 if you are outside of this area.

Local land uses

Local law enforcement agencies are empowered to enforce Minnesota state rules and laws relating to the prevention and control of pollution (Minn. Stat. 115.071). Many local governments also have nuisance noise ordinances or general public nuisance ordinances that can be used to enforce local noise concerns.

Local governments are required to take reasonable measures to prevent the approval of land use activities that will violate the state noise standard immediately upon establishment of the land use (Minn. R. 7030.0030). Municipalities should consider the state noise standard when reviewing and approving new projects in their jurisdiction. The MPCA can provide some expertise to support this review process. Please contact noise.pca@state.mn.us.

Roads and highways

The Minnesota Department of Transportation (MnDOT) handles complaints about noise on highways and other roads it manages. According to Minn. Stat. 116.07.2a, most roads are exempt from Minnesota's state noise rules. MnDOT does, however, have policies, agreed on with the MPCA, for providing noise mitigation when it is determined to be both feasible and reasonable. MPCA reviews some MnDOT projects and noise mitigation decisions. For further information on MnDOT's noise policies, please visit its website.

Vehicles

Minn. R.7030.1000-1060 outlines Minnesota's state rules relating to motor vehicle noise. In addition to the state rules, local governments may have nuisance sound ordinances, which are often easier to enforce than the state rule. As with noise relating to local land-use decisions, contacting your local government or law enforcement is your best course of action.

Airplanes

The Metropolitan Airports Commission (MAC) responds to all concerns regarding noise relating to aircraft or the airports. For more information, please see its website.

Snowmobiles, off-highway vehicles, and motor boats

The Minnesota Department of Natural Resources (MDNR) has source-specific noise rules for snowmobiles (Minn. R. 6100.5700.5), off-highway vehicles (Minn. R. 6102.0040.4), and motor boats (Minn. Stat. 86B.321), requiring them to be equipped with proper mufflers and conform to certain noise standards. For more information on MDNR regulations for snowmobiles, off-highway vehicles, and boats, please visit its website.

Mining

The MDNR also has source-specific rules to restrict noise and vibrations from different types of metallic mining operations (Minn. R. 6130.3900 and 6132.2900). Local governments are relied upon to consider noise when approving and permitting sand and gravel mining operations. The MPCA enforces noise standards at mining facilities for which it has issued an air permit. For complaints about noise at one of these facilities, please use the Online Citizen Complaints Form. If you prefer, you may call the MPCA to make your complaint: 651-296-6300 within the Twin Cities metropolitan area or 1-800-657-3864 if you are outside of this area.

Gun clubs

Minn. Stat. 116.07.2a exempts gun clubs from the receiver-based noise standards administered by the MPCA. However, Minn. Stat. 87A includes some standards regarding gun club noise. Through this statute, the MDNR is authorized to regulate gun club noise. For further information, please visit its website.

Motor vehicle race track

Minn. Stat. 116.07.2a exempts motor vehicle race tracks built before July 1, 1996 from Minnesota's noise standards. All tracks built since that date must comply with the noise rules. Local governments have often been successful in working with exempt tracks to mitigate noise concerns by establishing time and date restrictions, muffler requirements, and noise barriers.

1.4 Regulatory agencies

Several agencies have noise regulations for different noise sources. Noise rules either set standards based on the source of the noise (source standards) or based on who hears the noise (receiver-based standards).

Minnesota Pollution Control Agency - The MPCA has a receiver-based standard intended to limit noise levels and protect the health and welfare of the general public. The MPCA enforces the standard at facilities for which the agency issues air quality permits. The MPCA also works with other agencies and levels of government to enforce noise standards and reduce violations through pre-construction project reviews.

Local Agencies - Local governing agencies, such as a cities and counties, are relied upon to enforce noise standards relating to local land use and often have ordinances regulating noise levels. They are also responsible for not allowing land uses that would immediately violate the state noise standard. For instance, local governments should be cautious of allowing a loud local utility facility to locate in a residential area.

Minnesota Department of Natural Resources - The MDNR has source standards for snowmobiles, motorboats, personal watercraft, off-highway vehicles, and gun clubs. MDNR also has source standards for metallic mining operations. For more information, see its website.

Metropolitan Airport Commission - The MAC is responsible for all noise issues related to the Minneapolis-St. Paul International Airport and reliever airports. For more information, see its website.

Federal Aviation Administration - The FAA has source regulations for commercial jet engines. All commercial jet engines must meet noise emission criteria prior to being certified for flight. However, the Metropolitan Airport Commission is the best contact for noise concerns related to its airports. Additional information on the FAA's noise standards can be found on its website.

Minnesota Department of Transportation – MnDOT is responsible for state highway noise mitigation. It works with the Federal Highway Administration (FHWA) and the MPCA to evaluate road projects for noise impacts and possible mitigation measures. For more information see the Department's website.

Federal Highway Administration (FHWA) - The FHWA does not have actual noise standards, but has a 70 dBA L_{10} guideline that is used to determine federal funding for noise abatement on highway projects. New highway projects must go through a noise impact analysis and be considered for abatement measures. Information on FHWA's noise policies can be found on its website.

Federal Railroad Administration (FRA) - Regulation of railroad-related noise is the responsibility of the FRA. For more information see the Administration's website and to contact them about a noise concern, call 1-800-724-5040.

Occupational Safety and Health Administration (OSHA) - OSHA has regulations to protect against hearing loss in the workplace. These are "dose standards" that restrict the amount of noise an employee receives over a period of time, such as eight hours. For additional information, visit OSHA's website.

Housing and Urban Development (HUD) - HUD has noise regulations that establish acceptable noise zones for HUD housing projects. More information can be found on HUD's website.

2. Basics of how sound works

2.1 Waves and sound pressure level

Sound travels in a wave motion through the air to our ears. A good way to imagine wave motion is with a weight hanging from a spring. Picture the following diagram (Figure 1) as a single weight and spring combination varying as time progresses along the horizontal axis.

In Figure 1 the first position of the weight on the spring is at rest with no forces exerted upon the system. If the weight is raised above its point of rest and the progression of the weight moving down and up again is observed over a period of time, a wave form is produced.

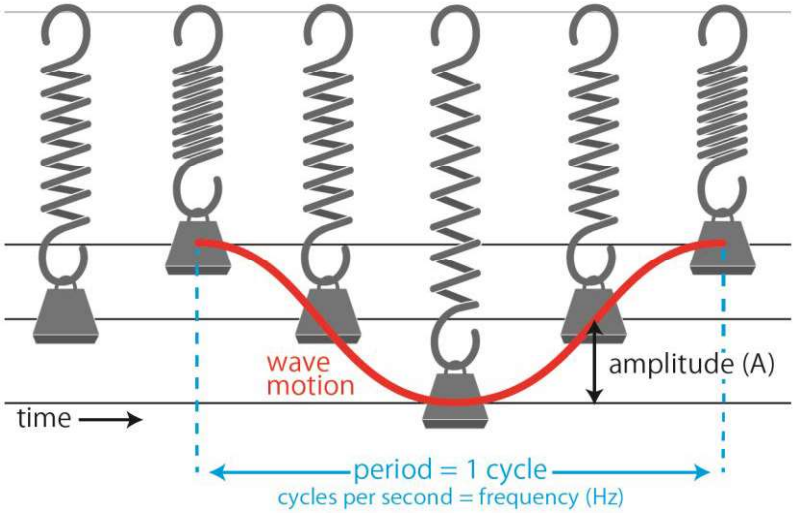


Figure 1. Weight on a spring – example of periodic motion

The *amplitude* of the moving weight is labeled as "A" in Figure 1 and corresponds with the maximum movement of the weight from its "at rest" position to the peak of the wave form either up or down. We hear changes in amplitude as changes in volume.

The *period* of the vibration is the amount of time taken to produce one complete cycle or, in this example, how quickly the weight moves from top to bottom and back. The number of cycles per second defines the *frequency* of the periodic (up and down) motion, which is given the unit of *hertz,* or *Hz*. We hear different frequencies as higher or lower pitched sounds.

Figure 2 shows how the weight on a string (two-dimensional) example of sound waves compares to the compression and expansion of sound waves through space (three-dimensional).

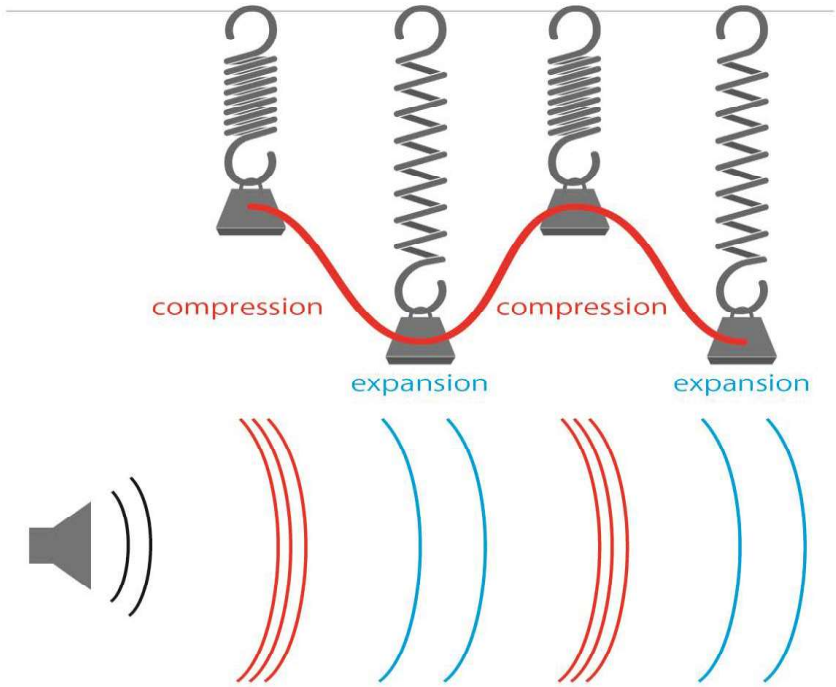


Figure 2. Comparison of periodic motion to sound waves

The graphical representation of sound waves in Figure 2 is of *pure tones***,** which are sounds made up of a single frequency. A familiar example of a pure tone is the sound produced when a single key of a piano is pressed. For instance, the middle C key on a piano vibrates the associated wire at a rate of approximately 260 times per second or 260 Hertz. The vibration of the wire transfers its motion to the sound board of the piano, which then vibrates at the same frequency, causing the air adjacent to the sound board to form compression and expansion waves in the air emitting outward from the sound board. When received by the human ear, this is regarded as sound. Most sounds are not pure tones, but a mixture of tones of varying amplitude, frequency, and duration.

The *intensity* of a sound is the amount of sound energy at a given moment in a given area. The *sound pressure level*, measured in a unit called the *decibel,* or *dB*, is the ratio between the intensity of a sound and that of a reference pressure, which is the threshold of perception. The decibel is a logarithmic measurement which can accommodate a large range of values. The human ear can detect sounds more than a million times quieter than a jet aircraft during take-off; therefore, to have a system with a manageable range of numbers, the logarithm is used.

Sound pressure level = 20 Log_{10} * (Measured Sound Pressure / Reference Pressure)

Reference Pressure = 0.00002 Newtons / $(meter)^2$

Many different properties affect the noise level of a specific source type. For example, three lawn mowers may have three different noise levels because of differences in each specific piece of equipment. Noise level also depends on the distance from the noise source and features of the surrounding environment.

Figure 3 provides a rough estimate of decibel levels of some common noise sources.

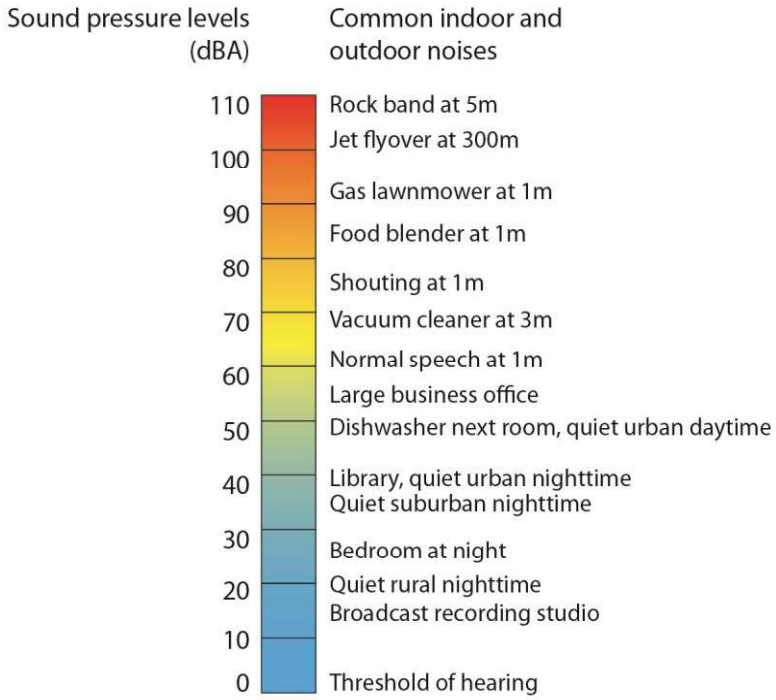


Figure 3. Decibel levels of common noise sources

2.2 Sound weighting networks

Sound level meters (SLM) used for monitoring can pick up sounds as a perfect computer, but the human ear is not as precise. The human ear cannot hear very low frequencies or very high frequencies. Weighting networks are used in noise monitors to adjust specific frequencies in the audio spectrum to attempt to duplicate the response of the human ear.

The C-weighting network represents the actual sound pressure level that is received by the sound level meter, and does not noticeably vary in its amount of compensation throughout the audio spectrum. C-weighting is used during the calibration of sound level meters to ensure that the sound level displayed on the meter is accurate and the same as the frequency of the calibrator.

The A-weighting network is used to duplicate the sensitivity of the human ear. At 100 Hertz, the A-weighting network filters out approximately 20 dB from the incoming signal before it is combined with the levels from the other frequency ranges to produce an A-weighted sound level.

The graph in Figure 4 represents the sensitivity of the human ear in comparison to the compensation of a C-weighting network and an A-weighting network. This illustration is useful in understanding how the ear is inefficient in the detection of lower frequencies and is very sensitive to higher frequencies.

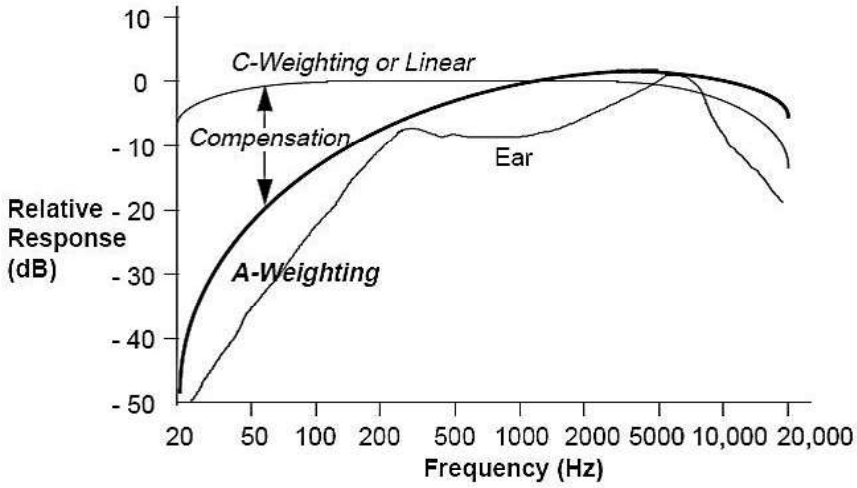


Figure 4. Weighting networks with sound measurements done in the A-weighting network are reported with the unit dBA

2.3 Human perception of sound

Sound has qualitative aspects that can be described with adjectives and quantitative aspects that can be described with measurements. Sound can be qualitatively perceived as pleasant or annoying, and quantitatively (as loudness) measured in terms of decibels.

Changes in loudness are described on a logarithmic scale because the human ear can hear such a wide range of sound levels. The human ear can usually tell the difference when sound changes by 3 dBA and a 5 dBA change is clearly noticeable. Because of how the logarithmic scale functions in compressing the measurements associated with sounds, an increase of 10 dBA sounds twice as loud.

± 1 dBA……..	Not Noticeable
± 3 dBA……..	Threshold of Perception
± 5 dBA……..	Noticeable Change
± 10 dBA……	Twice (Half) As Loud
± 20 dBA……	Four Times (One Fourth) As

Figure 5. Change in decibel level and perceived change in loudness

2.4 Using decibel measurements

Addition and subtraction of decibels is often necessary for estimating total noise levels or background noise. Because decibels are measured using a logarithmic scale, conventional linear mathematics cannot be used. The following rules of thumb provide a good estimate of the effect that type, distance, and number of sources have on measured sound pressure level.

Sound propagation and sources

Sources of sound can be defined as *point* or *line* sources, based on the way sound pressure waves spread away from the source. Sound waves move out from sources in a way similar to waves traveling away from a rock dropped in a pond. A *point* source, like a factory, emits sound that spreads out in a sphere. A *line* source, like a busy highway, emits sound that spreads out in a cylinder. Knowing the sources of sounds makes it possible to make assumptions about how the sound behaves.

Distance attenuation

Over distance, sound *attenuates*, or is reduced in amplitude, and is perceived as becoming quieter. This occurs as the sound travels outward to an increasingly larger sphere or cylinder, and the energy per unit of area decreases. These basic principles allow us to make generalized assumptions about sound.

When the distance is doubled from a *line* source, the sound level decreases three decibels.

Example: **If a sound level is:** **70 decibels at 50 feet it will be**

67 decibels at 100 feet, and

64 decibels at 200 feet

When the distance is doubled from a *point* source, the sound level decreases six decibels (Figure 6).

Example: **If a sound level is:** **70 decibels at 50 feet it will be**

64 decibels at 100 feet, and

58 decibels at 200 feet

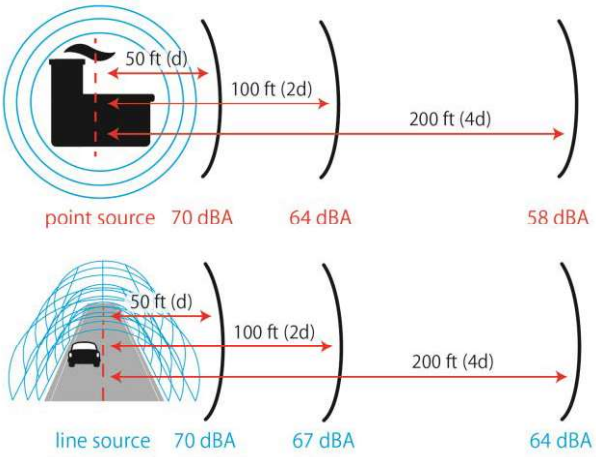


Figure 6. Distance attenuation of noise levels from a point source (top) and a line source (bottom)

Number of sources

In many situations pertaining to noise control and monitoring, it is very useful to be able to add and subtract multiple sources of sound. This can be done with principles similar to how sound attenuation over distance is estimated.

A doubling of sound energy yields an increase of three decibels. For example, each generator at a factory produces sound that is measured at 70 decibels, so running one generator would create sound measured at 70 dBA, turning on a second generator would increase sound by 3 dBA to 73 dBA, and doubling again to four generators would increase sound levels to 76 dBA. Figure 7 illustrates this principle.

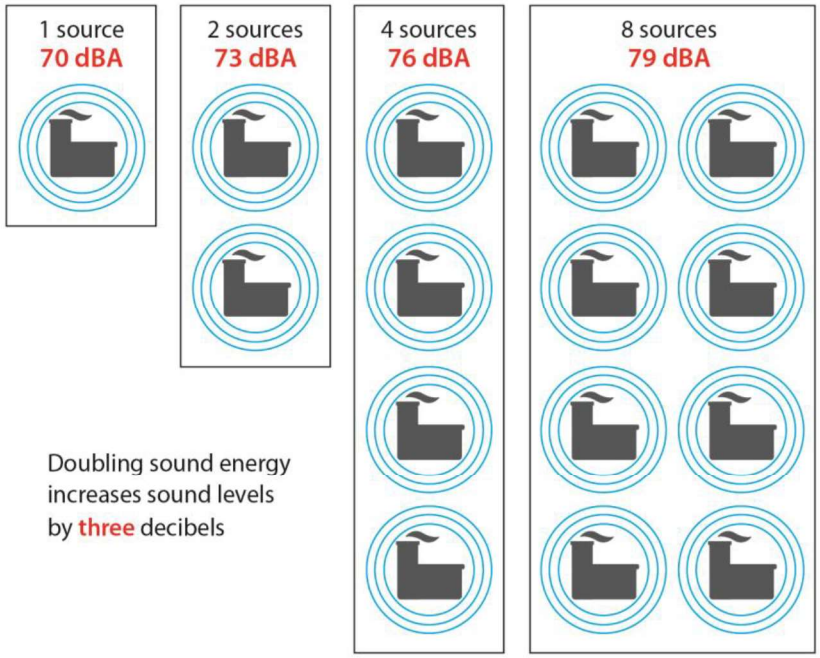


Figure 7. Addition and subtraction of decibel levels

In the same way, reducing the number of sources by half will reduce the sound pressure by 3 dBA.

Consider the perception of changes in decibel levels (Figure 5) compared to the example of addition or subtraction of sources (Figure 7). Doubling sources yields an increase of 3 dBA, which is a change that is just perceptible.

Background noise

Background, or ambient, noise consists of all noise sources other than the noise source of concern. This can include traffic, animals, machinery, voices, and other sounds.

Wind is often a major source of ambient noise and can frequently be a problem when trying to monitor a specific source of noise. The MPCA's noise test procedures state that measurements should not be made when noise from wind or precipitation results in a difference of less than 10 dBA between the background sound level and noise source being measured. In practice, this means that wind speeds must be below 11 mph when making noise measurements and rainy weather conditions should be avoided. When background noise is less than 10 dBA from the decibel level of the noise source to be measured, confidence in the accuracy of the measurement decreases.

In certain instances, when a single noise source is analyzed along with other noise sources, correction factors can be used to isolate the noise source being monitored and calculate its individual noise level. This is done by measuring and recording the total noise level of all sources. Next, the noise source to be isolated is turned off and a noise level reading is taken with all the other existing noise sources in operation. The background noise level is then subtracted from the total noise level. The result is used in conjunction with the following background noise correction chart (Figure 8) to find the approximate noise level of the source.

Figure 8 is a graph used to estimate the amount of background noise influencing a measurement. Based on the measured background noise it gives the corresponding decibel level to be subtracted from the total measurement to determine the decibel level of the noise source being monitored.

For example, if the total noise level is 74 dBA, and then falls to 70 dBA when the source of interest is turned off, the difference of four decibels between the total noise level and background noise indicates that two decibels should be subtracted from the total. This means that a 72 dBA noise level can be attributed to the monitored source in the absence of background noise.

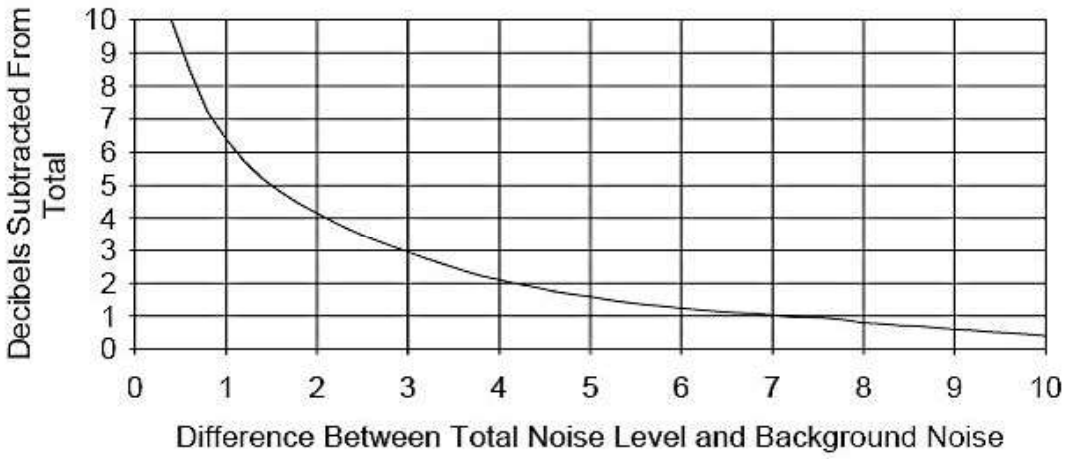


Figure 8. Background noise correction

3. Measurement procedures

This guide contains two measurement procedures. The general protocols remain the same, but your choice of procedure depends on the capabilities of your sound level meter (SLM). Noise Test Procedure 1 (NTP-1) should be used if your SLM is capable of calculating monitoring results and Noise Test Procedure 2 (NTP-2) should be used if your SLM only displays instantaneous readings.

3.1 General procedures

Sound level meter

Your sound level meter and microphone must comply with the specifications for ANSI S1.4-1983 Type 0, 1, 2, or S.

Calibration

You must also have a calibrator of a known frequency and sound level. Calibrators should be compared to a lab standard periodically. Calibration must be performed before and after the monitoring period. Adjustments should be made if necessary.

Weather conditions

Measurements should not be made when noise from wind or precipitation results in a difference between the background sound level and noise source being measured that is less than 10 dBA. In practice, this means that wind speeds must be below 11 mph and rainy weather conditions should be avoided. Temperature and humidity should be within equipment specifications.

Background noise

As mentioned in the previous section, background noise is any ambient noise other than the noise to be measured, including wind, precipitation, traffic, etc. The difference between the sound level of the source being monitored and that of the background noise must be less than 10dBA. See page 11 for suggestions on how to correct for background noise.

Location of measurement

Properly choosing a monitoring location is an important consideration. Measurements should be made in the appropriate NAC, at the area of normal outdoor human activity nearest to the noise source. The monitoring location may not necessarily be at the property line; for instance, if the property of the complainant is large and residential outdoor activity is limited to a backyard patio (possibly such as on a farm).

Measurements must be made outdoors from at least three feet off of the ground (a tripod is helpful for this). Another important part of site selection is the consideration of errors caused by reflecting objects, such as a house or other large manmade or natural structures. Measurements should be made at least as far away from any large reflecting object as from the noise source being measured. If this is not possible, stay at least 30 feet from structures.

Documentation of measurement

A survey form must be completed containing date, time, location, noise source, wind speed/direction, temperature, humidity, equipment information (make, model, serial number), site sketch with the location of the noise source and measurement location (including appropriate distances), data and calibration information. A sample survey form can be found on page 16.

3.2 Noise Test Procedure 1: Measurement procedure for non-impulsive noise

The following test procedure has been approved by the Commissioner of the MPCA for the measurement of non-impulsive noise. The general procedures described above (3.1 General procedures) should be followed whether you are using the NTP-1 or NTP-2 procedures.

Instrumentation:

- Sound level meter and a microphone conforming to type 0, 1, 2, or S specifications under ANSI S1.4-1983
- Calibrator of known frequency and level
- Small screwdriver for sensitivity adjustment
- Microphone windscreen
- Noise survey form
- Tripod (optional)

Monitoring procedure:

Monitoring must be conducted for at least a one hour time period. Sound meter must use the "A" weighting and FAST response characteristics. Follow your manufacturer instructions to obtain the L_{10} and L_{50} results.

3.3 Noise Test Procedure 2: Manual measurement procedure for non-impulsive noise

The following test procedure has been approved by the Commissioner of the MPCA for the measurement of non-impulsive noise. The general procedures described above (3.1 General procedures) should be followed whether you are using the NTP-1 or NTP-2 procedures. The NTP-2 procedure is to be used with SLMs that cannot calculate noise statistics and only provide instantaneous readings.

Instrumentation:

- Sound level meter and a microphone conforming to type 0, 1, 2, or S specifications under ANSI S1.4-1983
- Calibrator of known frequency and level
- Small screwdriver for sensitivity adjustment
- Microphone windscreen
- Noise survey form
- Tripod (optional)

Manual monitoring procedure:

Using a hand-held SLM, take an instantaneous sound reading every 10 seconds and record on a data sheet. A partner is very helpful.

Continue taking sound readings for one hour, which will give you 360 individual readings. Figure 9 provides an example of a manual monitoring data sheet.

To determine the L_{10}, take the 36th loudest (10 percent of 360 = 36) individual sound reading by counting from the loudest to the quietest on the data sheet. For example, in Figure 9, the L_{10} = 63 and is the 36th **X** from the top of the sheet.

To determine the L_{50}, take the 180th loudest (50 percent of 360 = 180) individual sound reading. In Figure 9, the L_{50} = 57 and represents the 180th **X** from the top of the sheet.

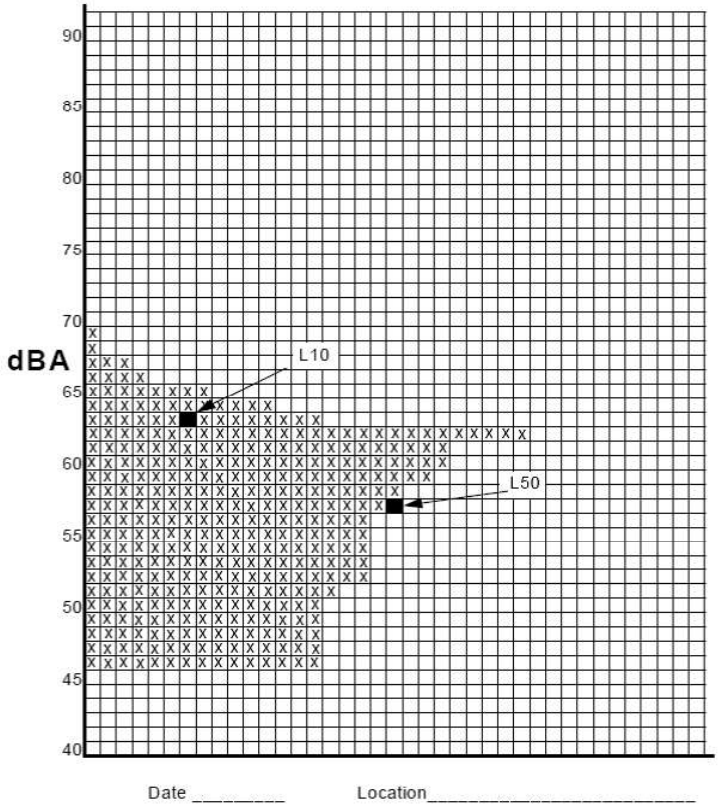
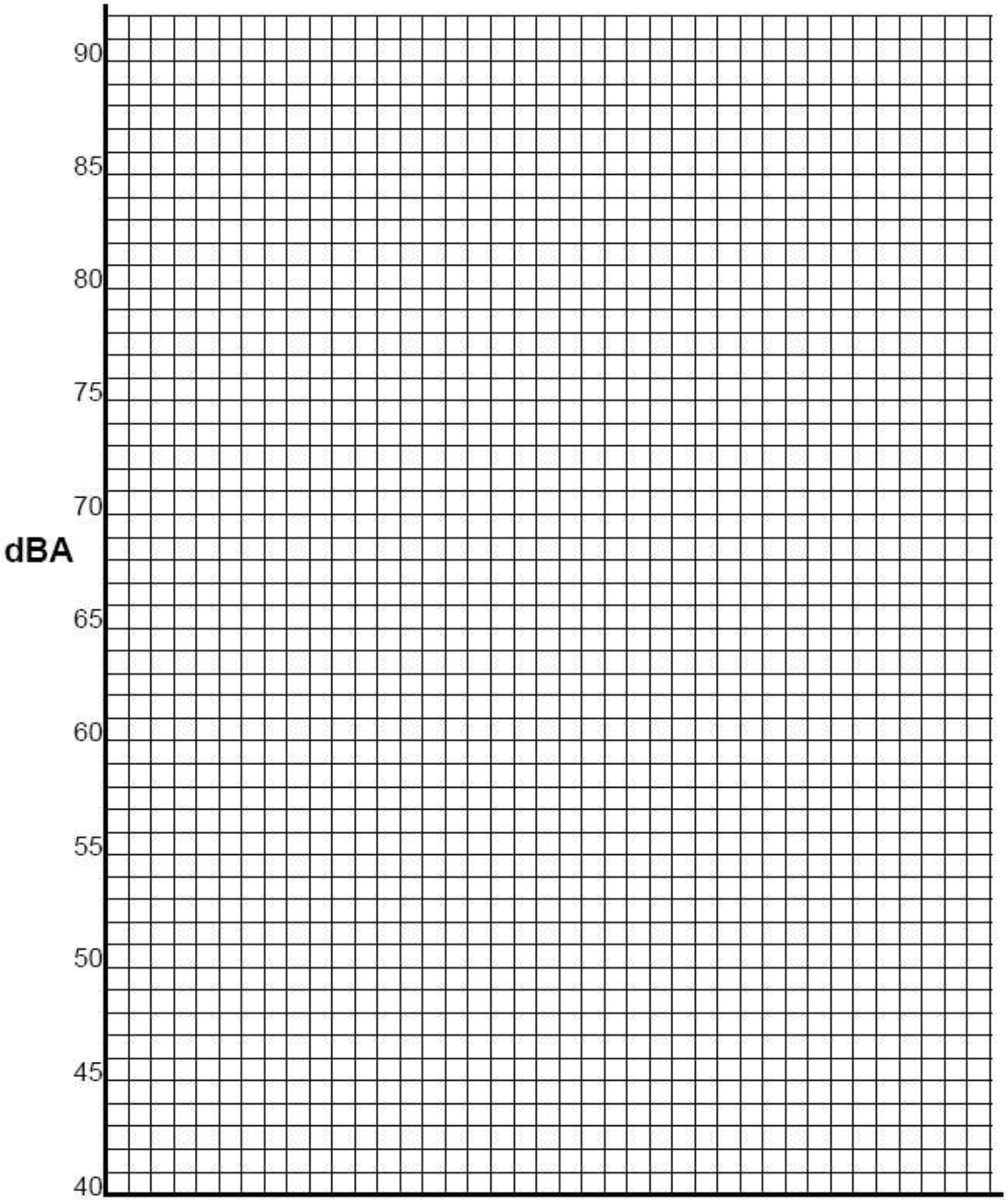


Figure 9. Example manual monitoring data sheet

Manual Monitoring Data Sheet



Date _____ Location_____

Noise survey

Investigator _____ Date _____

SLM Manufacturer and Model _____ Serial Number_____

Calibrator Manufacturer and Model _____

Calibrator Serial Number_____ Calibrator Frequency (Hz) _____

Initial Calibration (dBA) _____ Final Calibration (dBA) _____

Meteorological Conditions: Wind Speed _____ Direction _____ Temperature_____

Source _____

Monitor Location _____

Time Start _____ Time End _____

Results L_{10}_____dBA L_{50}_____dBA

Diagram *(Indicate noise source, receiver, microphone location, reflecting objects, obstructions, landmarks, and distances)*

4. Minnesota noise pollution statutes and rules

Minn. Stat. § 116.07 POWERS AND DUTIES.

Subdivision 1. **Generally.** In addition to any powers or duties otherwise prescribed by law and without limiting the same, the Pollution Control Agency shall have the powers and duties hereinafter specified.

Subd. 2. **Adoption of standards.** (c) The Pollution Control Agency shall also adopt standards describing the maximum levels of noise in terms of sound pressure level which may occur in the outdoor atmosphere, recognizing that due to variable factors no single standard of sound pressure is applicable to all areas of the state. Such standards shall give due consideration to such factors as the intensity of noises, the types of noises, the frequency with which noises recur, the time period for which noises continue, the times of day during which noises occur, and such other factors as could affect the extent to which noises may be injurious to human health or welfare, animal or plant life, or property, or could interfere unreasonably with the enjoyment of life or property. In adopting standards, the Pollution Control Agency shall give due recognition to the fact that the quantity or characteristics of noise or the duration of its presence in the outdoor atmosphere, which may cause noise pollution in one area of the state, may cause less or not cause any noise pollution in another area of the state, and it shall take into consideration in this connection such factors, including others which it may deem proper, as existing physical conditions, zoning classifications, topography, meteorological conditions and the fact that a standard which may be proper in an essentially residential area of the state, may not be proper as to a highly developed industrial area of the state. Such noise standards shall be premised upon scientific knowledge as well as effects based on technically substantiated criteria and commonly accepted practices. No local governing unit shall set standards describing the maximum levels of sound pressure which are more stringent than those set by the Pollution Control Agency.

Subd. 2a. **Exemptions from standards** No standards adopted by any state agency for limiting levels of noise in terms of sound pressure which may occur in the outdoor atmosphere shall apply to (1) segments of trunk highways constructed with federal interstate substitution money, provided that all reasonably available noise mitigation measures are employed to abate noise, (2) an existing or newly constructed segment of a highway, provided that all reasonably available noise mitigation measures, as approved by the commissioners of the Department of Transportation and Pollution Control Agency, are employed to abate noise, (3) except for the cities of Minneapolis and St. Paul, an existing or newly constructed segment of a road, street, or highway under the jurisdiction of a road authority of a town, statutory or home rule charter city, or county, except for roadways for which full control of access has been acquired, (4) skeet, trap or shooting sports clubs, or (5) motor vehicle race events conducted at a facility specifically designed for that purpose that was in operation on or before July 1, 1996. Nothing herein shall prohibit a local unit of government or a public corporation with the power to make rules for the government of its real property from regulating the location and operation of skeet, trap or shooting sports clubs, or motor vehicle race events conducted at a facility specifically designed for that purpose that was in operation on or before July 1, 1996.

Minn. Rules § 7030 NOISE POLLUTION CONTROL

7030.0010 INCORPORATION BY REFERENCE.

For the purpose of chapter 7030, American National Standards Institute, Specification for Sound Level Meters, S1.4-1983 is incorporated by reference. This publication is available from the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018 and can be found at: the offices of the Minnesota Pollution Control Agency, 1935 West County Road B-2, Roseville, Minnesota 55113; the Government Documents Section, Room 409, Wilson Library, University of Minnesota, 309 19th Avenue South, Minneapolis, Minnesota 55454; and the State of Minnesota Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155. This document is not subject to frequent change.

The Federal Highway Administration publication, Sound Procedures for Measuring Highway Noise: Final Report, FHWA-DP-45-1R (August 1981) is incorporated by reference. This publication is available from the United States Department of Transportation, Federal Highway Administration, 1000 North Globe Road, Arlington, Virginia 22201 and can be found at: the offices of the Minnesota Pollution Control Agency, 1935 West County Road B-2, Roseville, Minnesota 55113; the Government Documents Section, Room 409, Wilson Library, University of Minnesota, 309 19th Avenue South, Minneapolis, Minnesota 55454; and the State of Minnesota Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155. This document is not subject to frequent change.

7030.0020 DEFINITIONS.

Subpart 1. Application. The terms used in this chapter have the meanings given them in this part.

Subp. 2. A-weighted. "A-weighted" means a specific weighting of the sound pressure level for the purpose of determining the human response to sound. The specific weighting characteristics and tolerances are those given in American National Standards Institute S1.4-1983, section 5.1.

Subp. 3. Daytime. "Daytime" means those hours from 7:00 a.m. to 10:00 p.m.

Subp. 4. dB(A). "dB(A)" means a unit of sound level expressed in decibels (dB) and A-weighted.

Subp. 5. Decibel. "Decibel" means a unit of sound pressure level, abbreviated as dB.

Subp. 6. Impulsive noise. "Impulsive noise" means either a single sound pressure peak (with either a rise time less than 200 milliseconds or total duration less than 200 milliseconds) or multiple sound pressure peaks (with either rise times less than 200 milliseconds or total duration less than 200 milliseconds) spaced at least by 200 millisecond pauses.

Subp. 7. L_{10}. "L_{10}" means the sound level, expressed in dB(A), which is exceeded ten percent of the time for a one hour survey, as measured by test procedures approved by the commissioner.

Subp. 8. L_{50}. "L_{50}" means the sound level, expressed in dB(A), which is exceeded 50 percent of the time for a one hour survey, as measured by test procedures approved by the commissioner.

Subp. 9. Municipality. "Municipality" means a county; a city; a town; a regional planning and development commission established under Minnesota Statutes, chapter 473; the metropolitan council; or other governmental subdivision of the state responsible by law for controlling or restricting land use within its jurisdiction.

Subp. 10. Nighttime. "Nighttime" means those hours from 10:00 p.m. to 7:00 a.m.

Subp. 11. Person. "Person" means any human being, any municipality or other governmental or political subdivision or other public department or agency, any public or private corporation, any partnership, firm, association, or other organization, any receiver, trustee, assignee, agency, legal entity, other than a court of law, or any legal representative of any of the foregoing, but does not include the agency.

Subp. 12. Sound pressure level. "Sound pressure level", in decibels, means 20 times the logarithm to the base 10 of the ratio of the pressure to the reference pressure. The reference pressure shall be 20 micronewtons per square meter.

7030.0030 NOISE CONTROL REQUIREMENT.

No person may violate the standards established in part 7030.0040, unless exempted by Minnesota Statutes, section 116.07, subdivision 2a. Any municipality having authority to regulate land use shall take all reasonable measures within its jurisdiction to prevent the establishment of land use activities listed in noise area classification (NAC) 1, 2, or 3 in any location where the standards established in part 7030.0040 will be violated immediately upon establishment of the land use.

7030.0040 NOISE STANDARDS.

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

Subp. 2. Noise standards.

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

7030.0050 NOISE AREA CLASSIFICATION.

Subpart 1. Applicability. The noise area classification is based on the land use activity at the location of the receiver and determines the noise standards applicable to that land use activity unless an exception is applied under subpart 3.

Subp. 2. Noise area classifications. The noise area classifications and the activities included in each classification are listed below:

Noise Area Classification	Land Use Activities	
1	Household Units (includes farm houses)	Transient lodging
	Group quarters	Mobile home parks or courts
	Residential hotels	Other residential
	Cultural activities and nature exhibitions	Medical and other health services
	Correctional institutions	Educational services
	Religious activities	Motion picture production
	Entertainment assembly	Resorts and group camps
	Camping and picnicking areas (designated)	Other cultural, entertainment, and recreational activities.
2	Railroad terminals (passenger)	Bus passenger terminals (intercity)
	Railroad terminals (passenger and freight)	Bus passenger terminals (local)
	Rapid rail transit and street railway passenger terminals	Bus passenger terminals (intercity and local)
	Other motor vehicle transportation	Marine terminals (passenger)
	Airport and flying field terminals (passenger)	Marine terminals (passenger and freight)
	Airport and flying field terminals (passenger and freight)	Automobile parking
	Telegraph message centers	Transportation services and arrangements
	Wholesale trade	Retail trade -- apparel and accessories
	Retail trade -- building materials, hardware, and farm equipment	Retail trade -- automotive, marine craft, aircraft, and accessories
	Retail trade -- general merchandise	Retail trade -- furniture, home furnishings, and equipment
	Retail trade -- food	Retail trade -- eating and drinking
	Other retail trade	Finance, insurance, and real estate services

	Personal services	Repair services
	Business services	Legal services
	Other professional services	Contract construction services
	Governmental services (except correctional institutions)	Miscellaneous services (except religious activities)
	Public assembly (except entertainment assembly and race tracks)	Amusements (except fairgrounds and amusement parks)
	Recreational activities (except designated camping and picnicking areas)	Parks.
3	Food and kindred products -- manufacturing	Textile mill products -- manufacturing
	Apparel and other finished products made from fabrics, leather, and similar materials -- manufacturing	Lumber and wood products (except furniture) -- manufacturing
	Furniture and fixtures -- manufacturing	Printing, publishing, and allied industries
	Paper and allied products -- manufacturing	Chemicals and allied products -- manufacturing
	Petroleum refining and related industries	Primary metal industries
	Rubber and miscellaneous plastic products -- manufacturing	Stone, clay, and glass products -- manufacturing
	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks -- manufacturing	Railroad, rapid transit, and street railway transportation (except passenger terminals)
	Miscellaneous manufacturing (except motion picture production)	Fabricated metal products -- manufacturing
	Motor vehicle transportation (except passenger terminals)	Aircraft transportation (except passenger terminals)
	Marine craft transportation (except passenger and freight terminals)	Communication (except telegraph message centers)
	Highway and street right-of-way	Utilities
	Race tracks	
	Fairgrounds and amusement parks	Agricultural
	Agricultural and related activities	Fishing activities and related services
	Other transportation, communication, and utilities (except transportation services and arrangements)	Forestry activities and related services (including commercial forest land, timber production, and other related activities)
	All other activities not otherwise listed.	

4	Undeveloped and unused land area (excluding non-commercial forest development)	Non-commercial forest development
	Water areas	Vacant floor area
	Under construction	Other undeveloped land and water areas.

Subp. 3. Exceptions. The noise area classification for a land use may be changed in the following ways if the applicable conditions are met.

A. The daytime standards for noise area classification 1 shall be applied to noise area classification 1 during the nighttime if the land use activity does not include overnight lodging.

B. The standards for a building in a noise area classification 2 shall be applied to a building in a noise area classification 1 if the following conditions are met:

(1) the building is constructed in such a way that the exterior to interior sound level attenuation is at least 30 dB(A);

(2) the building has year-round climate control; and

(3) the building has no areas or accommodations that are intended for outdoor activities

C. The standards for a building in a noise area classification 3 shall be applied to a building in a noise area classification 1 if the following conditions are met:

(1) the building is constructed in such a way that the exterior to interior sound level attenuation is at least 40 dB(A);

(2) the building has year-round climate control; and

(3) the building has no areas or accommodations that are intended for outdoor activities.

D. The standards for a building in a noise area classification 3 shall be applied to a building in a noise area classification 2 if the following conditions are met:

(1) the building is constructed in such a way that the exterior to interior sound level attenuation is at least 30 dB(A);

(2) the building has year-round climate control; and

(3) the building has no areas or accommodations that are intended for outdoor activities.

7030.0060 MEASUREMENT METHODOLOGY.

Subpart 1. Measurement location. Measurement of sound must be made at or within the applicable NAC at the point of human activity which is nearest to the noise source. All measurements shall be made outdoors.

Subp. 2. Equipment specifications. All sound level measuring devices must meet Type O, I, II, or S specifications under American National Standards Institute S1.4-1983.

Subp. 3. Calibration. All sound level measuring devices must, at a minimum, be externally field calibrated before and after monitoring using a calibration device of known frequency and sound pressure level.

Subp. 4. Measurement procedures. The following procedures must be used to obtain representative sound level measurements:

A. Measurements must be made at least three feet off the ground or surface and away from natural or artificial structures which would prevent an accurate measurement.

B. Measurements must be made using the A-weighting and fast response characteristics of the sound measuring device as specified in American National Standards Institute S1.4-1983.

C. Measurements must not be made in sustained winds or in precipitation which results in a difference of less than ten decibels between the background noise level and the noise source being measured.

D. Measurements must be made using a microphone which is protected from ambient conditions which would prevent an accurate measurement.

Subp. 5. Data documentation. A summary sheet for all sound level measurements shall be completed and signed by the person making the measurements. At a minimum, the summary sheet shall include:

A. Date

B. Time

C. Location

D. Noise source

E. Wind speed and direction

F. Temperature

G. Humidity

H. Make, model, and serial number of measuring equipment

I. Field calibration results

J. Monitored levels

K. Site sketch indicating noise source, measurement location, directions, distances, and obstructions.

7030.0070 SOUND ATTENUATION MEASUREMENT METHODOLOGY.

Subpart 1. Purpose. Sound level measurements made for assessing sound attenuation as specified in part 7030.0050, subpart 3, item B, C, or D, shall be made according to the requirements of this part.

Subp. 2. Equipment. The equipment shall meet the requirements specified in part 7030.0060, subpart 2.

Subp. 3. Calibration. The equipment must meet the calibration requirements specified in part 7030.0060, subpart 3.

Subp. 4. Measurement procedure.

The measurement procedure described in FHWA-DP-45-1R, section 8 must be used for determination of the sound attenuation.

Subp. 5. Equivalent methods. Methods equivalent to those described in subpart 4 may be used provided they are approved by the commissioner of the Minnesota Pollution Control Agency. The commissioner shall approve an alternative method if the commissioner finds that the method will produce representative data and results which are as reliable as the methods specified in subpart 4.

7030.0080 VARIANCE.

If, upon written application of the responsible person, the agency finds that by reason of exceptional circumstances strict conformity with any provisions of any noise rule would cause undue hardship, would be unreasonable, impractical, or not feasible under the circumstances, the agency may permit a variance upon the conditions and within the time limitations as it may prescribe for the prevention, control, or abatement of noise pollution in harmony with the intent of the state and any applicable federal laws.

7030.1000 DEFINITION.

"Motor vehicle" means any self-propelled vehicle not operated exclusively upon railroad tracks and any vehicle propelled or drawn by a self-propelled vehicle and includes vehicles known as trackless trolleys which are propelled by electric power obtained from overhead trolley wires but not operated upon rails, except snowmobiles.

7030.1010 PROHIBITIONS.

Subpart 1. Operation of vehicle. No person shall operate either a motor vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 at any time or under any condition of grade, load, acceleration, or deceleration in such a manner as to exceed the noise limits contained herein for the category of motor vehicle and speed limits specified, when tested with a measurement procedure approved by the commissioner.

Subp. 2. Sale of vehicle. No person shall sell or offer for sale a new motor vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 which when maintained according to the manufacturer's specifications would exceed the noise limits contained herein for the category of motor vehicle and speed limits specified, when tested with a measurement procedure approved by the commissioner.

Subp. 3. Modification of vehicle. No person shall modify a motor vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 in a manner which will amplify or increase the noise emitted by the vehicle, above the noise limits contained herein for the category of motor vehicle and speed limits specified, when tested with a measurement procedure approved by the commissioner. No person shall operate a motor vehicle so modified.

Subp. 4. Sale of parts. No person shall sell or offer for sale replacement or additional parts for a motor vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 which when installed in the vehicle will amplify or increase the noise emitted by the vehicle, above the noise limits

contained herein for the category of motor vehicle and speed limits specified, when tested with a measurement procedure approved by the commissioner. No person shall operate a motor vehicle incorporating such parts.

7030.1020 SCOPE.

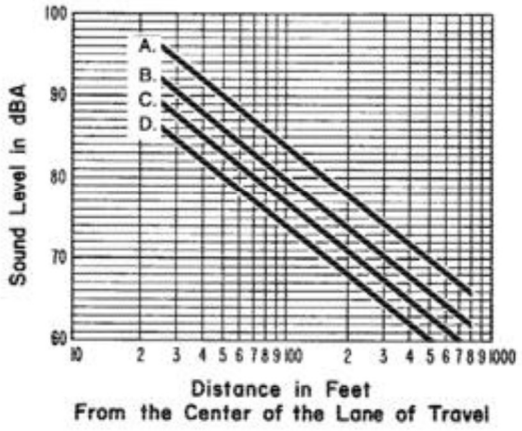
This chapter applies to the total noise from a vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 and shall not be construed as limiting or precluding the enforcement of any other provision of law relating to motor vehicle exhaust noise.

7030.1030 EXCEPTIONS.

Vehicles under parts 7030.1050 and 7030.1060 are allowed to exceed the noise limits contained herein when performing acceleration maneuvers for safety purposes.

7030.1040 NOISE LIMIT FOR VEHICLES OVER 10,000 POUNDS.

Motor vehicle noise limits for vehicles with a manufacturer's gross vehicle weight rating of more than 10,000 pounds and any combination of vehicles towed by such motor vehicle.



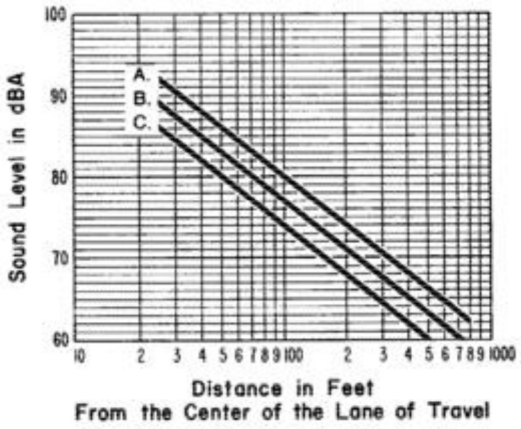
A. Speed limits greater than 35 mph.

B. Speed limits equal to or less than 35 mph and stationary run-up tests (for vehicles with governed engines). For stationary run-up tests on all-paved surfaces, add 2 dBA.

C. Speed limits equal to or less than 35 mph and stationary run-up tests (for vehicles with governed engines), for vehicles manufactured on or after January 1, 1978. For stationary run-up tests on all-paved surfaces, add 2 dBA.

D. Speed limits equal to or less than 35 mph and stationary run-up tests (for vehicles with governed engines), for vehicles manufactured on or after January 1, 1982. For stationary run-up tests on all-paved surfaces, add 2 dBA.

7030.1050 MOTOR VEHICLE NOISE LIMITS FOR MOTORCYCLES.



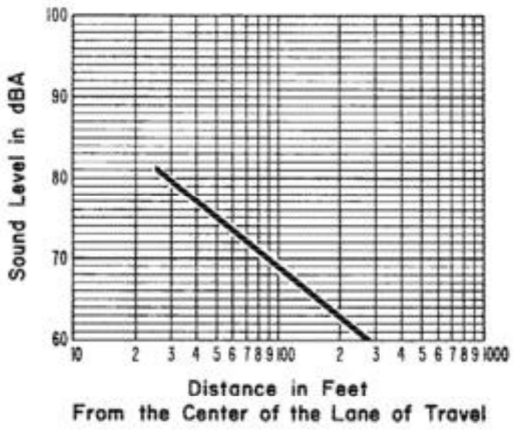
A. For vehicles manufactured before January 1, 1975.

B. Speed limits greater than 35 mph for vehicles manufactured on or after January 1, 1975.

C. Speed limits equal to or less than 35 mph for vehicles manufactured on or after January 1, 1975.

7030.1060 NOISE LIMITS FOR OTHER VEHICLES.

Motor vehicle noise limits for any other motor vehicle not included under parts 7030.1040 and 7030.1050 and any combination of vehicles towed by such motor vehicle.



Minn. Stat. § 86B WATERCRAFT OPERATION

86B.321 NOISE LIMITS.

Subdivision 1. **Operation in excess of noise limits prohibited.** A person may not operate a motorboat under any condition of load, acceleration, or deceleration in a manner that exceeds the noise limits contained in subdivision 2.

Subd. 2. **Noise limits.** (a) The noise limits for the total noise from the marine engine or motorboat may not exceed:

(1) for marine engines or motorboats manufactured before January 1, 1982, a noise level of 84 decibels on the A scale measured at a distance of 50 feet from the motorboat or equivalent noise levels at other distances as specified by the commissioner in a pass-by test or 86 decibels on the A scale measured at idle in a stationary test at least four feet above the water and at least four feet behind the transom of the motorboat being tested; and

(2) for marine engines or motorboats manufactured on or after January 1, 1982, a noise level of 82 decibels on the A scale measured at a distance of 50 feet from the motorboat or equivalent noise levels at other distances as specified by the commissioner in a pass-by test or 84 decibels on the A scale measured at idle in a stationary test at least four feet above the water and at least four feet behind the transom of the motorboat being tested.

(b) The noise limits in paragraph (a) do not preclude enforcement of other laws relating to motorboat noise. The officer or deputy doing the testing shall determine which test or tests shall be used. Failure to pass either the pass-by or stationary idle test is a violation of this section.

(c) Equivalent noise levels under paragraph (a) shall be specified by the commissioner by written order and published in the State Register. The noise level determinations are exempt from the rulemaking provisions of chapter 14 and section 14.386 does not apply.

Subd. 3. **Applicability.** The provisions of this section do not apply to motorboats operating under a permit issued under section 86B.121 or a United States Coast Guard marine event permit in a regatta or race while on trial runs or while on official trials for speed records during the time and in the designated area authorized by the permit.

86B.521 MOTORBOAT NOISE CONTROL.

Subdivision. 1. **Exhaust muffling system required.** A motor may not be used on a motorboat unless it is equipped with an efficient muffler, underwater exhaust, or other device that adequately muffles or suppresses the sound of the exhaust of the motor so as to prevent excessive or unusual noise. A motor may not be equipped with an altered muffler, muffler cutout, muffler bypass, or any other device designed or installed so that it can be used to continually or intermittently bypass any muffler or muffler system installed in the motorboat or to reduce or eliminate the effectiveness of such a muffler or muffler system.

Subd. 2. **Sale of motor that exceeds noise limits prohibited.**
A person may not sell or offer for sale a marine engine or motorboat that would exceed the noise limits contained in section 86B.321, subdivision 2, under a test procedure approved by the commissioner if the motor is maintained according to the manufacturer's specifications.

Subd. 3. **Modification of engine to exceed noise limits prohibited.** (a) A person may not modify a marine engine or motorboat in a manner that will amplify or increase the noise emitted by the marine engine or motorboat above the noise limits contained in section 86B.321, subdivision 2, under a test procedure approved by the commissioner.

(b) A person may not operate a motorboat with an engine modified to increase noise above the noise limits.

Subd. 4. **Sale of parts that cause excessive noise prohibited.** (a) A person may not sell or offer for sale replacement or additional parts for a marine engine or motorboat which when installed in the marine engine or motorboat will amplify or increase the noise emitted by the marine engine or motorboat above the noise limits contained in section 86B.321, subdivision 2, under a test procedure approved by the commissioner.

(b) A person may not operate a motorboat incorporating parts prohibited to be sold under paragraph (a).

Subd. 5. **Applicability.** The provisions of this section do not apply to motorboats operating under a permit issued under section 86B.121 or a United States Coast Guard marine event permit in a regatta, or race, while on trial runs, or while on official trials for speed records during the time and in the designated area authorized by the permit.

Subd. 6. **Rulemaking exemption.** The test procedures under subdivisions 2, 3, and 4 shall be established by written order by the commissioner and published in the State Register. The establishment of test procedures is exempt from the rulemaking provisions of chapter 14 and section 14.386 does not apply.

Minn. Stat. § 84.8 SNOWMOBILES

84.871 EQUIPMENT REQUIREMENTS.

Subdivision. 1. **Mufflers.** Except as provided in this section, every snowmobile shall be equipped at all times with a muffler in good working order which blends the exhaust noise into the overall snowmobile noise and is in constant operation to prevent excessive or unusual noise. The exhaust system shall not emit or produce a sharp popping or crackling sound. This section does not apply to organized races or similar competitive events held on (1) private lands, with the permission of the owner, lessee, or custodian of the land; (2) public lands and water under the jurisdiction of the commissioner of natural resources, with the commissioner's permission; or (3) other public lands, with the consent of the public agency owning the land. No person shall have for sale, sell, or offer for sale on any new snowmobile any muffler that fails to comply with the specifications required by the rules of the commissioner after the effective date of the rules.

6100.5700 REQUIRED EQUIPMENT.

Subp. 5. Mufflers. Mufflers:

A. No person shall operate a snowmobile unless it is equipped with a muffler as required by law and these rules, except that snowmobiles may be operated in organized events as authorized by Minnesota Statutes, section 84.871, without such a muffler.

B. No snowmobile manufactured on or after June 30, 1970, and before February 1, 1972, for sale in Minnesota, except snowmobiles designed for competition purposes only, shall be sold, or offered for sale, unless it is equipped with a muffler that limits engine noise to not more than 86 decibels on the A scale at 50 feet.

C. No snowmobile manufactured on or after February 1, 1972, for sale in Minnesota, except snowmobiles designed for competition purposes only, shall be sold, or offered for sale, unless it is equipped with a muffler that limits engine noise to not more than 82 decibels on the A scale at 50 feet.

D. No snowmobile manufactured on or after April 1, 1975, except a snowmobile designed for competition purposes only, shall be sold, offered for sale, or operated in Minnesota unless it is so equipped and has been certified by the manufacturer to conform to a sound level limitation of not more than 78 decibels on the A scale at 50 feet as originally equipped.

E. In certifying that a new snowmobile complies with the noise limitation requirements of this rule, a manufacturer shall make such a certification based on measurements made in accordance with the SAE Recommended Practice J192(a), as set forth in the Report of the Vehicle Sound Level Committee, as approved by the Society of Automotive Engineers September 1970 and revised November 1973.

F. No snowmobile shall be sold or offered for sale in Minnesota unless its maker has previously furnished the commissioner with a certificate of compliance certifying that all snowmobiles made by that maker meet or exceed the applicable noise level restrictions established by these rules. The certification of compliance shall be in the form of a "Snowmobile Safety Certification Committee" label conspicuously attached to the machine showing certification by the Snowmobile Safety and Certification Committee, Inc., or a label showing compliance with Snowmobile Safety Certification Committee standards accompanied by a letter containing test results of an evaluation of noise levels by a competent independent testing laboratory. Snowmobiles intended for competition purposes only shall be exempt from this part provided a separate placard identifying that such snowmobile is not so equipped is conspicuously and permanently affixed thereto.

G. Except for organized events as authorized by Minnesota Statutes, section 84.871, no snowmobile shall be modified by any person in any manner that shall amplify or otherwise increase total noise level above that emitted by the snowmobile as originally equipped, regardless of date of manufacture.

Minn. Stat. § 87A. SHOOTING RANGES

87A.05 NOISE STANDARDS.

Allowable noise levels for the operation of a shooting range are the levels determined by replacing the steady state noise L_{10} and L_{50} state standards for each period of time within each noise area's classification with a single Leq(h) standard for impulsive noise that is two dBA lower than that of the L_{10} level for steady state noise. The noise level shall be measured outside of the range property at the location of the receiver's activity according to Minnesota Rules, parts 7030.0010 to 7030.0080, as in effect on May 28, 2005. For purposes of this section, "Leq(h)" means the energy level that is equivalent to a steady state level that contains the same amount of sound energy as the time varying sound level for a 60-minute time period.

Minn. Rules § 6102, RECREATIONAL VEHICLES

6102.0002 DEFINITIONS.

Subpart 1. Scope. For the purposes of parts 6102.0002 to 6102.0080, the terms defined in this part have the meanings given them.

Subp. 2. ATV. "ATV" means an all-terrain vehicle.

Subp. 3. Commissioner. "Commissioner" means the commissioner of Natural Resources.

Subp. 4. Department. "Department" means the Department of Natural Resources.

Subp. 5. OHM. "OHM" means an off-highway motorcycle.

Subp. 6. ORV. "ORV" means an off-road vehicle.

Subp. 7. Vehicle. "Vehicle" means an OHM, ORV, or ATV.

6102.0040 REQUIRED EQUIPMENT.

Subp. 4. Mufflers.

A. No person shall operate a vehicle unless it is equipped with a muffler having a spark arrestor approved by the United States Forest Service as described by Code of Federal Regulations, title 36, chapter II, section 261.52, paragraph (j).

B. Vehicles shall not be sold, offered for sale, or operated in this state unless equipped so that overall noise emission does not exceed a sound level limitation of not more than 99 decibels on the A scale from a distance of 20 inches using test procedures and instrumentation as set forth in the Society of Automotive Engineers' Standard, SAE J1287, June 1988, or, if different procedures or instrumentation are used, a noise level equivalent to that level.

C. No noise suppressing system or muffler shall be equipped with a cutout, bypass, or similar device and no person shall modify or alter that system or its operation in any manner which will amplify or increase the noise emitted by the vehicle's motor to exceed the noise limits established in this subpart, except for organized events as authorized by Minnesota Statutes, sections 84.795, subdivision 7; 84.804, subdivision 5; and 84.928, subdivision 5.

Crystalline Silica Dust — The Invisible Killer

How a *Totally Unnecessary* Gravel Mine Would Create

Widely Known Deadly Health Issues

That Would Harm Hundreds of Benzie County Residents

Developed for and Presented to the

Homestead Inland Joint Planning Commission

December 6, 2019

prepared by

Friends of the Platte River Watershed

Crystalline Silica Dust — The Invisible Killer

Summary

The proposal of an open pit gravel mine in a district zoned Rural Residential creates numerous very serious consequences. This report primarily examines the devastating heath issues created by crystalline silica dust, an unavoidable byproduct produced when mining gravel.

Until recently, few understood the dangers created by crystalline silica dust. Unlike normal sand, crystalline silica dust has razor sharp edges and is microscopic in size. When inhaled, it bypasses the body's natural defenses and become *permanently* lodged in the deepest parts of the lungs. It has proven links to diseases that lead to death including silicosis, lung cancer, COPD, renal failure, and kidney disease as well as causing auto-immune diseases like rheumatoid arthritis. These health issues are so grave that OSHA and MIOSHA have recently adopted new safety standards to deal with crystalline silica dust. Both agencies are involved in a massive educational drive to warn workers about the dangers.

Not only is crystalline silica dust deadly, it is difficult to control. Clouds of it can easily be swept up and carried by the wind for tens of miles. Even in what weather experts call 'calm' winds, this deadly dust can travel for miles settling in the yards and on the homes and innocent bystanders in Inland Township, its three neighboring townships, and even further.

All of the related diseases crystalline silica dust is widely known to cause serve as sufficient proof of a 'very serious consequence' health based issue as required under MCL 125.3205 Sec. 205 (5)(e). Denying the requested special use permit for this totally unnecessary gravel mine at parcel 08-006-007-00 is the only logical, fair, and humane course of action the HIJPC can take.

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Direct any questions
about this report to:

Jim Brouwer

Friends of the Platte River Watershed

jim@platteriverwatershed.org

Sand's Tiny Secrets – Size, Material, & Shape

Sand holds some interesting secrets. We think we know what it is, but do we? Technically, 'sand' is any sediment whose particles are 60µm (microns or micrometers) or larger. Granules smaller than 60µm down to 2µm are considered 'silt.' For a point of reference, the hairs on your head are typically 10µm thick.

Sand is often referred to as 'silica.' Most sand deposits are primarily made up of quartz, but other minerals are usually found. Quartz is *crystalline silica*, a silicate mineral made of silicon dioxide (SiO_2), silicon and oxygen. It is the most abundant mineral found in sand.

Figure 1 shows a typical sample of sand, not unlike that which is found all around northern Michigan. It is comprised mostly of crystalline silica (quartz), with some epidote, garnet, potassium feldspar, and a few other minerals.

Figure 1 – 'Sand' (300x Magnification)

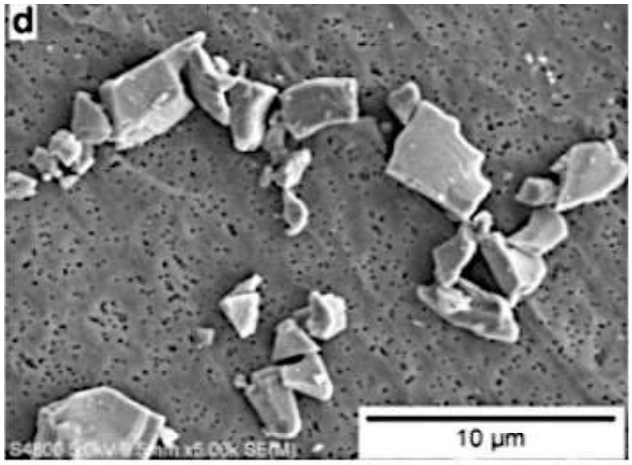
Different types of sands are put to work in a wide range of useful applications including: road construction, concrete, filtration, glass, ceramics, and computer chips. They also vary considerably in their marketable value.

Most sand with which we are familiar is heavily weathered. It has the familiar shape of stones washed up along the Lake Michigan shoreline. While their sizes may vary a bit, they all have nicely rounded, smooth edges.

Digging into the earth when mining for gravel, the size and shape of these unweathered common sand granules change dramatically.

Figure 2 – Crystalline Silica Dust
(5,000x Magnification)

Appendix A shows three even smaller sizes.



Note the 10µm graphic in Figure 2. That's the width of a typical human hair. Anything smaller than 5µm is invisible to the naked eye, unless there are billions of particles — as in crystalline silica dust clouds (see Appx. D p.4).

These jagged microscopic sub-10µm particles are as sharp as a stone-age flint knife — and they can kill you![1]

Crystalline Silica Dust *IS* Deadly

Unlike beach sand which is just annoying when it sticks to your skin and swimsuit, crystalline silica dust ***is*** a killer. Don't take our word for it, just take OSHA's.[2]

> *"[Those inhaling] these very small crystalline silica particles are at increased risk of developing serious silica-related diseases."*

[1] Silica...It's Not Just Dust: Silica Dust Causes Silicosis - What rock drillers can do to protect their lungs from silica dust, Center for Disease Control and Prevention, National Institute for Occupational Safety and Health, NIOSH Publications, 97-118, July 1998

[2] *Respirable Crystalline Silica*, Occupational Safety and Health Administration, United States Department of Labor, osha.gov/dsg/topics/silicacrystalline/

In 2017, OSHA completely revamped their requirements for worker safety when engaged in activities where crystalline silica is present.

Plastered all over OSHA's website and materials is the warning graphic shown here.

So, what exactly are those 'serious silica-related diseases?" They include (but are not limited to):

- **Silicosis**
- **Lung Cancer**
- **COPD (Chronic Obstructive Pulmonary Disease)**
- **Kidney Disease**

Silicosis is an *incurable* lung disease that leads to disability and death. We've all heard of 'black lung disease.' Black lung expert, Dr. Robert Cohen, has recently warned that

> *"[Crystalline] Silica could be even more dangerous to workers than coal dust.*
>
> *[Crystalline] Silica is actually a lung carcinogen. And it causes renal disease, it causes other auto-immune diseases like rheumatoid arthritis and other things, so silica exposure is a huge problem.*[3]

So serious is this issue that even the Michigan Aggregate Association (the lobbying organization behind the totally discredited MDOT *Michigan Aggregates Market Study Ph I & Ph II Reports*) is actively encouraging its member supporters to attend OSHA approved silica training![4] Why does the MAA promote this you ask?

> *"To increase workers' **awareness of the serous health hazards of silica dust** and provide the knowledge necessary for employee protections."*

Why is Crystalline Silica Dust So Deadly?

Mother Nature provided our respiratory tracts with a host of protective mechanisms to 'filter out' most of the junk that *naturally* occurs in our air. Since most of what nature throws at us is over 10µm in size, we do a pretty good job of keeping the bad stuff out of our bodies.

However, breathing crystalline silica dust is the equivalent of inhaling millions of microscopic razor blades. As shown in Appendix A, these dust particles can be as small as .01µm.

These invisible particles pass all body defense mechanisms and become embedded in the deepest reaches of the lungs. This is where the greatest danger lies as they reach the alveoli, the finest branches of the lungs where the oxygen/carbon dioxide exchange takes place.[5]

When inhaled, particulate matter larger than 5µm usually gets trapped and expelled before it reaches the lung's gas-exchange zone. Particles smaller than 5µm are considered to be 'respirable,' meaning they can reach the deepest parts of the human lungs.

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[3] *Silica safety urged in QLD*, OHS Career, March 21, 2017, ohscareer.com.au

[4] *Protecting and Promoting Your Interests*, Michigan Aggregate Association, November 16, 2019 See Appendix B

[5] A. Voss and S. Alfano, *The Body's Defenses Against Breathing Dirty Air*, ProRemodler, June 23, 2016

Mother Nature never planned on us being exposed to crystalline silica dust, certainly not in the quantities produced by our many industrial activities. Silicosis can develop very quickly and (short of an entire lung transplant) is completely untreatable.

Think You're Safe? — Wrong!

OSHA is making a tremendous push to raise worker awareness of the real hazards created by crystalline silica dust. Wearing adequate dust protection, respirators, and controlling the dust in the first place will save countless lives. How about those who don't work around this stuff?

Non-occupational exposure to crystalline silica dust is even greater cause for concern. As this 'killer dust' spreads miles past its place of origin it not only lingers in the air but settles everywhere — including *inside* homes.

We spend the majority of our time at home. Depending on our job and lifestyle that can be 70%-100% of our time. Unlike a protected work environment, exposure at home is unprotected and constant. Home settings also includes children and the elderly who are more vulnerable than able bodied workers. Not only do children breath more deeply than adults, their smaller body mass means their comparable exposure risk is much higher.[6]

Exposure limits for crystalline silica differ considerably between work and non-occupational exposure. OSHA's permissible exposure limit is 50 micrograms per cubic meter during an 8-hour workday.[7] Michigan follows these guidelines which includes an 'action level' set at 25 micrograms per cubic meter. Michigan also requires employers to safeguard employees from exposure, provide them with respiratory protection, maintain medical surveillance, engage in hazard communication, and keep good records.[8]

For those who spend all their time at home, equivalent exposure limits would fall below 12 micrograms per cubic meter for exposure and 6 micrograms per cubic meter for action.

I'm Nowhere Near Silica Dust — Really?

Turns out, size really does matter. For crystalline silica dust, the smaller it is the more threatening it becomes. Not only is this invisible dust respirable, it easily becomes airborne, stays airborne for extended periods of time, and travels incredible distances.[9]

Particles typically need to be under 200µm in size to become airborne. Those smaller than 10µm are invisible and smaller than 5µm penetrate our immune system. As shown in Figure 3, dangerous crystalline silica dust easily travels for miles. It not only affects people at the source but those in surrounding neighborhoods. In some measured cases as far away as 50 miles.[10]

Figure 3 – Distance Traveled by Particulate Size

Wind Speed (mph)	Miles Traveled 10µm	5µm
3.1	0.55	2.2
6.2	1.1	4.5
12.4	2.3	9
24.8	4.6	18
37.3	6.9	27
49.7	9.2	36.1

[6] J. Warren, *Silica Monitoring*, Public Lab, publiclab.org, February 22, 2018
[7] C.A. Epstein, *Everything You Need to Know About OSHA's Respirable Crystalline Silica Final Rule*, February 2, 2018, oshaonline.com
[8] *Crystalline Silica Exposure*, MIOSHA Fact Sheet, CSH Fact Sheet - #109, Revised October 12, 2017
[9] *Silica Dust Particle Size Causes Problems*, BossTek, 2019, bosstek.com/silica-dust-compliance/silica-particle-size-behavior
[10] *How Far Can Respirable dust Actually Travel?*, Insider News, NeSilex, September 24, 2019

How Far Will Silica Dust Spread Here?

The only available historic 'local' wind measurements are those taken at the Frankfort and Traverse City airports. Appendix C contains the diagrams of the wind history at both airports for the months of May – October (the busiest times for gravel production).

Roughly one-third of the time the wind is calm (less than 5.8mph). Calm doesn't mean 'dead calm.' Shown as red in Figure 5, at 5.8mph respirable silica would still travel 4.2 miles from the proposed 150-acre gravel mine.

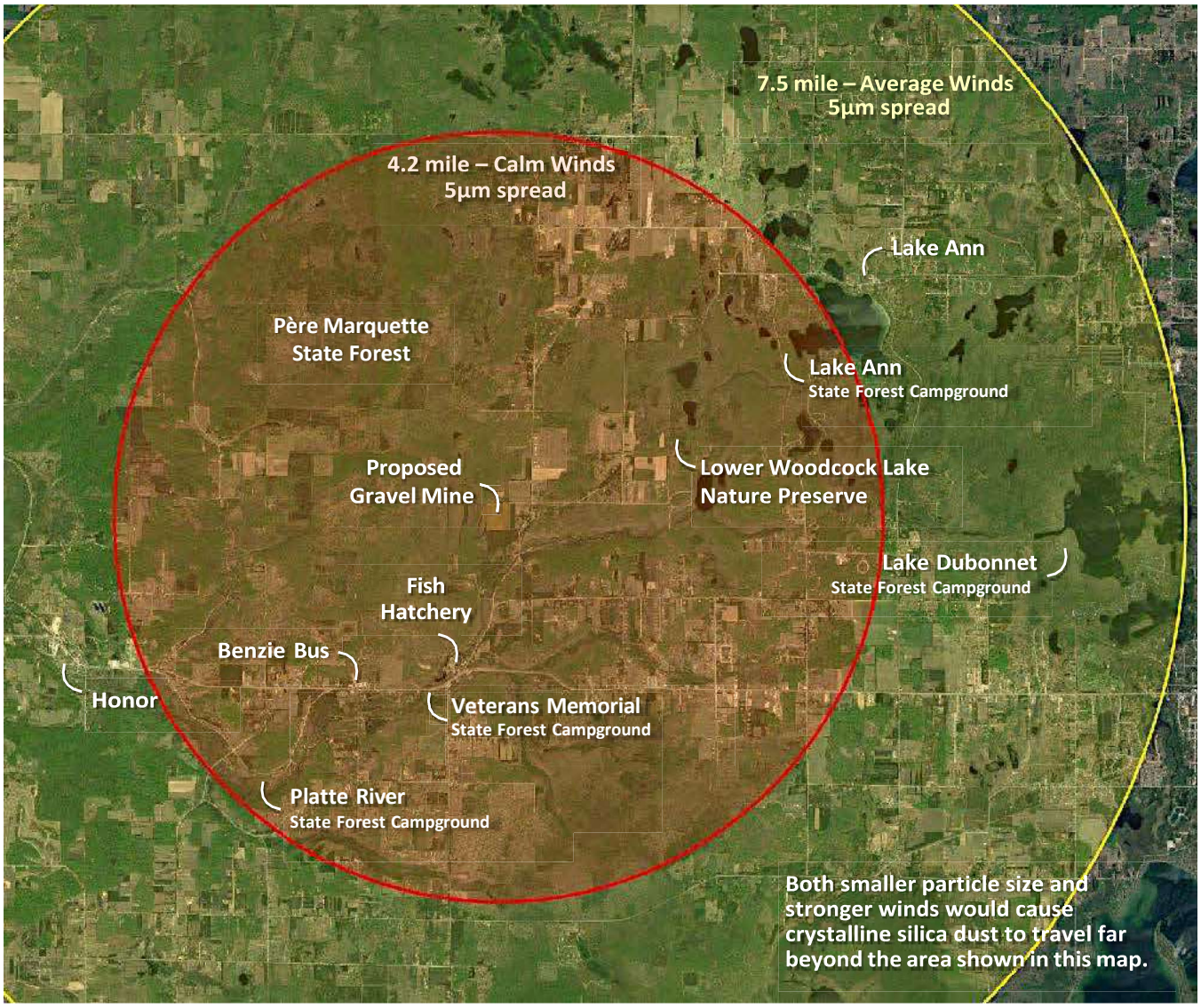
This area's Average windspeed over the past three years for May – October, the average Maximum sustained winds, and average Gusts are shown in Figure 4. The miles that silica dust can be spread relates to particulate size.[11]

Figure 4 – Crystalline Silica Dust Wind Distribution

	Wind Speed (mph)	Miles Traveled 10µm	Miles Traveled 5µm
Calm	<5.8	<1.0	<4.2
Average	10.3	1.9	7.5
Maximum	23.9	4.4	17.4
Gusts	39.8	7.4	28.9

Note: Silica Dust smaller than 5µm travels even further!

Figure 5 – Likely Spread of Crystalline Silica Dust



[11] While wind data was pulled from the Weather Underground, all data originates from the National Centers for Environmental Information, National Oceanic and Atmospheric Administration.

It's easy to understand how these microscopic razor blades carry so far in gentile winds. Strong gusts can carry crystalline silica dust all the way to Traverse City or Frankfort. As duly noted in the Homestead Inland Townships Master Plan, this truly is an issue of "Greater Than Local Concern."

Where's the Problem? – You Can't Be Serious!
Mr. Leman has done little to instill confidence that he understands the consequences of his desire to have a hobby gravel mine. In a September 12, 2019, TV 7&4 News interview, Mr. Leman states

> "*There's no production things we processes that we would do here which would pollute the ground in any way. That sand and gravel is already in the ground.*"

Seriously? It is obvious he doesn't understand the environmental impact of gravel mining or the dangerous release of crystalline silica dust which mining causes.

Mr. Leman is also quoted in that interview and in papers saying he's only going to work on 4–acres at a time. Yet all of the plans submitted to and described at HIJPC meetings clearly show sections of 6+ acres. If he is so inattentive to these and other details, how can he ever be trusted to understand or look after what's necessary to run a gravel mine safely?

Crystalline silica dust is a serious health issue. Given Mr. Leman's lack of responsiveness to providing a complete and timely application, let alone his inconsistency within those plans, many believe he's not taking things seriously. If that's the case and if his special use permit is granted, many wonder if he would ever follow safety precautions or take any laws seriously.

Given there appears to be no statutory value to the gravel as defined under MCL 125.3205 Sec. 205 (3) and there are considerable health risks, in the opinion of neighboring residents the risks completely outweigh the non-benefit.

Having focused on the harm silica dust does to humans, the same needs to be noted about the local wildlife. Further, local organic farming would also be disrupted as the strict protocols of being organic are unavoidably, unfairly, and unjustifiably violated. Even on a 'calm' day, over 55-square miles are put at risk. Kick the wind up to 'average' speed and the number jumps to over 176-square miles.

It is abundantly obvious that allowing the operation of an open pit gravel mine would create uncontrolled crystalline silica dust.

Beyond the flood of studies readily discoverable online and the recently adopted push by OSHA to protect workers, this report clearly outlines the very serious consequence that would result from granting the requested special use permit. It fulfills the requirement of defining a 'very serous consequence' under MCL 125.3205 Sec. 205 (5)(e)

> "*The impact on other identifiable health, safety, and welfare interests in the local unit of government.*"

But It's Just a Small Operation – Yeh, Right!
Getting one's foot in the door appears to be a standard ploy. There are dozens (if not hundreds) of stories about little mining operations that were never supposed to grow much bigger — but did — and did so quickly. Here's just one of those stories.

Downstate in Grass Lake Township, just 25 miles west of Ann Arbor, the Bohne Road Gravel Mine started as a little operation.

The local farmer was granted a special use permit to mine sand on his land for his own use on his farm. No big deal, right?

Then the farmer sells his farm to a company that expands the mine's operation into gravel extraction — hey, the special use permit said sand and gravel, not 'just sand.' The mine grew quickly. So did the problems.

In addition to the quality of life disruption and property devaluation experienced by the gravel mine's neighbors, crystalline silica dust became problematic. As some residents shared with their planning commission[12]

"…the dust issue is a HUGE factor here."

"The gravel pit is a serious health risk."

"…my windows haven't been open since the mine was started."

"There is dust all over the plants and trees in the yard as well as the house and car on a daily basis."

"The dust is a nightmare!! It's constantly in the air…"

"We are concerned for the health of our family, my daughter and I have sever asthma … we will have to continue to wear our masks to try and keep the contaminants out of our lungs. Why do we have to suffer?"

"There is overwhelming evidence regarding longterm silica dust exposure and respiratory disease. Residents near Bohne Road gravel pit testified they now suffer form respiratory diseases such as asthma and COPD."

"Why should the residents be subjected to all these issues from this gravel pit?"

The last comment raises a great question.

Figure 6 – Crystalline Silica Dust *Inside* a Home
(near the Bohne Road Gravel Mine)

As the years passed, the gravel mine was sold to its new owner who now wants to expand operations even further. What was once a 'little private sand mine' has turned a community upside down with a full-blown gravel mining as shown in the pictures of Figure 7 on the next page.

Don't Tell Us It Can't Happen Here!

It could. Far too easily it could. Need or benefit of this gravel mine does not exist. The damage to the community would be devastating and permanent. The HIJPC has evidence of very serious consequences which it can utilize to equitably and justifiably deny the requested special use permit. Crystalline silica dust is perhaps the most compelling of all very serious consequences.

[12] Excerpts from a private Memorandum from Dr. Sandra McCoy, December 3, 2019, full memorandum in Appendix D

Figure 7 – Bohne Road Gravel Mine, Grass Lake Township, Michigan

Conclusion

To the communities' knowledge, Mr. Leman has failed to provide credible evidence that there is a need for more gravel production in Benzie County. With over a dozen-and-a-half gravel mines within 2 – 12 miles with at least two being major operators, supply far exceeds demand.

To underscore Mr. Leman's apparent lack of market awareness, in his September 12, 2019, TV 7&4 News interview, he states

> "*People want to move to our area and the demand for construction materials is certainly there. Sand and gravel from our community means you don't waste fuel and truck this stuff in from a long ways away. They can get it right down the street.*"

First, as noted in the newly formed Inland Township Planning Commission's November 27, 2019 draft Master Plan, as reported by the official U.S. Census, Inland's population has fallen 8.6% since 2010. People certainly may *want* to move here, but the official numbers suggest they aren't doing so. "Demand for construction materials is certainly [here]" — and it is being more than sufficiently met by existing operators. More gravel mines in our area *are not* needed.

Second, there isn't much building going on 'right down the street' from this 150-acre Rural Residential parcel. Even with the horrible milage a gravel truck gets, given the close proximity of existing gravel mines, any theoretical savings on 'wasted fuel' is meaningless.

Mr. Leman's hasn't and likely can't justify that mining at this Rural Residential property would produce revenue of a sufficient enough level that he could reasonably expect to operate at a profit, a requirement under Michigan's Zoning Enabling Act, MCL 125.3205 Sec. 205 (3). In the opinion of many, under this act, this lack of profitability precludes finding value in the gravel on that property.

Even if there were valuable minerals to be found there — a hypothetical, not an acknowledgement — the HIJPC must, as required under Michigan's Zoning Enabling Act, balance that value against the very real health issues extracting it would create.

Clearly stated in MCL 125.3205 Sec. 205 (5)(e) and supported by OHSA, MIOSHA, scores of other reputable organizations, and health experts worldwide, the dangers of crystalline silica dust definitely creates a 'very serious consequence' that would

> "*impact on other identifiable health, safety, and welfare interests in the local unit of government*."

The residents of Inland Township and Benzie County would be unduly and unnecessarily punished if the special use permit for parcel 08-006-007-00 were approved.

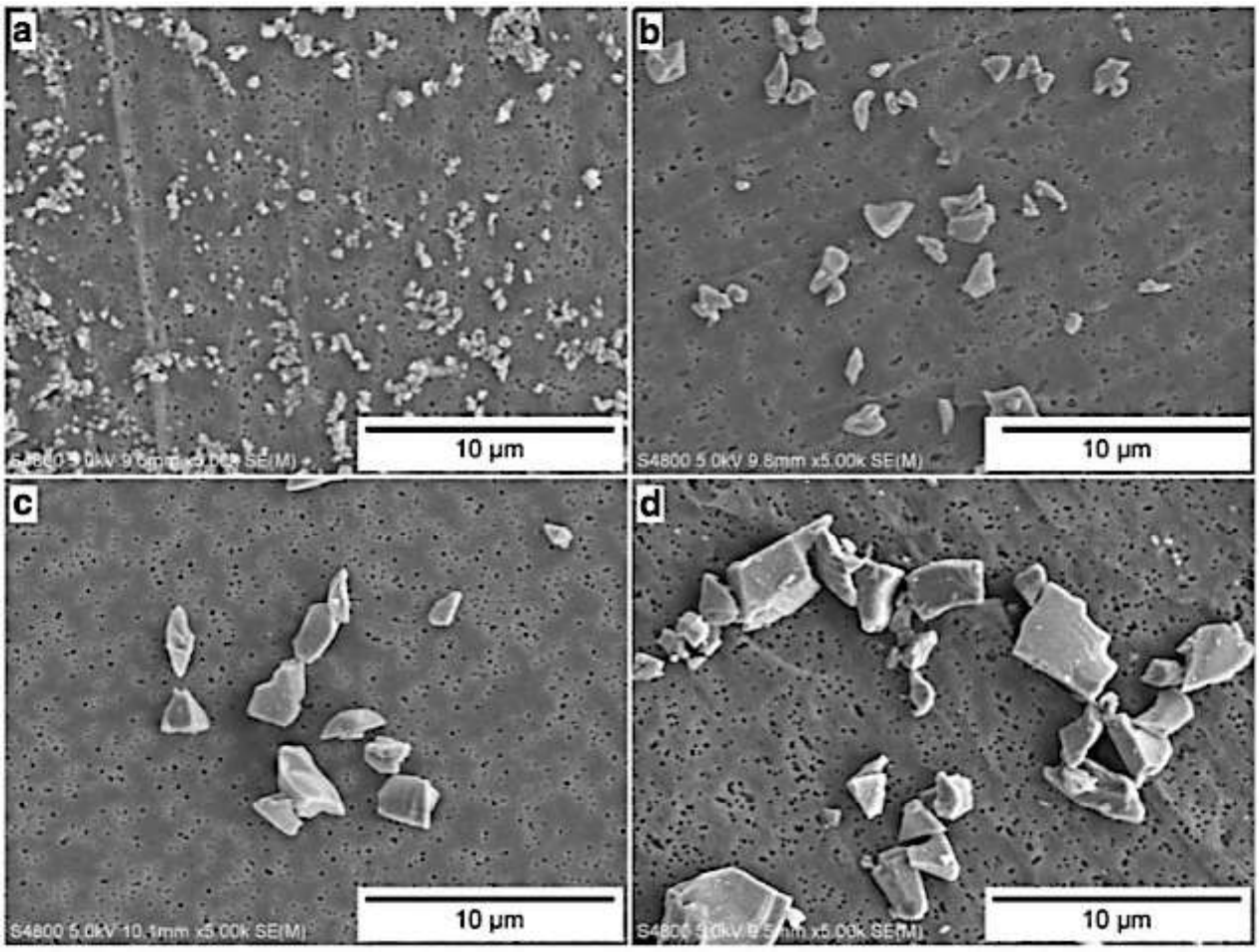
For the negative financial impacts it would impose on local property values, granting a special use permit would be unfair. For the unavoidable health problems it would unleash, such a decision would be downright cruel.

5,000x Images of Crystalline Silica Dust

These electron microscope images of the crystalline silica dust sort their sizes from 'ultra-fine' (as small as 0.01µm) to 'course' (up to 7µm). For reference, 10µm is the typical width of a human hair, represented here as the graphic insert of each image.

At sizes of 5µm and smaller, these microscopic razor blades are not only invisible, they are respirable. That is, when inhaled, they bypass all immune system defenses and can travel all the way to the deepest parts of the human lungs. There they ***permanently*** imbed themselves and begin creating their havoc on one's health.

As reported here and recognized by the medical community around the world, crystalline silica dust is deadly. It causes silicosis (an ***incurable lung disease*** that leads to disability and death), lung cancer, COPD (Chronic Obstructive Pulmonary Disease), kidney disease, renal disease, and auto-immune diseases such as rheumatoid arthritis.



Comparison of SEM images of the four sizes of crystalline silica particles used for this study, (**a**) Ultrafine (UF), (**b**) Submicron (S), (**c**) Respirable (R), and (**d**) Coarse (C). Images are all at the same magnification (5,000x)

SOURCE: S.E. Mischler et al, ***Differential activation of RAW 264.7 macrophages by size-segregated crystalline silica***, Journal of Occupational Medicine and Toxicology, DOI 10.1186/s12995-016-0145-2, December 15, 2016

MICHIGAN AGGREGATES ASSOCIATION

Proteciin,g and Promoting Your
Inleres'ls

OSHA Approved Silica Training

MM and MITA has partnered wich Wayne State University to offer Respirablle C,ystalline Silica training.

This program was developed though an OSHA Susan Harwood Training Grant and Is designed For the construction Industry {construction professiona ls including but not limited to workers, site superintendents, project mcmagers, s.,fety managers) to increase workers' awareness of the serious health hazards of silica dust and provic:le the knowledge necessary for employee protections.

The training covers the new OSHA Standard on Respirable Crystalline Sliica (29 CFR 1926.l 153) and it <1lms to incre<1se workers' awareness on the serious health hazards associated with silica exposure and provide the knowledge necessary to perform work safely when there is silic::a exposure and ways to limit silica exposure.

Trainees who complete all the training steps will be eligible to receive a certification.

The cost for the training is provided by Funds from the grant but space Is limited {max 30), so if you are imerested please com.;ct the MAA office rn register. Space will be filled on first come ba,i,.

Training dates and locations are as rollows:

All training times will be from 10:00 am co 12:00 p,m.

December 17, 2019
Michigan CAT
Grand Rapids, MI

December J8, 2019
AIS Construction Equipment· Lansing
3600 N Grand River Ave
Lansing, MI 48906

For more Information about these sessions. please click here.
{https:1/g.allery.rn.ailchimp.com/d250bd5a823dc6dd5e16250521files/f6fc3d95-753e-44ad-9b3a-b1ae46de08bFISH_SIlica_Training_Marketing_Flyer.pd

If you have any questions, please contact the MM office at 577-381-1732

OSHA SUSAN HARWOOD GRANT
RESPIRABLE CRYSTALLINE SILICA SAFETY TRAINING

In-Class Silica Safety Training for Construction Industry

Effective October 23, 2017, OSHA has been fully enforcing all appropriate provisions of the Silica in Construction standard.

Our OSHA APPROVED TRAINING MATERIALS were developed under an OSHA Susan Harwood training grant and designed for the construction industry to increase workers' awareness of the serious health hazards of silica dust and provide the knowledge necessary for employee protections.

This training is for all the construction professionals including but not limited to workers, site superintendents, project managers, safety managers and employers.

If you are interested in an in-class training for your company or organization, please contact one of the training coordinators below to schedule a session.

Training Session Scheduling or for More Information Please Contact

Mumtaz A. Usmen, PhD, PE
e-mail : musmen@eng.wayne.edu
Phone: (313) 577-3608

Emrah Kazan, PhD
e-mail: ekazan@wayne.edu

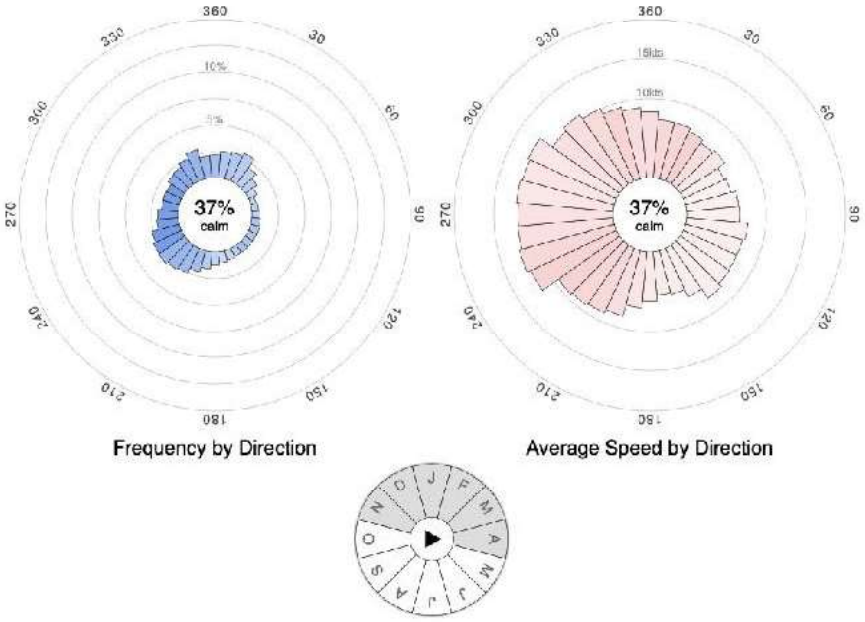
TRAINEES WHO PARTICIPATE in and complete the whole training will receive a certificate.

Training contact hours:
1.5 to 2 Hours

- **Sign-Up** — *Demographic Information*
- **Pretest** — *We measure trainee's existing knowledge*
- **Presentation** — *OSHA approved training module*
- **Posttest** — *To assess the knowledge gain after the training*
- **Opinion Survey** — *We would like to hear your opinion and feedback on the training*

This material was produced under a grant (SH-05039-SH8) from the Occupational Health Administration, U.S. Department of Labor. It does not necessarily reflect the views or policies of the U.S. Department of Labor, nor does the mention of trade names, commercial products, or organization imply endorsement by the U.S. Government.

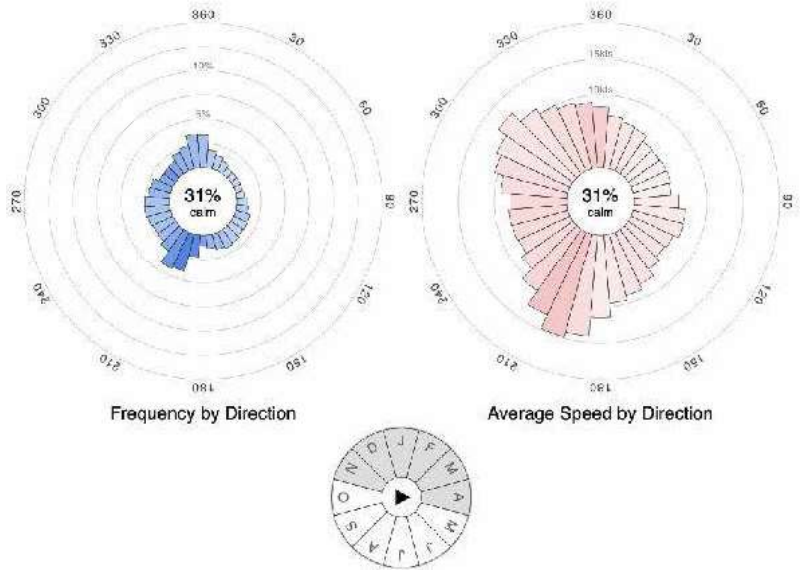
KTVC: Cherry Capital Airport



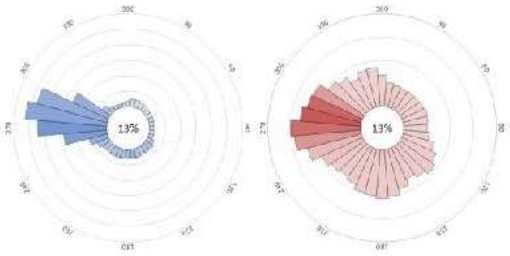
44.7439, -85.585 WeatherSpark Wunderground VFRMap RunwayFinder NavMonster

A diagram of the prevailing winds at **KTVC**: Cherry Capital Airport. The blue diagram at left is a wind rose: the bar length shows the frequency of winds from each direction. In the red diagram at right the bar length shows the average speed of winds when they come from that direction. For more information, see about this site.

KFKS: Frankfort, Frankfort Dow Memorial Field Airport



Station view



The station view shows the prevailing winds for a single weather station. Above is an example image for KSFO, San Francisco airport.

The blue diagram at left is a classic Wind Rose. The length of each bar is proportional to the frequency the wind comes from each direction and the colour is proportional to the average speed. At KSFO the wind is pretty much always from the west. The most common direction is 280°, 13% of the time with an average speed of 13kts.

The red diagram at right shows the same data as the wind rose but emphasizes wind speed. Bar length is proportional to average speed and colour is proportional to frequency. At KSFO northeast winds are rare, and when they come they tend to be light. The strongest winds come from 270°, 15kts 11% of the time.

You may hover the mouse over a bar to see exact textual data. In both diagrams the percentage in the middle indicates how often the winds are less than 5 knots (13% at KSFO). There are links on the station page for further information: WeatherSpark is a particularly nice complementary site showing historical weather.

Month filter

The month filter allows you to display prevailing winds for specific months. Click the calendar wedges to toggle each specific month off and on. Click the play button in the middle to animate your selection through the year.

Data

The source data for these graphs is the NOAA archive. METARs from 2006 to 2010 were parsed and crunched to calculate average winds for each weather station. Reporting variance and data processing errors mean these diagrams are not true statistical samples.

Browser compatibility

This site makes extensive use of SVG for graphics. It should work fine in modern versions of Firefox, Safari, Mobile Safari, Chrome, and Microsoft Internet Explorer 9. It will not work in IE 6, 7, or 8 and never will.

Feedback

This site is a labour of love: feedback and suggestions are most welcome. Please mail comments@windhistory.com with any thoughts you have. Some planned enhancements include showing winds for specific months and showing more detailed histograms.

SOURCE: Weather Underground wundergournd.com reported data from NOAA (National Centers for Environmental Information) National Oceanic and Atmospheric Administration

MEMORANDUM

TO: Jim Brouwer, Friends of Platte River Watershed

FROM: Sandra McCoy, Ph.D.

DATE: December 3, 2019

RE: Bohne Rd Grave) Mine, Grass Lake, Michigan

Jim,

I moved to Grass Lake Township, Michigan 1-1/2 years ago. Grass Lake is a small town, about 25 minutes West of Ann Arbor. It has a delightful "rural" character and that is what draws many people to settle here. Grass Lake Township has been embroiled in conflicts for many years concerning the incursion of ravel minin into resi entia areas in our community,

I am pleased to provide some excerpts from letters written by the residents of Grass Lake Township to their Township government over the past several years concerning the Bohne Rd gravel mine which has operated since 2003. These letters were obtained through a FOIA request. Also included are excerpts from Grass Lake Planning Commission meeting minutes. Many of the comments illustrate the negative effects of dust and health concerns related to mining operations in close prox1m1ty to residentialareas.

> "We purchased 5-1/2 acres of land ... in 1999 to build our final dream home. Since the start of the sand extraction operation... in August, 2003, our lives have been totally disrupted and our land value has dt'!finitely gone down." "Needless to say the dust issue is a HUGE factor here. The day they were doing this our whole house and deck were covered with dust and still is. I can't even open my·windows. These big earth *movers* were coming by our property every 10 minutes and the noise and dust was unbearable."
>
> "Gravel pits in residential areas undoubtedly cause health and safety concerns and much disturbance for surrounding residents... The gravel pit on Bohne Road as currently operating provides no benefit to Grass Lake Township.. We need to consider the more than 200 peop]e that live within a 2 mile radius of the gravel pit with many living within 50-100 feet of pit operations. These people have stated they now must close their windows due to the dust created by gravel pit operations. This certainly is not a desirable condition for them and we can and must protect the value of our homes1 the environment and keep our township a safe place to live in. "

"The gravel pit is a serious health risk There are no six foot trees on the berm to eliminate dust. Many people have not been able to walk in the area as a result of the extreme dust and probable air-borne. dangerous silica. There is no monitoring for silica contamination in the air and in the well water." "There has been no MDEQstudy done prior to the original SUP to check tor environmental health hazards and issues, including acquifer and water table contamination (well water contamination) and negative wildlife issues!'

"I would have my windows open to let the fresh air in... Now my windows haven't been open since the mtne (then called gravel pit to make it sound smaller and unobtrusive) was started. There is dust all over the plants and trees in theyard as well as the house and car on a daily basis. Inside my house, a layer of dust accumulates within a few days. I don't work in the yard anymore or hang my clothes outside... I've become a prisoner in my home which is supposed to be an enjoyable, safe haven and an investment."

wwe live in a log home on Sager road that we built in 2000 and it was supposed to be our dream home." "We couldn't even open our windows at all and still can't. The dust is a nightmare!! It's constantly in the air... and it's destroyed the finish on our home & decks and we have to clean it multiple times in a year now versus every **4-5** years." The biggest and closest to me is being diagnosed with a blood cancer called Multiple Myeloma. I went thru chemo for 9 months twice a week and had a stem cell collection. It's been the hardest 2 years of my life!!l I asked my dr. at the UofM cancer center what is the cause of Multiple Myeloma?? He said there is a connection from diesel fumes in the air. There are diesel trucks running all day long right behind my house since they opened this sand mine around 2001 or 2002. So this has been going on for around 17 years now. "

"We are concerned for the health of our family, my daughter and I *have severe* asthma and are worried *over* the silica dust amon other ave! it issues that has caused our asthma to be in a constant state of UK. We are concerned with the location of the gravel pit being so dose to our property and our well that we use for water. We don't want our well to be contaminated ... We unfortunately are not in a position to move, so we will continue to keep our doors and windows shut, continue to have our house vents, ac and heat checked for contaminants that the gravel pit puts upon us, we are not able to enjoy sitting outside on our deck, swimming in our pool and we will have to continue to wear our masks to try and keep the contaminants out of our lungs. Why do we have to suffer?"

"There is overwhelming evidence regarding longterm silica dust exposure and respiratory disease. Residents near Bohne Road gravel pit testified they now suffer from respiratory diseases such as asthma and COPD.j'

"The site alone is appalling with the noise, dust, contamination of the stream near the gravel pit,the pond,wildlife absent andnatural resources. Why is this gravel pit still in operation, from failing to comply with the agreement from 21 March 2018?" "Why should the residents be .subjected to all these issues from this gravel pit .

"8/15/19 1.33pm to 1.40pm, while my husband and I were driving along Bohne Rd, Grass Lake, right near the Bohne Rd Gravel Pit. The dust was so bad we had to pull over on to the side of the road because we couldn't see in front of us." "No only is this mine dangerous to any vehicle who happens to travel along Bohne Rd, the health issues caused by the dust and diesel fumes are catastrophic."

l think the issue is best summed up by one Bohne Road resident in a Jetter to the Township, urging them not to renew the mine permit:

"The residents need to be able too en their windows, sit outside, children nee to p ay outsi e, they need sleep, they need peace and quiet, most importantly, they need to breathe, be healthy, and they need to smne and dream again."

Have you considered that there could be threats to your access to safe, clean drinking water?

- Bill 132 has reduced our municipality's ability to protect our groundwater from gravel pits.
- The proposed aggregate extraction will alter the topography of the land including the catchment area of the on-site wetland.
- The Region of Waterloo will provide an internal review of the applicant's water study.
- The monitoring of gravel pits is essentially "self policed."

Once a groundwater source is contaminated, it is too late to correct. **There is NO acceptable risk when it comes to water.**

Groundwater is naturally filtered and requires less energy and resources to access and treat; compared to surface water (i.e. the Grand River) and pipes to access the Great Lakes. Waterloo Region is wise to protect this vital source of drinking water.

Take a look at this study from Finland stating that gravel pit operations DO affect groundwater when contaminants are present in existing soil/gravel/sand [Click here to read the PDF]

POSSIBLE RISKS TO OUR LOCAL WATER:

- 3 areas of concern for potential water contamination:
  - Source Protected Area (wellhead protection recharge area) - north portion of property
  - Cattle feedlot waste storage area - south end of property
  - Surface water and GRCA - east side of property

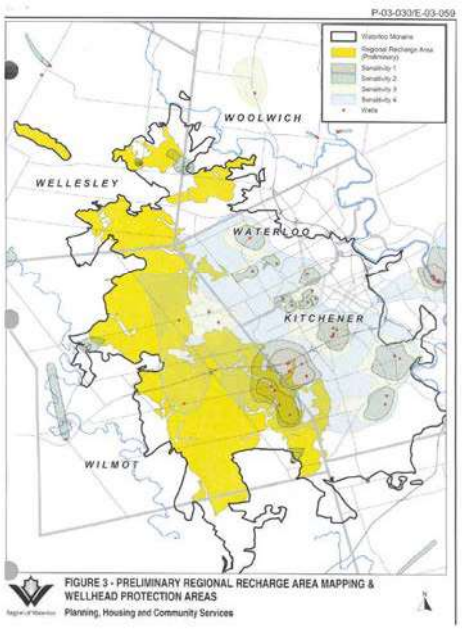
Click here to read a 2-page
Summary of Concerns re: Proposed Hallman Pit in Wilmot Township
by Wilf Ruland (P. Geo.) 30+ years experience as a hydrogeologist

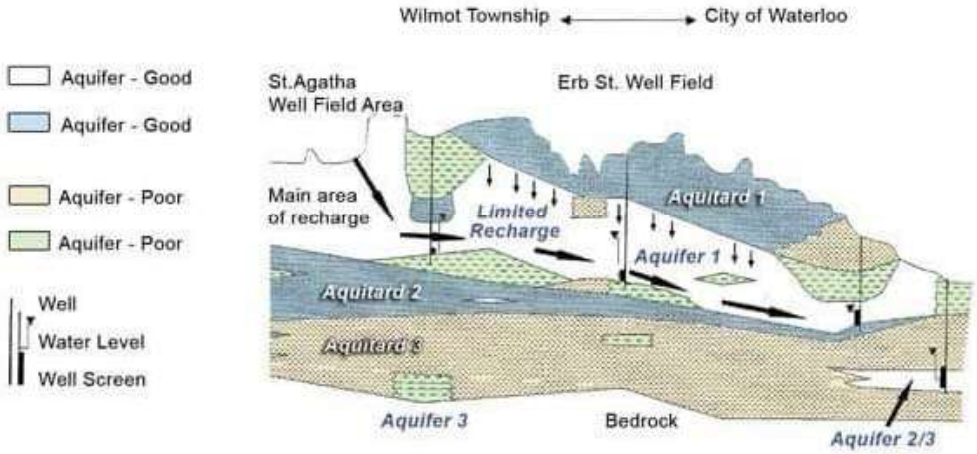
Click here to read a 5-page letter
from Douglas M. Huber, P.Geo. of Huber Environmental Consulting Inc.,
with comments about the proposed Hallman Pit

Click here to read Review of
Level 1 and Level 2 Hydrogeological Evaluation for
Above Water Table Aggregate Extraction
Hallman Pit
(Harden Environmental Services Ltd, Sep. 3, 2019)

MAPS

(Click on each to view larger version)





The Source Protection Plan (SPP) protects municipal wells and surface water intakes from specific activities that may pose a threat to drinking water.

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get updates

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NOISE & DUST IMPACTS

NOISE IMPACTS CAN INCLUDE:

- **Truck noise** from constant truck movement, deceleration and acceleration noise and use of engine brakes
- **Extraction noise** from construction, extraction and processing equipment (e.g. stone crusher, washing plant, loaders, conveyors)
- **Alarms -** back up alarms on machinery exempt from noise by-laws
- The **noise of the gravel pit can carry despite berms**. The hours of work at the gravel pit extend up to 12 hours a day, 6 days a week. On top of this, the gravel pit application mentions extended hours, which could mean disturbed sleep for the community.

Will the noise and micro dust particles invade your yards? Will it impact your family's enjoyment of the outdoors?

Large trucks produce toxic pollution and are safety hazards to our community.

‘Even a modest level of noise, over a long enough period of time (Like beeping trucks, air conditioners, hair dryers or in this case from a gravel pit), can cause damage to the brain networks that extract meaning from sound. Many of us don’t even realize our brains are being blunted and our thinking impeded by this invisible force.” (from Scientific American website)

“If possible, choose where you live wisely, based on noise levels. The constant low-level meaningless noise is chipping away at your brain’s ability to make sense of meaningful sounds like speech, and may hasten cognitive decline in old age." (from Scientific American website)

In the long term, noise from inside and outside, including the one caused by transportation, can affect a children’s academic performance. Attention problems, difficulty differentiating sounds, loss of motivation to learn, impaired memory, especially for complex tasks requiring understanding, are only a few of the problems of long-term exposure to noise. (Source)

DUST & POLLUTION CAN INCLUDE:

- Dust - **aggregate dust** from construction and extraction operations and stockpiling
- **Vehicular and Equipment Emissions** - pollutant emissions from diesel trucks and equipment (e.g. nitrogen oxides, volatile organic compounds – VOCs, carbon monoxide, fine particulate matter)
- **Plant fumes** - asphalt and concrete recycling

Dust from gravel pits gets into the body through our nose and mouth. Respiratory disease is well documented but what we know now is that the lining of the lungs can be infiltrated by these micro particles, and these end up in the blood stream and get to the brain. Through the nose, microparticles can pass through the olfactory bulb and pass directly into the various parts of the brain. When swallowed, particles can actually alter the microbiome of the gut which processes food and gives us nutrients and vitamins, etc. The health of the microbiome directly impacts brain health. Studies on air pollution and the brain indicate significant developmental, mental health, and neurodegenerative impacts on the brain. (Source 1 "Air Pollution May Damage People’s Brains"; Source 2 "Researchers Now Have Even More Proof That Air Pollution Can Cause Dementia")

“With every breath, children take in more air per unit of body weight than adults. By extension, when air is toxic, they take in more toxic air per unit of body weight than adults.” (UNICEF 2017) Children in our community will be at risk because they live near the gravel pit and will breathe and swallow its dust.

“Exposure to traffic emissions has been associated with a wide range of adverse health outcomes, including increased risk of respiratory diseases such as asthma, birth and developmental concerns, cancer, and cardiovascular and respiratory mortality. While some individual pollutants in traffic exhaust are toxic, it is the combination of the many pollutants present in emissions that is of concern.” (Source - University of Toronto "Near-Road Air Pollution Pilot Study released")

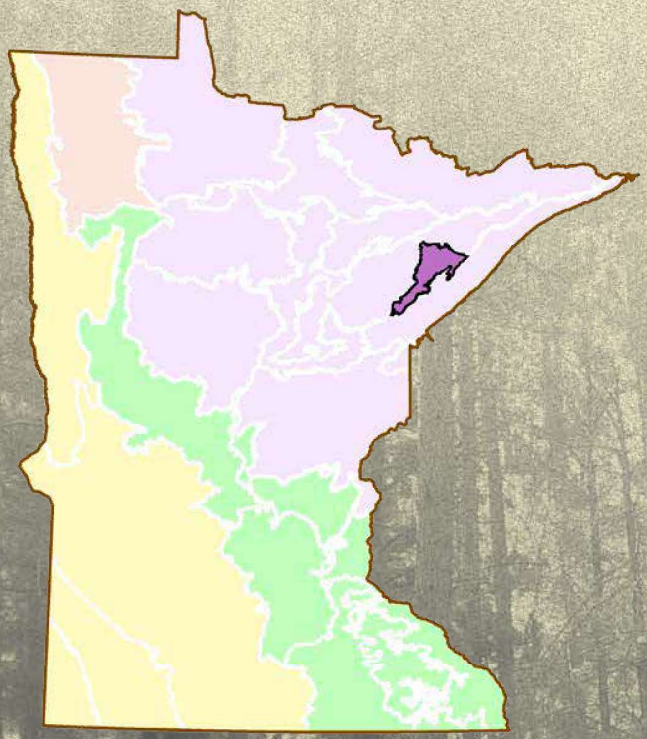
INDUSTRIAL AND RESIDENTIAL LAND USE DO NOT MIX

Tomorrow's Habitat for the Wild & Rare

An Action Plan for Minnesota Wildlife

Toimi Uplands

Subsection Profile



Minnesota's Comprehensive Wildlife Conservation Strategy

Toimi Uplands

SUBSECTION OVERVIEW

The Toimi Uplands Subsection is located in northeastern Minnesota, due west of the North Shore Highlands Subsection. It is heavily forested and consists mainly of drumlin fields, rolling hills that run from the southwest to the northeast. Before settlement by people of European descent, the area was covered with white pine, white spruce, and aspen-birch forests. This subsection's high elevation serves as the source of several rivers, including the St. Louis, Cloquet, and Whitefish. There are also numerous wetlands, especially in the northwest quadrant.

The Toimi Uplands is still predominantly forested, and the most important land use is forestry. With 84 percent of the land in public ownership, recreation is important, especially around lakes and rivers, and for hunters in the public forests. Logging of pines in the early part of the 20th century increased aspen-birch forests.

Quick facts

Acres: 339,147 (0.6% of state)

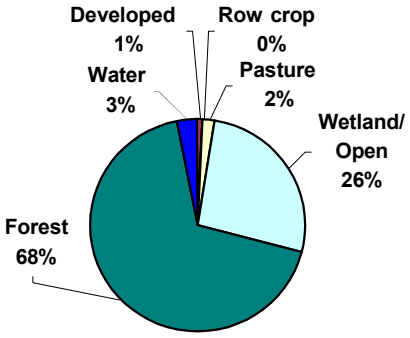
Ownership

Public	Private	Tribal
84.2%	15.8%	0.0%

Population density (people/sq. mi.)

Current	Change (2000-2010)
4.3	+0.6

Current Land Use/Land Cover



SPECIES IN GREATEST CONSERVATION NEED

52 Species in Greatest Conservation Need (SGCN) are known or predicted to occur within the Toimi Uplands. These SGCN include 10 species that are federal or state endangered, threatened, or of special concern. The table, SGCN by Taxonomic Group, displays by taxonomic group the number of SGCN that occur in the subsection, as well as the percentage of the total SGCN set represented by each taxon. For example, 4 mammal SGCN are known or predicted to occur in the Toimi Uplands, approximately 18% of all mammal SGCN in the state.

SGCN BY TAXONOMIC GROUP

Taxa	# of SGCN	Percentage of SGCN Set by Taxon	Examples of SGCN
Amphibians	1	16.7	*None documented since 1990*
Birds	37	38.1	Northern goshawk
Fish	1	2.1	*None documented since 1990*
Insects	5	8.9	Disa alpine
Mammals	4	18.2	Canada lynx
Mollusks	2	5.1	Creek heelsplitter
Reptiles	2	11.8	Wood turtle
Spiders	0	0	NA

HIGHLIGHTS

- The rolling hills of the Toimi Uplands provide habitat for gray wolves, bald eagles, and a variety of boreal forest birds like Connecticut warblers and spruce grouse. There are also wood turtles, red-necked grebes, and northern harriers present.
- Areas important for SGCN include the Cloquet Valley State Forest and portions of the Superior National Forest.

SPECIES SPOTLIGHT

Spruce grouse *(Falcipennis canadensis)*

Distribution Boreal (Laurentian) forests of extreme north-central and northeastern Minnesota.

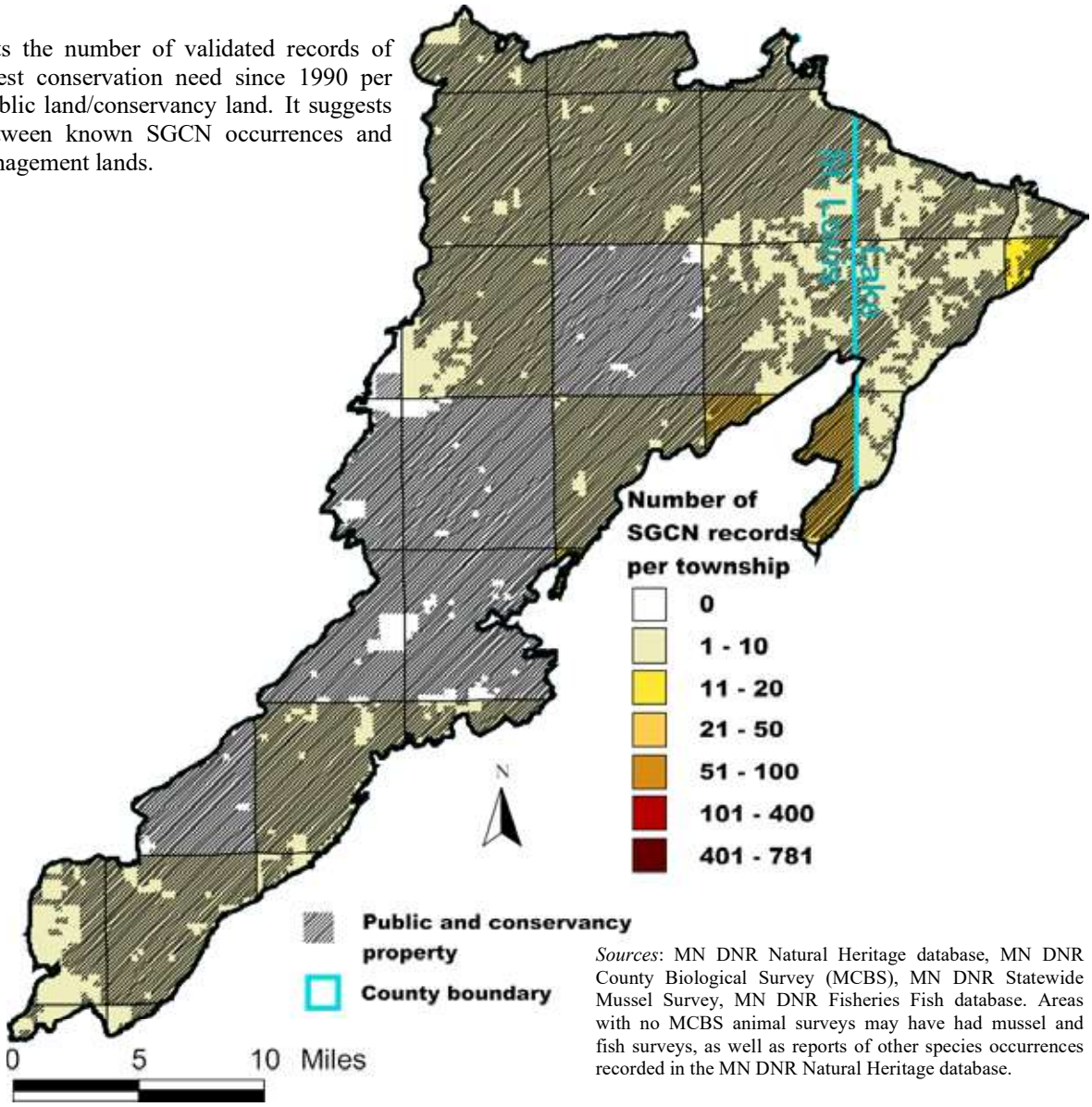
Abundance Uncommon, with most birds occurring in the northern Arrowhead region of MN.

Legal Status Game bird.

Comments Low numbers and cyclic changes make population assessment difficult, but numbers are sufficient to support limited hunting. This species is an excellent symbol of northern Laurentian forests.

SGCN ELEMENT OCCURRENCES BY TOWNSHIP

This map depicts the number of validated records of species in greatest conservation need since 1990 per township and public land/conservancy land. It suggests relationships between known SGCN occurrences and conservation management lands.



Sources: MN DNR Natural Heritage database, MN DNR County Biological Survey (MCBS), MN DNR Statewide Mussel Survey, MN DNR Fisheries Fish database. Areas with no MCBS animal surveys may have had mussel and fish surveys, as well as reports of other species occurrences recorded in the MN DNR Natural Heritage database.

SPECIES PROBLEM ANALYSIS

The species problem analysis provides information on the factors influencing the vulnerability or decline of SGCN that are known or predicted to occur in the subsection. The table lists the nine problems, or factors, used in the analysis, and the percentage of SGCN in the subsection for which each factor influences species vulnerability or decline. The results of the species problem analysis indicate that habitat loss and degradation in the subsection are the most significant challenges facing SGCN populations.

NOTE: The inverse of the percentages for each problem does not necessarily represent the percentage of SGCN for which the factor is not a problem, but instead may indicate that there is not sufficient information available to determine the level of influence the factor has on SGCN in the subsection.

Problem	Percentage of SGCN in the Subsection for Which This Is a Problem
Habitat Loss in MN	81
Habitat Degradation in MN	88
Habitat Loss/Degradation Outside of MN	44
Invasive Species and Competition	21
Pollution	27
Social Tolerance/Persecution/Exploitation	19
Disease	0
Food Source Limitations	2
Other	6

KEY HABITATS - For Species in Greatest Conservation Need

The CWCS identified key habitats for SGCN within the subsection using a combination of five analyses, labeled A-E below. The table depicts the five analyses, and under which analyses the key habitats qualified. To qualify as a key habitat for the subsection, the habitat had to meet the criteria used in at least one of the five analyses, as specified in the descriptions to the right of the table. The graphs below depict results from four (A-D) of the five analyses used in determining key habitats. Those habitats that meet the criteria are highlighted in **RED** in the graph for that analysis. Those habitats that do not meet the criteria are shaded in **GOLD**. Analysis E is not represented by a graph; the results of this analysis are presented as a list of key rivers/streams in Appendix I. For a more detailed explanation of the five analyses used, see Chapter 7, Methods and Analyses.

	ANALYSIS				
KEY HABITATS	A	B	C	D	E
Forest-Upland Coniferous	X	X			
Forest-Lowland Coniferous		X			
Shrub/Woodland-Upland (Jack pine woodland)		X			
River-Headwater to Large					X

Description of Analyses

A: Terrestrial habitat use analysis - terrestrial habitats that represent more than 5% of 1890s or 1990s landcover and are modeled to have the most SGCN using them based on a z-test with $p<0.01$.

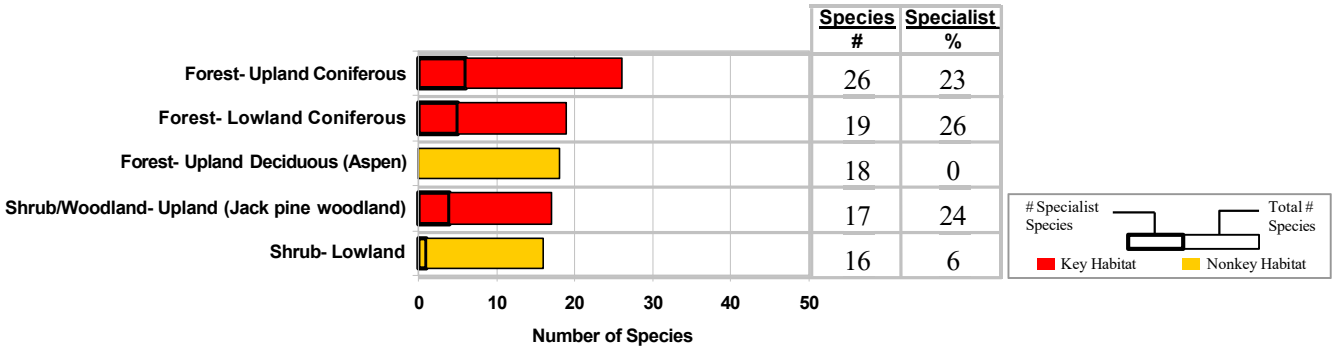
B: Specialist terrestrial habitat use analysis - terrestrial habitats that represent more than 5% of 1890s or 1990s landcover and have more than 15 species, 20% of which use 2 or fewer habitats (specialist species).

C: Terrestrial habitat change analysis - terrestrial habitats that represent more than 5% of the 1890s landcover and have declined by more than 50% in the 1990s landcover. For wetlands this change was based on an analysis done by Anderson & Craig in *Growing Energy Crops on Minnesota's Wetlands: The Land Use Perspective* (1984).

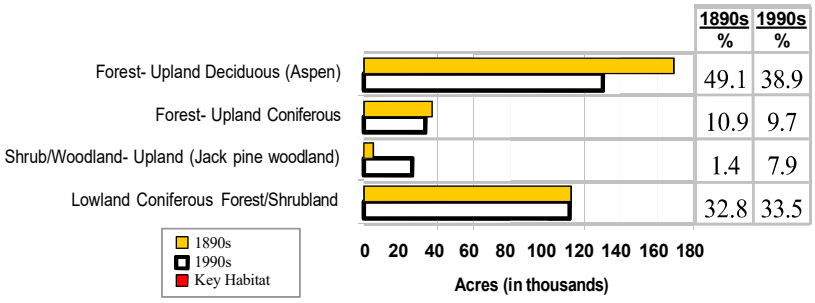
D: Aquatic habitat use analysis - lake or stream habitats that have the most SGCN use based on a z-test with $p<0.01$ of all subsections.

E: The Nature Conservancy/SGCN occurrence analysis - stream reaches identified in the Areas of Aquatic Biodiversity Significance in the four TNC Ecoregional Assessments and reaches with high SGCN occurrences (see Appendix I for list of stream reaches).

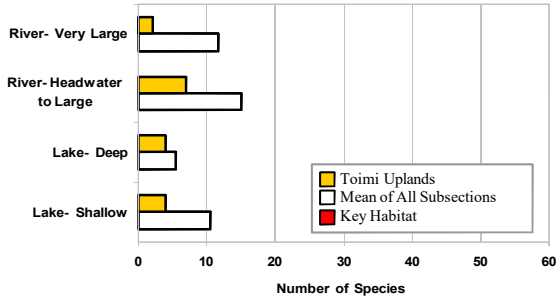
A/B – Terrestrial Habitat Use/Specialist Terrestrial Habitat Use



C – Terrestrial Habitat Change



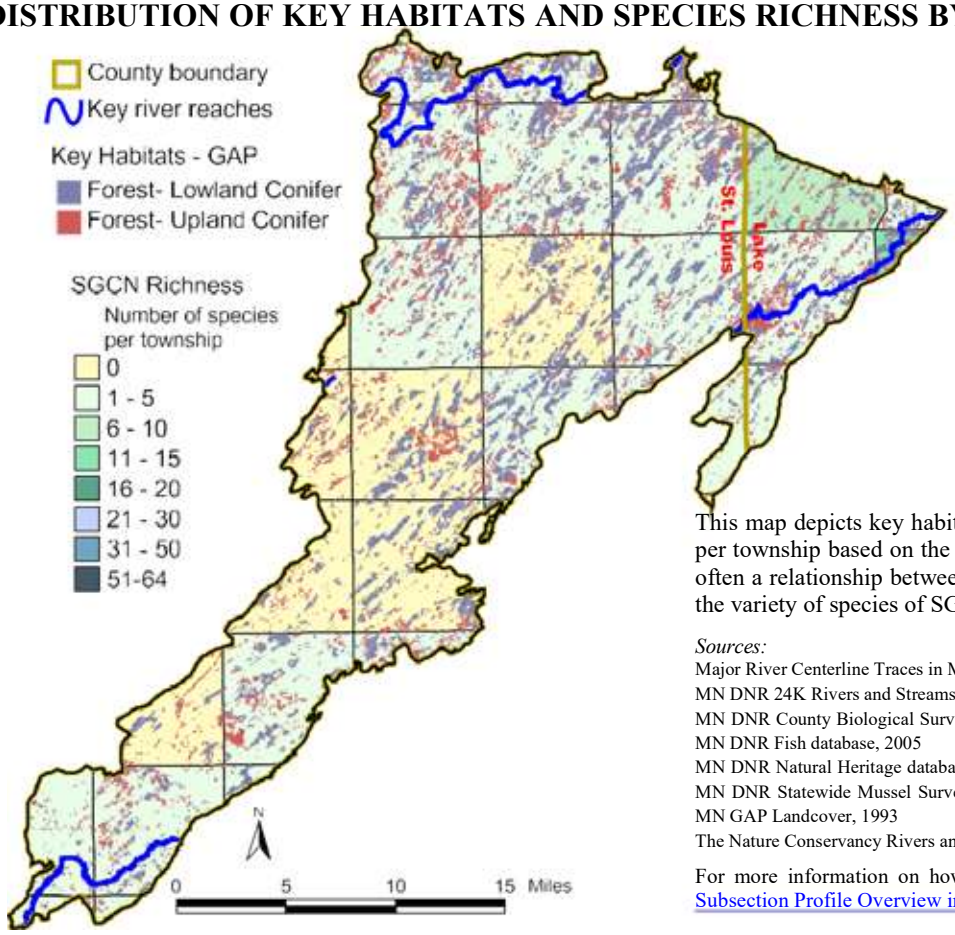
D – Aquatic Habitat Use



E – The Nature Conservancy/SGCN Occurrence

To reference the key rivers and streams for the subsection, see Appendix I.

DISTRIBUTION OF KEY HABITATS AND SPECIES RICHNESS BY TOWNSHIP



This map depicts key habitats and the number of species of SGCN per township based on the sources listed below. It suggests there is often a relationship between key habitats and species richness (i.e., the variety of species of SGCN in a township).

Sources:
Major River Centerline Traces in Minnesota, 1984
MN DNR 24K Rivers and Streams, 2005
MN DNR County Biological Survey (MCBS), 2005
MN DNR Fish database, 2005
MN DNR Natural Heritage database, 2005
MN DNR Statewide Mussel Survey, 2005
MN GAP Landcover, 1993
The Nature Conservancy Rivers and Streams combined dataset, 2005

For more information on how this map was constructed, please see the Subsection Profile Overview in Chapter 5.

SUBSECTION HABITAT PERCENTAGES AND HABITAT USE BY SGCN TAXA

This table presents information on the percentages for each habitat in the subsection (showing changes in coverage between the mid- to late 1800s and the 1990s), as well as habitat use by SGCN taxonomic group. Habitats are listed in ranked order for percent coverage within the subsection in the 1990s. Key habitats for the subsection (as identified on previous page) are listed in **BOLD**. SGCN habitat use is broken down by taxonomic group, with a total number of species for all taxonomic groups listed at the far right of the table.

			SGCN BY TAXONOMIC GROUP								
HABITAT	Percentage of Subsection (1890s)	Percentage of Subsection (1990s)	Amphibians	Birds	Fish	Insects	Mammals	Mollusks	Reptiles	Spiders	Total Number of Species
Forest-Upland Deciduous (Aspen)	49.1	38.9	1	15			2				18
Forest-Lowland Coniferous	32.8	33.5		15		2	2				19
Forest-Upland Coniferous	10.9	9.7	1	20		2	3				26
Shrub/Woodland-Upland (Jack pine woodland)	1.4	7.9		10		3	4				17
Forest-Upland Deciduous (Hardwood)	1.3	2.9	1	14			3				18
Grassland	N/A	2.1		9			3				12
Forest-Lowland Deciduous	0.5	1.6		11			1				12
Lake-Deep	N/A	1.4		2	1				1		4
Wetland-Nonforest	0.5	1.3		11			2		1		14
Lake-Shallow	N/A	0.4		2					1		3
Developed	N/A	0.2		2			1				3
Cropland	N/A	0.1		1			2				3
Shoreline-dunes-cliff/talus	N/A	N/A		5			1				6
Shrub-Lowland	N/A	N/A		12		1	3				16
River-Headwater to Large	N/A	N/A		2	1			2	2		7
River-Very Large	N/A	N/A						1	1		2

N/A: Insufficient data available to determine percent coverage within subsection. We have no data to indicate the existence of cropland, grassland, or developed land prior to settlement by people of European descent, although these land uses likely did occur at very low levels.
NOTE: 0.0 indicates less than 0.05 percent coverage.

Ten-Year Goals, Management Challenges, Strategies, and Priority Conservation Actions

Goal I: Stabilize and increase SGCN populations

Management Challenge 1 – There has been significant loss and degradation of SGCN habitat
Strategy I A – Identify key SGCN habitats and focus management efforts on them

Priority Conservation Actions to Maintain, Enhance, and Protect the Key Habitats

1. **Upland coniferous forest habitats**, actions include:
   a. Incorporate SGCN habitat concerns in forest management planning
   b. Provide technical assistance and protection opportunities to interested individuals and organizations
2. **Lowland coniferous forest habitats**, actions include:
   a. Incorporate SGCN habitat concerns in forest management planning
   b. Provide technical assistance and protection opportunities to interested individuals and organizations
3. **Jack pine woodland habitats**, actions include:
   a. Incorporate SGCN habitat concerns in forest management planning
   b. Provide technical assistance and protection opportunities to interested individuals and organizations
4. **Stream habitats**, actions include:
   a. Maintain good water quality, hydrology, geomorphology, and connectivity in priority stream reaches
   b. Maintain and enhance riparian areas along priority stream reaches
   c. Provide technical assistance and protection opportunities to interested individuals and organizations

Management Challenge 2 – Some SGCN populations require specific management actions
Strategy I B – Manage federal and state listed species effectively

Priority Conservation Actions for Specific SGCN

1. Implement existing federal recovery plans
2. Develop and implement additional recovery plans
3. Provide technical assistance to managers, officials, and interested individuals related to listed species
4. Enforce federal and state endangered species laws, as well as other wildlife laws and regulations

Strategy I C – Manage emerging issues affecting specific SGCN populations

Priority Conservation Actions for Specific SGCN

1. Work with partners to effectively address emerging issues affecting SGCN populations
2. Enforce federal and state wildlife laws and regulations

Goal II: Improve knowledge about SGCN

Management Challenge 1 – More information about SGCN and SGCN management is needed
Strategy II A – Survey SGCN populations and habitats

Priority Conservation Actions for Surveys

1. Survey SGCN populations within the subsection, actions include:
   a. Continue MCBS rare animal surveys
   b. Survey SGCN populations related to key habitats
   c. Survey wildlife taxa underrepresented by MCBS animal surveys
2. Survey SGCN habitats within the subsection, actions include:
   a. Assess the amount and quality of key habitats and map their locations

Strategy II B – Research populations, habitats, and human attitudes/activities

Priority Conservation Actions for Research

1. Research important aspects of species populations within the subsection, actions include:
   a. Better understand the life history and habitat requirements of important SGCN
2. Research important aspects of SGCN habitats within the subsection, actions include:
   a. Identify best management practices for maintaining and enhancing key habitats
   b. Identify important patterns and distributions of key habitats to better support SGCN populations
   c. Identify important functional components within key habitats to support specific SGCN
   d. Explore important, emerging SGCN habitat management issues
3. Research important aspects of people's understanding of SGCN within the subsection, actions include:
   a. Identify people's attitudes and values regarding SGCN
   b. Identify places and ways people can enjoy and appreciate SGCN

Strategy II C – Monitor long-term changes in SGCN populations and habitats

Priority Conservation Actions for Monitoring

1. Monitor long-term trends in SGCN populations, actions include:
   a. Continue existing population monitoring activities
   b. Develop additional monitoring activities for specific SGCN populations
2. Monitor long-term trends in SGCN habitats, actions include:
   a. Develop long-term monitoring activities for important SGCN habitats

Strategy II D – Create performance measures and maintain information systems

Priority Conservation Actions for Performance Measures and Information Systems

1. Create and use performance measures, actions include:
   a. Develop partner-specific performance measures within the subsection
   b. Develop project-specific performance measures for SWG-funded projects
   c. Actively incorporate monitoring and performance measure information to enhance adaptive management
2. Maintain and update information management systems

Goal III: Enhance people's appreciation and enjoyment of SGCN

Management Challenge 1 – Need for greater appreciation of SGCN by people

Strategy III A – Develop outreach and recreation actions

Priority Conservation Actions for Outreach and Recreation

1. Create new information and communicate with people to enhance their appreciation of SGCN
2. Create opportunities for people to appropriately enjoy SGCN-based recreation

Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife

How to use this subsection profile

Intended audience: Natural resource professionals and interested stakeholders

* Identify how the priority conservation actions and key habitats intersect and inform your

current and future priorities.

* Using your additional insights and local knowledge, “step-down” the priority conservation actions into more detailed actions and practical on-ground tasks.

* Use it to understand species in greatest conservation need priorities and tell a story

about the subsection (its history, biology, ecology, demography) to other natural resource

professionals, managers, decision makers and land owners.

* Visit our website or give us a call and tell us how you're using it, how others are using it, and ideas that step down the priority conservation actions.

Website:

www.dnr.state.mn.us/cwcs

For more information, please contact:

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St. Paul, MN 55155-4040

(651) 296-6157 (Metro Area)

1-888-MINNDNR (646-6367) (MN Toll Free)

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Health Issues with an Asphalt Plant Nearby

Here are some short quotes and abstracts from articles referencing the health problems that occur with working, and/or living near an Asphalt Plant.

Asphalt and Diesel Exhaust Fumes

> " Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. Health effects from exposure to asphalt fumes include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and skin cancer. "

Reference: Asnhalt Fumes - United States Department of Labor. Occupational Safetv and Health Administration

Reference: Hot Mix Asphalt Plants •· Truck Loading and Unloadirnr

> " The primary emission sources associated with Hot Mix Asphalt(HMA) production are the dryers, hot bins, and mixers, which emit particulate matter (PM) and a variety of gaseous po11utants. Other emission sources found at HMA plants include storage silos, which temporarily hold the HMA; truck load-out operations, in which the HMA is loaded into trucks for hauling to the job site; liquid asphalt storage tanks; hot oil heaters, which are used to heat the asphalt storage tanks; and yard emissions, which consist of fugitive emissions from the HMA in truck beds. Emissions also result from vehicular traffic on paved and unpaved roads, aggregate storage and handling operations, and vehicle exhaust. "
>
> "The PM emissions associated with HMA production include the criteria pollutants PM-1O (PM less than 10 micrometers in aerodynamic diameter) and PM-2.5, hazardous air pollutant (HAP) metals, and HAP organic compounds. The gaseous emissions associated with HMA production include the criteria pollutants sulfur dioxide (SO 2), nitrogen oxides (NO x), carbon monoxide (CO), and volatile organic compounds (VOC), as well as volatile HAP organic compounds. "

Reference: EPA - Hot i\iix Asohalt Plant Emission Assessment

Summary of Research on Diesel and Asphalt Hazards

Toxic Smell

> "It smells.[11]

"While a state study indicates the air quality in a neighborhood next to a controversial paving plant meets safety standards, neighbors say their problems with the plant are as much about quality of life as quality of air.

The odor of asphalt coming from the R.C. & Sons paving plant has been a prime complaint of several residents of the nearby Grandview neighborhood."

Bangor Dailv News - Jt smells.. but Maine Asphalt Piant meets standards

" Dr. Mitchell said that tiny particles in asphalt production plant emissions can cause lung damage, exacerbate breathing conditions and ultimately cause more·severe problems. "

1.Je,.v York Times Aiticle - Who Wants to Live Near an Asphalt Plant

Noise

Here are typical noise emissions from a Hot-Mix Asphalt Plant.

Noise Level	Distance from Center of Plant
85dBA	50 feet (measured reference level)
78dBA	JOO feet
70dBA	200 feet
63dBA	400 feet
55 dBA	800 feet
46dBA	1,600 feet
36dBA	3,200 feet
24dBA	6,400 feet

We do not know the assumptions that went into the measurements in this noise summary table.

Looking at the California study, we do not know the age or size/capacity of the plant(s) measured.

Remember that newer plants are quieter, and older plants make more noise.

Reference: Full Document - Caltrans - :tare of California

Overall Health Effects

[11] The complex chemical composition of asphalt makes it difficult to identify the specific component(s) responsible for adverse health effects observed in exposed workers. Known carcinogens have been found in asphalt fumes generated at worksites. Observations of acute irritation in workers from airborne and dermal exposures to asphalt fumes and aerosols and the potential for chronic health effects, including cancer, warrant continued diligence in the control of exposures. [11]

Reference: CDC - Hazard R..evkw - Health Effects of Occunational Exoosure to As1Jhalt

What the Federal Government Regulates on Asphalt Plants and Air Quality

What federal rules apply to asphalt plants?

- Asphalt plant emissions of particulate matter (PM2.5 and PMl 0, carbon monoxide, sulfur dioxide nitrogen dioxide, and lead must not exceed National Ambient Air Quality Standards (NAAQS) at the property boundary.
- Asphalt plants manufactured after June 11, 1973, are subject to 40 CFR 60 Subpart I-New Source Performance Standards for Hot Mix Asphalt Plants. NSPS, Subpart I limits only the emissions of particulate matter from material handling systems.
- On November 8, 2002, USEPAremovedAsphalt Hot Mix Production from the Source Category List for which development of National Emission Standards for Hazardous Air Pollutants Standan is required.

Reference: North Carolina Division of Air Quality -Air Toxics and Asphalt Plants

Web Sites With More Information

Here are addition web sites that have information on Asphalt Plants and health effects.

- Hot Mix Asphalt Plants - Stakeholders Opinions Report - US EPA
- Fact Sheet - Hot Mix Asphalt Plants - Ore1a!Oll Department of Environmental Quality
- Preventirnz Pollution at Hot Mix Plants -A Guide to Environmental Compliance and Pollution Prevention for Asphalt Plants in Missouri - State of Missouri
- Asphalt Plant Pollution - Blue Ridge Environmental Report
- Road PavirnzAsphalt - State of New Hampshire - Fact Sheet
- Asphalt - Hazardous Fact Sheet - State of New Jersev
- North Carolina Division of Air Quality - Air Toxics and Asphalt Plants

We are PARC - Protectors of the Arnmonoosuc River Corridor in Lisbon, New Hampshire.

You can contact PARC at

PARC
P.O. Box515
Sugar Hill, New Hampshire.
03586

Fiscal Agent: Peter Nightingale
Phone#: (603) 616-9292

ASPHALT PLANT POLLUTION

Asphalt plants mix gravel and sand with crude oil derivatives to make the asphalt used to pave roads, highways, and parking lots across the U.S. T11ese plants release millions of pounds of chemicals to the air during production each year, including many cancer-causing toxic air pollutants such as ai.-senic, benzene, formaldehyde, and cadmium. Other toxic chemicals are released into the air as the asphalt is loaded into trucks and hauled from the plant site, including volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), and very fme condensed particulates. PA]

!Bl f.\spt1c1it ftm1es a:- i{ O\'lm Taurrns. The federal Environmental Protection Agency (EPA) states ' -\sphalt processing and asphalt roofing manufacturing facilities are major sources of hazardous air pollutants such as formaldehyde, hexane,, phenol, polycyclic organic matter, and toluene. Exposure to these air toxics may cause cancer, central nervous system problems, liver damage, respiratory problems and skin irritation." [EPA]. _.-\ccording to one health agency, asphalt fumes contain substances known to cause cancer, can cause coughing, wheezing or shortness of breath, se,rere irritation of the skin, headacl1es, dizziness, and nausea. 11',1JDHSS] .Animal studies show P.AHs affect reproduction, cause birth defects and are harmful to the immune system. [:NJDHSS] The US Department of Health and Human Services has determined that P IBs may be carcinogenic to humans. [DHHSJ

i".8 ..,.J artf1 !E11p cts & Loss ©f PZ\;1p$rt!r *VE.EU*. TI1e Blue Ridge Environmental Defense League (BREDL), a regional environmental organization, has done two studies on the adverse impacts on property values and health for residents living near asphalt plants. A property value study documented losses of up to 56% because of the presence of a nearby asphalt plant. In another study, nearly half of the residents reported negative impacts on their health from a new asphalt plant. TI1e door-to-door health survey found 45% of residents living within a half mile of the plant reported a deterioration of their health, which began after the plant opened. The most freguent health problems cited were high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%). [BREDL]

tr *e=;c ·t:l!?3d* Tt S°t§ !Jric: : :3t:cJI• tB f" a2t;1 2.! £$ii In **addition to s1nokestack etnissio11s;, large amounts of** harmful "fugitive emissions" are released as the asphalt is moved around in trucks and conveyor belts, and is stored in stockpiles. A small asphalt plant producing 100 thousand tons of asphalt a year may release up to 50 tons of toxic fugitive emissions into the air. [Dr. R. NadkamD Stagnant air and local weather patterns often increase the level of exposure to local communities. In fact, most asphalt plants are not even tested for toxic emissions. The amounts of these pollutants that are released from a facility are estimated by computers and mathematical formulas rather than by actual stack testing, estimates that experts agree do not accurately predict the amount of toxic fugitive emissions released and the risks they pose. According to Dr. Luanne Williams, a North Carolina state toxicologist, 40% of the toxins from asphalt plant smokestacks even meet air guality standards-and for the other 60% of these emissions, the state lad .".s sufficient data to determine safe levels.

BE SAFE: Take Precautionary Action to Protect Our Communities from Asphalt Plant Air Pollution

OSHA ARCHIVE

Asphalt Fumes

Over a half-million wod<ers are exposed ro fumes from ilSphalt, a petroleum product used extensively in roadpaving, roofing, siding, and amcrete work. When hot asphalt is applied In a molten mte, it generates !Dx/c fumes. Wonrers exposed ID asphalt fumes are at lisk of developing headaches, rashes, cough, andpossibly cancer. There is no OSHA mndard for asphalt fumes. OSHA is developing an adion plan to reduce worker exposures to this hazard but iS not initiating ru/emaking at this time.

Hazard Description

NIOSH estimated that over 500,000 workers were potentially exposed to asphalt fumes (1). OSHA estimated in 1992 that over 300,000 construction workers were exposed primarily in road-paving and roofing operations (2). Exposures va,y considerably between different types of asphalt work (i.e. roofing vs. pavtng) and the different worker jobs (i.e. kettle operator vs. paver operator.) More research needs to be performed Ill detennlne and control important factnrs which cause increased worker exposures **(i.e.** application temperatures, type of equipment used, environmental conditions, workplace practices, and asphalt constituents.)

The acute effects of exposure to asphalt fumes include headache, skin rash, fatigue, reduced appetite, throat and eye irritation, and cough. Asphalt paving workers, for example, have reported breathing problems, asthma, bronchitis, and skin irritation (6). A recent study has shown that some of these effects occur at exposures of 0.5 to 1.3 mg/m3 (3).

Human studies have reported lung, stomach, and skin cancers following chronic exposures Ill asphalt fumes. However, these sbJdies have been incondusive, and the possible chronic effects to workers following exposures to asphalt fumes are areas of continuing investigations. One recent summary analysis of the available human sbJdies found a nearly twofold increase in risk of lung and stomach cancer among roofers. Increased risks were also noted for other asphalt workers for tung, stomach, and bladder cancer, and for leukemia (4).

Laboratory sbJdies have shown chemical extracts of asphalt fumes to have cancer-causing and mutagenic properties. For example, painting of asphalt extracts on mouse skin produces tumors that increase with dose (7). Other laboratory studies show DNA changes in mouse lung and skin cells (8) and in hwnan fetal cells exposed to asphalt fume extracts (9). Urinalysis of exposed workers shows mutations in laboratory tests (10).

Current Status

OSHA does not have a standard for asphalt fumes although it proposed a 5 mg/m3 permissible exposure limit (PEL} in 1992 (5). OSHA's quantitative risk assessment estimated a significant risk of lung cancer among exposed workers at levels as low as 0.2 mg/m3.

The American Conference of Governmental Industrial Hygienists (ACGIH) currently recommends a Threshold Limit Value (TLV) of 5 mg/m3 as an 8-hour time weighted average. In 1977, the National Institute for Occupational Safety and Health (NIOSH) recommended a S mg/m3 15 minute short·tenn exposure limit. NIOSH is developing a new Criteria Document for asphalt fumes and expects to make new recommendations for exposure limits within six months.

The International Agency for Research on cancer (IARC) found:

- 'There is sufficient evidence for the carcinogenicity of extracts of st.earn-refined bitumens air-refined bitumens and pooled mixtures of steam- and air-refined bitumens in experimental animals.•
- There is limited evidence for the carcinogenicity of undiluted steam-refined bitumens and for cracking-residue bitumens in experimental animals.
- There is inadequate evidence for the carcinogenicity of undiluted air-refined bitumens In experimental animals.
- There ls inadequate evidence that bitumens alone are carcinogenic to humans."

Rationale

Asphalt fume exposure meets several of the criteria for designation as an OSHA priority. In particular, the known and potential health effects are serious and a large number of workers are potentially exposed, especially considering high industry turnover rates. although the human studies of workplace cancer have limitations, there is considerable experimental evidence of cancer risk. There ls also evidence of acute health effects among workers exposed to asphalt fumes.

References

1. NIOSH; National Occupational Exposure Survey; 1981-1983.
2. Federal Register, vol. *'.il,* no. 114, June 12, 1992. Air Contaminants; Proposed Rule. pp. 26001-26602.
3. Chase, R.M., Liss, G.M., Cole, D.C, and Heath, B. 1994. Toxic health effects including reversible macrothrombocytosis in workers exposed to asphalt fumes. Am. J. Indus. Med. 25:279-289.
4. Partanen, T. and Boffetta, P. 1994. Cancer risk in asphalt workers and roofers: review and meta-analysis of epidemlologlc studies. Am. J. Indus. Med. 26:721-740.
5. Federal Register vol. *'.il,* June 12, 1992. Air Contaminants; Proposed Rule. p. 26182-26190 deals specifically with asphalt fume.
6. Norseth T, Waage J, and Dale I. Acute Effects and Exposure to Organic Compounds in Road Maintenance Workers Exposed Ill Asphalt Am J Ind Med; 1991; 20:737-44.
7. "Assessment of the Cocarcinogenic/Promoting *Aclivlty* of Asphalt Fumes;" U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health; Contract 200-83-2612; December 1989.

Nevv Jersey Department of Health and Senior Services

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **ASPHALT**

CASNumber: 8052-42-4
DOT Number: NA 1999 (Asphalt)
UN 1999 (Tars, Liquid)
DOT Hazard Class: 3 (Flammable)

RTK Substance number: 0170
Date: January 2001 Revision: April 2007

HAZARD SUMMARY

* **Asphalt** can affect you when breathed in.
* Extracts of certain *Asphalts* have been shown to cause cancer in animals.
* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can initate and cause severe burns of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.
* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE and FIRE HAZARDS.
* **Asphalt** is derived from *Petroleum.* **Asphalt** and *Coal Tar Pitch* are different. If you are actually working with *Coal Tar* chemicals, *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEETS ON COAL TAR PITCH AND COAL TARS.*
* *Asphalt, Oxidized* (CAS # 64762-93-4) is a carcinogen. *CONSULT THE NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES HAZARDOUS SUBSTANCE FACT SHEET ON ASPHALT. OXIDIZED.*

IDENTIFICATION

Asphalt is a blackish-brown solid, semi-solid or liquid, depending on the formulation or mixture of **Asphalt** used. **Asphalt** *fumes* are produced during the manufacture and heating of **Asphalt,** which is used for road building and roofing, and in rubber and adhesives.

REASON FOR CITATION

* **Asphalt** is on the Hazardous Substance List because it is cited by ACGIB, DOT, NIOSH, !ARC and NFPA.
* Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CPR 1910.1200) requires private employers to provide similar training and information to their employees.

* Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CPR 1910.1020).
* If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

NIOSH: The recommended airborne exposure limit is **5 mg/m^3,** which should not be exceeded during any 15-minute period.

ACGIH: The recommended airborne exposure limit is **0.5 mg/m^3** (for the *inhalable fraction* of the *Benzene-soluble* aerosol), averaged over an 8-hour workshift.

WAYS OF REDUCING EXPOSURE

* Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enc1osure is not used, respirators should be worn.
* Wear protective work c1othing.
* Wash thoroughly immediately after exposure to **Asphalt** and at the end of the workshift.
* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Asphalt** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Asphalt:**

* **Asphalt** *fumes* can irritate the eyes on contact.
* Breathing **Asphalt** *fumes* can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* Contact can irritate and cause severe bums of the skin and may cause dermatitis and acne-like lesions.
* Exposure to **Asphalt** *fumes* can cause headache, dizziness, nausea and vomiting.

Chronic Health Effects

The following chronic (long-term) health effects can occur **at** some time after exposure to **Asphalt** and can last for months or years:

Cancer Hazard

* While **Asphalt** has not been identified as a carcinogen, it should be HANDLED WITH CAUTION since extracts of certain **Asphalts** have been shown to cause cancer in animals.

Reproductive Hazard

* According to the information presently available to the New Jersey Department of Health and Senior Services, **Asphalt** has not been tested for its ability to affect reproduction.

Other Long-Term Effects

* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* **Asphalt** *fumes* can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness ofbreath.

MEDICAL

Medical Testing

Before beginning employment and at regular times after that, for those with frequent or potentially high exposures, the following are recommended:

* Lung function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

* Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Conditions Made Worse By Exposure

* Exposure to sunlight may make skin effects of **Asphalt** worse.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: **(1)** how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

* Where possible, automatically pump liquid **Asphalt** from drums or other storage containers to process containers.
* Before entering a confined space where **Asphalt** may be present, check to make sure that an explosive concentration does not exist.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

* Workers whose clothing has been contaminated by **Asphalt** should change into clean clothing promptly.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Asphalt.**
* Eye wash fountains should be provided in the immediate work area for emergency use.
* If there is the possibility of skin exposure, emergency shower facilities should be provided.
* On skin contact with **Asphalt,** immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Asphalt,** whether or not known skin contact has occurred.

* Do not eat, smoke, or drink where **Asphalt** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, applying cosmetics, smoking, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs {such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

* Avoid skin contact with **Asphalt.** Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

* Wear indirect-vent, impact and splash resistant goggles when working with liquids.
* Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
* Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

* Where the potential exists for exposure over **0.5 mg/m^3,** use a NJOSH approved full facepiece respirator with an organic vapor cartridge and particulate prefilters. Increased protection is obtained from full facepiece powered-air purifying respirators.
* If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Asphalt,** or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
* Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
* Where the potential exists for exposure over **5 mg/m3,** use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

HANDLING AND STORAGE

* Prior to working with **Asphalt** you should be trained on its proper handling and storage.
* **Asphalt,** when HEATED, can give off toxic *Hydrogen Sulfide gases.*
* **Asphalt** may ignite or explode when mixed with NAPHTHA, other VOLATILE SOLVENTS, and LIQUID OXYGEN.
* **Asphalt** is not compatible with OXIDIZING AGENTS (such as PERCIIl..ORATES, PEROXIDES, PERMANGANATES, CIIl..ORATES, NITRATES, CHLORINE, BROMINE and FLUORINE).
* Store in tightly closed containers in a cool, well-ventilated area.
* Sources of ignition. such as smoking and open flames, are prohibited where *Cutback* and *Rapid Curing* **Asphalt** are used, handled, or stored.
* Metal containers involving the transfer of *Cutback* and *Rapid Curing* **Asphalt** should be grounded and bonded.
* Use only non-sparking tools and equipment, especially when opening and closing containers of *Cutback* and *Rapid Curing* **Asphalt.**

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?

A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?

A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?

A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?

A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?

A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

Q: Don't all chemicals cause cancer?

A: No. Most chemicals tested by scientists are not cancer-causing.

Q: Should I be concerned if a chemical causes cancer in animals?

A: Yes. Most scientists agree that a chemical that causes cancer in animals should be treated as a suspected human carcinogen unless proven otherwise.

Q: But don't they test animals using much higher levels of a chemical than people usually are exposed to?

A: Yes. That's so effects can be seen more clearly using fewer animals. But high doses alone don't cause cancer unless it's a cancer agent. In fact, a chemical that causes cancer in animals at high doses could cause cancer in humans exposed to low doses.

The following information is available from:

New Jersey Department of Health and Senior Services
Occupational Health Service
POBox360
Trenton, NJ 08625-0360
(609) 984-1863
(609) 984-7407 (fax)

Web address: http://www.state;nj.us/health/eoh/odisweb/

Industrial Hygiene Information

Indus1?al hygienists are available to answer your questions reg g the c ntrol of chemical exposures using exhaust ven latton, SJ?ecial work practices, good housekeeping, good hyg1_ene practices, '.11:1-d personal protective equipment including respirators. In addttlon, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Departmen.t of Health and Senior Services, Occupational Health Service, who can help you find the infonnation you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Righ! to Kn w Survey, education and training programs, labelmg reqmrements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

>>>>>>>>>>>>>>>>>> EME RGE NC Y INF ORM AT I ON <<<<<<<<<<<<<<<<<

Common Name: **ASPHALT**
DOT Number: **NA 1999 (Asphalt)**
UN *1999* (Tars, Liquid)
DOT Hazard Class: **3 (Flammable)**
NAERGCode: **130**
CASNumber: **8052-42-4**

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	-	1, 2 or 3
REACTMTY	-	0

FLAMMABLE OR COMBUSTIBLE DEPENDING ON FORMULATION
POISONOUS GASES ARE PRODUCED IN FIRE
CONTAINERS MAY EXPLODE IN FIRE

Hazard Rating Key: 0=minimal;]=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

* *Cutback* and *Rapid Curing* **Asphalt** are FLAMMABLE.
* *Typical* or *Medium* to *Slow Curing* **Asphalt** is COMBUSTIBLE.
* Use dry chemical, CO2, water spray, or a foaming agent.
* Water may cause frothing so do not apply solid streams of water directly on **Asphalt.**
* POISONOUS GASES ARE PRODUCED IN FIRE including *Sulfer Oxides* and *Hydrogen Sulfide.*
* CONTAINERS MAY EXPLODE IN FIRE.
* Use water spray to keep fire-exposed containers cool.
* Vapors may travel to a source of ignition and flash back.
* Vapor is heavier than air and may travel a distance to cause a fire or explosion far from the source.
* If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

SPILLS AND EMERGENCIES

If **Asphalt** is spilled or leaked, take the following steps:

* Evacuate personnel and secure and control entrance to the area.
* Eliminate all ignition sources.
* Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
* Ventilate and wash area after clean-up is complete.
* Keep **Asphalt** out of a confined space, such as a sewer, because of the possibility ofan explosion.
* It may be necessary to contain and dispose of **Asphalt** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
* If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

FOR LARGE SPILLS AND F1RES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEPHOTLINE: 1-877-WARN-DEP

HANDLING AND STORAGE (See page 3)

FIRST AID

For POJSONINFORMA TION call 1-800-222-1222

Eye Contact
* Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact
* Quickly remove contaminated clothing. hnmediately wash contaminated skin with large amounts of soap and water.

Breathing
* Remove the person from exposure.
* Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
* Transfer promptly to a medical facility.

PHYSICAL DATA

Flash Point:
Cutback Asphalt: less than so°F (JOOC)
Slow to *Rapid Curing Asphalt:* 80°F (27°q to 22s°F (107oq
Typical Asphalt: greater than 400°F (204oq

Water Solubility: Insoluble

OTHER COMMONLY USED NAMES
This Fact Sheet can also be used for:
Alphalt (Cutback) RTK # 3172

Chemical Name:
Asphalt

Other Names:
Road Tar; Mineral Pitch; Petroleum Pitch; Bitumen

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Amador County News

Study Reveals Dangers of Asphalt Plants

NEW STUDY REVEALS ASPHALT PLANT DANGERS
http://www·.bredl.ondpress/2007/Younf!.-McQueenasphaltplant.htm

Today at a press conference in Spruce Pine, the Mitchell County Citizens for Clean Air and the Blue Ridge Environmental Defense League released an air pollution study of the proposed Young & McQueen asphalt plant which shows that air toxins would be deposited far from the plant site. The League's report shows dangerous levels offsite of formaldehyde, benzene and arsenic.

The study concludes that formaldehyde would exceed the state's health-based air pollution limit at 200 meters beyond the plant property line. Even worse, the study concludes that benzene would be deposited at dangerous levels 1.8 miles away and that arsenic would be deposited at dangerous levels 2.17 miles away.

Janet Marsh, the League's Executive Director, said, "The state has long maintained that their computer modeling is conservative and health protective, while we have long maintained what we now can demonstrate-that the state's approach cannot protect human health while ignoring huge amounts of asphalt plant pollution." The new study points out that the state permit fails to include the asphalt tank heater and a 10,000 gallon liquid asphalt storage tank. Marsh continued, "The state can't have it both ways: they can't claim that their hands are tied by these

exemptions and that their permit means that area residents are safe from pollution."

Louis Zeller, who authored the report, used the US Environmental Protection Agency's worst-case computer model for air pollution from the proposed asphalt plant. This EPA model calculates ground-level air poisons as well as smokestack sources. Having accessed this worst-case model only two weeks ago, the League chose the Young & McQueen plant for its first study.

Dr. James Carroll, a local resident, said, "The Mitchell County Citizens for Clean Air was formed to protect our health, our homes and our community. We know that if this plant is built, it will create bad smells, increased dust and poisonous chemicals like formaldehyde and arsenic. We want our local officials to protect us from polluting industries like this asphalt plant by keeping them away from populated areas, and we want the state to protect us by denying this air pollution permit."

Sue Dayton, who coordinates the League's NC Health Communities Project, said, "We are particularly concerned about the emissions of arsenic, benzene and formaldehyde. Both arsenic and benzene are known to cause cancer, and, in addition to being a suspected human carcinogen, formaldehyde is an acute irritant, causing coughing, wheezing, nausea, headaches and asthma."

Both organizations recognize that the state's air pollution permit does not consider plant location. The Mitchell County Board of Commissioners has the power under state statute to adopt an asphalt plant moratorium and implement a protective polluting industries ordinance.

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Remember to include the title of the article for

Please read this

ASPHALT PLANT POLLUTION

All asphalt plants emit toxic air pollution. A typical plant producing 300 thousand tons of asphalt per year and granted a permit to operate by the NC Division of Air Quality would be allowed to emit the following air pollution annually: (all numbers in pounds per year)

Chronic toxicants	
carbon disulfide	585
hexane	3,450
methyl ethyl ketone	11,700
toluene	14,700
xylene	8,550
Acute system toxicants	
styrene	3,240
CFC-11	168,000
Carcinogens	
benzene	118
methylene chloride	1,600
perchloroethylene	13,000

Chronic toxicants include neurotoxins and developmental toxins, substances which have a negative impact on the human nervous system and/or human growth and development.

Acute system toxicants are pollutants which cause the death of laboratory animals within 14 days of exposure or is toxic based on human experience.

Carcinogens are substances which are known to cause cancer or which are suspected to cause cancer in humans.

Definitions from the US Code of Federal Regulations (16CFR1500) for the Federal Hazardous Substances Control Act.

Some pollution sources at an asphalt plant are exempted from its state permit: 1) an Asphalt Tank Heater burning No. 2 fuel oil, 2) a liquid asphalt storage tank, and 3) fuel oil storage tanks. These units are known sources of toxic air pollution but are exempted by state statute; that is, they are not included in the air pollution permit.

Road asphalt contains gravel and sand mixed with asphalt cement obtained from crude oil. Asphalt cement is a mixture of hydrocarbons including naphtha which contribute to the vaporization of organic compounds at operating temperatures of 300-350 degrees F. Hydrocarbons released into the air by the hot mix asphalt as it is loaded into trucks and hauled from the plant site include volatile organic compounds, polycyclic aromatic hydrocarbons, and condensed particulates. Also, arsenic, benzene, formaldehyde, and cadmium are toxic air pollutants emitted from asphalt plants. Condensation of particulates occurs at ambient temperatures of 70 degrees F. These very fine particles carry polycyclic aromatic hydrocarbons which are a danger to public health. Animal studies show that PAHs affect reproduction, cause birth defects, and cause harmful effects on skin, body fluids, and the immune system. The US Department of Health and Human Services has determined that PAHs may be carcinogenic to humans. [Source: Agency for Toxic Substances and Disease Registry (ATSDR). 1995. *Toxicological Profile for polycyclic aromatic hydrocarbons (PAHs)*. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service]

The effect of fugitive emissions on local pollution levels may exceed the effects of pollutants emitted from the smokestack.

In addition to smokestack emissions asphalt plants emit large quantities of harmful fugitive emissions at ground level. A small asphalt plant producing 100 thousand tons of asphalt a year may generate 50 tons of toxic fugitive emissions. The bulk of fugitive emissions are condensed particulates. Volatile organic compounds (VOC's) emissions are about 29% of the this total. To this must be added the total emitted from the smokestack itself. Stagnant air conditions and inversions increase the level of exposure to the local community.

The Blue Ridge Environmental Defense League has released two studies showing the adverse impacts on property values and public health for residents living near operating asphalt plants. A property value study documented losses of up to 56% as a direct result of an asphalt plant. In another study nearly half of the residents report negative impacts on their health after only two years of asphalt plant operations. The door-to-door survey shows that 45% of the residents living within a half mile of a two year old asphalt plant report a deterioration of their health which began after the plant opened. The most frequent problems include high blood pressure (18% of people surveyed), sinus problems (18%), headaches (14%), and shortness of breath (9%).

Action recommendations

Federal regulation of asphalt plant emissions is inadequate to protect public health. EPA's emission estimates are inadequate to protect worker health and public health. Therefore, citizens must join together to protect their communities. Any county or town faced with an asphalt plant proposal should push for setbacks from residences and community buildings, site specific health-based air pollution modeling and monitoring, enclosures for load-out zones, and preferably a zero emissions asphalt plant, with total containment of air pollutants.

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NEWS

City of Rice Lake pumps the brakes on potential asphalt plant

The City Council unanimously adopted a one-year moratorium on a possible hot-mix facility, which had drawn sharp criticism from neighbors.

A cyclist rides past a sign protesting a potential asphalt plant Wednesday, July 15, along Martin Road in Rice Lake. (Tyler Schank / tschank@duluthnews.com)

By Tom Olsen
July 22, 2020 at 5:00 AM

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In December, a company called "Eagle Lake Land LLC" quietly purchased several parcels in southern Rice Lake, along the city's border with Duluth.

The entity, tied to Proctor's Sinnott Blacktop, paid $545,000 for the nearly 140-acre site, which currently contains an old gravel pit and significant greenspace between Martin and Riley roads, just west of Duluth's Lake Park Fields Athletic Complex.

While the developer has remained tight-lipped about plans for the site, it has been the subject of a bevy of rumors, accusations, petitions and, ultimately, a city moratorium over the possibility of Sinnott building a hot-mix asphalt facility on the site.

"I'm concerned about the noise," said Ian Johnson, who lives on Riley Road, just north of the site. "I'm concerned about the odor. … I'm concerned about the environmental impact. The east branch of Amity Creek runs right through the property."

Johnson is among a handful of nearby residents active in an initiative known as "Keep Ordinance 22," a reference to the city of Rice Lake's current zoning code. They claim the city has shown an eagerness to welcome the asphalt plant without public input.

The group has distributed yard signs demanding "No toxic asphalt plan in Rice Lake," launched a website(https://keepordinance22.com/) , gathered signatures on a petition and bombarded city officials with phone calls and emails in a proactive effort to fend off an asphalt facility.

NEWS TRIBUNE GRAPHICS

But Mayor John Werner said the effort is overblown and premature. He said the city zoning official fielded a phone call from the company back in February regarding the possibility of a hot-mix plant, but a complete application has yet to be submitted for formal review.

"It's had a life of its own," Werner said. "We had people saying all kinds of things — that we were hiding behind COVID to run this through at the midnight hour. Just all these accusations are absurd."

Hot-mix asphalt is produced by adding a cement-binding agent to material such as gravel or sand. Heated to 300-350 degrees before installation, it is commonly used to pave roads and parking lots.

Amid public pressure, the City Council voted unanimously last week to place a one-year moratorium on the acceptance of applications for any such facility in the city. The council also ordered a study to analyze possible regulations that could be

implemented to "promote the general health, safety and welfare of the people in the city."

Werner said he learned after the vote that the company had submitted a partial application for the site just days earlier, but it was returned by zoning officials for being incomplete. And with the moratorium now in place, it will be next July before any completed application could even be considered.

A sign protesting a potential asphalt plant in Rice Lake is aimed at traffic on Martin Road Wednesday, July 15. (Tyler Schank / tschank@duluthnews.com)

"We just want everyone to calm down," the mayor said. "We'll all go through this together. We're not doing anything in the dark of night behind locked doors. If we get an application, which won't be until after the moratorium ends, we'll put it out there for the world to see. We all live here, too."

Sinnott representatives did not respond to inquiries from the News Tribune about plans for the property.

Regulations debated

The site currently holds a gravel pit off Martin Road, which neighbors say has been mostly idle for many years, but about two-thirds of the property remains undeveloped.

Johnson, who has lived on Riley Road for seven years, fears it could change the entire complexion of his neighborhood. He enjoys raising his family in a relativity quiet residential area, but now worries that they'll be inundated with large truck traffic, noxious fumes and loud noises at all hours.

Residents involved in the Keep Ordinance 22 initiative have also pointed to potential health issues, plummeting property values and negative impacts on soil and water.

Johnson and others have been critical of the city's handling of the situation, citing a lack of transparency around possible changes to the zoning ordinance to accommodate the plant. It remains unclear if, and how, a hot-mix facility could even operate on the site.

According to the city, current zoning code allows for a bituminous hot-mix facility within a borrow pit, which requires a conditional use permit.

The existing gravel pit, in use well before Rice Lake incorporated as a city, is allowed to operate under a grandfather clause. City officials have discretion to revoke that permit if the site is left untouched for a period of 365 days — but it's unclear if that is the case with the property in question.

City Attorney Mike Couri advised councilors at a June 29 special meeting that they would need to give due process to the property owner should an application be submitted. He said the city could rely on testimony and aerial photos to determine if the conditional use permit has been forfeited, according to meeting minutes.

A sign protesting a potential asphalt is displayed in a homeowner's lawn along Martin Road in Rice Lake on July 15. (Tyler Schank / tschank@duluthnews.com)

The city's Planning Commission in May looked at updates to the zoning ordinance that would potentially allow Sinnott to meet standards for operating on the site, including the elimination of certain buffer zone requirements with neighboring properties. Several dozen residents turned out to the meeting, and the commission ultimately decided to hold off on any changes to Ordinance 22.

"It's hard to understand exactly what's going on," Johnson said. "If there hasn't been a formal application or an official request for changes to the ordinance, then why are they putting all this work into something that hasn't happened?"

Johnson said the moratorium amounted to a "small victory," but indicated the group isn't likely to slow down its opposition to the project.

Werner said the embargo will allow concerns to be heard from all sides before any further decisions are made.

If an application is eventually received, the Planning Commission would be tasked with determining whether it's an acceptable use for the site — a decision that could be appealed by either the property owner or neighbors to the City Council. The project may also require a state environmental review.

"Any application is entitled to due process," Werner said. "That's where it sits right now. Facts are being gathered. It's an education process."

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Twitter (https://twitter.com/OlsenDNT)
By Tom Olsen(https://www.duluthnewstribune.com/tom-olsen)
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OPINION LETTERS

Reader's View: Asphalt plant near stream a bad idea

By Mike DesCombaz and Heather Nelson, Rice Lake and Chuck Frederick
July 19, 2020 at 4:00 AM

Share

It was great news to read about the wild trout that are still in local streams ("Duluth's wild trout streams hanging on but need help," June 28). Yes, they are hanging on despite all the odds against them.

Even more uplifting is knowing that the community can play a role in protecting watersheds, limiting development near trout streams, and, above all else, keeping a wary eye on what is going into those streams. In the city of Rice Lake there is a local company that has

eyes on developing an asphalt plant right next to the Amity Creek. In fact, the Amity Creek runs right through the heart of the proposed asphalt plant.

Here are some fun facts that are related to asphalt plants, according to the federal Occupational Safety and Health Administration, or OSHA. Exposure to asphalt fumes can cause headaches, skin rashes, fatigue, throat and eye irritation, and coughing. On top of all that neat stuff, OSHA also states that asphalt plants release millions of pounds of chemicals during production, including some of the more enjoyable cancer-causing air pollutants such as arsenic, benzene, formaldehyde, and cadmium.

Don't worry, though, I am sure none of these chemicals will find their way into Amity Creek, Lake Superior, the groundwater that fills our wells, or the lungs of a loved one.

Not developing an asphalt plant in a residential neighborhood adjacent to a trout stream that feeds into the greatest of lakes seems like the biggest no-brainer of all time. I wonder when construction will begin?

Mike DesCombaz and Heather Nelson

Rice Lake

March 11, 2024

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Rice Lake neighbors oppose hot mix asphalt plant

On July 10, 2020 / By John Ramos

JULY 2020

S	M	T	W	T	F	S

Eagle Lake Land Company wants to build a hot mix asphalt plant north of Duluth, in Rice Lake. The owner of Eagle Lake Land Co., Scott Sinnott, is also the vice-president of Sinnott Blacktop in Proctor. Hot mix plants are used to manufacture the asphalt cement used in roadbuilding.

The site of the proposed hot mix plant is a 140-acre parcel located on the corner of Eagle Lake and Martin Roads. About 40 acres of the site is currently occupied by a gravel pit, with the rest of the site being greenspace. Eagle Lake Land Co. purchased the site for $545,000 in December of 2019.

The proposal for a hot mix facility first appeared publicly on the agenda of the Rice Lake Planning Commission on April 21, 2020. According to the minutes of the meeting, City Zoning Official Teresa Koivula “stated that someone has purchased [the gravel pit] and they have asked about adding a hot mix facility. She pointed out that a hot mix facility … is currently an allowed use … through the Conditional Use Permitting process.”

Residents who live around the proposed hot mix site have mobilized in opposition. They are concerned about the noise, odor, and pollution

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12	13	14	15	16	17	18
19	20	21	22	23	24	25
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March 10, 2024

which they fear such an operation would bring to the community. They are also concerned that the planning process itself has been rushed and non-transparent.

Signs opposing the facility appeared in people's yards. A website was created to provide up-to-date information on the project—KeepOrdinance22.com. A petition began circulating to oppose the ordinance changes.

At the May 19 Planning Commission meeting, so many members of the public showed up that the meeting was moved outdoors due to coronavirus concerns. Despite Ms. Koivula's earlier assurance that the hot mix facility could obtain a Conditional Use Permit, she now made a significantly different statement: "The current ordinance language allows for hot mix facilities, however this particular property owner does not meet the requirements."

To accommodate the new facility, the city proposed to, among other things, (1) eliminate a 100-foot no-disturbance buffer zone requirement between the hot mix property and adjacent properties; (2) eliminate the requirement that the hot mix plant operators obtain permission from adjacent property owners to operate within the buffer zone; and (3) eliminate the requirement that the facility post a bond to financially guarantee that it can carry out "site remediation and abatement measures" if the facility closes.

Koivula also stated that the city "has not received an application for a hot mix facility, as there is no application process at this point." And when a reporter asked for more details on the type of plant being proposed, Planning Commissioner Steve Kossett answered that "the City has not received that information at this point, because the discussion is currently about an ordinance update, not an individual application." Why would the city administration work so hard to accommodate a project which doesn't yet exist?

No Sinnott representatives were present to offer further details. Ultimately, the commissioners voted unanimously "to postpone the

I had Les do our windows and terrible wo Plygem dir told us he installed them wrong. The locks don't…

Rick Flaherty on Kenwood woman facing loss of home due to slander, deceit and malfeasance

March 7, 2024

I hope this story goes viral. I now know who I will never hire for any contracting work. Amazing reporting.…

Jeff Michael Hall on Kenwood woman facing loss of home due to slander, deceit and malfeasance

March 6, 2024

discussion of an Ordinance 22 update … until the Planning Commission can gather and review sufficient information to make a decision."

At the regular Council meeting of May 26, Rice Lake Mayor John Werner complained about the "lack of civility [he was seeing from the public] in reference to the asphalt plant," and repeated that "We don't have an application for the plant at this time."

On June 29, 2020, the City Council held a special meeting to discuss compensation for city firefighters. Under "New Business," however, the agenda also reserved time for "Council Questions for Mike Couri." Mike Couri is a St. Charles-based attorney who works under contract with the city. The agenda did not mention that Couri was attending specifically to answer questions about the hot mix plant. When I spoke with resident Ian Johnson on July 2, he told me that a neighbor had called City Hall to ask what that part of the meeting was going to cover, and was told that it would be about the hot mix plant.

"They asked, 'Is the hot mix facility going to be discussed?' and they said 'Yes,'" said Mr. Johnson. "It had to be specifically asked about." When a government entity conceals a specific discussion item behind a vague label on the agenda, they are violating standards of transparency.

On July 2, I emailed the City of Rice Lake a list of questions about the hot mix project, along with a request to speak with Mayor Werner or somebody else. City Clerk Toni Blomdahl answered my questions via email.

> ***Monitor:*** *When did city officials first become aware that Sinnott was seeking to build a hot mix plant?*
>
> ***Blomdahl:*** *I believe Sinnott contacted our Zoning Administrator and asked what was an allowable use on the parcel prior to purchase and then Sinnott followed up with the question of whether a hot mix plant would be allowed after they purchased in February.*

I was Holly's platoon leader when she s in Desert S with the 477th Ground Ambulance Company during the years…

ChesterBowl on Kenwood woman facing loss of home due to slander, deceit and malfeasance

March 5, 2024

Les replaced my gutters. Terrible job. I paid him what was owed and would never work with him again.

Mike Casey on Investigation finds no evidence for Ostreicher claims

February 25, 2024

I had hoped you would have included Dave

> ***Monitor:*** *Did Sinnot know they wanted to do this when they purchased the land?*
>
> ***Blomdahl:*** *I can't speak for what Sinnott thought.*
>
> ***Monitor:*** *Did the city know?*
>
> ***Blomdahl:*** *The City still does not know what Sinnott plans to do as they have not submitted an application yet.*

Nevertheless, the city is still busily tailoring an ordinance to Sinnott's needs. When I asked Blomdahl who the city was talking with at Sinnott, she replied, "I have spoken with Scott Sinnott. I cannot speak for Teresa [Koivula] as to who she has spoken with."

Protest sign at a home on Martin Road, just east of the Sinnott site. Credit: John Ramos

When asked why the agenda for June 29 had concealed the discussion about the hot mix plant behind the vague "Questions for Mike Couri" label, Blomdahl responded, "The questions were not specifically related to the hot mix plant. The questions were in reference to the current Conditional Use Permit on the Sinnott property and the legal matters involved with that. It was not specifically mentioned in the agenda as Council thought they would have other questions." She did not address the fact that the agenda didn't mention a Conditional Use Permit, either.

Montgomery's famous and overused p when sellir goods to councilors--"You will…

If that was the intended topic of discussion, it should have been listed as such.

In response to my inquiry about the city's next steps, Blomdahl wrote, "The Planning Commission has scheduled a Work Meeting to discuss hot mix facilities and changes that need to be made in our Zoning Ordinance to regulate them. This meeting is scheduled for July 28. We are strictly in the information-gathering stages right now … No application has been received requesting a permit for this type of operation."

Any ordinance changes proposed by the city will be required to have a public hearing before the Council votes on them, which will give citizens another chance to speak out. Based on Blomdahl's comments, the opposition received from citizens thus far does not seem to have caused the city to reconsider plans for the hot mix plant. Blomdahl said that the city hadn't seen the Save Ordinance 22 petition yet, but "We are aware there is one circulating out there." She did not offer an opinion as to whether the petition might affect their planning.

According to Ian Johnson, the petition had over 400 signatures as of July 2. This was an estimate, as he is not the person in charge of the petition. That person, Brad Campe, did not respond to an email as of press time.

An email sent to Scott Sinnott had received no response as of press time.

Headline photo: Protest sign at a home on Riley Road. Credit: John Ramos

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Rice Lake Hot mix asphalt / Sinnott Blacktop

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August 2, 2022

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DEPARTMENT OF NATURAL RESOURCES

Sunset (69062000)

Fish consumption advisory

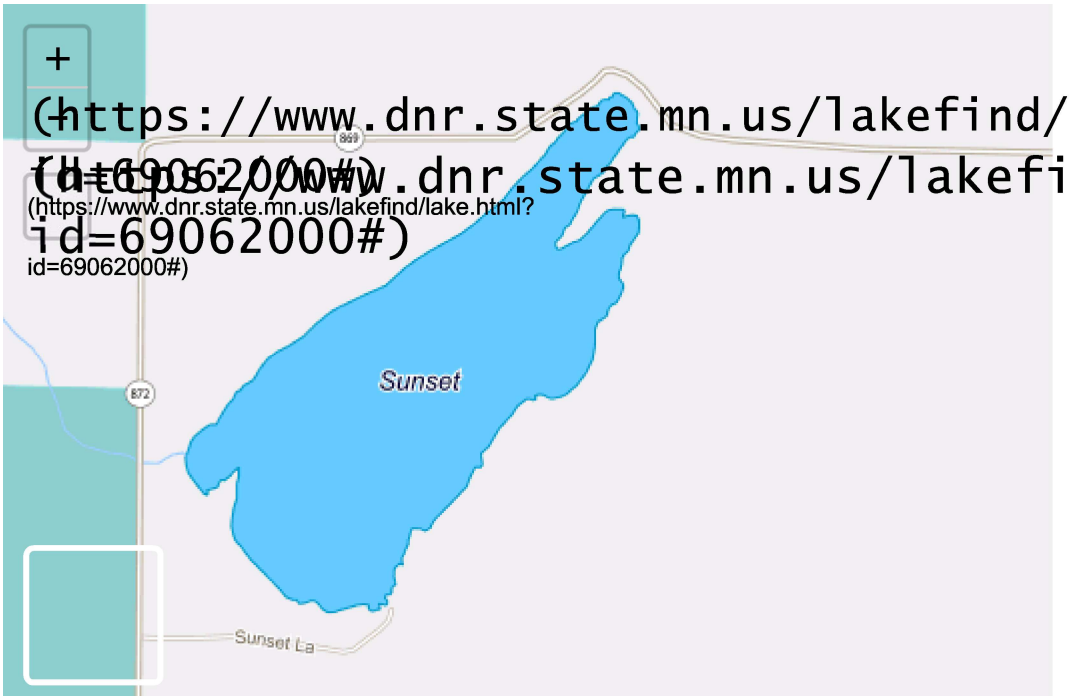
Read about fish consumption guidelines (https://www.dnr.state.mn.us/lakefind/fca/report.html?downum=69062000) provided by the Minnesota Department of Health for this waterbody.

ID: 69062000
County: St. Louis (https://www.dnr.state.mn.us/lakefind/search.html?county=69)
Near: Twig
Border water: No
Sentinel Lake (https://www.dnr.state.mn.us/fisheries/slice/index.html): No

Size and depth

Area: 65.75 acres
Littoral Area: 36 acres
Shore length: 1.81 miles
Maximum depth: 54 feet

Fish species: black bullhead, black crappie, bluegill, brown bullhead, largemouth bass, northern pike, pumpkinseed, rock bass, walleye, yellow bullhead, yellow perch, white sucker, Johnny darter



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Inland waters (https://www.dnr.state.mn.us/fishing/regs.html?topic=inland) »

Invasive species: none listed

Stop aquatic hitchhikers (https://www.dnr.state.mn.us/invasives/preventspread_watercraft.html) »

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St. Louis County

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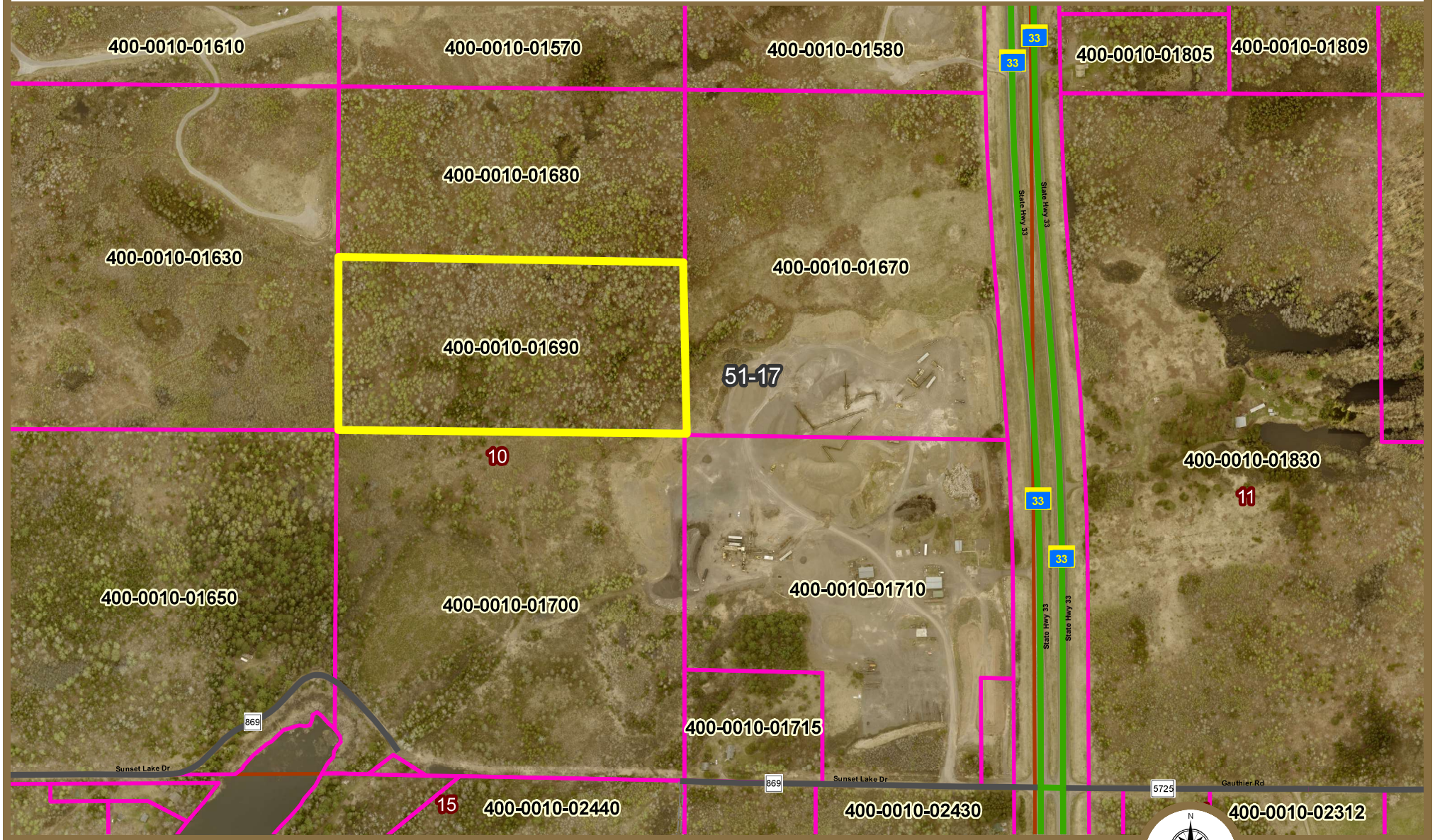

Prepared By:	**Planning & Community Development** (218) 725-5000 www.stlouiscountymn.gov
Source:	St. Louis County
Map Created:	3/26/2024

Disclaimer: This is a compilation of records as they appear in the St. Louis County Offices affecting the area shown. This drawing is to be used only for reference purposes and the County is not responsible for any inaccuracies herein contained.

Northland Constructors proposed expansion boundary map

St. Louis County MN