

Yellow Medicine County, Minnesota - Aggregate Resources
Crushed-Stone Potential
yell_csp

Metadata Summary

<i>Originator</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
<i>Abstract</i>	This dataset consists of information about the geology, geological characteristics, and aggregate potential of crushed-stone potential units. Two attribute fields relate to crushed stone characteristics, including depth to bedrock and bedrock type. These characteristics were used to calculate the aggregate potential of the map unit for crushed stone.
<i>Browse Graphic</i>	none available
<i>Time Period of Content Date</i>	2025
<i>Currentness Reference</i>	Data was gathered during the summer and fall of 2023 and 2024. Data was compiled and interpreted during the spring and summer of 2024 and 2025.
<i>Access Constraints</i>	
<i>Use Constraints</i>	Acknowledgement of the Minnesota Department of Natural Resources and the Minnesota Geological Survey is appreciated for products derived from these data.
<i>Distributor Organization</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals
<i>Ordering Instructions</i>	<p>Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page: http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html</p> <p>The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.</p>
<i>Online Linkage</i>	Click here to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" in Section 6 of this metadata.

Full Metadata

Yellow Medicine County Aggregate Resources: yell_csp (crushed-stone potential)

Section 1	Identification Information
Originator	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
Title	Yellow Medicine County Aggregate Resources: yell_csp (crushed-stone potential)
Abstract	This dataset consists of information about the geology, geological characteristics, and aggregate potential of crushed-stone potential units. Two attribute fields relate to crushed stone characteristics, including depth to bedrock and bedrock type. These characteristics were used to calculate the aggregate potential of the map unit for crushed stone.
Purpose	To summarize the geological characteristics, bedrock geology, and crushed-stone potential of the different bedrock units. To help categorize the geological characteristics and incorporate them into a model to help determine the crushed-stone potential of the deposit.
Time Period of Content Date	2025
Currentness Reference	Data was gathered during the summer and fall of 2023 and 2024. Data was compiled and interpreted during the spring and summer of 2024 and 2025.
Progress	Complete
Maintenance and Update Frequency	None planned
Spatial Extent of Data	Yellow Medicine County, Minnesota
Bounding Coordinates	-96.45 -95.36 44.94 44.54
Place Keywords	Yellow Medicine County, Minnesota
Theme Keywords	bedrock, geological characteristics, aggregate potential, crushed stone, construction aggregates
Theme Keyword Thesaurus	
Access Constraints	
Use Constraints	Acknowledgement of the Minnesota Department of Natural Resources and the Minnesota Geological Survey is appreciated for products derived from these data.
Contact Person Information	Aggregate Resource Mapping Program, Industrial Minerals Geologist or GIS Specialist Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road - St. Paul, MN 55155-4045 Phone: 651-259-5959 FAX: 651-296-5939 E-mail: aggregatemap@state.mn.us
Browse Graphic	none available

Browse Graphic
File Description

Associated Data
Sets

Yellow Medicine County’s aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page: http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html
The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.

Section 2 **Data Quality Information**

Attribute Accuracy

Logical Consistency

Completeness The crushed-stone potential units were manually interpreted using a depth to bedrock model created by MGS, Minnesota well index data, soil surveys, MGS outcrops, exploratory drilling, and field observations. Additionally, the crushed-stone potential was further interpreted using the following Minnesota Geological Survey Bedrock Geology map of Yellow Medicine County (2024 Atlas C-70, Part A, Plate 2).

Horizontal 1:100,000
Positional Accuracy

Vertical Positional Not applicable.
Accuracy

Lineage The first step in determining the distribution of aggregate resources is to understand the recent geological history of the area. The geological history basically tells us the story, or sequence of events, of when the aggregate and other sediments were deposited. By understanding this story we can determine where the aggregate was deposited, as well as some of the general characteristics about the material. Data about the overburden, bedrock, and depth to bedrock includes well locations with well log information indicating a depth to bedrock; bedrock outcrops from the soil information; bedrock outcrops from MGS; depth to bedrock information from exploratory drilling; bedrock outcrops observed in the field.

Source Scale 500000
Denominator

Section 3 **Spatial Data Organization**
Information

Native Data Set ArcGIS Pro 3.3.1
Environment

Geographic
Reference for
Tabular Data

Spatial Object Type Vector

Vendor Specific Polygon
Object Types

Tiling Scheme None

Section 4 Spatial Reference Information

<i>Horizontal Coordinate Scheme</i>	UTM
<i>Ellipsoid</i>	GRS80
<i>Horizontal Datum</i>	NAD83
<i>Horizontal Units</i>	Meters
<i>Distance Resolution</i>	
<i>Altitude Datum</i>	Not applicable
<i>Depth Datum</i>	Not applicable
<i>UTM Zone Number</i>	15E

Section 5 Entity and Attribute Information

<i>Entity and Attribute Overview</i>	The polygons were delineated to represent geological features, geological characteristics, and aggregate potential for crushed-stone
<i>Entity and Attribute Detailed Citation</i>	See beyond Section 7 for detailed field and attribute information

Section 6 Distribution Information

<i>Publisher</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
<i>Publication Date</i>	2025
<i>Contact Person Information</i>	Aggregate Resource Mapping Program Industrial Minerals Geologist or GIS Specialist Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road St. Paul, MN 55155-4045 Phone: 651-259-5959 FAX: 651-296-5939 E-mail: aggregatemap@state.mn.us
<i>Distributor's Data Set Identifier</i>	Yellow Medicine County Aggregate Resources, Sand and Gravel Potential
<i>Distribution Liability</i>	The State of Minnesota makes no representations or warranties express or implied, with respect to the use of the information contained herein regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability, completeness, usefulness, or reliability of this information for any purpose. The user accepts the information "as is." The State of Minnesota assumes no responsibility for loss or damage incurred as a result of any user's reliance on this information. All maps, reports, data, and other information contained herein are protected by copyright. Permission is granted to copy and use the materials herein for any lawful noncommercial purpose. Any user of this information agrees not to transmit or provide access to all or any part of this information to another party unless the user shall include with the information a copy of this disclaimer.

***Transfer Format
Name***

***Transfer Format
Version Number***

Transfer Size

mb for data, mb for associated maps

***Ordering
Instructions***

Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page:
http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html
The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.

Online Linkage

[Click here](#) to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" above.

Section 7 Metadata Reference Information

Metadata Date

2025

***Contact Person
Information***

Aggregate Resource Mapping Program, Industrial Minerals Geologist or GIS Specialist
Minnesota Department of Natural Resources, Division of Lands and Minerals
500 Lafayette Road
St. Paul, MN 55155-4045
Phone: 651-259-5959
FAX: 651-296-5939
E-mail: aggregatemap@state.mn.us

***Metadata Standard
Name***

Minnesota Geographic Metadata Guidelines

***Metadata Standard
Version***

2.1

***Metadata Standard
Online Linkage***

https://resources.gisdata.mn.gov/pub/gdrs/data/pub/us_mn_state_dnr/geos_aggregate_mapping/metadata/metadata.html

Table Name	Field Name	Definition	Valid Values	Descriptions
yell_csp.dbf	OBJECTID	Number, 4	e.g., 1-247	Unique number for each crushed stone potential polygon
	Significance	Text, 225	See Below	
			Significant Potential for Crushed-Stone Resources	Includes high and moderate potential map units. The following bedrock lithologic types are interpreted to have significant potential for crushed stone: granite and granitic gneiss. These bedrock types generally have physical characteristics suitable for producing Class A aggregates, inferred to be thick (greater than 100 feet), and covered by less than 25 feet of overburden. Most of the quarries located within the county are active or inactive dimension-stone or crushed-stone quarries. Dimension-stone quarries are located within rock types that are also suitable for crushed stone aggregate and, for the purpose of this project, are considered as identified crushed-stone resources.
			Nonsignificant Potential for Crushed-Stone Resources	Includes low and limited potential map units. Nonsignificant is a term used in this assessment to define mapped areas that contain any of the following conditions: lower quality bedrock units, high quality bedrock units with thick overburden (>25 feet), or areas where higher potential may exist but cannot be verified due to a lack of substantiating data which facilitate a lower probability rating. Lower quality bedrock units include gneiss and schist. These rock types do not have physical characteristics suitable for producing Class A aggregates. No quarries exist within these rock types.
	Potential	Text, 225	See Below	
			High Potential for Crushed Stone Resources	Includes granite and/or granitic gneiss exposed at the land surface or buried by less than 10 feet of overburden.
			Moderate Potential for Crushed Stone Resources	Includes granite and/or granitic gneiss buried beneath 10 to 25 feet of overburden.

			Low Potential for Crushed Stone Resources	Includes granite and/or granitic gneiss buried by 25 to 50 feet of overburden or gneiss and/or schist buried by 0 to 15 feet of overburden. Low potential also includes areas with little supporting data to substantiate a higher potential classification.
			Limited Potential for Crushed Stone Resources	Includes all rock types with >50 feet of overburden or lower quality bedrock with varying thickness of overburden (10 to >50 feet).
	Depth_bedrock	Text, 255	(0-10, 10-25, 25-50)	Range of the overburden thickness, also can be described as the depth to crystalline bedrock (in feet)
	Bdrk_Type	Text, 255	See Below	
			Granite	An intrusive, felsic igneous rock that has medium to coarse crystalline texture. Includes granite, quartz monzonite, and granodiorite based on Minnesota Geological Survey bedrock descriptions. Referred to as “Sacred Heart Granite”.
			Granitic Gneiss	A coarse-grained metamorphic, crystalline rock. Includes pink granitic gneiss associated with the Granite Falls Dome and granitic gneiss with amphibolite interlayers mapped as Montevideo Gneiss, based on Minnesota Geological Survey bedrock descriptions.
			Gneiss	A medium- to coarse-grained, foliated metamorphic rock composed of biotite, feldspar, quartz, and locally garnet, with variable gneissic to schistose texture. Includes garnetiferous intermediate biotite schist and gneiss, as well as dioritic to mafic gneiss, based on Minnesota Geological Survey bedrock descriptions.
			Schist	A medium- to coarse-grained foliated metamorphic rock. Includes amphibolitic to dioritic schist varieties, based on Minnesota Geological Survey bedrock descriptions.

Yellow Medicine County, Minnesota - Aggregate Resources
Geologic Field Observations
yell_fobs

Metadata Summary

<i>Originator</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
<i>Abstract</i>	<p>This dataset includes information gathered in the field. Fieldwork was completed in the summer and fall of 2023 and 2024. It includes 190 field observation sites within Yellow Medicine County, Minnesota. Observations include, but are not limited to gravel pits, exposures of surficial geologic sediment, and glacial stratigraphy in road cuts or along stream banks, excavations for construction projects and trenches (cable, pipe, and tiling). This spatial dataset contains a field description of each site, the dominant type of material encountered, the source of information, geologic unit thickness, and geologic overburden thickness.</p>
<i>Browse Graphic</i>	none available
<i>Time Period of Content Date</i>	2025
<i>Currentness Reference</i>	Data were collected intermittently in the summer and fall of 2023 and 2024.
<i>Access Constraints</i>	
<i>Use Constraints</i>	Acknowledgement of the Minnesota Department of Natural Resources is appreciated for products derived from these data.
<i>Distributor Organization</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals
<i>Ordering Instructions</i>	<p>Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page: http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html</p> <p>The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.</p>
<i>Online Linkage</i>	<p>Click here to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" in Section 6 of this metadata.</p>

Full Metadata

Yellow Medicine County Aggregate Resources: yell_fobs (Geologic Field Observations)

Section 1	Identification Information
Originator	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
Title	Yellow Medicine County Aggregate Resources: yell_fobs (Geologic Field Observations)
Abstract	This dataset includes information gathered in the field. Fieldwork was collected in the summer and fall of 2023 and 2024. It includes 190 field observation sites within Yellow Medicine County, Minnesota. Observations include, but are not limited to gravel pits, exposures of surficial geologic sediment, and glacial stratigraphy in road cuts or along stream banks, excavations for construction projects and trenches (cable, pipe, and tiling). This spatial dataset contains a field description of each site, the dominant type of material encountered, the source of information, geologic unit thickness, and geologic overburden thickness.
Purpose	To summarize the field observations collected in Yellow Medicine County, Minnesota. These field observations were made to confirm air photo interpretation that identified potential aggregate bearing landforms.
Time Period of Content Date	2025
Currentness Reference	Data were collected intermittently in the summer and fall of 2023 and 2024.
Progress	Complete
Maintenance and Update Frequency	None planned
Spatial Extent of Data	Yellow Medicine County, Minnesota
Bounding Coordinates	-96.45 -95.36 44.94 44.54
Place Keywords	Yellow Medicine County, Minnesota
Theme Keywords	Field observations, aggregate resources, surficial geology.
Theme Keyword Thesaurus	
Access Constraints	
Use Constraints	Acknowledgement of the Minnesota Department of Natural Resources is appreciated for products derived from these data.
Contact Person Information	Aggregate Resource Mapping Program, Industrial Minerals Geologist or GIS Specialist Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road St. Paul, MN 55155-4045 Phone: 651-259-5959 FAX: 651-296-5939

E-mail: aggregatemap@state.mn.us

Browse Graphic

none available

Browse Graphic File Description

Associated Data Sets

Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page:

http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html

The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.

Section 2 Data Quality Information

Attribute Accuracy

Logical Consistency

Completeness

The data points were gathered at the location where field observations took place. Additional information is given in the Lineage section.

Horizontal Positional Accuracy

The differential correction of the GPS unit for GPS located sites is +/- 2 meters.

Vertical Positional Accuracy

Not applicable.

Lineage

A tablet, a GPS unit (Garmin inReach SE+), and ArcGIS Pro 3.3.1 software were used in the field to determine the track and location of the observer collecting the points. Field observation points were digitized in real time, as well as the entered tabular attribute information. The combination of the GPS unit's location, USGS topographic maps (1:24,000), and aerial photographs (1:3,000 - 1:12,000) were used to assist in determining the observation's site location on screen. The GPS unit (with differential correction) is accurate to approximately a few meters.

Source Scale Denominator

3000

Section 3 Spatial Data Organization Information

Native Data Set Environment

ArcGIS Pro 3.3.1

Geographic Reference for Tabular Data

Spatial Object Type

Point

Vendor Specific Object Types

Point

Tiling Scheme

None

Section 4 Spatial Reference Information

<i>Horizontal Coordinate Scheme</i>	UTM
<i>Ellipsoid</i>	GRS80
<i>Horizontal Datum</i>	NAD83
<i>Horizontal Units</i>	Meters
<i>Distance Resolution</i>	
<i>Altitude Datum</i>	Not applicable
<i>Depth Datum</i>	Not applicable
<i>UTM Zone Number</i>	15E

Section 5 Entity and Attribute Information

<i>Entity and Attribute Overview</i>	This dataset consists of field observation unique id, type of site, type of geologic material, description of the observation, unit thickness, and overburden thickness.
<i>Entity and Attribute Detailed Citation</i>	See beyond Section 7 for detailed field and attribute information

Section 6 Distribution Information

<i>Publisher</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
<i>Publication Date</i>	2025
<i>Contact Person Information</i>	Aggregate Resource Mapping Program Industrial Minerals Geologist or GIS Specialist Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road St. Paul, MN 55155-4045 Phone: 651-259-5959 FAX: 651-296-5939 E-mail: aggregatemap@state.mn.us
<i>Distributor's Data Set Identifier</i>	Yellow Medicine County Aggregate Resources, Sand and Gravel Potential
<i>Distribution Liability</i>	The State of Minnesota makes no representations or warranties express or implied, with respect to the use of the information contained herein regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability, completeness, usefulness, or reliability of this information for any purpose. The user accepts the information "as is." The State of Minnesota assumes no responsibility for loss or damage incurred as a result of any user's reliance on this information. All maps, reports, data, and other information contained herein are protected by copyright. Permission is granted to copy and use the materials herein for any lawful noncommercial purpose. Any user of this information agrees not to transmit or provide access to all or any part of this information to another party unless the user shall include with the information a copy of this disclaimer.

***Transfer Format
Name***

***Transfer Format
Version Number***

Transfer Size

mb for data, mb for associated maps

***Ordering
Instructions***

Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page:

http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html

The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.

Online Linkage

[Click here](#) to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" above.

Section 7 Metadata Reference Information

Metadata Date

2025

***Contact Person
Information***

Aggregate Resource Mapping Program, Industrial Minerals Geologist or GIS Specialist
Minnesota Department of Natural Resources, Division of Lands and Minerals
500 Lafayette Road
St. Paul, MN 55155-4045
Phone: 651-259-5959
FAX: 651-296-5939
E-mail: aggregatemap@state.mn.us

***Metadata Standard
Name***

Minnesota Geographic Metadata Guidelines

***Metadata Standard
Version***

2.1

***Metadata Standard
Online Linkage***

https://resources.gisdata.mn.gov/pub/gdrs/data/pub/us_mn_state_dnr/geos_aggregate_mapping/metadata/metadata.html

Field Name	Definition	Valid Values	Descriptions
FIELD_ID	Text, 8	Ex: 0616-03	Unique identifiers used in the field.
SITETYPE_1	Text, 50	See Below	
		Crushed Stone Quarry	Crushed stone quarry exposing bedrock.
		Dimension Stone Quarry	Dimension stone quarry exposing bedrock.
		Excavation	Animal or human activity, such as animal holes and digging of building, trenches, construction areas, or containment ponds.
		Exposure	Outcrop of material from erosional, biological processes, or construction processes.
		Gravel Pit	Gravel pits exposing sand and gravel material.
		Other	Other types of means of observing material.
		Outcrop	Bedrock exposure at the surface.
SITETYPE_2	Text, 50	See Below	Further description of the observation site specified in SITETYPE 1.
		Animal Hole	A hole dug by an animal that exposes sediment.
		Auger Hole	A hole dug with a hand auger.
		Backhoe	A hole or exposure of sediment created by a backhoe.
		Communication	Data sourced from communications in the field.
		Crushed Stone Quarry	Bedrock exposed in a crushed stone quarry.
		Dimension Stone Quarry	Bedrock exposed in a dimension stone quarry.
		Ditch	Materials exposed in a ditch due to a slump or landscaping that has removed vegetation.
		Drainage	Materials exposed in a drainage ditch due to a slump or landscaping that has removed vegetation.
		Field	Materials exposed in a field.
		Gravel Pit	Materials exposed in gravel pit.
		Outcrop	Bedrock exposed at the surface.
		Pond	Material exposed within excavated retention pond.
		River Cut	Materials exposed by river erosion.
		Road Cut	Materials exposed in a road cut.
		Slump	Material exposed in a slump.
		Surface	Material exposed at the surface.
		Telephone Pole	Material exposed from the excavation of a telephone pole.
		Tree Tip	Material exposed from a fallen tree.
		Trench	Material exposed in an excavated trench.
MATERIAL_1	Text, 25	See Below	Describes the primary type of material encountered at each observation site and does not necessarily reflect stratigraphic order.
		Bedrock	General term to describe competent rock underneath the surface. Bedrock outcrop is where the bedrock can be seen above the surface.
		Clay	Very fine-grained sediment that is less than 0.004 mm

			in size.
		Cobbles	Rock fragments that have a diameter between 3-10 inches.
		Fine Sand	Rocks and minerals that range in diameter of 0.0625 to 0.3 mm.
		Sand	Sand is composed of rocks and minerals that range in diameter from 0.0625 to 2 mm.
		Sand minor Gravel	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 5-15% by volume.
		Sand with Gravel	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 15-35% by volume.
		Sand and Gravel	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 35-50% by volume.
		Gravel and Sand	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 50-65% by volume.
		Silty Sand with Gravel	Sand with gravel that contain a portion of silt.
		Silty Sand and Gravel	Sand and gravel that contain a portion of silt.
		Silty Sand	Sand that contains some silt.
		Sandy Till	Till that contains a high percentage of sand.
		Silt	Sediment that contains rock fragments with a diameter between 0.004 to 0.0625 mm.
		Rocky Soil	Soil that contains a high percentage of rock fragments.
		Till	A term used to describe the unsorted sediment deposited by glaciers- contains a mixture of clay, silt, sand, gravel and boulders.
		Topsoil	Soil that contains organic matter.
MATERIAL_2	Text, 25	See Below	Describes the secondary (not primary) type of material at each observation site.
		Bedrock	General term to describe competent rock underneath the surface. Bedrock outcrop is where the bedrock can be seen above the surface.
		Boulders	Refers to rocks with a diameter >10 inches.
		Clay	Very fine-grained sediment that is less than 0.004 mm in size.
		Cobbles	Rocks with a diameter between 3-10 inches.
		Fine Sand	Rocks and minerals that range in diameter of 0.0625 to 0.25 mm.
		Sand	Sand is composed of rocks and minerals that range in diameter from 0.0625 to 2 mm.
		Sand minor Gravel	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate

			of gravel between 5-15% by volume.
		Sand with Gravel	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 15-35% by volume.
		Sand and Gravel	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 35-50% by volume.
		Silty Sand and Gravel	Sand and gravel that contain a portion of silt.
		Silty Sand	Sand that contains some silt.
		Silt	Sediment that contains rock fragments with a diameter between 0.004 to 0.0625 mm.
		Sandy Till	Till that contains a high percentage of sand.
		Till	A term used to describe the unsorted sediment deposited by glaciers- contains a mixture of clay, silt, sand, gravel and boulders.
FIELDDESC	Text, 200	Ex: Drill Hole (0-9 ft) 0-6 Till, 6-9 Gravel.	A short field description of the observation site.
Thickness	Text, 15	Ex: >10, <25	The thickness of the deposit expressed in combination with a modifier.
Thick_mod	Text, 1	Ex: >,<	Modifiers to express numeric approximations observed for deposit thickness: > greater than; < less than
Thick_val	Number, 4	Ex: 5, 10, 15	Gives the minimum value for thickness.
Overburden	Text, 15	Ex: >10, <25	Expresses overburden thickness by possibly using one or both the modifier and value.
Ob_mod	Text, 1	Ex: >,<,	Modifiers to express numeric approximations observed for deposit thickness: > greater than; < less than
Ob_val	Number, 4	Ex: 5, 10, 15	Gives the value for overburden thickness.

Yellow Medicine County, Minnesota - Aggregate Resources

Aggregate Pits and Prospects

Gravel Pits, Crushed Stone Quarries, Dimension Stone Quarries, Sand Pits, Borrow Pits, Boulder Pits, and Prospects
yell_pits

Commented [MC1]: Confirm all there

Metadata Summary

Originator	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
Abstract	<p>This dataset consists of location information, source information, and geological characteristics for 410 aggregate pits (263 Gravel Pits, 2 Sand Pits, 1 Boulder Pit, 6 Dimension Stone Quarries, 1 Crushed Stone Quarries, 45 Borrow Pits, and 84 sand and gravel Prospects) in Yellow Medicine County, MN. There are pits that are currently being mined or have been mined in the past. Several sources of information identify pit locations: topographic maps, aerial photographs, soil surveys, MnDOT (Aggregate Source Information System) ASIS files, fieldwork, interviews with gravel operators, and other miscellaneous sources. Pits range in size from less than 1 acre to greater than 15 acres and may be active, inactive, or reclaimed. The aggregate quality of the pit varies. Some pits were observed in the field during the summer and fall of 2023 and 2024. All gravel pits were re-evaluated using Farm Service Agency (FSA) 2008-2021 air photographs.</p>
Browse Graphic	none available
Time Period of Content Date	2025
Currentness Reference	<p>Source information in the pit shapefile was collected from the following: fieldwork, soil survey, topographic maps, aerial photographs, LiDAR and ASIS (Aggregate Source Information System). Pits were identified during fieldwork conducted in the summer and fall of 2023 and 2024. Pit locations were digitized and edited in ArcGIS Pro 3.3.1. either in real time while in the field or in the office. Pits from aerial photographs were identified from NAPP (National Aerial Photography Program), 1991-1992, Farm Service Agency (FSA) air photos from 2003-04, 2005, 2006, 2008, 2009, 2010, 2017, 2019, and 2021 ASIS data points were acquired from the Minnesota Department of Transportation in March of 2017.</p>
Access Constraints	
Use Constraints	Acknowledgement of the Minnesota Department of Natural Resources is appreciated for products derived from these data.
Distributor Organization	Minnesota Department of Natural Resources, Division of Lands and Minerals
Ordering Instructions	<p>Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page: http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html</p> <p>The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.</p>
Online Linkage	<p>Click here to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" in Section 6 of this metadata.</p>

Full Metadata

Yellow Medicine County Aggregate Resources: yell_pits
(aggregate pits)

Section 1	Identification Information
Originator	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
Title	Yellow Medicine County Aggregate Resources: yell_pits (aggregate pits)
Abstract	This dataset consists of location information, source information, and geological characteristics for 410 aggregate pits (263 Gravel Pits, 2 Sand Pits, 1 Boulder Pit, 6 Dimension Stone Quarries, 1 Crushed Stone Quarries, 45 Borrow Pits, and 84 sand and gravel Prospects) in Yellow Medicine County, MN. There are pits that are currently being mined or have been mined in the past. Several sources of information identify pit locations: topographic maps, aerial photographs, soil surveys, MnDOT (Aggregate Source Information System) ASIS files, fieldwork, interviews with gravel operators, and other miscellaneous sources. Pits range in size from less than 1 acre to greater than 15 acres and may be active, inactive, or reclaimed. The aggregate quality of the pit varies. Some gravel pits were observed in the field during the summer and fall of 2023 and 2024. All gravel pits were re-evaluated using Farm Service Agency (FSA) 2008-2021 air photographs.
Purpose	To display the current and historic mining pit (gravel, sand, stone quarry, boulder, and borrow) locations within Yellow Medicine County, MN.
Time Period of Content Date	2025
Currentness Reference	Data were collected in the summer and fall of 2023 and 2024
Progress	Complete
Maintenance and Update Frequency	None planned
Spatial Extent of Data	Yellow Medicine County, Minnesota
Bounding Coordinates	-96.45 -95.36 44.94 44.54
Place Keywords	Yellow Medicine County, Minnesota
Theme Keywords	Gravel pit, Sand pit, Boulder pit, Quarry, Aggregate Source Information System (ASIS)
Theme Keyword Thesaurus	
Access Constraints	
Use Constraints	Acknowledgement of the Minnesota Department of Natural Resources is appreciated for products derived from these data.
Contact Person Information	Aggregate Resource Mapping Program, Industrial Minerals Geologist or GIS Specialist Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road St. Paul, MN 55155-4045 Phone: 651-259-5959 FAX: 651-296-5939

	E-mail: aggregatemap@state.mn.us
Browse Graphic	none available
Browse Graphic File Description	
Associated Data Sets	<p>Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page: http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html</p> <p>The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.</p>

Section 2	Data Quality Information
Attribute Accuracy	
Logical Consistency	
Completeness	Described in the lineage section.
Horizontal Positional Accuracy	<p>These points were captured from several different sources, including USGS 1:24000 quadrangles, 1:12000 USGS DOQs (from 1991-92), Farm Service Agency (FSA) color air photos (from 2003-04, 2005, 2006, 2008, 2009, 2010, 2017, 2019, and 2021), Natural Resource Conservation Service Soil Survey point data, and the ASIS (Aggregate Source Information System) dataset from the Minnesota Department of Transportation. Points captured in the field were assisted with a GPS (+/- 2 Meters), Tablet, and ArcGIS Pro 3.3.1.</p>
Vertical Positional Accuracy	Not applicable.
Lineage	<p>These points were captured from several different sources in the summer and fall of 2021, including USGS 1:24000 quadrangles, 1:12000 USGS DOQs (from 1991), Farm Service Agency (FSA) color air photos (from 2003-04, 2005, 2006, 2008, 2009, 2010, 2017, 2019, and 2021), Natural Resource Conservation Service Soil Survey point data, and the ASIS (Aggregate Source Information System) dataset from the Minnesota Department of Transportation. The pits captured were edited in the field during the summer and fall of 2023 and 2024 with a GPS (+/- 2 Meters), tablet, and ArcGIS Pro 3.3.1.</p>
Source Scale Denominator	24000

Section 3	Spatial Data Organization Information
Native Data Set Environment	ArcGIS Pro 3.3.1.
Geographic Reference for Tabular Data	
Spatial Object Type	Point
Vendor Specific Object Types	Point

Tiling Scheme None

Section 4	Spatial Reference Information
Horizontal Coordinate Scheme	UTM
Ellipsoid	GRS80
Horizontal Datum	NAD83
Horizontal Units	Meters
Distance Resolution	
Altitude Datum	Not applicable
Depth Datum	Not applicable
UTM Zone Number	15E

Section 5	Entity and Attribute Information
Entity and Attribute Overview	This dataset consists of pit information such as; location, type, source, relative size, material thickness and overburden, depth to water table, dominant texture, lithology, and geologist comments.
Entity and Attribute Detailed Citation	See beyond Section 7 for detailed field and attribute information

Section 6	Distribution Information
Publisher	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
Publication Date	2025
Contact Person Information	Aggregate Resource Mapping Program Industrial Minerals Geologist or GIS Specialist Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road St. Paul, MN 55155-4045 Phone: 651-259-5959 FAX: 651-296-5939 E-mail: aggregatemap@state.mn.us
Distributor's Data Set Identifier	Yellow Medicine County Aggregate Resources, Sand and Gravel Potential
Distribution Liability	The State of Minnesota makes no representations or warranties express or implied, with respect to the use of the information contained herein regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability, completeness, usefulness, or reliability of this information for any purpose. The user accepts the information "as is." The State of Minnesota assumes no responsibility for loss or damage incurred as a result of any user's reliance on this information. All maps, reports, data, and other information contained herein are protected by copyright. Permission is granted to copy and use the materials herein for any lawful noncommercial purpose. Any user of this information agrees not to

transmit or provide access to all or any part of this information to another party unless the user shall include with the information a copy of this disclaimer.

Transfer Format Name

Transfer Format Version Number

Transfer Size

mb for data, mb for associated maps

Ordering Instructions

Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page: http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html
The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.

Online Linkage

[Click here](#) to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" above.

Section 7 Metadata Reference Information

Metadata Date

2025

Contact Person Information

Aggregate Resource Mapping Program, Industrial Minerals Geologist or GIS Specialist
Minnesota Department of Natural Resources, Division of Lands and Minerals
500 Lafayette Road
St. Paul, MN 55155-4045
Phone: 651-259-5959
FAX: 651-296-5939
E-mail: aggregatemap@state.mn.us

Metadata Standard Name

Minnesota Geographic Metadata Guidelines

Metadata Standard Version

2.1

Metadata Standard Online Linkage

https://resources.gisdata.mn.gov/pub/gdrs/data/pub/us_mn_state_dnr/geos_aggregate_mapping/metadata/metadata.html

Table Name	Field Name	Definition	Valid Values	Descriptions
Yell_pits.dbf				
	PIT_Q_ID	Number, 9,0	Ex: 1,2,3,4,5,6,7... 341, 342, 343, 344	Aggregate pit unique ID
	Source	Text, 30	See Below	Construction aggregate pit data source compiled from or observed (ex: topographic map- found on the topographic map). Where multiple records existed for a single gravel pit, data points were removed based on a constructed hierarchy of source information. The following sources of information are listed according to rank.
			MNDOT ASIS	Minnesota Department of Transportation database called Aggregate Source Information Systems (ASIS). If the location didn't intersect a gravel pit, the locations were interpreted off of existing gravel pit sheets to relocate the mines as specified on the sheet. This was ranked highest because of associated quality and texture data. Some locations were modified to better correlate to present gravel pit boundaries and on top of USGS 7.5 Minute Topographic Map symbols.
			Fieldwork	These pits were located while in the field. These pits were ranked second highest due to the fact they were directly observed for quality, texture, and spatial accuracy.
			MGS	These pits were identified using maps and/or databases compiled by the Minnesota Geological Survey.
			Topographic Map	These gravel pits are located from USGS 7.5 minute quadrangles. This was ranked third highest because of the widespread use of the maps. Where field checked, some of these pit types were changed from gravel to borrow or sand pits to reflect the material excavated.
			Soil Survey	Gravel pits were identified using SSURGO (Soil Survey Geographic Database), a database produced by the Natural Resources Conservation Service.
			LiDAR	Gravel pits were located and some attributes were interpreted with LiDAR. These pits were ranked second to last because they were remotely interpreted.
			Air Photograph	Gravel pits were located and some attributes were interpreted with air photography. These pits were ranked last because they were remotely interpreted.
	Type	Text, 30	See Below	The type of pit observed
			Borrow Pit	Contains other unconsolidated sediment like clay, silt, or clay with boulders and does not contain significant amounts of sand and/or gravel. Includes sites that have been or are currently being mined.
			Crushed Stone Quarry	Includes sites that were or are currently crushing bedrock to be used as aggregate.
			Dimension Stone Quarry	Includes sites that were or are currently mining bedrock for dimension stone.
			Gravel Pit	Includes sites that have been or are currently being mined for varying percentages of sand and gravel.
			Prospect	Site that has been prospected, leased, or assigned an ASIS number by Mn/DOT. This designation does not imply the site has produced aggregate or is currently producing aggregate. The site may have been leased by Mn/DOT. Sites with this designation include ASIS status classifications: P, O, C, and L.
			Quarry	Includes sites that were or are currently being mined for bedrock. Either as crushed or dimension stone.
			Sand Pit	A pit that contains significant amounts of sand with little to no gravel. Includes sites that have been or are currently being mined.
	Fieldcheck	Text, 30	See Below	Explains how pits were investigated. The following sources of information are listed according to rank.
			All Other Types	Observations were taken from MnDOT ASIS prospect sheet and/or data comments.
			Observed on Site	Observations were taken on site.
			Observed from Road	Observations were taken from the road due to limited access and/or no permission was given to enter the site.

			Observed with Airphoto	Observations were taken from air photos and/or LiDAR due to limited access and/or pit may have been fully reclaimed.
	Asis_number	Text, 8, 0	Ex: 34077, 34021	Aggregate Source Information System Number (MN/DOT Database). An empty field means that it does not have an ASIS number.
	Size	Text, 8	See Below	Refers to the relative size of the pit.
			Very Small <1 ac	Very small pits are less than 1 acre in size. These are typically used as borrow pits by private owners of for small jobs.
			Small 1 to <5 ac	Small pits are between 1 and 5 acres. These pits are usually used by private landowners or for small jobs.
			Medium 5 to 15 ac	Between 5 and 15 acres in size. These pits are used by landowners and for small construction jobs. They are generally used for short periods of time by contractors.
			Large >15 ac	These pits are generally greater than 15 acres and are typically used by commercial aggregate operators.
	Thickness	Text, 15	Ex: >10, ~20, <25	The thickness of the deposit expressed in combination with a modifier.
	Thick_mod	Text, 1	Ex: >, <, ~	Modifiers to express numeric approximations observed for deposit thickness: > greater than; < less than; ~ approximate
	Thick_val	Number, 4	Ex: 5, 10, 15	Gives the value for thickness.
	Overburden	Text, 15	Ex: >10, ~20, <25	Expresses overburden thickness by possibly using one or both the modifier and value.
	Ob_mod	Text, 1	Ex: >, <, ~	Modifiers to express numeric approximations observed for deposit thickness: > greater than; < less than; ~ approximate
	Ob_val	Number, 4	Ex: 5, 10, 15	Gives the value for overburden thickness.
	Watertable	Text, 15	Ex: >10, ~20, <25	The depth of the water table expressed in combination with a modifier.
	Wattabmod	Text, 1	Ex: ~, -, +	Modifiers to express numeric approximations for the depth to the water table: ~ approximate; - to, as in 10-20; + greater than
	Wattabval	Number, 4	Ex: 5, 10, 15	Describes the depth to the water table within a pit or quarry. If 20 feet of gravel was exposed and there was no water table encountered, then >20 were used.
	Status_1	Text, 20	See Below	Refers to the status of the pit at the time of mapping.
			Active	Active indicates that the pit is either being actively mined or used for other mining related usage like stockpiling material.
			Inactive	Refers to a pit that was not immediately active when documented or may appear to have been inactive for some time.
			Prospect	Site that has been prospected, leased, or assigned an ASIS number by MnDOT. This designation does not imply the site has produced aggregate or is currently producing aggregate. The site may have been leased by MnDOT.
			Reclaimed	The pit has been passively or actively reclaimed. Status_2 further describes the type of reclamation.
	Status_2	Text, 50	See Below	Associated with the field Status_1. This field further explains the condition of a partially or fully reclaimed gravel pit. The status could be a combination of more than one use.
			Active	Specifies that pit is an active aggregate producing pit.
			Agriculture	Pit has been reclaimed into an agricultural use.
			Commercial	Pit has been reclaimed into a commercial development like a strip mall, a store, etc.
			Inactive	Pit is not presently active at time of assessment.
			Naturally Vegetated	Pit has been partially or entirely passively reclaimed and naturally vegetated.
			Naturally Vegetated- Grass	Pit has been partially or entirely passively reclaimed and naturally vegetated with grass.
			Naturally Vegetated- Trees	Pit has been partially or entirely passively reclaimed and naturally vegetated with trees.
			Partially Vegetated	Sections of the pit have been passively or actively vegetated.
			Partially Vegetated- Grass	Sections of the pit have been passively or actively vegetated with grass.

			Partially Vegetated- Trees	Sections of the pit have been passively or actively vegetated with trees.
			Pond	Mining was likely below the water table and created a pond.
			Recreation Area	Pit has been reclaimed into a public recreation area.
			Residential	Pit has been reclaimed into residential development.
			Sloped and Vegetated	Pit has been actively reclaimed and vegetated.
			Vegetated	Pit has been partially or entirely actively reclaimed and vegetated
			Vegetated- Grass	Pit has been partially or entirely actively reclaimed and vegetated with grass
			Vegetated- Trees	Pit has been partially or entirely actively reclaimed and vegetated with trees
			Wetland	Part of the pit is covered by a wetland.
	Dom_litho	Text, 30	See Below	Dominant lithology of the pit.
			Des Moines	Sand and gravel associated with a glacier called the Des Moines Lobe. These sands and gravels contain deleterious rocks (like shale, iron oxides, and soft limestones) that can degrade the quality of the deposit.
			Bedrock	General term to describe competent rock underneath the surface. Bedrock outcrop is where the bedrock can be seen above the surface.
	Dom_text	Text, 35	See Below	The dominant texture of the pit.
			Not Available	The texture of a prospect was undetermined due to lack of information.
			Did Not Observe	The texture of the pit was undetermined due to lack of access or exposure. In some cases, proximal geologic evidence was used to make a textural determination.
			Granite	An intrusive, felsic igneous rock that has medium to coarse crystalline texture. Includes granite, quartz monzonite, and granodiorite based on Minnesota Geological Survey bedrock descriptions. Referred to as "Sacred Heart Granite".
			Granitic Gneiss	A coarse-grained metamorphic, crystalline rock. Includes pink granitic gneiss associated with the Granite Falls Dome and granitic gneiss with amphibolite interlayers mapped as Montevideo Gneiss, based on Minnesota Geological Survey bedrock descriptions.
			Gneiss	A medium- to coarse-grained, foliated metamorphic rock composed of biotite, feldspar, quartz, and locally garnet, with variable gneissic to schistose texture. Includes gametiferous intermediate biotite schist and gneiss, as well as dioritic to mafic gneiss, based on Minnesota Geological Survey bedrock descriptions.
			Schist	A medium- to coarse-grained foliated metamorphic rock. Includes amphibolitic to dioritic schist varieties, based on Minnesota Geological Survey bedrock descriptions.
			Boulders	Refers to rocks with a diameter >10 inches.
			Clay	Very fine-grained sediment that is less than 0.004 mm in size.
			Cobbles	Rock fragments that have a diameter between 3-10 inches.
			Fine Sand	Rocks and minerals that range in diameter of 0.0625 to 0.3 mm.
			Gravel with Sand	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 65-85% by volume.
			Gravel and Sand	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 50-65% by volume.
			Sand	Indicates the deposit is composed of mostly sand and has a fine texture.
			Sand minor Gravel	Indicates the deposit overall has more sand than gravel (~5-15%) by percent weight and has an overall fine texture.
			Sand with Gravel	Indicates the deposit overall has more sand than gravel (~15-35%) by percent weight and has an overall fine texture.
			Sand and Gravel	Indicates the deposit has approximately equal or slightly more sand than gravel (~35-50%) by percent weight.
			Silty Sand	Sand that contains some silt.

			Silty Sand and Gravel	Sand and gravel that contain a portion of silt.
			Silt	Sediment that contains rock fragments with a diameter between 0.004 to 0.0625 mm.
			Sandy Till	Till that contains a high percentage of sand.
			Till	A term used to describe the unsorted sediment deposited by glaciers- contains a mixture of clay, silt, sand, gravel and boulders.
	Comments	Text, 200	Ex: Very sandy deposit with limited gravel	Geologist comments related to the pit.

Yellow Medicine County, Minnesota - Aggregate Resources
Sand and Gravel Potential
yell_sgp

Metadata Summary

<i>Originator</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
<i>Abstract</i>	This dataset consists of information about the geology, geological characteristics, and sand and gravel potential of 291 map units. Five fields relate to the surficial geology of the map unit, including a unique map unit id, sediment, landform, surficial geology description, and dominant lithology. Six fields relate to sand and gravel characteristics, including probability, quality, texture, overburden thickness, deposit size, and sand and gravel thickness. These characteristics were used to calculate the aggregate potential of the map unit for sand and gravel.
<i>Browse Graphic</i>	none available
<i>Time Period of Content Date</i>	2025
<i>Currentness Reference</i>	Data was gathered in the summer and fall of 2023 and 2024. Data was compiled and interpreted during the spring and summer of 2024 and 2025.
<i>Access Constraints</i>	
<i>Use Constraints</i>	Acknowledgement of the Minnesota Department of Transportation and the Minnesota Department of Natural Resources is appreciated for products derived from these data.
<i>Distributor Organization</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals
<i>Ordering Instructions</i>	Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page: http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.
<i>Online Linkage</i>	Click here to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" in Section 6 of this metadata.

Full Metadata

Yellow Medicine County Aggregate Resources: yell_sgp (sand and gravel potential)

Section 1 Identification Information	
<i>Originator</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
<i>Title</i>	Yellow Medicine County Aggregate Resources: yell_sgp (sand and gravel potential)
<i>Abstract</i>	This dataset consists of information about the geology, geological characteristics, and sand and gravel potential of 291 map units. Five fields relate to the surficial geology of the map unit, including a unique map unit id, sediment, landform, surficial geology description, and dominant lithology. Six fields relate to sand and gravel characteristics, including probability, quality, texture, overburden thickness, deposit size, and sand and gravel thickness. These characteristics were used to calculate the aggregate potential of the map unit for sand and gravel.
<i>Purpose</i>	To summarize the geological characteristics, surficial geology, and aggregate potential (sand, gravel) of the different units. To help categorize the geological characteristics and incorporate them into a model to help determine the aggregate potential of the deposit.
<i>Time Period of Content Date</i>	2025
<i>Currentness Reference</i>	Data was gathered in the summer and fall of 2023 and 2024. Data was compiled and interpreted during the spring and summer of 2024 and 2025.
<i>Progress</i>	Complete
<i>Maintenance and Update Frequency</i>	None planned
<i>Spatial Extent of Data</i>	Yellow Medicine County, Minnesota
<i>Bounding Coordinates</i>	-96.45 -95.36 44.94 44.54
<i>Place Keywords</i>	Yellow Medicine County, Minnesota
<i>Theme Keywords</i>	Aggregate potential, sand and gravel, surficial geology, geomorphology, glacial geology, geological characteristics, probability, quality
<i>Theme Keyword Thesaurus</i>	
<i>Access Constraints</i>	
<i>Use Constraints</i>	Acknowledgement of the Minnesota Department of Transportation and the Minnesota Department of Natural Resources is appreciated for products derived from these data.

***Contact Person
Information***

Aggregate Resource Mapping Program, Industrial Minerals Geologist or GIS Specialist
Minnesota Department of Natural Resources, Division of Lands and Minerals
500 Lafayette Road - St. Paul, MN 55155-4045
Phone: 651-259-5959
FAX: 651-296-5939
E-mail: aggregatemap@state.mn.us

Browse Graphic none available

***Browse Graphic
File Description***

***Associated Data
Sets*** Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page:
http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html
The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.

Section 2 Data Quality Information

Attribute Accuracy

Logical Consistency

Completeness The sand and gravel potential map units were delineated using ArcGIS Pro 3.3.1. Delineations are based on the interpretation of high resolution elevation data (LiDAR) using 3 meter cell-sized digital elevation model; several sets of DOQ's with flight dates ranging from the 1938 to 2021 and at varying scales; and fieldwork including visits to several gravel pits. Digitizing was completed at a scale of 1:24,000. The final data sets represent a reconnaissance-scale survey mapped at 1:50,000.

***Horizontal
Positional Accuracy*** 1:50,000

***Vertical Positional
Accuracy*** Not applicable.

Lineage

Color, color-infrared (CIR), and black-and-white aerial photographs were used to delineate geological landforms and aggregate resources. Sources include; Stereoscopic pairs of color infrared aerial photographs (NAPP, 9in x 9in at 1:40000 scale, April 1991 and April 1992); On-screen landform analysis was used with FSA (Farm Services Administration) Color Aerial Photography collected from the following years, with their associated pixel resolution in parenthesis; 2003-04 (1 meter), 2005 (10 meter), 2006 (10 meter), 2008 (1 meter), 2009 (1 meter), FSA CIR (Color Infrared) Imagery collected in 2008 (1 meter), FSA Imagery collected in 2010 (1 meter); and National Agricultural Imagery Program (NAIP) 2009-2021 imagers (1 meter). Aerial photographic interpretation was completed with a glacial mapping technique known as the land systems approach. This technique relies on the principle that depositional glacial landforms are composed of a predictable range of sediments, some consisting of sorted sand and gravel and others consisting of silts, clays, or unsorted materials. In addition to the land systems approach, several other general characteristics helped determine the nature of the material, such as tonal contrasts, texture, context, shape, size, trend, association, and patterns. These characteristics can help determine the properties of the surface material (e.g., certain vegetation grows on well drained soils such as sand and gravel, which on an aerial photograph has a distinctive texture, tone, pattern, etc.). The landform recognition approach (part of the land systems approach) was also used when interpreting the topography within the project boundary. Glacial landforms have distinct and unique shapes and patterns that can be observed in their topographic expression. Topographic maps (USGS 1:24000), digital elevation models, and shaded relief maps were all used to help delineate these sand and gravel bearing features. The topographic expression of a feature can also be observed by looking at the distribution of lakes and wetlands. For example, a string of lakes and/or wetlands may be the signature of a glacial outwash channel or collapsed channel, which may host sand or gravel deposits. Several aggregate bearing features were located using this technique (outwash channels, ice contact features, etc.).

Other mapping sources include the 3-meter LiDAR DEMs (Digital Elevation Models) from Yellow Medicine County; and MWI (Minnesota Well Index) database of located and unlocated wells from the Minnesota Department of Health and MGS (Minnesota Geological Survey), downloaded in 2021. Related geological maps were referenced including MN DNR Report 369 Plate A, and Plate 3 from Minnesota Geological Survey, 2024, C-70, Geologic Atlas of Yellow Medicine County, Minnesota, University of Minnesota. <https://hdl.handle.net/11299/57196>. Gravel pits and quarries were extracted from several sources (refer to yell_pits) and reviewed in the field or with air photos.

<i>Source Scale Denominator</i>	24000
--	-------

Section 3	Spatial Data Organization Information
------------------	--

<i>Native Data Set Environment</i>	ArcGIS Pro 3.3.1
---	------------------

<i>Geographic Reference for Tabular Data</i>	
---	--

<i>Spatial Object Type</i>	Vector
-----------------------------------	--------

<i>Vendor Specific Object Types</i>	Polygon
--	---------

<i>Tiling Scheme</i>	None
-----------------------------	------

Section 4	Spatial Reference Information
------------------	--------------------------------------

<i>Horizontal Coordinate Scheme</i>	UTM
--	-----

<i>Ellipsoid</i>	GRS80
-------------------------	-------

<i>Horizontal Datum</i>	NAD83
--------------------------------	-------

<i>Horizontal Units</i>	Meters
--------------------------------	--------

<i>Distance Resolution</i>	
-----------------------------------	--

<i>Altitude Datum</i>	Not applicable
------------------------------	----------------

<i>Depth Datum</i>	Not applicable
---------------------------	----------------

<i>UTM Zone Number</i>	15E
-------------------------------	-----

Section 5	Entity and Attribute Information
------------------	---

<i>Entity and Attribute Overview</i>	The polygons were delineated to represent geological features, geological characteristics, and aggregate potential for sand and gravel.
---	---

<i>Entity and Attribute Detailed Citation</i>	See beyond Section 7 for detailed field and attribute information
--	---

Section 6

Distribution Information

<i>Publisher</i>	Minnesota Department of Natural Resources, Division of Lands and Minerals, Mineral Potential Evaluation Section
<i>Publication Date</i>	2025
<i>Contact Person Information</i>	Aggregate Resource Mapping Program Industrial Minerals Geologist or GIS Specialist Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road St. Paul, MN 55155-4045 Phone: 651-259-5959 FAX: 651-296-5939 E-mail: aggregatemap@state.mn.us
<i>Distributor's Data Set Identifier</i>	Yellow Medicine County Aggregate Resources, Sand and Gravel Potential
<i>Distribution Liability</i>	The State of Minnesota makes no representations or warranties express or implied, with respect to the use of the information contained herein regardless of its format or the means of its transmission. There is no guarantee or representation to the user as to the accuracy, currency, suitability, completeness, usefulness, or reliability of this information for any purpose. The user accepts the information "as is." The State of Minnesota assumes no responsibility for loss or damage incurred as a result of any user's reliance on this information. All maps, reports, data, and other information contained herein are protected by copyright. Permission is granted to copy and use the materials herein for any lawful noncommercial purpose. Any user of this information agrees not to transmit or provide access to all or any part of this information to another party unless the user shall include with the information a copy of this disclaimer.
<i>Transfer Format Name</i>	
<i>Transfer Format Version Number</i>	
<i>Transfer Size</i>	mb for data, mb for associated maps
<i>Ordering Instructions</i>	Yellow Medicine County's aggregate resource spatial datasets (shapefiles & file geodatabase) are included in the file Yellowmedicinedata.zip, accessible from the MN DNR Aggregate Mapping web page: http://www.dnr.state.mn.us/lands_minerals/aggregate_maps/completed/index.html The spatial datasets include: sand and gravel resource potential; crushed stone potential; geologic field observations; and aggregate pits.
<i>Online Linkage</i>	Click here to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" above.

Section 7

Metadata Reference Information

<i>Metadata Date</i>	2025
<i>Contact Person Information</i>	Aggregate Resource Mapping Program, Industrial Minerals Geologist or GIS Specialist Minnesota Department of Natural Resources, Division of Lands and Minerals 500 Lafayette Road St. Paul, MN 55155-4045 Phone: 651-259-5959 FAX: 651-296-5939 E-mail: aggregatemap@state.mn.us

Metadata Standard Name Minnesota Geographic Metadata Guidelines

Metadata Standard Version 2.1

Metadata Standard Online Linkage https://resources.gisdata.mn.gov/pub/gdrs/data/pub/us_mn_state_dnr/geos_aggregate_mapping/metadata/metadata.html

Table Name	Field Name	Definition	Valid Values	Descriptions
yell_sgp.dbf	SGPOT_ID	Number, 4	e.g., 99-9999	Unique identifier for the field- mapping units.
	SEDIMENT	Text, 50	e.g., Silt and Sand over Till; Organics over Sand and Gravel; Sand and Gravel over Till; see below text values and their descriptions for subsequent information.	General description of the dominant sediment material for each mapping unit. Multiple values may be used in descriptions.
			Clay	Clay is very fine-grained sediment that is less than 0.004 mm in size.
			Silt	Rock fragments that have a diameter between 0.004 to 0.0625 mm.
			Fine Sand	Rock fragments that have a diameter between 0.0625 to 0.3 mm.
			Sand	Rock fragments that range in diameter from 0.0625 to 2 mm.
			Sand minor Gravel	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains between 5-15% by volume gravel.
			Sand with Gravel	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains between 15-35% by volume gravel.
			Sand and Gravel	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains between 35-50% by volume gravel.
			Fine Gravel	Rock fragments of specific particle size that is larger than 2 mm and less than 9.525 mm.
			Gravel	Rock fragments of specific particle size that is larger than 2 mm and less than 63 mm.
			Gravel with Sand	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 65-85% by volume.
			Gravel and Sand	Sediment that contains a mixture of rocks in varying sizes ranging from 0.0625 to 64 mm. This description is given to sediment that contains an approximate estimate of gravel between 50-65% by volume.
			Cobbles	Rock fragments that have a diameter between 3-10 inches.
			Boulder	Rocks with a diameter >10 inches.
			Organics	Soil that contains decaying organic matter.
			Sandy Till	Till that contains a high percentage of sand.
			Till	A term used to describe the unsorted sediment deposited by glaciers- contains a mixture of clay, silt, sand, gravel, cobbles and boulders.
			Bedrock	General term to describe consolidated rock underneath the surface. Bedrock outcrop is where bedrock can be seen above the surface.
	SGPOT_DESC	Text, 125	e.g., Mostly till with isolated pockets of sand and gravel.	A summarized description of each mapping unit.
	LANDFORM	Text, 50	See Below	The geological landform associated with each mapping unit.
			Alluvial Valley	Valley carved by flowing water like a river, stream, or creek valley.
			Collapsed Channel	A depression or linear trough formed when sediment collapses into voids left by melting glacial ice.
			Colluvium	A deposit of poorly sorted, unconsolidated material that accumulates at the base of slopes, transported primarily by gravity through processes such as soil creep, sheetwash, or slope failure. While not a landform itself, colluvium contributes to the development of landforms like colluvial aprons and mantled slopes.
			Glacial Lake	A body of water formed by the melting of glaciers, typically occupying depressions or basins created by glacial erosion or blocked by glacial deposits such as moraines or ice dams. Glacial lakes can form during or after glaciation and are often temporary features in the geologic record.
			Ground Moraine	Till covered areas with irregular topography forming gently rolling hills or plains. It is accumulated under glacial ice as transports and deposits sediment.
			Ice Contact Feature	A landform consisting of sediments that was initially contained or bound by glacial ice. Steep slopes characterize these landforms where ice once existed. Common ice contact features include eskers, kames, and ice-walled lakes.
			Ice-Marginal Feature	A landform created at or near the edge of a glacier during its advance, standstill, or retreat

			Modified Ground Moraine	Ground moraine deposits that have been modified by glacial lake or glacial outwash activity.
			Modified Recessional Moraine	A recessional moraine that has been reworked or altered by glacial lake processes (such as wave action or lake sedimentation) or by glacial outwash (meltwater streams depositing sand and gravel). These features retain the general shape of a moraine but show evidence of erosion, re-deposition, or sediment infilling related to post-depositional glacial activity.
			Outwash Feature	A landform consisting of stratified sediments, chiefly sand and gravel, removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of an active glacier.
			Outwash Channel	A landform consisting of stratified sediments, chiefly sand and gravel, removed or “washed out” from a glacier by meltwater, typically deposited in a large broad channel.
			Recessional Moraine	A landform composed of ridge-like accumulations of till deposited at the margin of a retreating glacier during temporary pauses in ice retreat. This mapping unit includes sequential ridges formed perpendicular to ice flow.
			Stagnation Moraine	A landform characterized by hummocky topography composed of poorly sorted till and ice-contact sediments, formed as buried, stagnant (non-moving) glacial ice melts in place. These moraines often include irregular mounds, flat-topped mounds, kettles, and collapsed features, reflecting sediment deposition beneath and within the glacial ice.
	Potential	Text, 75	See Below	
			Significant Potential for Sand and Gravel Resources	Geologic units that are inferred to contain sand and gravel resource potential. These units exhibit the geologic characteristics associated with sand and gravel-bearing landforms. Existing gravel pit and MNDOT aggregate sources within these units are considered identified or known resources that increase the level of confidence for that mapping unit. These resources include the classes High and Moderate potential for sand and gravel deposits.
			Nonsignificant Potential for Sand and Gravel Resources	Units that generally have little or no potential for significant aggregate resources or lack sufficient data to support a classification of significant aggregate resources. These units typically contain clay, silt, fine sand, unsorted sediments (till), very thin layers of sand and gravel, or have significant overburden. Nonsignificant potential regions also coincide where bedrock is at or near the surface, or these units may include aggregate deposits that are too small to map.
	CLASS	Text, 75	See Below	
			High Potential for Sand and Gravel Resources	Includes landforms such as ice contact features and outwash features. Predominant sediment typically consists of sand and gravel. The probability ² that a potential sand and gravel resource exists within any map unit is high to very high. Deposit thickness ranges from 0-35+ feet with 0-20+ feet of overburden ³ . The sand and gravel resources occurring in this unit are moderate to very large in areal extent ⁴ and the textural characteristics ⁵ are moderately good to very good. The quality ⁶ is moderately high to very high, relative to other sand and gravel resources within Yellow Medicine County.
			Moderate Potential for Sand and Gravel Resources	Includes landforms such as ground moraines, ice contact features, outwash channels, and outwash features. Predominant sediment ranges from sand and gravel to sand with gravel. The probability that a potential sand and gravel resource exists within any map unit is moderate to high. Deposit thickness is typically 0-25+ feet with 0-30+ feet of overburden. The sand and gravel resources occurring in this unit are small to large in areal extent and the textural characteristics are moderate to good. The quality is typically moderate to high relative to other sand and gravel resources within Yellow Medicine County.
			Low Potential for Sand and Gravel Resources	Includes landforms such as alluvial valleys, collapsed channels, colluvium, glacial lakes, ground moraines, ice contact features, ice marginal features, modified ground moraines, outwash channels, outwash features, recessional moraines, and stagnation moraines. Predominant sediment varies and can include silt, sand, gravel, clay, and till. The probability that a significant sand and gravel resource exists within this unit is low to moderately high. The thickness of the deposits is typically 0-15+ feet with overburden thickness ranging from 0-50+ feet. The sand and gravel resources occurring in this unit are very small to moderate in areal extent and textural characteristics are poor to moderate. The quality ranges from very low to

				moderate relative to other sand and gravel resources within Yellow Medicine County.
			Limited Potential for Sand and Gravel Resources	Includes landforms such as bedrock, collapsed channels, ground moraines, modified ground moraines, modified recessional moraines, outwash channels, recessional moraines, and stagnation moraines. The deposits of this unit contain all or one of the following: till, clay, silt, sand, organics, and bedrock. The probability that a significant sand and gravel resource exists within this unit is very low to moderately low. The thickness of the deposits is typically 0-10+ feet with overburden thickness ranging from 0-50+ feet. The sand and gravel resources occurring in this unit are very small to small in areal extent and textural characteristics are very poor to moderately poor. The quality ranges from very low to moderately low relative to other sand and gravel resources within Yellow Medicine County. A limited potential rating includes the circumstance where characteristics are unknown; there was insufficient data to give a higher ranking; limited access to an area for further investigation; and/or no obvious landform-sediment association.
	PROBABLT	Text, 20	Very High, High, Moderately High, Moderate, Moderately Low, Low	The relative degree of certainty that sand and gravel exists within a unit. Based on air photo interpretations, field observations, MWI, presence of gravel pits, etc. Each unit is relative to the other units and range from very high to low.
	SIZE	Text, 20	Very large, Large, Moderately Large, Moderate, Moderately Small, Small, Very Small	The relative size of the sand and gravel deposit.
	ACREAGE	Text, 8	See Below	The size of the deposit in acres.
			30+	Very Large
			20-30	Large
			15-20	Moderately Large
			10-15	Moderate
			5-10	Moderately Small
			3-5	Small
			< 3	Very Small
	TEXTURE	Text, 20	Very Good, Good, Moderately Good, Moderate, Moderately Poor, Poor, Very Poor.	A relative scale of the textural quality of the sand and gravel resource (sieve analysis). The coarser the material the higher the rating. Fine sand material would have a poorer rating. See MNDOT Pit sheets for more detail.
	QUALITY	Text, 20	Very High, High, Moderately High, Moderate, Moderately Low, Low, Very Low	A relative scale of the quality of the sand and gravel (soundness, durability, and mineral makeup).
	DOM_LITHO	Text, 30	See Below	Glacial Lobe Source
			Des Moines Lobe	A glacial lobe that flowed from the northwest, down the Minnesota River valley to a glacial maximum in Des Moines, Iowa. A tan, silty loam with the indicator lithologies of shale and limestone characterizes the till. Sediment from this lobe tends to produce aggregate with lower quality due to the water absorption of the shale and higher percentages of soft limestone and iron oxides.
	THICKNESS	Text, 15	5-15, 10-30, 20-100+	Gives range of minimum and maximum thickness for sand and gravel deposit.
	THICK_MOD	Text, 1	+	The thickness modifier indicates that the thickness of the unit could exceed the value listed in the Thick_max field.
	THICK_MIN	Number , 19, 5	0, 5, 10, 15, 20, 25, 30	Describes the minimum thickness of the sand and gravel unit.
	THICK_MAX	Number , 19, 5	5, 10, 15, 20, 25, 30, 40, 50, 75	Describes the maximum thickness of the sand and gravel unit.
	OVERBURDEN	Text, 15	0-100+, 0-5, 10-50	Gives range of minimum and maximum thickness for overburden.
	OB_MOD	Text, 1	+	The overburden modifier indicates that the thickness of the overburden exceeds the values listed in the Ob_max field.
	OB_MIN	Number , 19, 5	0, 3, 10, 20	Describes the minimum thickness of the overburden covering the sand and gravel.
	OB_MAX	Number , 19, 5	1, 3, 5, 10, 15, 20, 30, 40, 50	Describes the maximum thickness of the overburden covering the sand and gravel.
	MAP_LABEL	Text, 2	See Below	A cartographic map label for the sand and gravel potential classifications.
			Hp	High Potential for Sand and Gravel Resources
			Mp	Moderate Potential for Sand and Gravel Resources
			Lp	Low Potential for Sand and Gravel Resources

			Ltd	Limited Potential for Sand and Gravel Resources