ENVIRONMENTAL ASSESSMENT WORKSHEET

Note to preparers: This form and EAW Guidelines are available at the Environmental Quality Board's website at: http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm. The Environmental Assessment Worksheet provides information about a project that may have the potential for significant environmental effects. The EAW is prepared by the Responsible Governmental Unit or its agents to determine whether an Environmental Impact Statement should be prepared. The project proposer must supply any reasonably accessible data for — but should not complete — the final worksheet. If a complete answer does not fit in the space allotted, attached additional sheets as necessary.
The complete question as well as the answer must be included if the EAW is prepared electronically.
Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation, and the need for an EIS.

1. **Project title:** Milestone Materials, Rochester Sand and Gravel Project - North Quarry

2. **Proposer:** Milestone Materials, A Division of Mathy Construction Company

Proposer Name:	Milestone Materials, Rochester Sand and Gravel, A Division of Mathy Construction Company
Proposer Association or Corporation:	
Contact person:	Tara Wetzel
Title:	Environmental Manager
Address:	920 10th Avenue North
City, state, ZIP:	Onalaska, WI 54650
Phone:	608-779-6322
Fax:	608-779-9182
E-mail:	twetzel@mathy.com

3. **RGU:** Minnesota Department of Natural Resources

Contact person:	Charlotte W. Cohn
Title:	Environmental Planner and EAW Project Manager
Address:	500 Lafayette Road
City, state, ZIP:	St. Paul, MN, 55155-4025
Phone:	651-259-5072
Fax:	651-297-1500
E-mail:	**Environmentalrev.dnr@state.mn.us** Include phrase "Rochester Sand and Gravel – North Quarry Project in subject line

4. **Reason for EAW preparation** (check one)

☐ EIS Scoping ☒ Mandatory EAW ☐ Citizen petition ☐ RGU discretion ☐ Proposer volunteered

If EAW or EIS is mandatory give EQB rule category subpart(s) number(s) and subpart(s) name(s):
4410.4300, subpart(s) 12.B., Nonmetallic Mineral Mining
4410.4300, subpart(s) 24.A., Water Appropriation and Impoundments

5. **Project location** County: Olmsted City/Township: Cascade

_____ ¼ SE 1/4 Section 11 Township 107 North Range 14 West

GPS Coordinates N 44 deg 05' W 92 deg 27'

Tax Parcel Number(s) 741142030909, 741144030911, 741113075989, 741114030899

Attach each of the following to the EAW:

- County map showing the general location of the project (**refer to Figure 1, Project Vicinity Map**)
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable) (**refer to Figure 2, USGS Topographic Map**); and
- Site plan showing all significant project and natural features (**refer to list below**).

The site plan for the proposed project and figures, maps, and diagrams referred to in the EAW are identified as listed below; refer to the individual items for additional information. To clarify what is shown on the figure, map, or diagram, some of the Figure Names in the following list vary slightly from the title used on the actual figure, map, or diagram.

Figure 3 2010 Aerial Photograph
Figure 4 North Quarry Existing Conditions, 2010
Figure 5 North Quarry Site Plan
Figure 6 Schematic for Proposed Water Treatment Plan
Figure 7 Proposed North Quarry Reclamation Plan
Figure 8 Olmsted County Public Waters Inventory Map
Figure 9 National Wetlands Inventory Map
Figure 10 Subsurface Cross-Section Well Locations
Figure 11 Well Locations Cross-Section A – A'
Figure 12 Well Locations Cross-Section B - B'
Figure 13 Minnesota Department of Health County Well Index Wells
Figure 14 County Well Index Display Index
Figure 15 County Well Index Display, Northwest Quadrant
Figure 16 County Well Index Display, Northeast Quadrant
Figure 17 County Well Index Display, Southwest Quadrant
Figure 18 County Well Index Display, Southeast Quadrant
Figure 19 Groundwater Contour Map
Figure 20 Federal Emergency Management Agency Floodway Map
Figure 21 Olmsted County Flood Insurance Rate Map
Figure 22 Olmsted County Floodplain Zoning Map/
Figure 23 Soils Map
Figure 24 Karst Features
Figure 25 Karst Features, Three Meter DEM

6. **Description**

a. Provide a project summary of 50 words or less to be published in the *EQB Monitor.*

Milestone Materials proposes to expand aggregate mining operations within the Rochester Sand and Gravel, North Quarry (approximate 70 acre site). This expansion requires the extraction of limestone aggregate from 60 feet to 120 feet below grade. Extraction of limestone aggregate requires proposed dewatering by appropriating approximately 4,000 million gallons of water annually or 333.3 million gallons of water per month to access the limestone deposit. In addition, aggregate washing will occur on-site.

b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods, and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal, or remodeling of existing structures. Indicate the timing and duration of construction activities.

Milestone Materials proposes to expand aggregate mining operations within the Rochester Sand and Gravel, North Quarry (approximately 70 acre site). This expansion requires the extraction of limestone aggregate from 60 feet to 120 feet below grade. Extraction of limestone aggregate requires proposed dewatering by appropriating approximately 4,000 million gallons of water (i.e., 4 billion gallons of water) annually or 333.3 million gallons of water per month to access the limestone deposit. In addition, aggregate washing will occur on-site. The 70-acre site within the North Quarry is the acreage of the North Quarry area proposed to be mined or proposed where aggregate extraction is planned to occur. The entire site comprising the North Quarry is approximately 135 acres and refer to Cover Types, Item No. 8 which indicates the site size based on different cover types.

The North Quarry of Rochester Sand and Gravel proposes an expansion of an existing sand pit and limestone quarry which currently supplies aggregate products to the City of Rochester, Minnesota; to Olmsted County, Minnesota; and to other areas in southeast Minnesota (**refer to Figure 1, Project Vicinity Map**). The aggregate products produced by this site are mostly used in road and building construction for base course, hot mix asphalt production, and ready mix concrete. Additional quarry products include rip rap and erosion control stone.

Currently, the active portion of the site is the adjacent Rochester Sand and Gravel or South Quarry, and there is limited aggregate extraction at the North Quarry (**refer to Figure 2, USGS Topographic Map**). The aggregate supply of the South Quarry is approaching the end of its life and the major sand and gravel extraction and quarry operations are proposed to move to the adjacent North Quarry of Rochester Sand and Gravel. The resources at the North Quarry are anticipated to be quarried for 50 to 100 years; however, the duration of the operations will depend on the demand for aggregate.

The North Quarry up to this time has only been mined to a limited extent. The present quarry area is approximately one acre in size with approximately nine to ten acres of areas that have been stripped of overburden in partial preparation for the proposed expansion of the North Quarry (**refer to Figure 4, North Quarry Existing Conditions, 2010**). Generally, the operation area of the site is planned to be approximately 70 acres in size with the depth of aggregate on site ranging from approximately 60 feet to approximately 120 feet (**refer to Figure 5, North Quarry Site Plan**). The current depth of aggregate extraction is at an elevation of approximately 960’ msl (mean sea level). The proposed expansion is for the aggregate to be mined at and to an anticipated minimum elevation approximately 900’ msl, depending on demand for the aggregate. Dewatering of the North Quarry is needed to reach this depth of mining.

The plant is proposed to operate most of the year, on a year-around basis, approximately Monday through Friday. Operating hours are likely to occur during daylight hours which generally may be from 5:00 a.m. to 8:00 p.m. from April through September, and from 7:00 a.m. to 5:00 p.m. from October through March. Occasional operations requiring extended hours may occur due to the needs of particular projects or due to the need for specific aggregate materials at particular times. At the present time, specific noise limitations or restrictions to reduce possible effects on nearby residences and neighbors or on wildlife resources are not planned or proposed.

Associated with the proposed dewatering for the North Quarry, Milestone Materials has submitted an application for a Water Appropriation Permit to the Minnesota Department of Natural Resources (MDNR) requesting an annual appropriation of 4,000 million gallons (4 billion gallons) of water (333.3 million gallons per month). This requested volume is based on the proposer's industry experience in similar geologic, hydrologic, and hydrogeologic settings. The water appropriated would be discharged to the South Fork of the Zumbro River after treatment within a series of settling ponds which will be constructed on site (**refer to Figure 6, Schematic for Proposed Water Treatment Plan**). The settling pond system will be designed according to permit requirements to be specified in the Minnesota Pollution Control Agency's (MPCA's) National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permit to ensure that the water discharged from the site will comply with the MPCA's NPDES/SDS permit requirements and provisions. The North Quarry site has not in the past, and is not currently discharging water into the Zumbro River.

Proposed operations to occur at the North Quarry site include removing the topsoil and overburden and stockpiling it for future reclamation of the site. Some of the overburden is a sand product which may be commercially used. Removal of overburden will be typically done using excavators, haul trucks, dozers, and/or scrapers. Once the overburden is removed and the aggregate is exposed, holes are drilled into the aggregate rock for blasting. Shot rock, created by blasting, is then fed by a front end loader into an aggregate crusher for size reduction of the product into marketable crushed stone products.

As operations continue, the mining extends to greater depths within the limestone formation and extends below the water table. Dewatering or water removal of the quarry is necessary to gain access to the limestone product. Water is proposed to be pumped from the quarry sump to a series of settling ponds prior to discharge into the South Fork of the Zumbro River. This discharge is and/or will be part of a permit or approval from the Minnesota Pollution Control Agency (MPCA). This discharge will be sampled periodically for water quality. Quantities of groundwater seepage into the quarry sump vary as the extraction depth and geological formation changes.

As the quarry operations expand in the North Quarry, the existing aggregate washing at the South Quarry will move towards operations on the North Quarry. In order to wash aggregate on site, multi-staged settling ponds are proposed to be constructed as a system separate from the dewatering settling ponds. The source of the aggregate wash water is from groundwater seeping into the site, which is then recycled and reused within the aggregate washing operations. (**Refer to Figure 5, North Quarry Site Plan and to Figure 6, Schematic for Proposed Water Treatment Plan.**) The process water from the aggregate washing is recycled within the settling ponds and does not discharge to surface water. Water losses from evaporation and loss of water into the aggregate product are replenished with groundwater seeping into the wash ponds or water is proposed to be pumped from the quarry sump to the wash ponds, as needed.

Progressive reclamation of the site will occur as extraction of aggregate resources is completed. Reclamation will be completed concurrently with quarrying activities. In areas of the quarry where the aggregate resources have been depleted, in the event that unstable slopes are found during reclamation, the slopes will be stabilized by the use of heavy equipment. Reclaimed slopes that will be underwater at the site will be left as sheer faces

and will not be sloped. The proposed final reclamation of the site will include stabilization of slopes by spreading stockpiled site soils, seeding, and allowing the resulting basin to fill with water, thus creating or constructing a lake (**refer to Figure 7, Proposed North Quarry Reclamation Plan**). Ongoing reclamation will also occur to incorporate erosion control measures and to ensure soil erosion is limited in areas outside of the active quarrying area. As shown on the North Quarry Site Plan (**refer to Figure 5**), access to and from the site and to access the operation areas will be along the access roads and haul road, with ingress and egress at 55th Street NE.

Temporary berms will be constructed around the perimeter of disturbed areas as necessary to control storm water runoff. The berms will be constructed of topsoil and subsoil removed from future areas proposed to be mined and will seeded with grass. The berms will be designed and constructed to not interfere with surface water drainage or to cause surface water impoundments beyond the boundaries of the mining site. Berm heights and widths have not been identified and will vary in different areas of the property depending on the need to contain and divert storm water. (**Refer to Figure 5 and to Figure 7.**)

Disturbed and reclaimed areas are planned to be seeded with Seed Mixture No. 350. Oats or rye may also be used as a cover crop if seeding occurs in the spring or early summer.

When possible and in areas with active and ongoing reclamation, the topsoil and subsoil stripped and removed will be placed directly into these areas. This will reduce soil handling and also preserve the soil viability for final reclamation and vegetation.

Erosion control nets or mats, mulching, filter fabric barriers, straw bale barriers, and other erosion control measures will be used as needed to limit or minimize soil loss during berm construction and during other soil disturbance activities. These erosion control measures will be installed based on generally used methods and procedures. These erosion control measures will also be maintained and inspected monthly (or at other identified periods) as required by permits and approvals provisions by the MPCA and/or by other permitting or regulatory authorities.

Berms will be established along the south, west, and northwest portion of the site; around the existing quarry and the stripped areas; and between the haul road and the east boundary of the property in the southeast portion of the site.

As reclamation is occurring and once the proposed lake is constructed, the eventual primary land uses of the constructed lake have not been established. Opportunities exist for the lake to be operated and managed for limited recreational uses such as wildlife observation, hiking, fishing, boating, hunting and other recreational uses. The continued ownership of the site at this time is anticipated to remain in private ownership. Specific plans or proposals for the long-term use of the constructed lake or for the area adjacent to the constructed lake have not been identified.

The Site Plan also shows the approximate area of long term reserves (**refer to Figure 5**). The site plan shows and generally delineates a timeline for aggregate extraction. Demand for aggregate product is variable, however 50 to 100 years is the anticipated time until the southernmost reserves are quarried. This estimate is based on the generally known historical demand for aggregate product in the Rochester, Minnesota area as well as on the time required to quarry and process all other aggregate north of this area of the property. The project proposer estimates projected aggregate reserves on the property to be between 30 million tons and 60 million tons.

c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The North Quarry is a large sand pit and quarry producing both sand and crushed stone products for the City of Rochester, Minnesota; for Olmsted County, Minnesota; and for other areas in southeast Minnesota. Future road and building construction and maintenance projects in these geographical areas require a continued source of aggregate product. The majority of the products produced at this site are used to make road base, hot mix asphalt, and ready mix concrete. The proximity of this resource to its likely uses makes it an economically viable resource for area merchants.

d. Are future stages of this development including development on any other property planned or likely to happen? ____ Yes **X** No
If yes, briefly describe future stages, relationship to present project, timeline, and plans for environmental review.

e. Is this project a subsequent stage of an earlier project? **X** Yes ____ No
If yes, briefly describe the past development, timeline, and any past environmental review.

The North and South Quarries of Rochester Sand and Gravel are physically separated by 55th Street in Rochester, Minnesota; though, these sites are a single unit based on contiguous land leasing between private landowners and Milestone Materials, A Division of Mathy Construction (**refer to Figure 2**). While the North Quarry has been in continual operation since the 1970s, the primary operations have focused on the South Quarry or the south end of the property. As the South Quarry begins to approach the end of its life, the major operations are proposed to shift to the North Quarry. Similar to the South Quarry, a large portion of the limestone aggregate is located below the water table and thus there is the need to dewater the site to access the aggregate limestone.

The current North Quarry and past development of the site is a sand pit and limestone aggregate quarry with the balance of the property mostly agriculturally farmed (**refer to Figure 3, 2010 Aerial Photograph, and to Figure 4**). Whether any past environmental review occurred on the South Quarry, Rochester Sand and Gravel site is not known.

The proposed duration for continued aggregate extraction of the North Quarry is many decades or more. This estimate is based on the high volume of available aggregate extraction at the south section of the property.

7. **Project magnitude data**
Total project acreage: Approximately 135 acres

Approximately 70 to 80 acres of the property are within the operational area of the site (**refer to Figure 5**). The balance of the property is maintained as a buffer between the operations and surrounding land uses.

Number of residential units: None Unattached None attached ____ maximum units per building
Commercial, industrial, or institutional building area (gross floor space): ____ total square feet: ____

Indicate areas of specific uses (in square feet):

Office	Manufacturing	
Retail	Other Industrial	One scale house, approximately 160 sq. ft.*
Warehouse	Institutional	
Light industrial	Agricultural	
Other commercial (specify)		

Building height	Single story	If over 2 stories, compare to heights of nearby buildings

* One proposed scale house, approximately 160 square feet, to be constructed on site.

8. **Permits and approvals required.** List all known local, state, and federal permits, and approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing, and infrastructure. *All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

Unit of Government	Type of Application	Status
Minnesota Department of Natural Resources	Water Appropriation Permit	Pending
Minnesota Pollution Control Agency	General NPDES Storm Water Permit	Existing and ongoing
Minnesota Pollution Control Agency	Individual NPDES Storm Water Permit	Pending
Minnesota Pollution Control Agency	Tank Registration	To Be Applied For
Minnesota Pollution Control Agency	Air Emissions Permit	To Be Applied For
Olmsted County	Conditional Use approval or	Existing and ongoing
Olmsted County	Land Use permit or approval	Existing and ongoing

Note: permits, approvals, and regulatory controls known at this time are identified. Permits, approvals, zoning changes, or other regulatory controls, if or when required or necessary, will be applied for; this includes those by the City of Rochester (suburban district), review and/or approval of grading plans, by Cascade Township, and/or by the Township Cooperative Planning Association.

Based on information provided at this time, it is not known if a specific permit from Olmsted County is required to complete quarrying at the site since the site was a quarrying operation prior to adoption of the Olmsted County Zoning Ordinance.

9. **Land use.** Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

The current land use of the site is a sand pit and limestone aggregate quarry. The site has been used for these purposes for a number of years. The northern edge of the proposed operation area was previously mined. The shoreline areas from this previous mining operation contain the ponds resulting from these operations and they are now natural shoreline. The balance of the site is agricultural fields with natural river shoreline along the South Fork Zumbro River (**refer to Figure 3**). The site also includes some small undisturbed, wooded areas. The proposed use of the site for the North Quarry is compatible with adjacent land uses, including agricultural, rural, and residential or suburban uses. The proposed berms and the ingress and egress roads also provide some separation between land uses. The North Quarry site has not in the past, and is not currently discharging water into the Zumbro River.

The MPCA has identified a closed demolition landfill adjacent to the proposed site (i.e., for additional information refer to the MPCA's website and the links to "What is in My Neighborhood). There is also an active NPDES permit for the Hallmark Terrace, Inc. (adjacent to and neighboring the site to the east).

10. **Cover types.** Estimate the acreage of the site with each of the following cover types before and after development:

	Before	**After**		**Before**	**After**
Types 1-8 wetlands	4.524	4.524	Lawn/landscaping	0.00	0.00
Wooded/forest	40.682	38.36	Impervious surfaces	5.31	5.31
Brush/Grassland	6.177	16.107	Stormwater Pond	0.00	0.00
Cropland	60.00	0.0	Other (describe)	17.61 (Quarry)	70.0 (Lake)
TOTAL				**134.30**	**134.30**

If **Before** and **After** totals are not equal, explain why:

No wetlands are proposed to be disturbed during the quarrying process (**refer to Figure 8, Olmsted County Public Waters Inventory Map, and to Figure 9, National Wetlands Inventory Map**). The impervious surfaces on site will not be disturbed and no additional impervious surfaces will be created. As a result of reclamation of some quarry areas and the reduction of agricultural land after conversion to berm areas and reclamation of quarrying areas, the amount of brush/grassland will increase by an estimated ten acres. All cropland currently used on site will be lost after quarrying is complete. During the quarrying process, areas that are not currently within quarrying operation areas will continue to be farmed. Following quarrying, the site will become an area available for types of recreational opportunities (i.e., such as wildlife observation, hiking, boating, fishing, walking, and hunting) and will not be used for agricultural land. The site, however, will remain in private ownership and specific public recreational uses are not proposed. At this time, the dimensions of the proposed lake are estimated, and along with setbacks from property boundaries and with plans to maintain buffers from and between adjacent and surrounding land uses, the size of the proposed lake to be constructed will be approximately 70 acres (**refer to Figure 7**).

11. **Fish, wildlife, and ecologically sensitive resources**
    a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

Fish species have been collected in the South Fork of the Zumbro River in various years (i.e., 1964, 1974, 1975, 1983, 1986, 1987, 1985, 1990 1991, and 1993) at three different locations (i.e., below the Silver Lake Dam, between Silver Lake and the Mayowood Lake Dam, and above Mayowood Lake). The fish species collected during these surveys include American brook lamprey, Stoneroller sp., Common carp, Ozark minnow, Brassy minnow, Hornyhead chub, Emerald shiner, Common shiner, Bigmouth shiner, Rosyface shiner, Spotfin shiner, Sand shiner, Redfin shiner, Suckermouth shiner, Southern redbelly dace, Bluntnose minnow, Fathead minnow, Blacknose dace, Longnose dace, Creek chub, Quillback, White sucker, Northern hogsucker, Silver redhorse, Black redhorse, Golden redhorse, Shorthead redhorse, Black bullhead, Yellow bullhead, Channel catfish, Stonecat, Tadpole madtom, Brook Stickleback, White bass, Rock bass, Hybrid sunfish, Green sunfish, Orangrespotted sunfish, Bluegill, Smallmouth bass, Largemouth bass, White crappie, Black crappie, Mud darter, Fantail darter, Rainbow darter, Johnny darter, Banded darter, Logperch, Blackside darter, and Slenderhead darter.

Effects on fish and other aquatic resources in the South Fork of the Zumbro River are anticipated to be limited as a result of discharge limits to be provided in the permits or approvals to be issued by the MPCA. These limits for discharge from the site are to pH, total suspended solids, and turbidity and are anticipated to provide protection for fish and other aquatic resources in the area of the proposed project.

Terrestrial wildlife resources in the project area likely include raccoon, mink, great blue heron, kingfishers, swallows, deer, geese, reptiles, and amphibians. These wildlife resources at the site will be disturbed by the conversion of agricultural land, wooded land, and grasslands to quarry operations. The wildlife located in these areas will be displaced to areas typically used by wildlife adjacent to the site. The site is surrounded by agricultural land, deciduous forests, grasslands, and limited urban residential development. These areas extend a number of miles to the north, east, and west of the property. In addition, efforts will be made to reduce or limit the quarrying operations to provide sufficient wooded and brushland buffers to minimize effects to wildlife resources.

Once quarry operations are completed at the site and reclamation of the site is completed, the replacement of agricultural land with an approximately 70-acre constructed lake and surrounding brush and grasslands will occur. This will create a wildlife resource for waterfowl and aquatic animals and plants, including wildlife displaced during quarrying operations.

As part of and in addition to the permits and approvals indicated (**refer to Permits and Approvals Required, Item No. 9**), the project area is also subject to a review and approval of effluent limits and a nondegradation review of the proposed discharge from the facility; these are part of and in addition to the permits and approvals required by the MPCA for the proposed facility and for the proposed discharge to the South Fork of the Zumbro River. The MPCA, as part of its permit and approval process may require or incorporate effluent limitations.

b. Are any state-listed (endangered, threatened, or special concern) species, rare plant communities, or other sensitive ecological resources on or near the site? **X** Yes ____ No
If yes, describe the resource and how it would be affected by the project. Describe any measures that will be taken to minimize or avoid adverse impacts. Provide the license agreement number (LA-____) and/or Minnesota Department of Natural Resources, Division of Ecological Resources contact number (ERDB 20100249) from which the data were obtained and attach the response from the MDNR, Division of Ecological Resources. Indicate if any additional survey work has been conducted within the site and describe the results.

The MDNR's Natural Heritage Information System was consulted and a database search was conducted to determine if any rare plant or animal species or other significant natural features are known to occur within an approximate one mile radius of the proposed North Quarry project area. Based on the MDNR's Natural Heritage Information System review, timber rattlesnakes *(Crotalus horridus)* and Blanding's turtles *(Emydoidea blandingii),* both state-listed threatened species, have been documented in the vicinity of the North Quarry and may be affected by the proposed project. (**Refer to Attachment 1, the Minnesota Department of Natural Resources, Natural Heritage Information System review correspondence, recommendations, database search, and fact sheet and guidelines.)**

To mitigate possible disturbance of these species by the North Quarry operations, the wetland areas and other shoreline areas will remain undisturbed. Also, an existing vegetated berm between the low lying areas and the existing disturbed quarry area functions as a limited natural buffer. Efforts have been and will continue to be made to reduce the quarrying operations in order to provide large areas of wooded and brushland buffers to help minimize effects to wildlife resources and to these ecologically sensitive resources.

In the event that timber rattlesnakes are encountered during the operation of the quarry, they will be left undisturbed and quarrying operations will be limited or paused temporarily pending implementation of specific measurers to assure the timber rattlesnakes are not disturbed. If Blanding's turtles are encountered during the operation of the quarry, the project proposer and contractors will follow all recommendations (i.e., including construction recommendations and guidelines) provided by the MDNR applicable to the site. (**Refer to**

Attachment 1, the Minnesota Department of Natural Resources, Natural Heritage Information System review correspondence, recommendations, and fact sheet and guidelines.) The MDNR's summary and fact sheet will also be provided and available to all personnel at the site for continual reference.

12. **Physical impacts on water resources.** Will the project involve the physical or hydrologic alteration – dredging, filling, stream diversion, outfall structure, diking, and impoundment – of any surface waters such as a lake, pond, wetland, stream, or drainage ditch? **X** Yes ____ No
If yes, identify water resource affected and give the DNR Public Waters Inventory number(s) if the water resources affected are on the PWI: see below Describe alternatives considered and proposed mitigation measures to minimize impacts.

The proposed North Quarry project includes hydrologic alteration by dewatering large appropriations of waters and then discharging waters into the South Fork of the Zumbro River. **Refer also to** the Project Description (Item No. 6.B.) which identifies that water appropriated for dewatering operations will discharge to the South Fork of the Zumbro River. **(Refer also to Figure 8, the Olmsted County Public Waters Inventory Map and to Figure 9, the National Wetlands Inventory Map.)** The eventual construction of the lake on site as a result of reclamation operations will create an approximately 70-acre lake and open water area with water depths ranging from shallow near shore environments to approximately 100 feet deep; shallow depths may provide wetland-type habitat areas, while deeper areas may provide deep water-type habitat areas.

As part of the proposed reclamation, seeding and sloping of banks is planned to occur. The proposed overburden is from former upland areas, and seeding of the shallow water areas may also occur if during or after re-sloping of the banks such seeding becomes necessary to ensure that wetland and lake vegetation with favorable species to wetland and lake areas will effectively naturally grow. This is also to ensure that wetland and lake habitat result in this wetland and lake area.

A small area of wetlands identified and mapped on the National Wetlands Inventory Map as PFO1A (Freshwater Forested/Shrub Wetland), R2UBHx (Riverine), PUBGx ((Freshwater Unconsolidated Bottom), and PEMCx (Freshwater Emergent Wetland) occur along the South Fork of the Zumbro River. Much of the wetland areas have the modifier "x" which indicates these areas have been excavated during previous mining operations. These wetlands are outside the project disturbance area and will be left undisturbed by any physical or hydrological alteration.

13. **Water use.** Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)?
X Yes ____ No
If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity, and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

As quarry operations continue at the North Quarry, the mining extends to greater depths within the limestone formation and below the water table (**refer to Figure 10, Subsurface Cross-Section Well Locations; Figure 11, Well Locations Cross-Section A – A'; and Figure 12, Well Locations Cross-Section B - B'**). As a result, dewatering or water removal of the quarry is needed to gain access to the limestone product. Typically, water is proposed to be pumped from the quarry sump to a series of settling ponds (**refer to Figure 6**) prior to discharge to the South Fork of the Zumbro River. The MPCA has permitted and approved some aspects of this discharge during the time of quarry operations as part of a general NPDES/SDS permit applicable to a number

of the project proposer's quarry operations (though not as of yet part of an individual permit or approval for this particular operation and discharge to the South Fork of the Zumbro River). As a component of the existing general permit, the discharge water is sampled periodically for water quality to ensure the discharges do not adversely affect the water body or its inhabitants. Quantities of groundwater seepage into the quarry sump vary as the extraction depth and geological formation changes. Maximum water withdrawals from the quarry sump are estimated to be 7,700 gallons per minute and 4,000 million gallons per year once the quarry footprint is at its largest and deepest point. Typical water withdrawal volumes are estimated to be lower than these anticipated amounts although an exact estimate is not identified or known.

At the present time, the North Quarry has been mined to a limited extent. The quarry area presently is approximately one acre with approximately nine to ten acres of the area that have been stripped of overburden in partial preparation for expansion of the quarry (**refer to Figure 4**). Generally, the operation area of the site is planned to be approximately 70 acres in size with the depth of aggregate on site ranging from approximately 60 feet to approximately 120 feet below ground (**refer to Figure 5**). The current depth of aggregate extraction is at an elevation of approximately 960' msl. The proposed expansion anticipates aggregate to be mined at an elevation to approximately 900' msl depending on the market demand for the aggregate (**refer to Figure 10, Figure 11, and Figure 12**). Dewatering of the quarry will be needed to attain this proposed depth of mining. The bottom elevation of the quarry sump is proposed to be at approximately 890' (msl). The sump is currently proposed to be located at the north end of the quarry (**refer to Figure 6**). The combination of the geometry of the cone-of-depression (i.e., an inverted cone with the greatest drawdown at the center) and the location of the sump at the north end of the quarry, may necessitate the sump to be operated at a lower elevation than would be necessary if the sump were situated in the center of the quarry. Placing the sump next to the South Fork of the Zumbro River, near the center of the cone-of-depression, may also increase the possibility for pumping effects to the river. As noted in the plans shown in Figure 6, the exact configuration of this element of the operation could vary as more final plans and requirements are established.

The project proposer has completed dewatering of the Rochester Sand and Gravel, South Quarry to a similar depth for a number of years; though the amount of dewatering may be similar or may vary from that proposed for this North Quarry. The project proposer has dewatered mines, pits, or quarries in other similar geologic settings in other areas of Olmsted County. The Rochester Sand and Gravel, South Quarry is in the same geologic and hydrogeologic setting as the one proposed for excavation of aggregate in the North Quarry. At a number of these other quarries in similar geologic and hydrologic settings completed by the project proposer, adverse affects to water resources or to the availability of water resources to nearby domestic wells have not occurred.

A Water Appropriation Permit application for dewatering associated with the proposed project has been submitted to the MDNR. This application is for an annual appropriation of 4,000 million gallons of water or 4 billion gallons (i.e., 333.3 million gallons of water per month). This volume is estimated or anticipated based on the project proposer's previous industry experience in generally similar geologic, hydrologic, and hydrogeologic settings. After treatment within a series of settling ponds that are proposed to be constructed on site, the water is proposed to be discharged to the South Fork of the Zumbro River (**refer to Figure 6**). The settling pond system will be designed according to the MPCA's NPDES/SDS permit requirements and there will be provisions to ensure the water discharged from the site will comply with the MPCA's NPDES/SDS permit requirements and provisions. The quarry sump and associated settling ponds will be located on the north end of the quarry footprint (**refer to Figure 5**).

Groundwater withdrawals from the quarry sump at the site will be returned to the South Fork of the Zumbro River and to the water table through the settling ponds (to be constructed) and the discharge system. The exact design and specific operation of the sump and settling pond system will be determined closer in time to commencement of the proposed. This transfer of water will create a cone of depression allowing the aggregate

below the water table to be mined. This dewatering process, to a limited extent, may reduce some of the potential for effects to the aquifer in the area as the extent of the cone of depression may be narrowed. All wells presently listed on the Minnesota Department of Health's Minnesota County Well Index within 1.5 miles of the quarry property boundary have been located and mapped (**refer to Figure 13, Minnesota Department of Health County Well Index Wells**). The wells within this same radius of the site are also displayed generally and specifically on five maps (**refer to Figure 14, County Well Index Display Index; Figure 15, County Well Index Display, Northwest Quadrant; Figure 16, County Well Index Display, Northeast Quadrant; Figure 17, County Well Index Display, Southwest Quadrant; and Figure 18, County Well Index Display, Southeast Quadrant**). An index for these maps is presented and shows the quadrants displayed (**refer to Figure 14**). Each of the wells within this same radius of the site have been tabulated and the data for each of the wells is presented in the table in **Appendix 1, Minnesota Department of Health, Minnesota County Well Index Tables**. However, this table of the Minnesota County Well Index is limited to information contained in the Minnesota County Well Index. There are likely wells located with the 1.5 mile radius of the project site that are not included in the Minnesota County Well Index and therefore information is not available about those wells at this time. During the subsequent evaluation by the MDNR regarding the water appropriation permit application, the Department may acquire or use additional information about wells not included in the Minnesota County Well Index to assist the Department in determining the potential risk of or potential for domestic well interference.

Adjacent to the site to the east and at the southern portion of the property, and separated by a proposed berm is a the Hallmark Terrace Mobile Home Park. This is in the area of future mining reserves and further from the area of immediate proposed quarrying operations. The well(s) serving this trailer park is not mapped by the Minnesota Department of Health. The well depth is 413 feet and the static water level of the well is 53 feet from the land surface.

The Prairie Du Chien Group/Jordan Sandstone aquifer is the primary aquifer for the located wells associated with the proposed project. This aquifer is widely used as a potable water source in southeast Minnesota. Information from the Minnesota Geological Survey indicates that the aquifer water level elevation is at approximately 940' msl in the area of the proposed North Quarry site (**refer to Figure 19, Groundwater Contour Map**). Data based on the Minnesota Department of Health's County Well Index is similar. This data and site observations indicate that for the quarry operations to reach the desired aggregates at an elevation of 900' msl, dewatering the pit will occur from approximately 40 feet to up to approximately 60 feet below ground. Based upon the distance to surrounding wells and the project proposer's previous experience dewatering quarries in similar geologic settings, interference with nearby water supplies generally has not occurred. The project proposer has managed water volumes of similar and/or larger magnitude in similar geological formations. One site is located north of the North Quarry also on the Zumbro River. At this site (i.e., Golberg Quarry), the project proposer indicates having managed water appropriation volumes of approximately 530 million gallons monthly or more than 5 billion gallons annually. According to the project proposer, specific instances of effects on neighboring wells (or on water resources) were not reported. In the event of reports of well interference or effects on water resources as a result of the dewatering or discharge processes, the project proposer will follow all guidelines or provisions identified in the MNDR's Well Interference resolution process. In the event of potential interference with appropriations or with other wells in the future, the MDNR will use its existing DNR Well Interference resolution process or procedures to resolve interference issues.

An additional source of water appropriation within the site will be from aggregate washing operations. (**Refer to the Project Description, Item No. 6.B.** for the water appropriation volumes included in the maximum volumes identified in Item No. 6 and in this Item.) As the quarry operations expand in the North Quarry, the existing aggregate washing at the South Quarry will transition to the North Quarry. To wash aggregate on-site, multi-staged settling ponds will be constructed as a system separate from the dewatering ponds. The source of

the aggregate wash water is from groundwater seeping into the site, which is then recycled and reused within the aggregate washing operations. The process water from the aggregate washing is recycled within the settling ponds and is not proposed to discharge to surface water resources. Water losses from evaporation and loss of water into the aggregate product are replenished with groundwater seeping into the wash ponds or water is proposed to be pumped from the quarry sump to the wash ponds, as needed by operations.

14. **Water-related land use management district.** Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? **X** Yes ____ No
If yes, identify the district and discuss project compatibility with district land use restrictions.

There is a 100-year delineated flood plain within the site regulated and identified by an Olmsted County zoning ordinance (**refer to Figure 20, Federal Emergency Management Agency Floodway Map; Figure 21, Olmsted County Flood Insurance Rate Map; and Figure 22, Olmsted County Floodplain Zoning Map**). The northern boundary of the proposed project is close to the South Fork of the Zumbro River and to the 100-year delineated flood plain. Based on information known at this time, the exact quarry footprint and any areas of quarrying, mining, or extraction are not within the 100-year flood plain. Fill is not proposed to be placed in the 100-year flood plain. The North Quarry area may also be within the Shoreland Zoning District of the river, even if project operations are not specifically proposed to occur within the identified district.

The South Fork of the Zumbro River is identified on the Public Waters Inventory for Olmsted County (**refer to Figure 8**). The proposed project is not planned to extend into the South Fork of the Zumbro River and buffers between the river and the proposed project operations are in place and will continue to be in place. These buffers range in length from 150 feet to 650 feet and consist of approximately 25 acres of grassland and wooded lands. The specific width of the buffers varies throughout the site and is not specifically known at this time.

15. **Water surface use.** Will the project change the number or type of watercraft on any water body?
____ Yes **X** No
If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

16. **Erosion and sedimentation.** Give the acreage to be graded or excavated and the cubic yards of soil to be moved: 70-90 acres ; 726,000 cubic yards at an average depth of five feet (overburden is between three feet and eight feet).

Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.

Refer to the description in Item No. 19, Geologic Hazards and Soil Conditions and to **Figure 23, the Soils Map** for a description of the types of soils present on the site. There is currently a general (not individual) Nonmetallic Mining NPDES permit which has been issued by the MPCA for a number of quarrying operations (i.e., permit number MNG490000). The permit conditions require identified Best Management Practices for managing runoff. A Stormwater Pollution Prevention Plan has also been prepared and is maintained according to MPCA stormwater permit requirements. This plan describes actions completed on-site regarding erosion control and describes actions to ensure storm water discharges from the site are appropriately managed. In addition, the existing general NPDES permit requires that the site is inspected on a monthly basis by the

MPCA to ensure there are not erosion problems and to ensure that identified best management practices are complied with and properly functioning.

Most of the water entering the site will be controlled and collected within the disturbed quarry area. As it becomes necessary to dewater areas of quarry operations, water will be processed in staged settling ponds prior to discharge by way of a rip rap channel (**refer also to Figure 6**). The rip rap channel that is proposed to be constructed as part of the treatment of dewatering discharge is needed and will be used to slow the flow of the discharge from the outfall pipe to reduce or eliminate erosion and scouring. The channel is proposed to involve lining the existing drainage way with geotextile fabric and then rip rap will be placed on top of the fabric for a distance (i.e., length to be determined as part of further design) to provide for the flow to be dissipated to reduce or eliminate scouring. Currently, a vegetated perimeter berm is established along the northwest section of the property to provide a barrier between quarrying operations and undisturbed areas. Additional vegetated perimeter berms will be constructed as the quarry extends southward within the site. The berms will consist primarily of organic soils overlying the limestone bedrock. Once constructed, the berms will be graded and seeded with Seed Mixture No. 350, and oats and rye as a cover crop. Silt fence will also be installed around the newly constructed berms and will remain in place until vegetation becomes established on the berms. The berms presently at the site, along the northern edge of the existing quarry, range in height from five feet to ten feet. Berms also of five feet to ten feet each, are proposed for the berms to be constructed on site in the future. Additionally, a vegetated buffer is, and will continue to be maintained between the active quarry and the South Fork of the Zumbro River.

After reclamation activities at the quarry are completed, the affected areas will be graded and seeded, and drainage through the site will be restored. The control methods described in the Project Description, Item No. 6.B.; in the Water Use section, Item No. 13; and in this Item will also protect the quality of the water during and after the quarry excavation operations.

17. **Water quality: surface water runoff**
    a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any stormwater pollution prevention plans.

Currently, storm water from the active quarry area is maintained within the quarry footprint. A vegetated perimeter berm along the north and west section of the property provides a surface water flow barrier between the active operations and the undisturbed area. As the quarry footprint increases in size and depth during quarrying operations, the increased runoff, which is collected within the quarry footprint, will be processed in a multiple staged settling pond prior to discharge in a rip rap-lined outfall and channel (**refer to Figure 6**). **Refer also to** description in the item regarding erosion and channelization (Item No. 16). The rip rap channel that is proposed to be constructed as part of the treatment of dewatering discharge is needed and will be used to slow the flow of the discharge from the outfall pipe to reduce or eliminate erosion and scouring. The channel is proposed to involve lining the existing drainage way with geotextile fabric and then rip rap will be placed on top of the fabric for a distance (i.e., length to be determined as part of further design) to provide for the flow to be dissipated to reduce or eliminate scouring. Periodic water quality monitoring prior to discharge is designed to provide for compliance with existing water quality standards. After the project is completed, the reclaimed quarry will be graded, seeded, and drainage through the site will be restored. If necessary after reclamation has occurred, other erosion control measures, such as ponds, vegetated berms, and rip rap lined outfalls, will be left in place to for continued erosion control.

A Stormwater Pollution Prevention Plan has also been prepared and is maintained according to MPCA stormwater permit requirements.

b. Identify routes and receiving water bodies for runoff from the site; include major downstream water bodies as well as the immediate receiving waters. Estimate the impact of runoff on the quality of receiving waters.

Water processed in the dewatering settling ponds will flow into the South Fork of the Zumbro River and then will flow into the Mississippi River. Stormwater within the site has potential for particulate contamination. To reduce or eliminate the potential for scouring and erosion, multiple staged settling ponds are proposed as part of the water discharge system. This will occur along with a rip rap-lined discharge outlet and channel (**refer to Figure 6 and to the description in this Item and in Item No. 16, Erosion and Sedimentation**). Water quality testing at quarries similar to this size, volume, and geologic setting have not indicated an effect of runoff on the quality of the receiving waters. (General further information about this water quality testing can be made available during further review of this proposed project.) Some of the water quality tests are less than the limits of detection for suspended solids. Sampling and analysis of dewatering discharge on a specific schedule may be required as part of individual discharge permits issued to a specific or individual site by the MPCA. The permit generally requires the total suspended solids for dewatering discharge to be limited to 30 milligrams per liter.

18. **Water quality: wastewaters**
    a. Describe sources, composition, and quantities of all sanitary, municipal, and industrial wastewater produced or treated at the site.

As aggregate extraction continues below the water table, groundwater seeping into the quarry footprint will be dewatered. The dewatering of groundwater is an industrial process. The source of the wastewater is groundwater seepage combined with stormwater runoff.

Quantities of groundwater seepage into the quarry sump vary as the extraction depth and geological formation changes. Maximum water withdrawals from the quarry sump are estimated to be 7,700 gallons per minute and 4,000 million gallons per year (i.e., 4 billion gallons) when the quarry footprint is at its largest and deepest point. The average anticipated volumes of water withdrawal anticipated not known at this time of project development.

Water processed in the dewatering settling ponds will flow into the South Fork of the Zumbro River and then flow into the Mississippi River. Water treatment will include multiple staged settling ponds and a rip rap-lined outfall prior to water discharge. To reduce or eliminate the potential for scouring and erosion, multiple staged settling ponds are proposed as part of the water discharge system. This will occur along with the rip rap-lined discharge outlet and channel (**refer to Figure 6 and to the description in this Item; in Item No. 16, Erosion and Sedimentation; and in Item No. 17, Water Quality Surface Water Runoff**). Some of the water quality tests are less than the limits of detection for suspended solids. Sampling and analysis of dewatering discharge on a specific schedule may be required as part of individual discharge permits issued to a specific or individual site by the MPCA. The permit generally requires the total suspended solids for dewatering discharge to be limited to 30 milligrams per liter.

An additional source of process water within the site is from aggregate washing operations. (The proposed water appropriation volumes for aggregate washing operations are included in the identified proposed maximum volumes of water to be appropriated.) As the quarry operations expand more in the North Quarry, the aggregate washing operations currently at the South Quarry will move towards the North Quarry. To wash aggregate on site, a multi-staged settling pond system will be constructed as a system separate from the dewatering ponds. The source of the aggregate wash water is from groundwater seeping into the site, which is then recycled and reused within the aggregate washing operations. The process water from the aggregate

washing is recycled within the settling ponds and does not discharge to surface water resources. Water losses from evaporation and loss of water into the aggregate product will be replenished with groundwater seeping into the wash ponds or water is proposed to be pumped from the quarry sump to the wash ponds, as needed.

There are no sanitary waste water sources on site. Portable chemical toilets are and will be used and serviced at the site.

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies (identifying any impaired waters), and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

Dewatering process water may include particulate (and turbidity) from stormwater runoff commingling with the groundwater. Groundwater and potential stormwater will both settle in the quarry sump. A dewatering pump mounted on floats is proposed to pump the water to the elevation of the quarry highwall and then to discharge into multiple-staged settling ponds. The water will then flow through the multiple cells of a pond into a rip rap-lined outfall discharging into the South Fork of the Zumbro River. The proposed particulate and turbidity treatment methods for process water are the combination of settling ponds and the rip rapped outfall.

The South Fork of the Zumbro River is impaired for turbidity. Based on turbidity tests from similar dewatering sites on the Zumbro River in Olmsted County, the turbidity effect on the receiving waters from the proposed project is anticipated to be not substantial.

As part of and in addition to the permits and approvals indicated (**refer to Permits and Approvals Required, Item No. 9**), the project area is also subject to a review and approval of effluent limits and a nondegradation review of the proposed discharge from the facility; these are part of and in addition to the permits and approvals required by the MPCA for the proposed facility and for the proposed discharge to the South Fork of the Zumbro River. The MPCA, as part of its permit and approval process may require or incorporate effluent limitations. As noted, the South Fork of the Zumbro River is impaired for turbidity. The volume of water proposed to be discharged to the river results in the possibility or potential for increase in the amount of total suspended solids (TSS) in the receiving water during periods of low flow. There is the potential or possibility for changes or increases in turbidity and pH.

Aggregate wash water is not discharged from the site. This water is recycled and reused within the proposed wash ponds (i.e., multi-staged settling pond system to be constructed).

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions, and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

Not applicable.

19. **Geologic hazards and soil conditions**

a. Approximate depth (in feet) to ground water: two feet Minimum 45 feet average;
to bedrock: six feet minimum 12 feet average.
Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations, or karst conditions. Describe measures to avoid or minimize

environmental problems due to any of these hazards.

There are no known sinkholes or karst conditions on the site (**refer to Figure 24, Karst Features and to Figure 25, Karst Features, Three Meter DEM**). On-site inspection of the project site and review of published data and maps do not indicate the presence of karst features on the property. Dolomite bedrock of the Shakopee formation of the Prairie du Chien Group outcrops on the site. The bedrock is covered by weathered stone, sand and gravel, and residual clay. The soil that exists at the site has formed on the underlying clay, weathered stone, and sand and gravel material. **Figures 24 and Figure 25** display the presence of known karst features on the site. As the quarry increases and grows over the years, there may be the potential for development of karst features. To avoid effects to the groundwater, a Spill Prevention Plan and Best Management Practices are and will continued to be implemented for fuel use and storage. Best management practices include regular employee training, availability and presence of spill containment materials on-site, and equipment maintenance.

b. Describe the soils on the site, giving NRCS (SCS) classifications, if known. Discuss soil texture and potential for groundwater contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

According to the NRCS maps, the soil on the site is mostly a sandy loam (**refer to Figure 23**). During the mining process, the soils are stripped off the land surface and reserved in a vegetated perimeter berm until the soil is reused in the reclamation process. The native soils are placed on the reclaimed surface. The site soils are listed in the following **Table 1, Characteristics of North Quarry Property Soils**.

Table 1: Characteristics of North Quarry Property Soils

Soil Name	Map Symbol	Hydrologic Group	Permeability	Slope
Frontenac Loam	173F	B	0.6 to 6.0 in/hr	15 to 35
Channahon Loam	472C	D	0.6 to 2.0 in/hr	6 to 12
Channahon Loam	472B	D	0.6 to 2.0 in/hr	1 to 6
Brodale Flaggy Loam	488F	C	0.6 to 2.0 in/hr	25 to 40
Mt. Carrol Silt Loam	401E	B	0.6 to 2.0 in/hr	18 to 25
Mt. Carrol Silt Loam	401D	B	0.6 to 2.0 in/hr	12 to 18
Becker Loam	25	B	2.0 to 20 in/hr	-
Plainfield Loamy Sand	283E	A	6.0 to 20 in/hr	12 to 30
Kalmarville Silt Loam	465	B/D	0.6 to 20 in/hr	-
Pits, Gravel	1029	-	-	-
Marlean Silty Clay Loam	251F	B	0.6 to 6.0 in/hr	25 to 40
Plainfield Loamy Sand	283B	A	2.0 to 20 in/hr	0 to 6
Zumbro Loamy Sand	495	A	6.0 to 20 in/hr	-
Dickinson Sandy Loam	27B	B	2.0 to 20 in/hr	2 to 6
Lamont Sandy Loam	216B	B	2.0 to 20 in/hr	2 to 6
Terril Loam	1812B	B	0.6 to 20 in/hr	1 to 6
Whalan Loam	340B	B	0.6 to 2.0 in/hr	1 to 6
Rockton Loam	299A	B	0.6 to 2.0 in/hr	0 to 1
Sogn Loam	11C	D	0.6 to 2.0 in/hr	4 to 12

To avoid effects to groundwater, a Spill Prevention Plan and Best Management Practices are implemented and will continue to be implemented for fuel use and storage. Best management practices include regular employee training, availability and presence of spill containment materials on-site, and equipment maintenance. Absorbents and other spill response equipment will be available on site in the unlikely event a spill would

occur. The oil and fuel storage at the quarry will consist of a diesel fuel tank contained within a generator trailer; a small diesel fuel tank for fueling of equipment on-site; and a support trailer containing lubricants and other equipment maintenance fluids. All of these materials will be used and stored in compliance with applicable State of Minnesota rules and regulations.

20. **Solid wastes, hazardous wastes, storage tanks**

a. Describe types, amounts, and compositions of solid or hazardous wastes, including solid animal manure, sludge, and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

There are no solid or hazardous wastes produced by the crushed stone operations. Occasionally, recycled asphalt and concrete will be brought on site for crushing and for reuse in road construction projects. In the event that materials brought to the site for crushing and for reuse contain hazardous wastes, the proposer will coordinate activities with the MPCA to assure that MPCA guidelines and/or standards are followed for the handling of these hazardous wastes.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating groundwater. If the use of toxic or hazardous materials will lead to a regulated waste, discharge, or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge, or emission.

The potential hazardous materials used at the site are fuel oils and lubricating oils used in the crushing plant and for associated equipment. Fuel storage will be done to comply with all applicable MPCA tank regulations. Additionally, a Spill Prevention Plan for the site addresses and/or will address fuel handling, storage, inspection, spill prevention measures, and employee training.

c. Indicate the number, location, size, and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

Typically, a diesel storage tank approximately 500 gallons in size is maintained on site to service the on-site loaders. The above-ground tank is stored within a concrete or steel containment bunker and is operated to comply with all applicable MPCA regulations..

If a portable aggregate crusher is on-site, process fuel tanks and/or an electric generator tank are used. The tanks vary in size depending on which aggregate crusher is used and typical total fuel storage is approximately 1,000 gallons. All tanks are above ground and portable. Tanks comply with applicable MPCA regulations. Additionally, a Spill Prevention Plan for the site addresses and/or will address fuel handling, storage, inspection, spill prevention measures, regular employee training, and emergency response (as warranted or necessary).

21. **Traffic.**

Parking spaces added:	None proposed; parking is contained within the quarry footprint.
Existing spaces (if project involves expansion):	None proposed; there are sufficient areas to park within the quarry footprint.
Estimated total average daily traffic generated:	30 to 35 trucks per day.
Estimated maximum peak hour traffic generated and time of occurrence:	Generally daylight hours.

Indicate source of trip generation rates used in the estimates.

Total average aggregate sales divided by 20 tons (the approximate quantity of crushed aggregate per truck load), which was then divided by 260 working days per year. Also included in the trip generation estimates are a few visitors in cars or pickups to the site each day.

If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Using the format and procedures described in the Minnesota Department of Transportation's Traffic Impact Study Guidance *(available at http://www.oim.dot.state.mn.us/access/pdfs/Chapter%205.pdf)* or a similar local guidance, provide an estimate of the impact on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system.

There are a sufficient number of parking spaces available on the quarry property. Typically two to four employee vehicles will be parked in the quarry during operating hours. The ingress and egress points for the quarry exist but these may need to be widened and stabilized once the quarrying and processing begins. The quarry is accessed from 55th Street NE which is a dead end road and which allows also access to residential properties beyond its intersection with East River Road NE. The traffic on this road is limited. (**Refer also to Figure 1, to Figure 3, and to Figure 5.**)

22. **Vehicle-related air emissions.** Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts.

    The project proposes to shift aggregate operations from the existing Rochester Sand and Gravel, South Quarry approximately one mile north to the Rochester Sand and Gravel, North Quarry. There is a small number of average trucks per day, and little or no effect on ambient air quality or carbon monoxide levels is anticipated. No mitigation measures are proposed. The U.S. Environmental Protection Agency (U.S. EPA) has recently enacted regulations to reduce emissions from on-road diesel engines. One of the new regulations is the low sulfur diesel fuel standard, which requires the use of ultra low sulfur in on-road trucks. Another U.S. EPA standard applies to diesel engine manufacturing, which requires reduced engine emissions for new engine construction over several years using a tiered approach. These standards may reduce the possibility of effects.

23. **Stationary source air emissions.** Describe the type, sources, quantities, and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks, or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing) and any greenhouse gases (such as carbon dioxide, methane, nitrous oxide) and ozone-depleting chemicals (chloro-fluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

    If a portable crushing plant is on site, a diesel generator and/or diesel engines on the aggregate crushing plant itself are used to power the crushing spread. These are stationary source emissions. The diesel generator/engine runs on diesel fuel and produces diesel exhaust emissions. Diesel exhaust emissions from the combustion of diesel fuel typically contain nitrogen oxide, particulate matter, sulfur dioxide, carbon monoxide, carbon dioxide, and organic compounds. Stationary source diesel emissions are regulated and permitted by the MPCA and the U.S. EPA. The pump(s) needed for dewatering of the quarry will also be operated using a diesel generator.

When the portable crushing plant and associated mobile equipment are not crushing at the site, the only equipment at the site are the endloader and customer trucks. These are mobile source air emissions.

24. **Odors, noise and dust.** Will the project generate odors, noise, or dust during construction or during operation? **X** Yes ____ No

If yes, describe sources, characteristics, duration, quantities or intensity, and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at Item 23 instead of here.)

The crushed stone aggregate products produced at the site do not produce discernable odors.

The crushing plant generates noise which is limited and reduced to some effect by earthen berms and aggregate highwalls within the quarry. Noise levels are also limited by the distance from the source (aggregate crushing plant) to the potential receptor(s). The aggregate crushing plant location in relation to the property boundaries provides mitigation of potential noise levels and such levels are anticipated to be similar to average conversation levels at the property boundaries. Crushing operations typically occur during daylight hours unless a particular construction project may require extended operating hours.

Occasionally, a portable aggregate crusher may temporarily operate at the site if a road project is occurring in the geographic area or if aggregate inventory levels need to be replenished. During the crushing process, some aggregate dust is generated by the crushing equipment. This aggregate dust is controlled and limited by water spray bars and shrouding of dust generating transfer points. Fugitive dust from crushing operations is regulated and permitted by the MPCA through an Air Quality permit (to be applied for) to ensure ambient air concentrations are not affected.

Fugitive dust is also generated on roads and traffic areas around the plant and stockpile areas. This fugitive dust is controlled by water truck spraying.

25. **Nearby resources.** Are any of the following resources on or in proximity to the site?

Archaeological, historical, or architectural resources?	**X** Yes	____ No
Prime or unique farmlands or land within an agricultural preserve?	____ Yes	**X** No
Designated parks, recreation areas, or trails?	____ Yes	**X** No
Scenic views and vistas?	____ Yes	**X** No
Other unique resources?	____ Yes	**X** No

If yes, describe the resource and identify any project-related impacts on the resource. Describe any measures to minimize or avoid adverse impacts.

The Minnesota State Historic Preservation Office (SHPO) conducted a database search and review of the proposed North Quarry project property using the Minnesota Archeological Inventory and Historic Structures Inventory (i.e., State Historic Preservation Office databases). **Refer to Attachment No. 2** which includes the Minnesota State Historic Preservation Office (SHPO) review correspondence and recommendations. Based on that search, two sites were identified near, but not on, the site. The Archeological Site Location is listed as "Truax" and identifies that a single artifact was obtained from the archeological site location. Based on the description from the SHPO database, the Truax site is located on the other side of the Zumbro River from the proposed project. The Historic Structures Inventory lists a school at the southwest corner of West River Road and Oak Meadow Lane. That site is more than one-half mile from the project site.

The SHPO January, 2011 correspondence indicates and concludes that office's review of the proposed project plans is that there are no properties listed on the National or State Registers of Historic Places, and there are no known or suspected archaeological properties that may be affected by the proposed project.

26. **Visual impacts.** Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas, and large visible plumes from cooling towers or exhaust stacks? **X** Yes ____ No
If yes, explain.

Normally, quarry operations are screened from view by public access by forest cover and the topography of the site. For the North Quarry, the surrounding topography to the west, north, and east is slightly adding to screening potential. Site perimeter berms will be maintained around the quarry operational area to screen most, if not all of the quarry area from view. It is anticipated that the berm on the east side of the property may be of sufficient height to screen the entire operations from the east and from adjacent properties to the east. However, for residences on the surrounding hilltops west and north of the site, the quarry may be already visible or become visible as the operations expand.

If extended or longer than daylight crushing hours are necessary to complete a road construction project due to time schedules or deadlines, or if a particular contract requires evening hours, artificial lights may be used to safely operate the equipment. This might occur in connection with further review and evaluation of the proposed project by regulatory and permitting authorities.

27. **Compatibility with plans and land use regulations.** Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state, or federal agency? **X** Yes **X** No.
If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

The Rochester Sand and Gravel, North Quarry Project is both subject to and not subject to adopted local comprehensive plans, land use plans or regulations, and other applicable land use, water, or resource management plans of a local, regional, state, or federal agency.

As noted in the description of Land Use Management Districts (Item No. 14), parts of the proposed project are located in the Olmsted County designated 100-year flood plain and within the Shoreland Zoning District. The proposed project is subject to provisions of the Flood Plain Zoning Ordinance and to the Shoreland Zoning District or shoreland regulations that may be applicable to the site and to the project.

The project appears to be compatible with existing local land use plans or regulations. In 1998, the Rochester-Olmsted County Planning Department determined that the existing sand and gravel pits located in both Section 11 (i.e., area of the North Quarry) and Section 14 (i.e., the area of the South Quarry) of Cascade Township were established before the adoption of the Olmsted County Zoning Ordinance in the 1970s. There was also a local determination that the proposed use may continue as long as the use does not expand onto adjacent property and does not discontinue operation for more than one year. The North Quarry project does not appear to be subject to an otherwise specific element of an adopted local comprehensive plan or land use plan.

County zoning provisions do not specifically apply to the parcels of the proposed project. Enforcement of zoning and land use provisions for relevant aggregate resources developments in Cascade Township are

typically addressed by the Township Cooperative Planning Association. Grading plans in the project area may also be subject to review and comment by the City of Rochester, Public Works Department.

Review of the project and of reclamation needs or standards, and the need for permits and approvals in addition to those identified in Item No. 9, Permits and Approvals required, will also occur as part of public review of this EAW. If additional local permits or approvals are required, the project proposers will comply with those requirements prior to construction and/or or at the appropriate time within the schedule of project construction and development.

28. **Impact on infrastructure and public services.** Will new or expanded utilities, roads, other infrastructure, or public services be required to serve the project? ____ Yes **X** No.
If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

The site will continue to use the roads that exist and are currently being used and that have been in use since original operations began in the early 1970s. New or expanded roads, other infrastructure, or public services are not required to serve the proposed project and are not planned by the project proposers at this time.

While new infrastructure or public services are not required to serve the project, there is a proposed road project along 55th Street in the development and/or construction stages.

29. **Cumulative potential effects.** Minnesota Rule part 4410.1700, subpart 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement.
Identify any past, present, or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative potential effects. (Such future projects would be those that are actually planned or for which a basis of expectation has been laid.)
Describe the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects (*or discuss each cumulative potential effect under appropriate item(s) elsewhere on this form).*

There are no known past, present, or reasonably foreseeable future projects that may interact with this project in such a way as to cause a cumulative potential effect.

Cumulative effects result from individually minor but collective actions taking place over a period of time. The effects of this proposed project have been considered in connection with current and future projects constructed or planned within the project area and vicinity and known to the MDNR.

As described in this EAW, this proposed project will occur over many years. It is likely and possible that future projects may occur sometime during the operating life of this proposed project.

The MDNR has examined whether the proposed project, which may not individually have the potential to cause significant environmental effects, could have a significant effect when considered along with other projects that: (1) are already in existence, are actually planned for, or for which a basis of expectation has been laid; (2) are located in the surrounding area; and/or (3) might reasonably be expected to affect the same natural resources.

The MDNR reviewed present and proposed activities within an approximate half mile to one mile distance

from the proposed project, within Cascade Township, and within Olmsted County. There are no projects known to the MDNR recently completed or specifically planned in the foreseeable future within the same geographic area that may interact with the project described in this EAW in such a way as to cause cumulative effects. Projects in the development, construction, or planning phases in the vicinity of the project include a road project along 55th Street to upgrade and/or improve the road which may be in the construction phase after 2011. There is also the Hadley Creek subdivision and development in the construction phases. There is a quarry mining facility and operation to the south and east of the project area. In addition, the City of Rochester and other governmental entities have purchased a reclaimed quarry pit and are in the development process of converting that area to future open space and recreational activities and opportunities. The current information is that efforts have occurred over the years and that this area will, as a result of acquisition, be in public ownership.

Of particular concern are present or proposed actions that may cumulatively affect water resources, wetland and wildlife resources, water quality and quantity, fish and wildlife habitat and resources, and listed or sensitive species.

The type of potential cumulative effects that the MDNR may or will likely evaluate as part of examining the need or potential for further environmental review include groundwater appropriations; the potential for effects upon the South Fork of the Zumbro River from the groundwater withdrawal itself; the variety of ground water inflow at varying quarry depths; dewatering volume; dewatering discharge; effects of discharge to the South Fork of the Zumbro River; assuring discharge to the South Fork of the Zumbro River occurs with protection and standards for the fishery and other aquatic resources; potential changes or increases in turbidity, total suspended solids, and pH; potential for limiting effects with well interference on other water appropriations if concerns arise; noise, air emissions, the potential for development of changes in karst feature presence as the quarry grows or expands over a number of years; effective reclamation of the site following quarrying and extraction; reduction of soil erosion and soil loss; and potential relationships between and the effects of appropriation on wetlands.

With this type of project and with the period of time over which the project will be occurring, testing, monitoring, inspection, evaluation, the relationships between dewatering and discharge, and groundwater and surface water interactions and relationships are elements of ongoing testing, reports, and technical evaluation. Changes may occur as operations moved throughout the site and as quarrying depths vary and change. As described in the EAW, a number of the design features or specifics of the proposed project have not been decided upon at this time.

30. **Other potential environmental impacts.** If the project may cause any adverse environmental impacts not addressed by Items 1 to 28, identify and discuss them here, along with any proposed mitigation.

    There are no other potential environmental effects known at this time other than those identified or described in this EAW.

31. **Summary of issues.** *Do not complete this section if the EAW is being done for EIS scoping; instead, address relevant issues in the draft Scoping Decision document, which must accompany the EAW.*
    List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages, or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9b and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature  Date April 4, 2011

Title EAW Project Manager for the Minnesota Department of Natural Resources

Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board at the Minnesota Department of Administration, Office of Geographic and Demographic Analysis. For additional information, worksheets, or for *EAW Guidelines*, contact: Environmental Quality Board, 658 Cedar St., St. Paul, MN, 55155, 651-201-2492, or http://www.eqb.state.mn.us.