

July 2019

## Natural Resources Plan

Merriam Junction Sands, LLC  
Louisville Township  
Scott County, MN



SUNDE ENGINEERING, PLLC.  
10830 Nesbitt Avenue South  
Bloomington, MN 55437-3100

## **Resource Management Plan Merriam Junction Sands**

### **1.0 Introduction:**

The following Natural Resources Plan (NRP) has been prepared for the Merriam Junction Sands, LLC (MJS) proposed mining and processing operations (Project). The Project involves the continuation of an existing sand, gravel and limestone mining and processing and the establishment of new silica sand mining and processing. The Project is located on 682 acres of land in Louisville Township, Scott County, MN (Site).

The purpose of this NRP is to develop appropriate stormwater management to protect downstream water resources which include wetlands and public waters to insure that there are no significant, irreversible impacts to the water quality of nearby surface water resources. The stormwater management system has been developed to comply with performance standards established in Chapter 6 of the Scott County Zoning Ordinance. The County standards have been developed to prevent or reduce effects or impacts of stormwater runoff, to protect wetlands and public waters, and to minimize stormwater runoff damages in order to prevent degradation of water and soil resources. Development of a stormwater management system that meets State and County standards will help to eliminate the potential for significant environmental effects to adjacent downstream surface water resources as a result of the Project.

The NRP is required as part of the Scoping Decision Document for the DEIS for Merriam Junction Sands. This NRP will be used to develop the Merriam Junction Sands Resource Management Plan for the chosen Alternative.

The following items are analyzed in detail within this plan:

- Evaluation of existing stormwater patterns of the Site and receiving waterbodies.
- Hydrologic modeling and watershed analysis of pre-settlement, existing, and reclamation conditions.
- Determination of the off-site drainage areas that flow into and through the Site.
- Design of future stormwater conveyance measures to accommodate identified peak flows and to preclude the introduction of surface water runoff into end use lakes which takes into consideration future development of the contributing watershed area.
- Identification of erosion and sedimentation control measures to be used throughout all phases of the Project to minimize or eliminate impacts to surface

waters including specifically the Minnesota River with its status as an impaired water of the state.

- Wetland conservation and establishment of wetland buffers

This NRP covers the existing and proposed mining operations and includes generally the processing plant and railyard sites. Alternatives evaluated in the EIS include three different processing plant site and railyard locations. Once the location of the processing plant has been identified, construction of the plant will require an approved grading plan that complies with stormwater management and erosion and sediment control requirements of Chapter 6 of the Scott County Zoning Ordinance. The grading plan will further define stormwater management associated with the plan area(s).

Stormwater controls have been implemented at the Site for the existing mining operations. These stormwater controls are periodically updated and expanded as needed as mining progresses throughout the Site. Mining operations at the Site are currently conducted under the General Non-Metallic Mineral Mining and Associated Activities National Pollutant Discharge Elimination Systems (NPDES Permit) and a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the NPDES Permit. A SWPPP that includes the proposed sandstone mining and sand and gravel mining is included as Appendix A of this NRP. It is noted however that the SWPPP is intentionally a dynamic working document that is intended to be modified, amended, and supplemented by the operator over time as mining progresses across the Site, Site conditions and/or mining operations change, monitoring results or inspections indicate the need for additional best management practices, and/or NPDES Permit requirements are revised when new general permits are periodically issued.

## 2.0 Project Description:

The Project involves the continuation of existing sand and gravel and limestone mining and processing operations and the addition of sandstone mining and processing facilities. The Project also includes the development of a railyard and loading facility and Site reclamation. The majority of the Site has been previously disturbed from past mining operations. The sand processing plant(s) will be located in one or two of three general locations. Mining will continue to be conducted in phases and reclamation will be on-going following the completion of sandstone removal. Reclamation grades will result in a mix of end use lakes and uplands.

### Project Contact Information:

Matt Bryan  
Merriam Junction Sands, LLC  
327 Marschall Road, Suite 115  
Shakopee, MN 55379

Cell: (612) 919-3900  
Office: (952) 445-3900  
Fax: (952) 445-0809

2.1 Location Map:

Figure 1 is a location map of the Site that illustrates major streets and landmarks.

2.2 Existing Conditions:

Figure 2 illustrates pertinent information regarding existing Site conditions including:

- Current survey information;
- Name and address of Project proposer
- Name and address of engineer;
- Date of plan preparation;
- Dates and descriptions of all revisions;
- Name of Project;
- Current and proposed mine limits
- On-site well locations;
- On-site septic areas;
- 100-yr Floodplain; and
- Wetlands and public waters;

3.0 Existing Drainage Patterns and Receiving Bodies:

3.1 Existing Drainage Patterns:

Existing drainage patterns and receiving waters of the Site and surrounding area are illustrated on Figure 3, Drainage Patterns and Receiving Waters.

The Site consists of two properties. The eastern property is owned by Bryan Rock Products, Inc. (Bryan Rock). The western property is owned by Malkerson Sales, Inc. (Malkerson Sales). Both properties have been mined for several decades. Substantial portions of the Bryan Rock property have been lowered in elevation as a result of mining activity. Stormwater within the mined areas is internally captured and drained through vertical percolation and does not contribute to off-site drainage. The southern portion of the Bryan Rock property which has not been mined, drains off-site to the south through a culvert running under 145<sup>th</sup> Street to a landlocked wetland basin. The very northern portion of the Bryan Rock property has not been mined and does not drain internally. This area receives drainage from a 1,210 acre upstream watershed area through three arch pipe culverts running under US 169 which convey it across the northern portion of the Bryan Rock property to a drainage ditch located along the northern property line of Bryan Rock. This regional stormwater flow is joined by additional off-site flows, including the southern portion of the Dem-Con and Louisville Landfills, and the industrial

lands located west of US 169 and south of 130<sup>th</sup> Street West. The flow continues across the northern portion of the Bryan Rock property through stormwater ponds and a ditch system and is conveyed under a trestle running beneath the railroad tracks and into a ditch system on the Malkerson Sales property. The ditch system on the Malkerson Sales property, located west of the tracks, eventually discharges into wetland S4 (see Figure 4 for location) and then into the very northern portion of the seepage wetland through a 60" culvert. (Wetlands and public waters are described in Section 3.2.1 below)

Stormwater from the majority of the Malkerson Sales property flows from east to west to Gifford Lake or the floodplain wetland. The northern portion of the Malkerson Sales property, encompassing approximately 50 acres has not been mined yet (to be mined for sand and gravel as part of the Project) and is currently developed into a number of commercial/industrial uses including stables, paddock area and horse training facilities, warehouses, and residences collectively called the stable area. The existing development contains impervious surfaces, gravel access roads and rooftops, as well as pervious surfaces. It was developed prior to regulations requiring rate control, water quality treatment or volume control. There are culverts under existing roads but there are no storm sewer catch basins, stormwater ponds or other designated stormwater management facilities. The entire developed area drains from east to west into Gifford Lake.

Just south of the stable area is a sand and gravel mining area. Much of the area has been mined and reclaimed. The current mine haul road and scale house is located on the eastern portion of this area. A portion of the area that has been mined is vegetated and serves as a parking area for events held on-site (Trail of Terror, Renaissance Festival). The parking area drains from east to west into a series of stormwater ponds, the southernmost of which outlets into Gifford Lake.

The limestone quarry on the Malkerson Sales property begins south of the sand and gravel mining area. The northern portion of the quarry has been backfilled and sloped with imported and on-site soils. The majority of this area of the quarry has been vegetated and serves as parking for the Renaissance Festival and portions are used for crop production. The southern portion of this area is currently used as processing and stockpile area for the limestone mining operations. There is a stormwater pond in the stockpile and processing area and a series of ditches running through the entire area that direct stormwater runoff to wetland S4 as described above.

The southern portion of the active limestone quarry on the Malkerson Sales property drains internally. The Renaissance Festival booth area, campground and parking for the Festival on the south end of the Malkerson Sales property all drain west into the floodplain wetland complex.

The Malkerson Sales property located southeast of the railroad tracks in the northern portion of the project area drains to the northeast through a 30" RCP culvert running from the property under TH 41. A small area of off-site drainage enters the Malkerson Sales property from the ditch along the TH 41 right of way.

In addition to the off-site drainage under the railroad trestle, there are two culverts that drain off-site onto the Malkerson Sales property. One is a 7" RCP culvert located at the northern end of Louisville Landfill which directs runoff from the northern portions of the Louisville and Dem-Con Landfills. The other is a 24" DIP culvert that drains a portion of the railroad ditch south of the old 41 crossing.

### 3.2 Receiving Water Bodies:

#### 3.2.1 Wetlands and Public Waters:

There are three regulated wetlands located on the Site: S4, S6 and B4 as shown on Figure 4. All three wetlands are regulated under the Wetland Conservation Act. Wetland B4 is an Army Corps of Engineers (USACE) jurisdictional wetland. Wetlands S4 and S6 were determined to be non-jurisdictional wetlands. Wetland B4 consists of two distinct wetland types that are evaluated separately throughout the DEIS. Although the original wetland delineation labelled the entire wetland complex "B4", there are two different wetland areas within the complex. Because the two areas have distinctly different hydrologic components, for the purposes of the DEIS and this NRP, the term "seepage wetland" includes the high quality Wet Meadow and Shrub Carr native plant communities portion of the wetland complex that is dominated by groundwater flow. The remainder of the wetland is referred to as "wetland B4". The seepage wetland and wetland B4 portions of the floodplain wetland complex are illustrated on the inset on Figure 4. Both portions of the wetland complex, the seepage wetland and wetland B4, are under USACE jurisdiction.

Gifford Lake, which is in part located on the Site, is a public water. The Minnesota River, located west of the Site, is also a public water. Figure 4 illustrates the location of existing on-site regulated wetlands and public waters. There are existing drainage ditches, stormwater, and process water treatment ponds located on the Malkerson Sales property. The drainage ditches, stormwater, and process water treatment ponds, have been determined to be incidental wetlands and not subject to WCA regulation or USACE jurisdiction.

The Project does not propose any permanent significant adverse impacts to any of the regulated wetlands. Stormwater management and erosion and sediment control measures described within this plan will be implemented to eliminate or minimize any water quality impacts.

#### 3.2.2 100-Year Floodplains:

Figure 2 illustrates the 100-year floodplain of the Minnesota River with respect to the Site based on the preliminary update to the Flood Insurance Rate Map for Scott County, dated September 30, 2011. The preliminary update indicates that the Minnesota River 100-year floodplain elevation varies from approximately 724 to 725 feet above mean sea level (msl) across the Site. Floodplain areas are designated as Zone AE, Base Flood Determined.

Mining is not proposed within the floodway of the Minnesota River. Mining is proposed within the flood fringe area outside the floodway, primarily along areas that were lowered below the 100-year floodplain by past mining on the Malkerson Sales property. End use lakes on the Malkerson Sales property will have perimeter elevations above the 100 year floodplain elevation to prevent floodwaters from entering open water features during mining and end use lakes upon final reclamation. Any filling within the floodplain will be outside of the floodway. An emergency outlet will be established for the end use lakes on the Malkerson Sales property at an elevation above 100-year floodplain elevation. Floodwaters will be prevented from entering the groundwater lakes during mining and upon final reclamation.

#### 4.0 Watershed Analysis:

##### 4.1 Existing Vegetation:

The existing vegetation of the Site is illustrated on Figure 5, Cover Types. Active mining areas are sparsely vegetated or unvegetated. There are also areas with grassland, shrubland, cropland, brushland, woods and wetlands on the Site.

##### 4.2 Soils Map:

Site soils are illustrated on Figure 6, Soil Survey Map. The Natural Resource Conservation Service soil map indicates a wide range of soil types over the Site. Many of the original Site soils have been removed from past mining. The Site soils are summarized on Table 1 below.

Table 1 Site Soils and Hydrologic Soil Group Rating

<b>HSG A</b>
Dickman Sandy Loam – 0 to 12 percent slopes (DbA, DbB)
Estherville Loam and Sandy Loam – 0 to 12 percent slopes (EaA, EaB, EaC2)
Hawick Gravelly Sandy Loam, 2 to 6 percent slopes (EbC)
Salida Gravelly Sandy Loam – 0 to 12 percent slopes (EbB)
Sparta Fine Sand/Loamy Fine Sand – 0 to 12 percent slopes (HeB, HeC)
<b>HSG B</b>
Terril Loam – 0 to 12 percent slopes (TcA, TcB, TcC)
Waukegan Silt Loam – 0 to 2 percent slope (WaA)
<b>HSG C</b>
Dorchester Silty Clay Loam (Dd)
<b>HSG D</b>
Copaston Silt Loam – 0 to 6 percent slope (CdA, CdB, CdB2)
Oshawa Silty Clay Loam (Oa)
Houghton Muck – 0 to 1 percent slope (PbA)
<b>Other</b>
Pits, Gravel (Gp)
Marsh (Ma)
Stony Land (Sc)
Terrace Escarpments (Ta)
Water (W)

## 5.0 Hydrologic Modelling:

Evaluation of the stormwater management system includes hydrologic modelling of the pre-settlement, existing and reclamation to demonstrate compliance with Scott County’s stormwater management regulations.

### 5.1 General Standards:

Stormwater management for the Project has been developed in accordance with Article B of Chapter 6 of the Scott County Zoning Ordinance. This Project will meet runoff rate, volume and quality control regulations specified in the Scott County Zoning Ordinance. In addition, the project will operate under a National Pollutant Discharge Elimination Systems (NPDES) Permit and a Site specific Stormwater Pollution Prevention Plan (SWPPP). Current mining operations operate under the

General Non-Metallic Mineral Mining and Associated Activities NPDES Permit and a SWPPP.

## 5.2 Pre-settlement Conditions:

Stormwater management for the Site is based on the pre-settlement condition and topography of the Site. (Regional stormwater flows coming into and flowing through the Site are discussed in Section 5.3.) There are six pre-settlement drainage areas on the Site. PS1, PS2, and PS3 all drain to Gifford Lake. PS1 is located in the northeastern portion of the Bryan Rock property, which under pre-settlement conditions drained to the north through the current Dem-Con Landfill property and then into PS2 and Gifford Lake. PS4 and PS5 drain into the floodplain wetland, and PS6 drains south to a landlocked wetland basin southwest of the Bryan Rock southernmost parcel. Pre-settlement drainage areas of the Site are illustrated on Figure 7.

Per County Zoning Ordinance, pre-settlement conditions may include lake or pond outlets that were in place at the time the ordinance was adopted (pre-existing outlet). The outlet associated with the stormwater ponds adjacent to Gifford Lake and the outlet from wetland S4 into wetland B4, predate the ordinance and are considered pre-existing outlets in this evaluation. The pre-settlement peak flows included in Table 5 reflect existing peak flows through the two pre-existing outlets.

The outlet to Gifford Lake consists of three ponds constructed to treat runoff from mining and processing operations prior to discharge to the Gifford Lake. These basins were constructed by the early 1960's on upland soils and are connected to one another via pipes and overland flow. These ponds were designed to operate in series with the final discharge into Gifford Lake through a culvert from the southernmost basin into Gifford Lake. Drainage to this pre-existing outlet is indicated as Drainage Area PS3 in Table 2 below.

The stormwater basin identified as wetland S4 was constructed in the 1980's to manage runoff from the quarry floor. A 60-inch culvert provides an outlet from this basin into the very northern edge of the seepage wetland. Channels within the seepage wetland direct flow a short distance into the B4 floodplain wetland complex and out to the MN River. Drainage to the culvert from on-site areas is indicated as Drainage Area PS5 in Table 2 below. The drainage area includes runoff from existing subwatershed areas EX4, EX5, EX6 and EX7 (see Section 5.3). Although there are regional flows that also pass through this pond and outlet (from the area east of US 169 and the industrial lands north of Bryan Rock and east of Malkerson Sales properties), these off-site drainage areas and flows are not included in this analysis. Off-Site flows are discussed in Section 10.0.

Table 2 includes details of the pre-settlement conditions used to model pre-settlement flows. Hydrologic Soil Groups included Types A, B, C and D soils. Composite runoff curve numbers used for pre-settlement conditions are based on

Scott County Stormwater Management Standards for the Hydrologic Soil Groups (HSG) and are as follows:

HSG A - CN 30	HSG B - CN 55	HSG C - CN 71	HSG D - CN 77
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Table 2 Pre-Settlement Conditions on Site

Drainage Area Name	Area (Acres)*	Composite Curve Number	T <sub>c</sub> ** (Min)	Discharge to:
PS1	37.77	54	110	Gifford Lake
PS2	120.26	34	96	Gifford Lake
PS3	32.90	63		Pre-existing Gifford Lake through ponds/outlet
PS4	157.61	See Table 3 Existing Conditions EX4, EX5, EX6 and EX7		Pre-existing S4/B4 outlet
PS5	239.76	55	144	Wetland Complex
PS6	41.52	55	75	SW of 145 <sup>th</sup> to landlocked area
Total	629.82			

\*Drainage areas do not include the portion of the Site covered by the floodplain wetland or Gifford Lake therefore drainage area is less than total Site acres.

\*\* T<sub>c</sub> - Time of Concentration

### 5.3 Existing Conditions:

Existing conditions of the Site consider the current mining, commercial and residential development of the Site and surrounding area. The Site is broken into 12 subwatershed areas as illustrated on Figure 8, Existing Conditions. Drainage areas were delineated using LiDAR topography. Two subwatershed areas drain internally as a result of past mining activity and the remaining discharge off-site to four different receiving waters as indicated on Table 3. Vegetative cover has changed from pre-settlement conditions and now also includes impervious areas associated with existing Site development. Impervious areas include the main haul road through the Site and scale house area, commercial and residential uses and their associated buildings, access roads, and paddocks, Festival grounds, quarry floor, reclaimed mining areas and pasture and grasslands.

There are a number of ponds located on-site which are used to manage stormwater runoff. The three ponds adjacent to Gifford Lake were discussed in Section 5.2. There are two significant ponding areas within EX4. One is associated with the Dem-Con Landfill. The Dem-Con pond was constructed in the 1980's and is located within a drainage easement on Bryan Rock property. The pond receives runoff from the southern portion of the Dem-Con Landfill, as well as from Anchor Block, the additional industrial lands east of Dem-Con, and drainage from a large contributing drainage area east of US 169. This pond outlets into a ditch that enters a ponding

area on the northwest corner of the Bryan Rock property. This pond, as well as water from the pond located on the Louisville Landfill, discharges under the railroad trestle onto the Malkerson Sales property.

There is a pond located on the floor of the quarry that receives water from the stockpiling and processing area. The pond has an outlet that discharges to a ditch system that runs through the old quarry floor. The ditch system eventually discharges into wetland S4 which was constructed as a stormwater basin along the edge of wetland B4. Wetland S4 has a 60" CMP outlet that discharges water into the very northwest portion of the seepage wetland. Channels within the wetland direct the flow into wetland B4 and into the Minnesota River.

Table 3 Existing Conditions on Site

Drainage Area Name	Area (Acres)*	Composite Curve Number	T <sub>c</sub> ** (Min)	Discharge to
EX1	100.64	57	50.5	Gifford Lake
EX2	33.00	70	27.3	Gifford Lake through ponds/outlet
EX3	19.39	54	70	NE of 41
EX4	28.30	81	49	S4/B4
EX5	10.54	73	77	S4/B4EX23
EX6	91.96	71	120	S4/B4
EX7	26.97	56	49	S4/B4
EX8	59.58	72	100	Wetland Complex
EX9	54.42	69	71.5	SW of 145th to landlocked area
EX10	14.81	70	47.7	SW of 145 <sup>th</sup> to landlocked area
EX11	46.78	70	66	Internal
EX12	143.53	79	42	Internal
Total	629.82			

\*Drainage areas do not include the portion of the Site covered by the floodplain wetland or Gifford Lake.

\*\* T<sub>c</sub> - Time of Concentration

#### 5.4 Reclamation Condition:

The reclamation condition of the mined portion of the Site is modeled as open space (Modelled as HSG B soils CN=61) and water body (impervious CN=98). Much of the Site will drain internally in the reclamation condition. Potential future development areas identified on the reclamation plan will be required to design and implement stormwater management practices in accordance with regulations current at the time of development. Regional stormwater flow from east of US 169 will pass through the Site in an open channel designed to accommodate the 100-yr peak flow without overflowing into an end use lake. Reclamation drainage areas are illustrated on Figure 9, Reclamation Conditions.

Table 4 Reclamation Conditions on Site

Drainage Area Name	Area (Acres)	Composite Curve Number*	T <sub>c</sub> ** (Min)	Discharge to
R1	75.82	61	47.3	Gifford Lake
R2	33.00	64	44.1	Gifford Lake through pond/outlet
	19.4	61	66.4	NE of 41
R4	35	63	71.1	S4/B4
R5	12	61	10	Wetland Complex
R6	10	61	43.5	SW of 145 <sup>th</sup> to landlocked area
Internally drained	444.60	-	-	
Total	629.82			

\*Drainage areas do not include the portion of the Site covered by the floodplain wetland or Gifford Lake.

\*\* T<sub>c</sub>- Time of Concentration

### 5.5 Summary of Peak Rates of Runoff Pre-Settlement, Existing, Reclamation:

In accordance with the Scott County Zoning Ordinance, the project has been designed to manage increased runoff so that the post reclamation condition will meet the Site's total 2, 10 and 100-yr peak rates of runoff for the Site. Much of the Site will drain internally resulting in peak rates of runoff that will be generally lower throughout the Site than existing conditions. Accelerated channel erosion on and off-site will not occur as a result proposed mining and reclamation. Table 5 summarizes pre-settlement, existing post-reclamation peak rates of runoff.

Table 5 Pre-Settlement, Existing, and Post Development Peak Flows for Site \*

Receiving Water	Pre-settlement			Existing Conditions			Reclamation Conditions		
	Peak flow (cfs)**			Peak flow (cfs)			Peak flow (cfs)		
	2-Yr	10-Yr	100-Yr	2-Yr	10-Yr	100-Yr	2-Yr	10-Yr	100-Yr
Gifford Lake	2.77	9.13	103.62	6.86	37.6	160.44	10.11	41.20	152.46
NE of 41	0	0	0	0.51	4.14	20.23	0	0	0
S4/B4	23.94	54.09	114.99	23.94	54.09	114.99	4.9	18.73	68.56
Wetland Complex	5.61	34.27	154.87	13.16	34.66	93.16	2.32	12.41	45.05
South of 145th	1.36	9.49	43.65	16.77	47.09	124.09	1.29	5.39	19.1
SITE TOTAL	33.68	106.98	417.13	61.24	177.58	512.91	19.45	81.67	299.39

\* Does not include off-site contributions

\*\* cfs- cubic feet per second

### 6.0 Water Quality:

Erosion and sedimentation control measures will be used throughout all phases of the Project to minimize or eliminate impacts to surface waters including the Minnesota River and its status as an impaired water of the state. During mining the

majority of stormwater contacting exposed soils will be handled internally, directed to internal low areas, allowed to infiltrate and will not be discharged off-site. Much of the mined area of the Bryan Rock property and portions of the Malkerson Sales property are currently internally drained.

Perimeter controls such as silt fence, diversion berms and drainage swales will be installed adjacent to active mining areas that could drain off-site prior to stripping these areas in preparation of mining. These controls will redirect stormwater internally or treat the stormwater prior to discharge off-site. The Site operates under a SWPPP and discharges to the wetland complex are sampled and tested in accordance with the General NPDES permit for non-metallic mineral mining operations. The current Best Management Practices (BMPs) that are utilized at the Site are effective at reducing total suspended solids. BMPs include revegetation of completed mining areas, internal drainage to low areas to promote infiltration, temporary stormwater ponds located in the floor of active mining areas, perimeter controls, sedimentation basins to treat and recycle process water from washing operations, riprap or other energy control devices at outlets, vegetated swales, and vegetated perimeter berms. As mining progresses across the Site, BMPs will be extended and/or additional BMPs will be implemented to accommodate changing Site conditions. Discharges from the mine are monitored in accordance with the NPDES permit.

Wetland S4 which is regulated by the states' Wetland Conservation Act (WCA) , but it is not under the jurisdiction of the USACE, receives much of the Site runoff as well as regional flows that pass through the Site. This basin has been used as a stormwater basin for many decades, constructed by berming across a wetland bay to create the basin. A 60" CMP culvert was installed through the berm to discharge water from the basin to the seepage wetland. On-going maintenance activities of this pond including sediment removal will be required throughout the Project.

A preliminary SWPPP for the proposed sandstone mining operation is included as Appendix A. The SWPPP will be finalized to accommodate the alternative, phasing, and plant location ultimately developed as the Project. The SWPPP is a plan that receives ongoing mine operator review and assessment, and updates as a result of inspections, mine progression and updated permit conditions.

The processing plant site will require a grading permit from Scott County along with specific stormwater and erosion and sedimentation control designs in accordance with the Scott County Zoning Ordinance. Once a plant location has been determined, wet sedimentation basins will be designed to treat stormwater runoff from plant area(s) with more than one acre of impervious surface that drains off-site (a condition that will be limited to plant sites located on the Malkerson Sales property). All wet sedimentation basins will be designed and constructed to provide a permanent wet pool with dead storage greater than or equal to the runoff from a 2.5-inch storm

event. Pond outlets will be designed to prevent short circuiting of the flow from pond inlets to the outlets. Skimmers will be provided on outlets to prevent migration of floatables and oils for at least the 1-year storm event. Access will be provided around the pond(s) to allow future maintenance. Scott County standards for water quality treatment and the provisions of the NPDES permit, including special provisions for sites within one-mile of an impaired water will be met by the Project. The Project will not result in any significant water quality impacts to downstream surface waters.

#### 7.0 Volume Control:

Mining and reclamation will not increase the amount of impervious surfaces located on-site. As the stable area is mined for sand and gravel, impervious surfaces will decrease. The processing plant location(s) will include additional impervious surfaces. For plant sites that do not drain internally, infiltration basins will be designed to provide infiltration for a volume of runoff equivalent to the depth of one inch of runoff over the area of all new impervious surfaces within the plant site within forty-eight (48) hours. Infiltration volumes will be calculated using the appropriate hydrologic soil group and saturated infiltration rate from the County's stormwater management regulations unless Site specific infiltration or hydraulic conductivity measurements are taken and the values are approved by the County. Directly connected impervious surface areas will be minimized to the extent practical to desynchronize stormwater flows. Pretreatment; oil/grease separation, sedimentation, biofiltration, filtration, swales or filter strips, will be provided for runoff generated from parking lots that will enter the infiltration system.

#### 8.0 Processing Plant(s):

The Project will involve the construction of one or two sand processing plants and rail yards depending upon the alternative that is chosen. There are three potential plant locations, two on Malkerson Sales property (North and South) and one on Bryan Rock property. If a plant is constructed on the Bryan Rock property, the plant will be located on the floor of the existing quarry and stormwater from the plant area will not discharge off-site. If the plant is located at the Malkerson North or South locations, stormwater from the plant area may be discharged off-site. Stormwater management including rate control, volume control and water quality treatment will be designed into the grading plan for chosen plant area. A grading permit will be required for the processing plant(s) construction. Construction of the plant(s) may not commence until the Grading Permit has been issued. All Scott County stormwater management standards including a Stormwater Management Plan, an Erosion and Sedimentation Control Plan, and a Stormwater Pollution Prevention Plan, will be met and design and hydrologic computations of the plant will be submitted to the County for review and approval prior to plant and/or railyard construction.

#### 9.0 End Use Lakes:

The Reclamation Plan for the Site includes the creation of three end use lakes. Regional stormwater flows will be directed around these lakes to protect their water quality. The end use lakes will have a small watershed to lake ratio and the water quality is expected to meet the Class 2A waters; aquatic life and recreation standards established in MN Rules 7050.0222. The surface water standards have been established to permit the propagation and maintenance of a healthy community of cold water sport or commercial fish and associated aquatic life, and their habitats, and to be suitable for aquatic recreation of all kinds. Reclaimed vegetated perimeter areas and open space which may be developed in the future will drain to the lakes. Stormwater management controls including water quality treatment will be integrated into final development plans in accordance with standards in effect at the time of development.

The size of the end use lakes is expected to range from approximately 50 to 120 acres and ultimately will depend upon the volume of overburden, transition material and reject sand that the Site generates. The perimeter of the lakes will be above the 100-year flood elevation so that floodwaters will not enter the lakes during regional flooding events of this magnitude. Back to back 100-year rainstorm events have been modelled for the end use lakes to determine approximate high water levels. The results can be used to establish appropriate low floor and entry elevations of buildings and residences, individual sewage treatment systems (ISTS)), and infrastructure (sanitary sewer, stormwater pipes and facilities, and roads) surrounding the water bodies. Calculations were based on 75% impervious for all developable areas draining into the end use lakes.

Prior to any final development, the analysis should be rerun to reflect any changes in the final configuration of the waterbodies and contributing watersheds. The created lakes on the Malkerson property will have emergency overflows constructed just above the 100-year flood elevation to provide protection to adjacent future development, even though the analysis shows lake levels are not expected to reach the overflow with two back to back 100-year events. Consistent with the current approved reclamation plans for the Bryan Rock property, a pumped emergency overflow may be constructed on the Bryan Rock property.

Table 6 End Use Lakes: Back to Back 100-yr events

End Use Lake	Normal Water Level (msl)	High Water Level* (msl)	Emergency Overflow (msl)	Regional 100-yr flood elevation (msl)
BRP	718	720.25	Pumped - elevation to be determined	NA
MS-N	715	717.49	726	724-725
MS-S	715	716.74	726	725

\*back to back 100-year rainstorm events

## 10.0 Off-Site Drainage Through the Site:

### 10.1 Determination of the off-site drainage areas that flow into and through the Site:

Regional stormwater flows from a 1,209 acre drainage area enter the Site through three arch culverts located under US 169. Stormwater flows along the west side of US 169, across the Bryan Rock entrance, and along the northern property line of Bryan Rock joined by additional off-site stormwater from the Louisville Landfill, the Dem-Con Landfill and industrially developed land east of Dem-Con and South of 130<sup>th</sup> Street West. The total off-site drainage area that flows into the northern portion of the Bryan Rock property and through the Malkerson Sales property to wetland S4 is 1,350 acres.

Additional off-site drainage flows onto the Site through a 27" RCP culvert under the railroad tracks near the northern end of the Louisville Landfill. The culvert flows through culverts under the main haul road on the Malkerson Sales property and then overland flow across the Malkerson Sales property to Gifford Lake.

Once Dem-Con Landfill's northern phases are completed, additional stormwater from the Dem-Con Landfill and developed land east of the landfill and north of 130<sup>th</sup> Street West will also flow through this culvert onto the Site. The drainage area flowing through the 27" RCP is 110 acres. This culvert flows under the tracks to the west onto Malkerson Sales property and continues through a series of culverts under the main haul road then overland flow to Gifford Lake. This culvert drains an 8.7 acre drainage area that includes primarily railroad right of way. If the capacity of the 24" culvert is exceeded overflow is to the north within the railroad ditch.

A portion of the developed lands in the southwest quadrant of US 169 and TH 41 drains to the TH 41 ditch and into the Malkerson Sales property to a low area in the corner of the property. The off-site drainage area is 19.65 acres. Overflow of the low area is to a culvert located in the TH 41 right of way that flows northeast into a MnDOT Stormwater pond. The recently mined portion of the MnDOT facility drains internally. Drainage areas that flow into and through the Site are illustrated on Figure 3, Drainage Patterns and Receiving Waters.

### 10.2 Determination of Peak Flows Into and Through the Site:

HydroCAD modelling was performed for off-site watershed conditions that reflect peak flows from the 100-yr rainstorm event using Atlas 14 rainfall. The watershed that includes the drainage area east of US 169 which was modelled by the County as part of the US 169 frontage road and access improvements. A 100-yr peak flow of 400 cubic feet per second (cfs) occurring 16 hours into the storm event from

the watershed east of US 169 was routed along with drainage from the very northern portion of the Bryan Rock property and drainage from the Anchor Block property, resulting in a 100-yr peak flow of 410 cfs into the northeastern portion of the Bryan Rock property.

100-yr peak flows under full development conditions for Louisville Landfill, Dem-Con Landfill, and the industrial areas east of the landfill, were incorporated into the model. The model assumes full development of both of the landfills and utilized the 100-yr rainfall amounts from Atlas 14 rather than the rainfall amount that was used as a design basis for the stormwater facilities on the landfills. The stormwater facilities include Dem-Con's large sedimentation basin located on an easement which extends onto Bryan Rock property and a large pond on the Louisville Landfill. The Dem-Con pond discharges into a swale that runs into a pond in the northwestern corner of the Bryan Rock property. The Louisville landfill pond joins flows from the Bryan Rock Pond which continue under a railroad trestle onto the Malkerson Sales property. The additional inputs from the Louisville and Dem-Con landfill increase the 100-yr peak flow to 438 cfs through the Malkerson Sales property.

Currently flow continues through culverts under the mine haul road and into a ditch system located on the floor of the quarry area. The ditch system enters wetland S4 which serves as a large stormwater basin with an outlet into the northern portion of the seepage wetland eventually flowing west into wetland B4 and the Minnesota River.

Drainage through the northern portion of the two landfills and the associated industrial lands through the 27" RCP result in a 100-yr peak flow of 52 cfs. In large rainstorm events, water heading up on the east side of the tracks by the culvert overflows to the north through the railroad's ditch system to the 24" DIP culvert. The 100-yr peak flow through the 24" DIP culvert is 40 cfs. If the capacity of this culvert is exceeded, overflow is to the north along the railroad ditch.

The 100-yr peak flow into the Malkerson Sales parcel southeast of 41 and the railroad tracks from the developed area southeast of US 169 and TH 451 is 35 cfs. Table 7 indicates the 100-yr peak flows associated with each off-site drainage area that flows into and through the Site.

Table 7: Off-Site Peak Flows

Inflow Location	100yr peak flow (cfs)
BRP NE	400
Trestle	438
27" CMP	52
24" CIP	40

10.3 Design of future stormwater conveyance measures to accommodate identified peak flows taking into consideration future development of the contributing watershed area and precludes the introduction of regional surface water runoff into the end use lakes:

The conveyance of the regional stormwater through the Site will be maintained throughout mining. Reclamation includes the establishment of a permanent open channel designed to convey regional stormwater through the Site and preclude it from entering the end use lakes. The channel design accommodates 100-yr peak flows for full watershed development.

Reclamation of the Site will maintain the existing regional stormwater drainage patterns from the watershed east of US 169 through an engineered open channel that will prevent regional stormwater runoff from entering the end use lakes. The northern boundary of Bryan Rock will be reserved to construct the engineered open channel and a maintenance road. Portions of the area that will not be mined are currently subject to drainage easements, some additional easement area will be required to accommodate the open channel. The proposed channel design separates the regional flows from the Dem-Con pond by routing the channel south of the pond. This will allow better stormwater treatment in the Dem-Con pond.

Figure 10, Channel Design Bryan Rock Property, illustrates the proposed channel design on the Bryan Rock property. The open channel will have a 5-foot base and 3:1 slopes to accommodate the 100-yr peak flow and provide one foot of freeboard. The channel will be riprapped lined for erosion control. A maintenance road will be constructed adjacent to the channel.

On the Malkerson Sales property, a backfilled berm will be constructed to support the construction of the open channel between the two end use lakes. The channel will flow into the existing drainageway on the western edge of the Malkerson Sales property and discharge at its current location into Wetland S4. Figure 11, Channel Design Malkerson Sales Property, illustrates the open channel through Malkerson Sales to the wetland. A maintenance road will also be constructed adjacent to the channel on the Malkerson Sales property. Barr Engineering conducted a slope stability analysis<sup>1</sup> of the proposed stormwater channel across the berm. (The results of the analysis are presented in Section 3.10 Geologic Hazards and Soil Conditions of the DEIS. The results of the analysis are incorporated into the reclamation plan and channel design. Prior to reclamation, on a temporary basis,

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<sup>1</sup> Barr Engineering Company. January 2017 Pit High Wall Stability Analysis Merriam Junction Sands. Minneapolis, MN 2017.

stormwater may be routed around active mine areas, diverted internally to open water features, or the floor of the quarry.

Sandstone mining activity will not impact the stormwater drainage patterns flows from the 27" culvert. Sand and gravel mining activity will require temporary diversions around active mining areas. The current overland flow drainage patterns will be restored once reclamation of the sand and gravel area has been completed. During active mining perimeter berms along the TH 41 right of way will be used to keep stormwater in the highway right of way.

#### 10.4 Floodplain Alterations:

The existing channel conveying regional stormwater through the Malkerson Sales property will be improved and will require grading within the 100-year floodplain of the Minnesota River. All grading will occur outside of the designated floodway. There will be no net loss of storage within the floodplain associated with the regional improvements.

#### 11.0 Erosion and Sediment Control Measures:

Erosion and Sediment management to be used throughout all phases of the Project has been developed to minimize or eliminate impacts to surface waters including the Minnesota River and its status as an impaired water of the state. Erosion and sedimentation measures have been developed in accordance with Article C of Chapter 6 of the Scott County Zoning Ordinance, the NPDES Permit and SWPPP.

A preliminary SWPPP that includes the proposed sandstone mining is included as Appendix A of this NRP. It is noted that the SWPPP is intentionally a dynamic working document that is intended to be modified, amended and supplemented by the operator over time as mining progresses across the Site, as Site conditions and/or mining operations change, as monitoring results or inspections indicate the need for additional best management practices, and/or NPDES Permit requirements are revised when new general permits are periodically issued.

#### 12.0 Impaired waters:

The Site is located within one mile of, and is tributary to, an impaired reach of the Minnesota River. Mining will take place over one-quarter mile from the river. Soils exposed as part of the mining, reclamation, or plant construction that drain off-site will be treated with silt fence, diversion berms and swales, temporary sedimentation basins, and vegetated buffers. Stabilization of graded areas that drain off-site will begin immediately upon conclusion of temporary or final grading of an area and completed within seven days after grading that portion of the Site has been completed. If a drainage area that is five acres or more that serves a

common drainage location is disturbed at one time for any reason, stripping, mining, reclamation etc., a temporary sedimentation basin will be installed.

The mining area will not be generating new impervious surfaces. Processing plants developed at Malkerson Sales south and at Bryan Rock will not drain off-site. A plant area on Malkerson Sales north will generate impervious surface that will drain off-site. Infiltration basins will be designed to provide infiltration for a volume of runoff equivalent to the depth of one inch of runoff over the area of all new impervious surfaces within the plant site within forty-eight (48) hours.

### 13.0 Erosion and Sediment Control Practices:

Mining and Processing: BMPs are currently in place and additional BMPs will continue to be implemented at the Site as needed in order to minimize the potential for erosion and sedimentation and protect off-site surface waters. BMPs include silt fence, perimeter diversion berms, revegetation, progressive reclamation, energy dissipaters, riprap, drainageways, vegetated buffers and temporary stormwater basins where needed. These practices will continue with the added sandstone mining activity. Sandstone mining will continue to direct stormwater runoff from active mine areas internally reducing the potential for off-site erosion and sedimentation. Perimeter controls including silt fence or diversion berms or swales will be used as needed along perimeter areas that may temporarily drain off-site. Silt fence will be maintained as needed and removed from the Site when no longer useful and mining has redirected surface water. The perimeter controls will be installed downstream of any land disturbing activities prior to the start of any land disturbance within a given area to be mined. BMPs will be extended and additional BMPs will be added as needed as mining progresses across the Site. Areas will be stabilized and reclaimed in phases, minimizing the area of disturbance which could potentially drain off-site. All BMPs shall be maintained, inspected, and remain in place until final stabilization is completed or drainage is directed internally.

Reclamation: Stabilization BMPs include grading and sloping areas around the perimeter of the quarry walls, benching quarry walls to provide long term slope stability, and establishing vegetation over areas that have been backfilled and graded. These activities will be conducted in accordance with the approved Reclamation Plan which has been developed to provide long term slope stability. Seed mixes will vary across the Site as outlined in the Reclamation Plan.

Crushing and screening equipment operating at the Site: Equipment is inspected on a daily basis during normal operations. Leaks or spills are promptly cleaned up and reported to the supervisor and the Minnesota Pollution Control Agency as appropriate. Maintenance of the equipment is routinely conducted.

Material storage areas: Stormwater is directed away from material storage areas to internal stormwater/infiltration areas. The winter stockpile will be partially recessed and stormwater management will direct runoff from the winter stockpile to sediment treatment areas.

Roads and vehicle parking: The majority of internal haul roads are gravel surfaced. The haul roads are watered as needed to control dust. The main entrances to the Site will be monitored for dust and soil tracking and swept or washed as necessary to prevent tracking onto public roads.

Fuel storage and fueling: All fuels will be stored and transferred in accordance with applicable regulations. Best management practices adopted at the Site include secondary containment, portable drip pans, spill kits, good housekeeping, and employee training of proper fuel storage and handling.

Spills or leaks from fueling procedures or equipment maintenance: Spill clean-up material will be maintained on the Site including shovels, sand and larger earth moving equipment. Large earth moving equipment, shovels, absorbent materials and sand are available to contain or isolate a spill. All efforts will be made to prevent the spilled material from impacting any surface water. Following a spill, the Spill Prevention Plan will be reviewed to determine if it was successful in responding to the spill. Changes will be made as necessary to improve spill response. Spills of petroleum products over five gallons will be reported in accordance with state and federal law.

Vehicle and equipment maintenance activities are performed on-site. Oil changes are conducted by facility personnel on-site. All used oil is collected by facility personnel in a leak-proof metal container, and is hauled off-site to be recycled.

Equipment washing: No detergent or chemicals are used to wash equipment on-site. Wash water from equipment washing is directed to on-site infiltration areas and is not discharged from the Site.

Fugitive Dust: Haul roads are watered as needed to prevent dust from leaving the Site. Paved roads are swept as needed to prevent tracking of dirt onto public roadways.

Chemical Storage Areas: All chemicals on-site will be stored in an appropriate manner under cover or within sealed containers to avoid contact and contamination of stormwater runoff. Spills of materials will be immediately cleaned up in accordance with all regulations.

Additional BMPs will be added as needed to the mining SWPPP to ensure that there are no off-site discharges, violations of water quality standards, floating

solids and to ensure that visible foams are not discharged except in trace amounts, and that oil or other substances are not discharged in amounts that create a visible color film. All outlets from the Site will be located on the ground with protective measures such as riprap at the outlets to prevent erosion. Additional temporary sedimentation basins may be required as quarry activity progresses. Good housekeeping procedures are followed at this Site.

#### 14.0 Wetland Conservation:

Stormwater management has been developed in accordance with Article D of Chapter 6 of the Scott County Zoning Ordinance. According to the National Wetland Inventory, there are three regulated wetlands on-site: S4, S6 and B4. The Project has been designed to minimize direct and indirect impacts to the wetlands. There will be no permanent inundation or flooding of the wetlands, significant degradation of water quality, excavation, filling or drainage of the wetlands. A surface water monitoring plan will monitor for changes in the established wetland hydrology and mitigation measures will be implemented as needed to ensure no permanent significant adverse wetland impacts. The seepage wetland, which has the high quality native plant communities is protected from inundation by the natural topography and established drainage channels that convey excess water from groundwater seepage and stormwater runoff through the seepage wetland into wetland B4 and out to the River. Both the seepage wetland and wetland B4 are located in the floodplain and are subject to flooding from the Minnesota River.

Wetland Buffers: The proposed wetland buffer along Wetland B4, ranked exceptional for vegetative diversity/integrity, habitat structure, and wetland water quality using the Minnesota Routine Assessment Method by Barr Engineering<sup>2</sup>, is an average of 65 feet wide and a minimum of 30 feet wide. The proposed buffer meets County width standard of an average of 65 feet and a minimum of 25 feet for exceptional wetlands. The proposed wetland buffer around wetlands S4 and S7, which are lower quality due to past disturbance, have average buffer widths of 50 feet and minimum of 25 feet, meeting the County's standard for high quality wetlands

The proposed wetland buffers are located in areas that are assumed to have acceptable natural vegetation. This vegetation will be undisturbed and protected by installing temporary fencing prior to clearing, grubbing or stripping operations adjacent to the wetland. An exception to this may be the need to remove enough vegetation to allow the construction of the improved stormwater channel to accommodate regional stormwater flow through the Site to wetland S4, and any other required utility installations. Disturbed buffer areas will be revegetated with

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<sup>2</sup> October 2011, Wetland Delineation Report. Portions of Merriam Junction Sands Mine, Scott County, Minnesota. Barr Engineering Company, Minneapolis, MN,

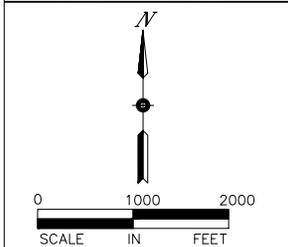
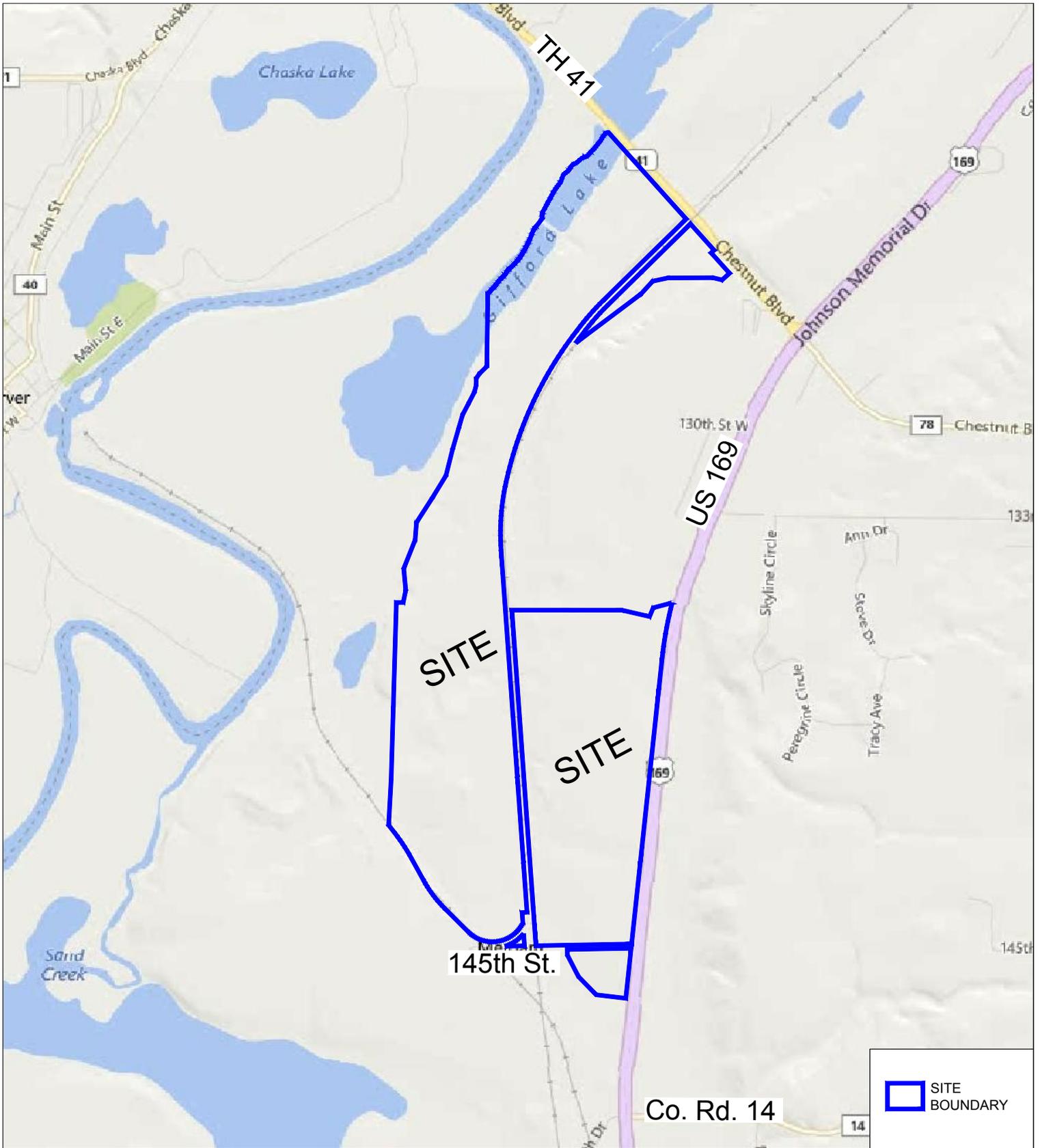
a native state seed mix. The appropriate seed mix will be determined once soil and growing conditions are verified and will be approved by the Scott Soil and Water Conservation District. Native prairie grasses and forbs will be planted using a method approved by the County prior to planting or seeding. An annual nurse cover crop will be applied at a minimum rate of 30 pounds per acre. No fertilizer will be used in reestablishing the vegetation. Seeded areas will be immediately mulched with clean straw at a rate of one and one-half (1.5) tons per acre. Mulch will be anchored with a disk or tackifier. The revegetated area will be protected with silt fence until the area crop is established. During the first two full growing seasons, any buffer vegetation that does not survive will be replanted.

The wetland buffer area will be maintained as a “no mow” area.

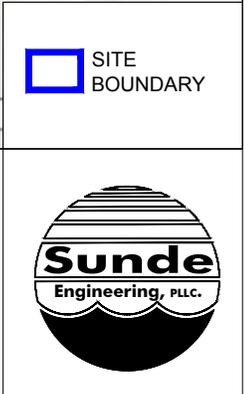
Alterations including building, storage, paving, mowing, plowing, introduction of noxious vegetation, cutting, dredging, filling, mining, dumping, grazing livestock, agricultural production, yard waste disposal or fertilizer application, will be prohibited within any buffer, except as allowed by Scott County Zoning ordinance including:

- The use and maintenance of an unimproved access strip through the buffer of not more than 20 feet in width, for recreational access to the watercourse or wetland and the exercise of riparian rights;
- Placement, maintenance, repair or replacement of utility and drainage systems that exist after creation of the buffer or are required to comply with the approved mining permit obtained from the County, so long as any adverse impacts of the utility and drainage systems on the function of the buffer have been avoided or minimized to the extent practical;
- Construction, maintenance, repair, reconstruction or replacement of existing and future public roads within a buffer, so long as any adverse impacts of the road on the function of the buffer have been avoided or minimized to the extent practical.
- Potential construction of Individual Sewage Treatment Systems (ISTS) within a buffer but outside the 35-foot structure setback as long as the vegetation growing on the system is maintained and the system otherwise meets County and State rules for ISTS systems.
- Clearing, grading and seeding is allowed if part of an approved Wetland Replacement Plan.

# Figures

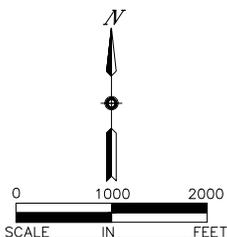
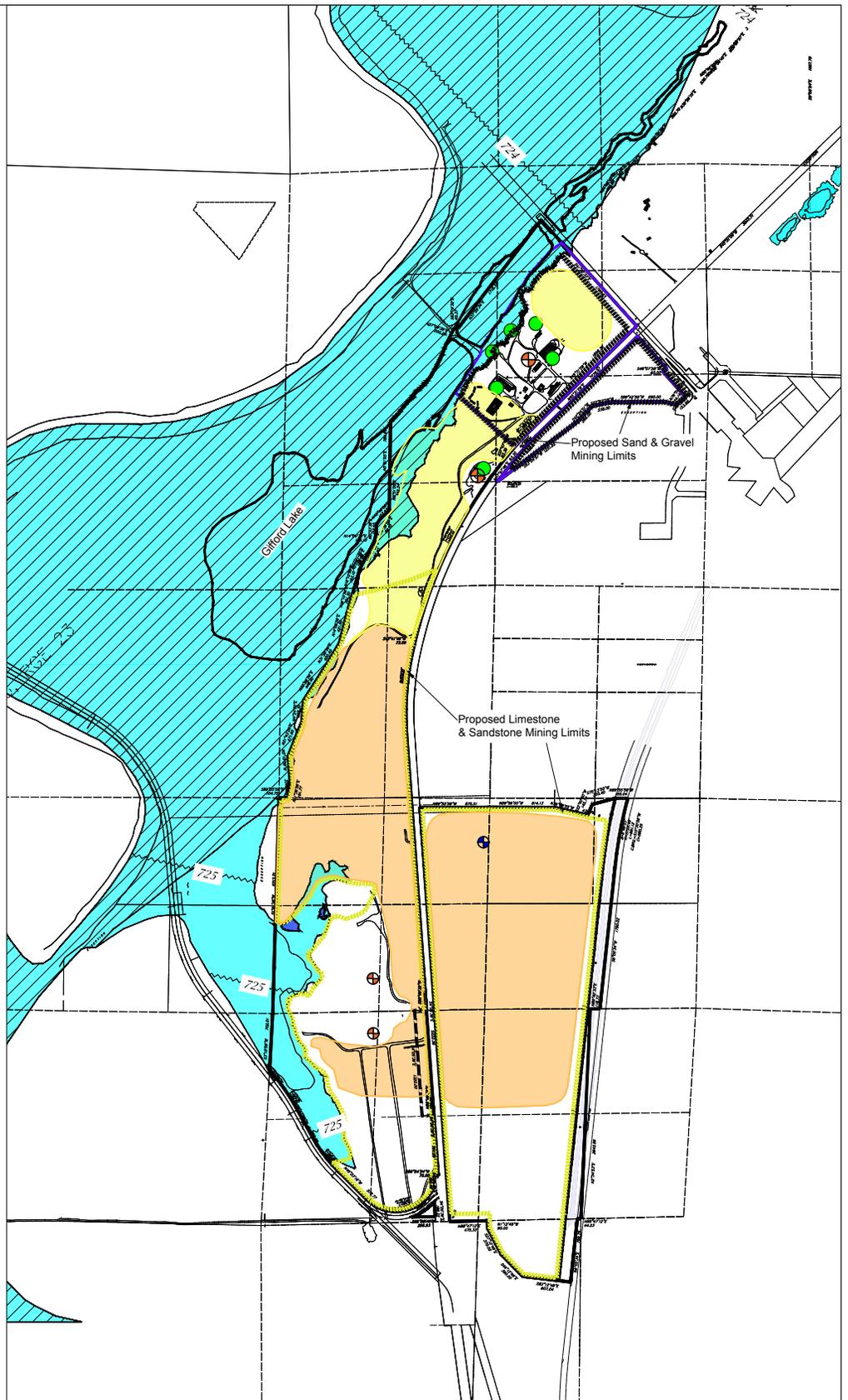


**Figure 1**  
**Location Map**  
 Merriam Junction Sands  
 Natural Resources Plan



Notes:

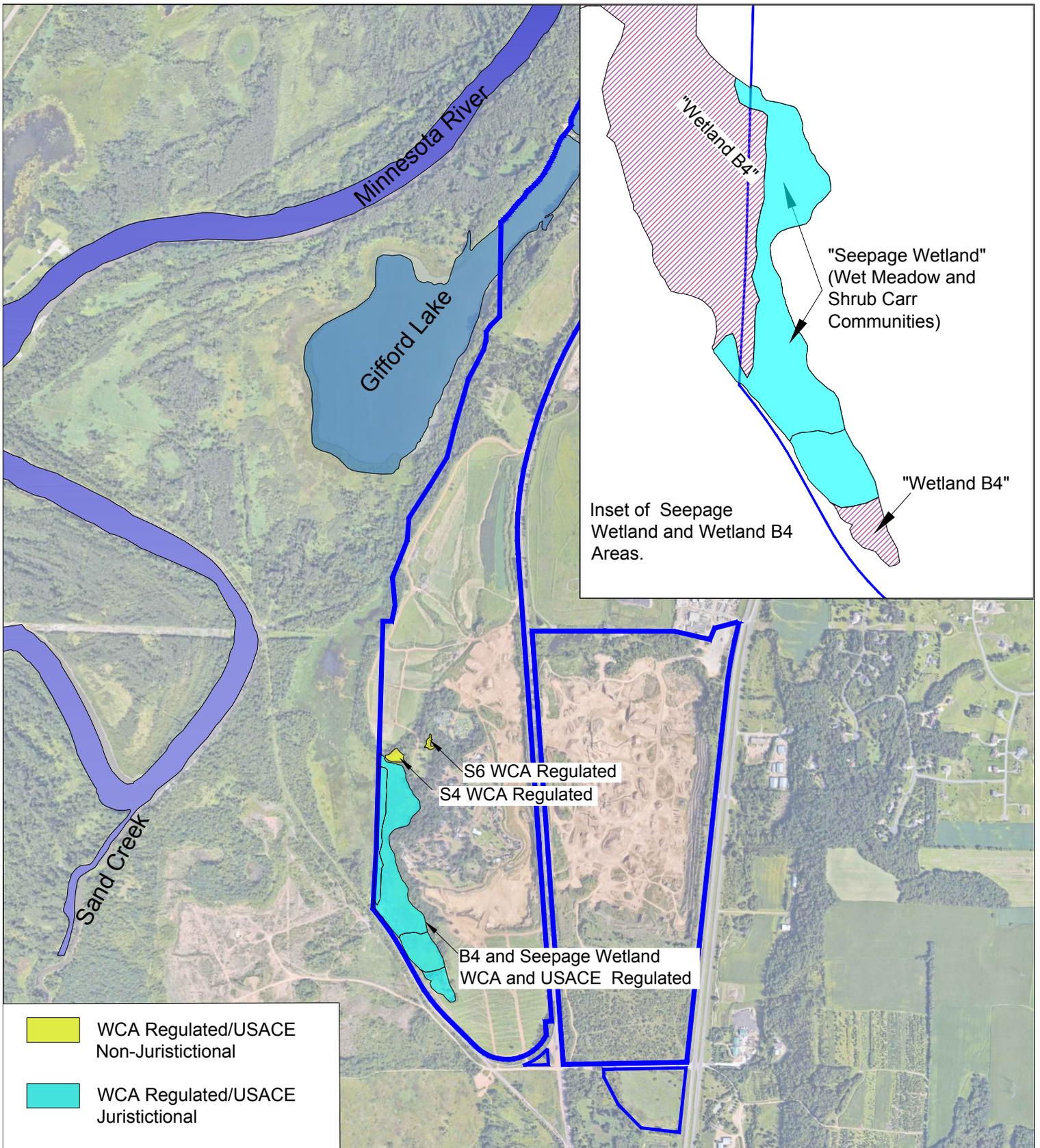
1. Survey Information from boundary survey by Sunde Land Surveying. Malkerson sales survey dated Sept. 28, 2011. Bryan Rock survey dated Aug. 13, 2015
2. Project Proposer:  
Merriam Junction Sands, LLC  
325 Marshall Road, Suite 115  
Shakopee, MN 55379
3. Engineer:  
Sunde Engineering, PLLC  
10830 Nesbitt Ave. S.  
Bloomington, MN 55437
4. ● Existing On-site Septic
5. ⊕ Existing On-site Potable Well
6. ⊕ Existing On-site Production Well
7.  100 Year Floodplain  
Preliminary FIRM update not  
officially adopted.  
ELEV 724-725 ft msl
8.  100 Year Floodway
9.  Current Sand & Gravel  
Mining Limits
10.  Current Limestone Mining  
Limits
11.  Proposed Sand and Gravel  
Mine Limits
12.  Proposed Limestone/  
Sandstone Mine Limits
13. Date of Plan Preparation:  
3/28/2017



**Figure 2**  
**Existing Conditions**  
 Merriam Junction Sands  
 Natural Resources Plan



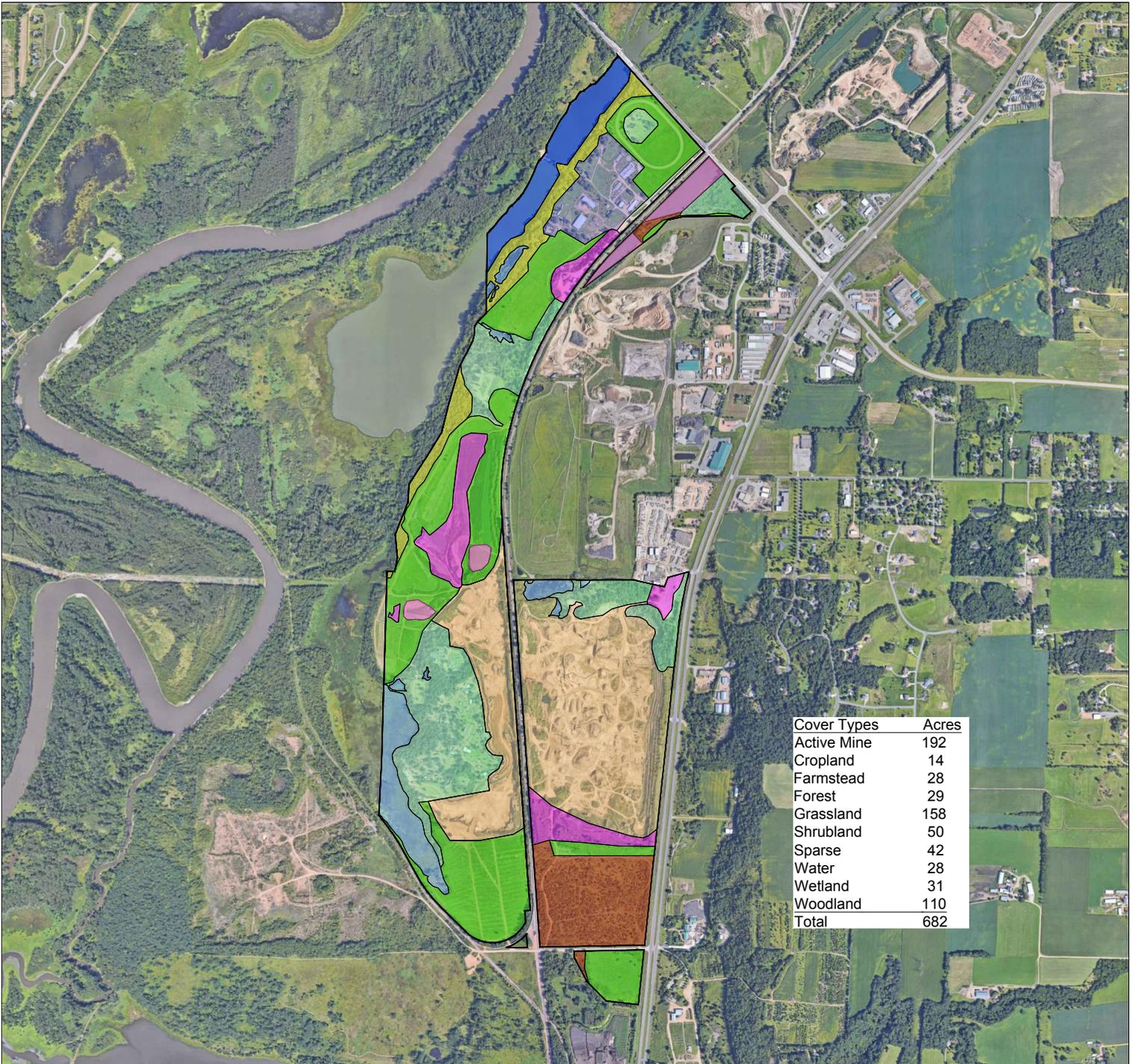




NOT TO SCALE

**Figure 4**  
**On-Site Wetlands**  
 Merriam Junction Sands  
 Natural Resources Plan



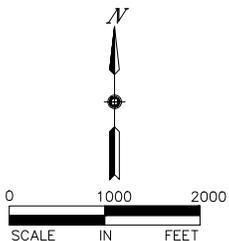


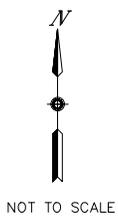
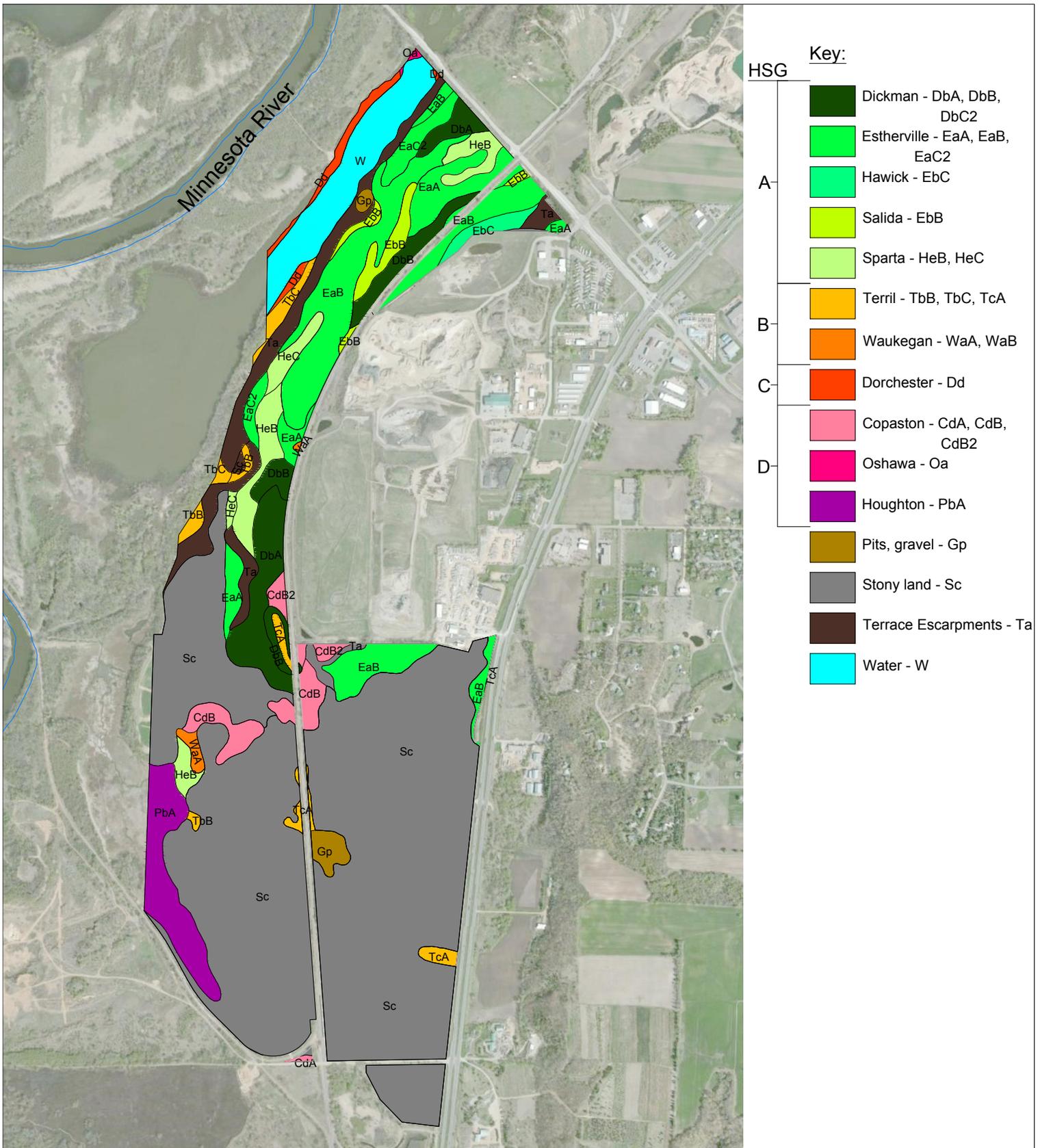
Cover Types	Acres
Active Mine	192
Cropland	14
Farmstead	28
Forest	29
Grassland	158
Shrubland	50
Sparse	42
Water	28
Wetland	31
Woodland	110
<b>Total</b>	<b>682</b>

**Key:**



**Figure 5**  
**Cover Types**  
 Merriam Junction Sands  
 Natural Resources Plan





**Figure 6**  
**Soil Survey Map**  
 Merriam Junction Sands  
 Natural Resources Plan



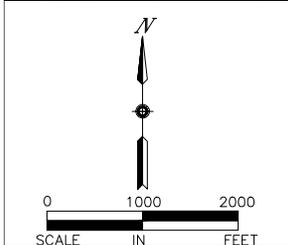
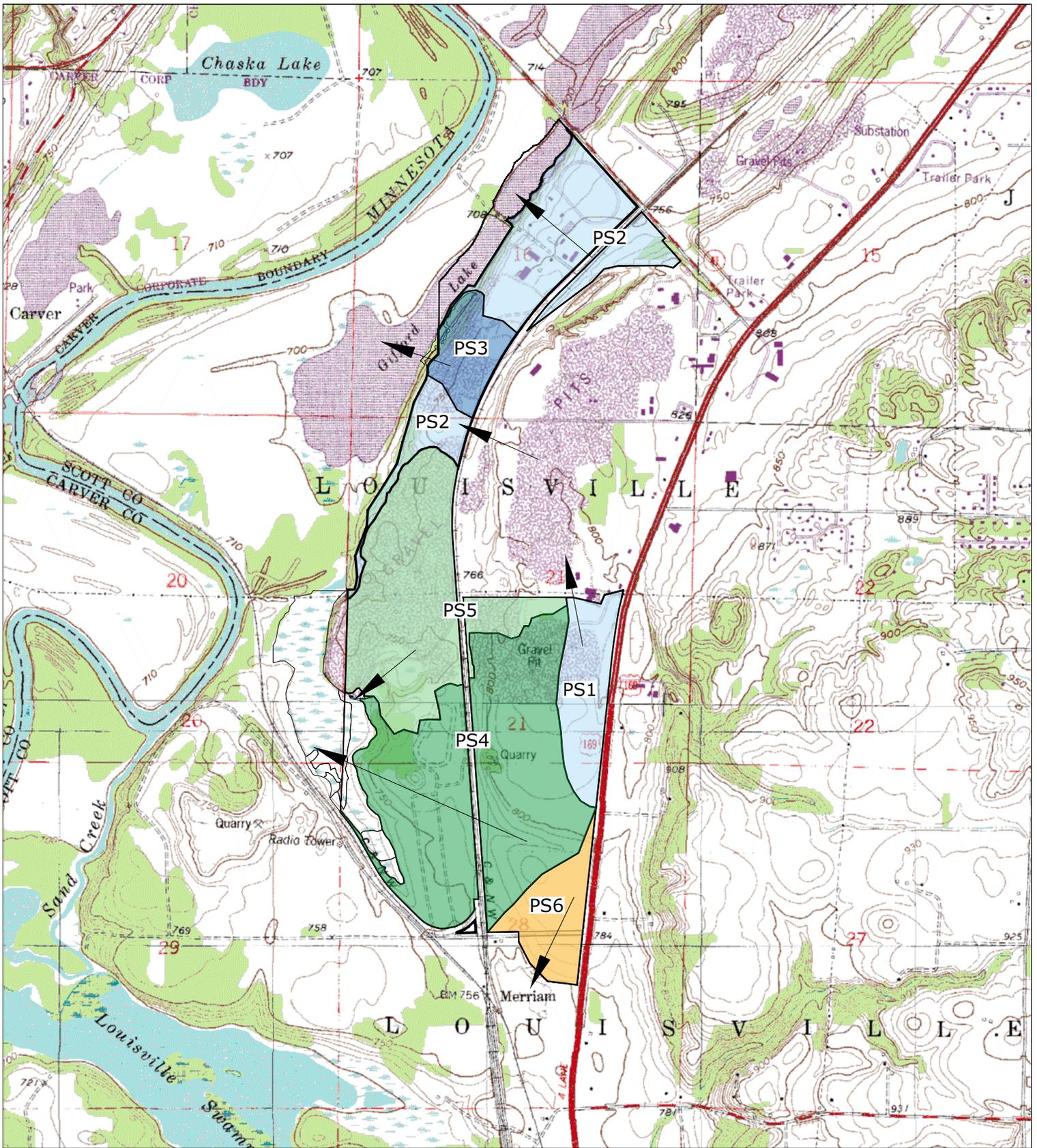


Figure 7  
 Pre-Settlement Conditions  
 Merriam Junction Sands  
 Natural Resources Plan



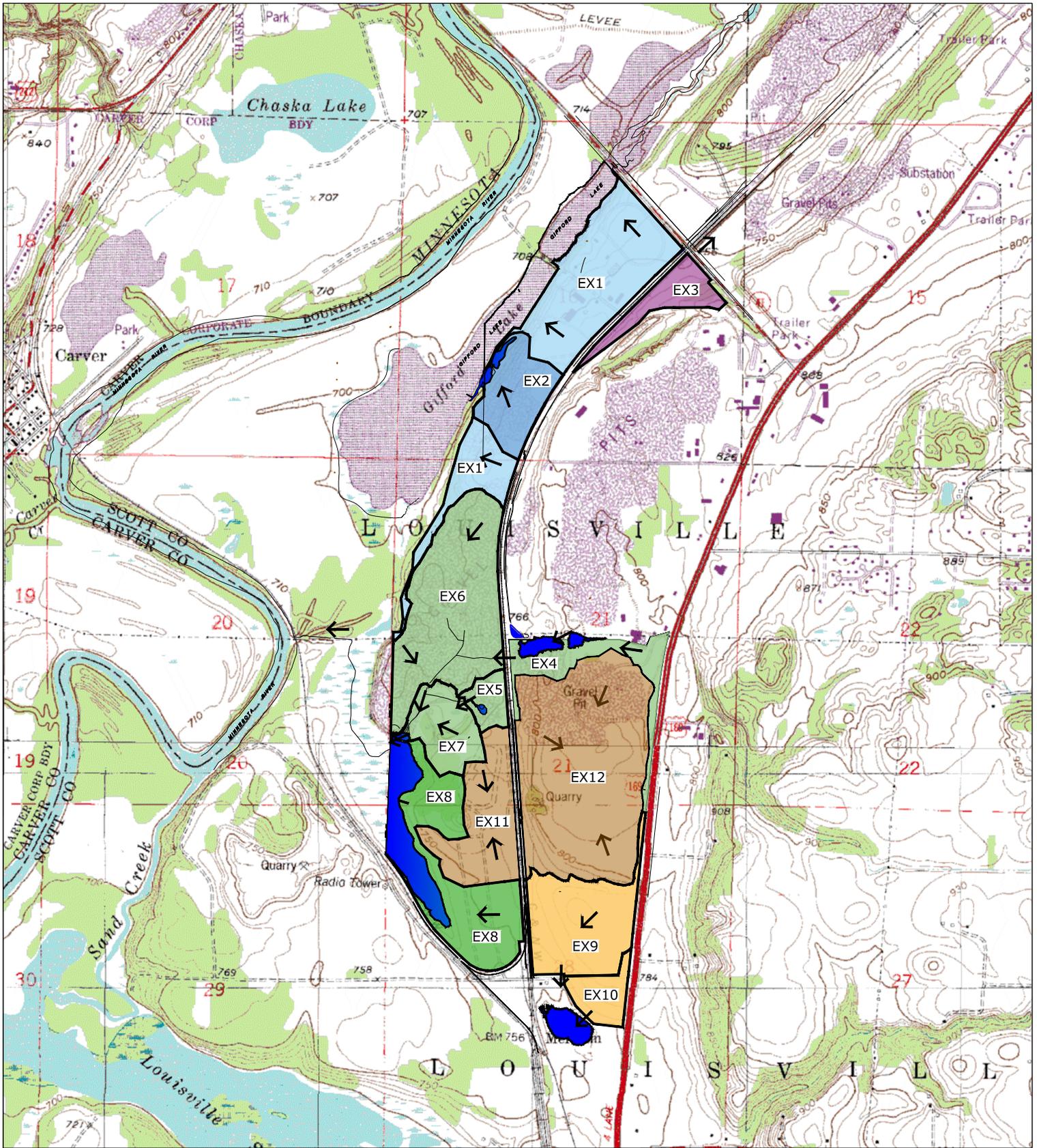
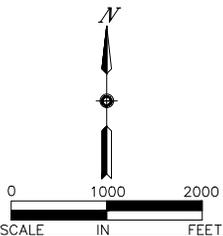


Figure 8  
 Existing Conditions  
 Merriam Junction Sands  
 Natural Resources Plan



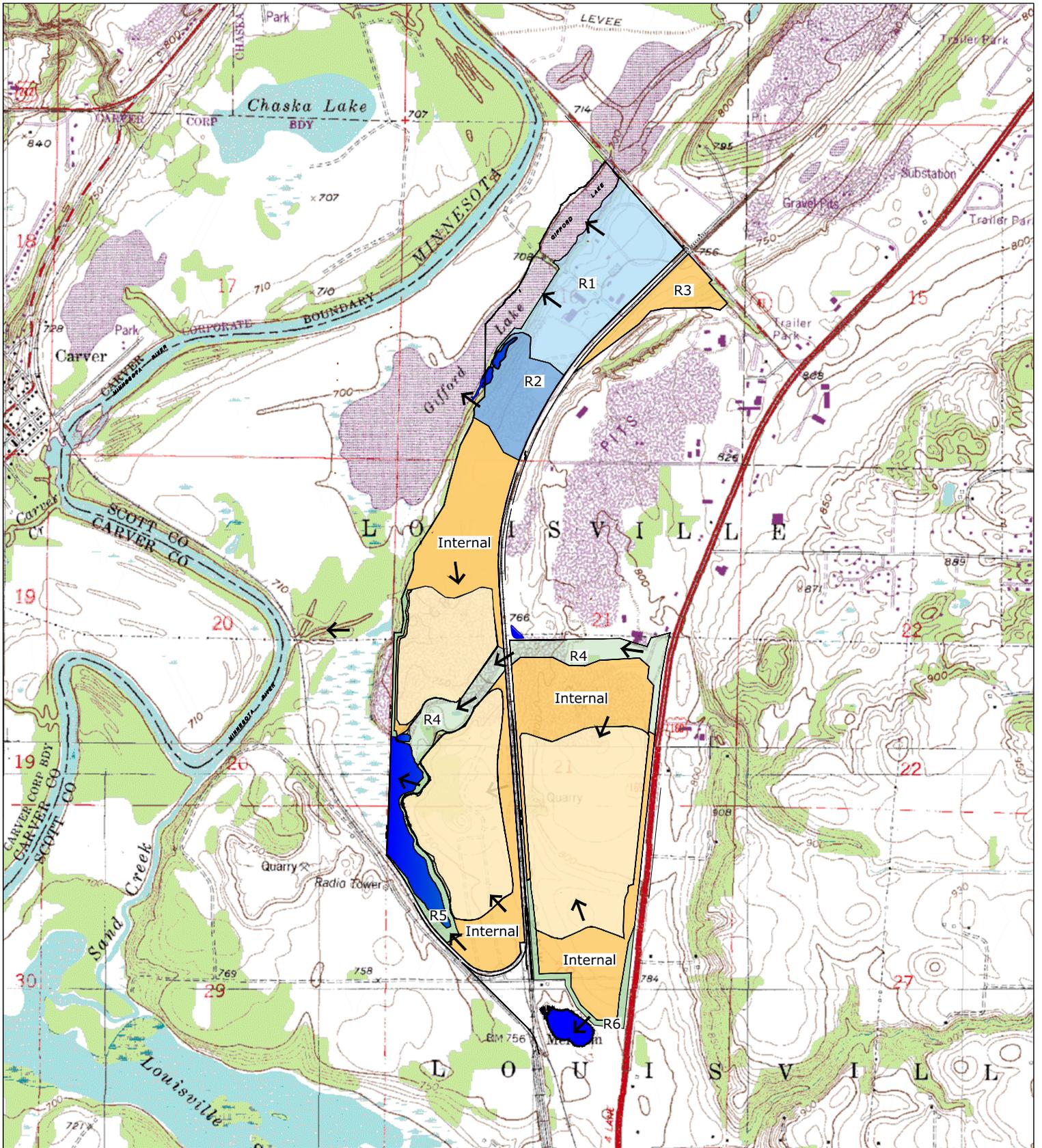
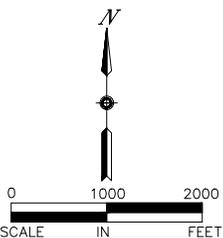
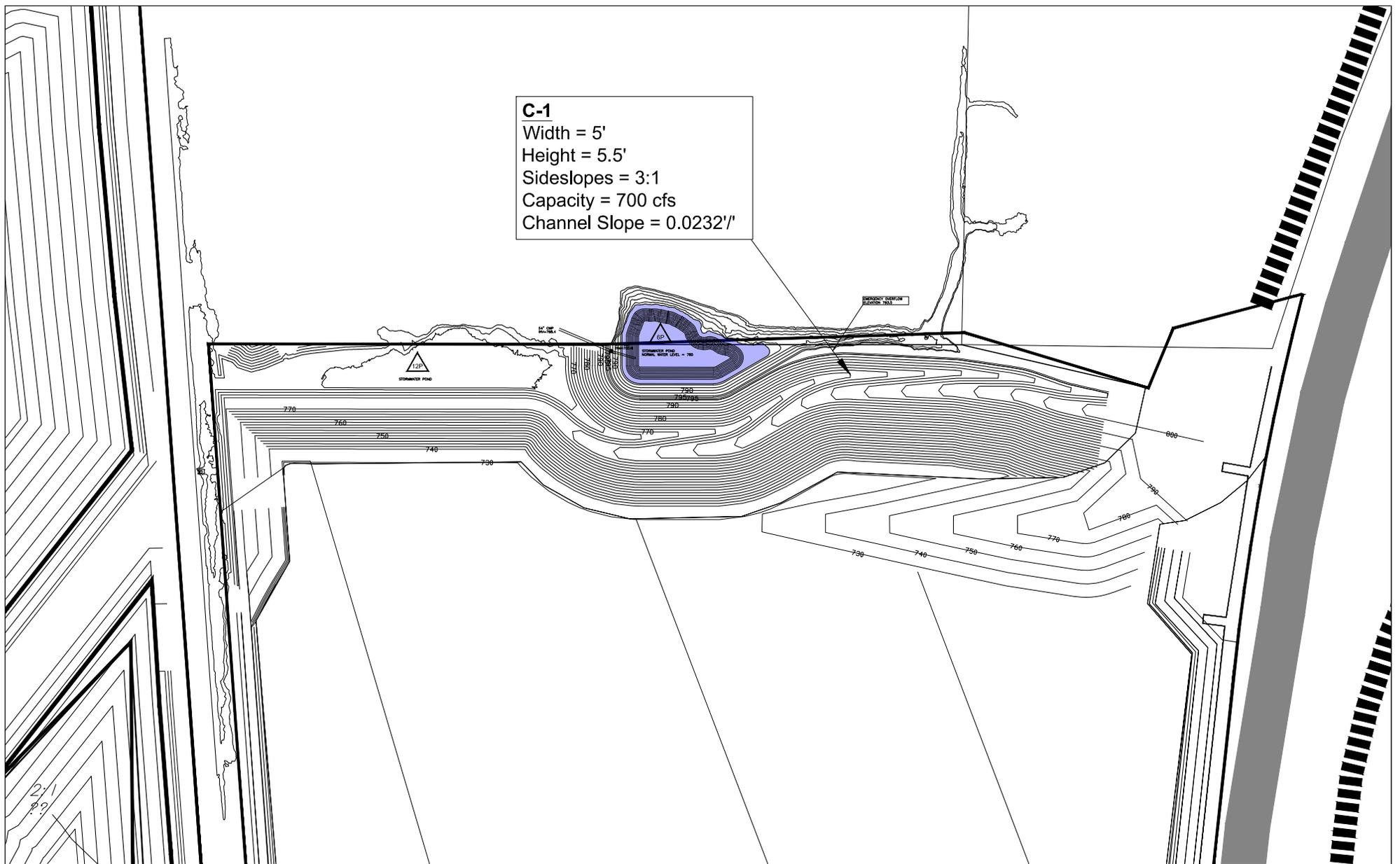


Figure 9

## Reclamation Conditions

Merriam Junction Sands  
Natural Resources Plan





**C-1**  
 Width = 5'  
 Height = 5.5'  
 Sideslopes = 3:1  
 Capacity = 700 cfs  
 Channel Slope = 0.0232'/



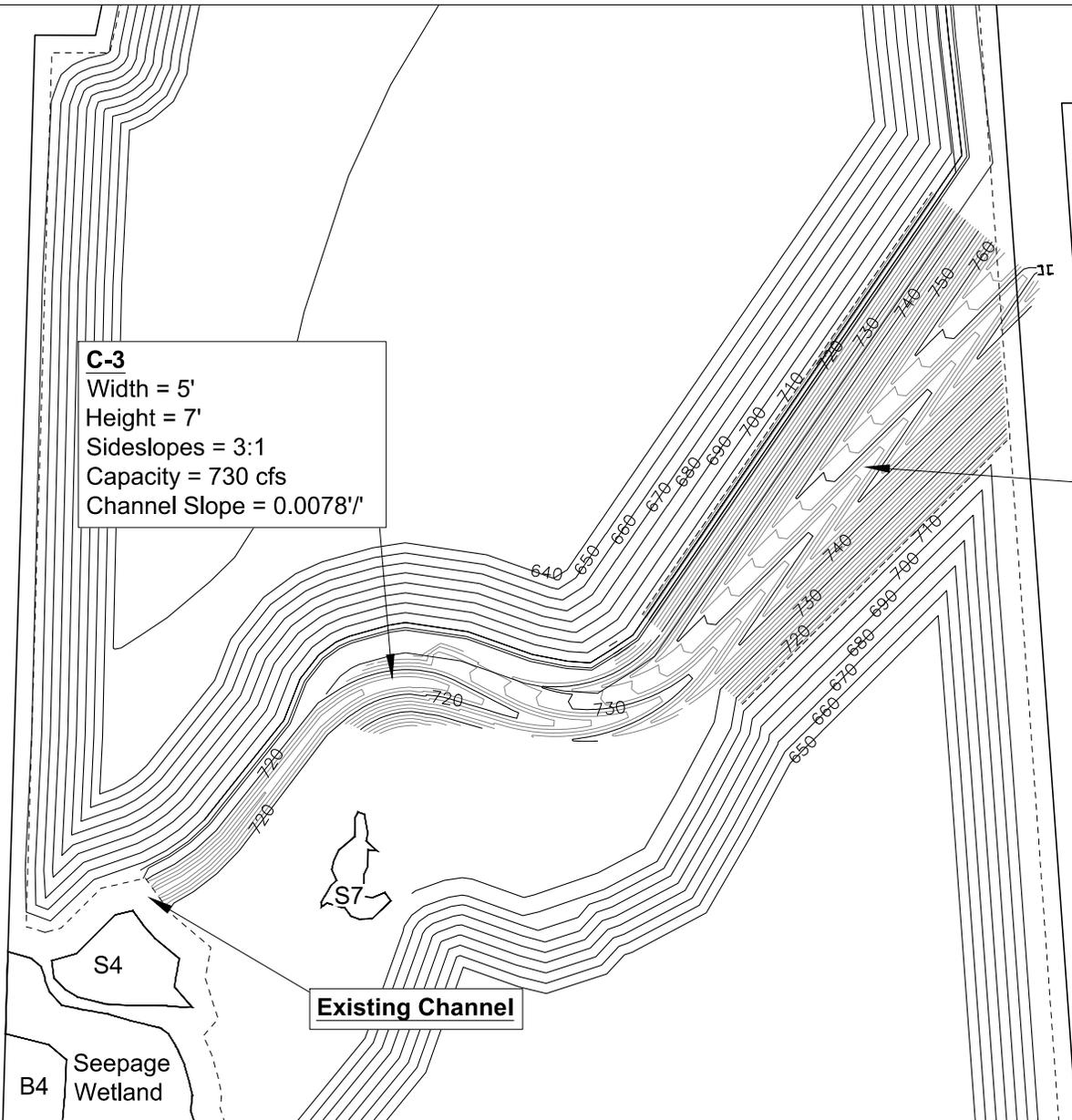
NOT TO SCALE

Figure 9  
 Channel Design - Bryan Rock  
 Merriam Junction Sands  
 Natural Resources Plan



**C-3**  
Width = 5'  
Height = 7'  
Sideslopes = 3:1  
Capacity = 730 cfs  
Channel Slope = 0.0078'/'

**C-2**  
Width = 5'  
Height = 5.5'  
Sideslopes = 3:1  
Capacity = 800 cfs  
Channel Slope = 0.0312'/'



Existing Channel

S4

S7

B4 Seepage Wetland



NOT TO SCALE

Figure 10  
Channel Design - Malkerson Sales  
Merriam Junction Sands  
Natural Resources Plan



## Appendix A

### Preliminary Stormwater Pollution Prevention Plan

July 2019

**Preliminary  
Stormwater Pollution Prevention Plan**

**Merriam Junction Sands, LLC  
Louisville Township  
Scott County, MN**



SUNDE ENGINEERING, PLLC.  
10830 Nesbitt Avenue South  
Bloomington, MN 55437

**PRELIMINARY STORM WATER POLLUTION PREVENTION PLAN**

For

Merriam Junction Sands, LLC

Nonmetallic Mineral Mining and Processing Facility

Scott County, Minnesota

Permit number XXX-XXXXXX Facility ID number XXXX

**1.0 INTRODUCTION**

This Preliminary Stormwater Pollution Prevention Plan (Preliminary SWPPP) has been prepared for Merriam Junction Sands, LLC (MJS) proposed sandstone mining and processing operations located in Scott County, MN (Site). The Site consists of several parcels owned by two separate property owners: Malkerson Sales, Inc. (Malkerson Sales), and Bryan Rock Products, Inc. (Bryan Rock). This Preliminary SWPPP has been prepared in compliance with the provisions contained within the National Pollutant Discharge Elimination System (NPDES) and State Disposal System (SDS) Permit MN G490000 for Nonmetallic Mineral Mining and Associated Activities (General Permit). Although it has yet to be determined if the Site will operate under the General Permit or and individual permit, (which will depend upon management of process water and dewatering discharges), it is assumed that the SWPPP will be consistent with the requirements of the General Permit.

The Preliminary SWPPP was prepared as a requirement of environmental review. Prior to initiating any sandstone mining activity, this Preliminary SWPPP will be finalized after environmental review and to incorporate the specifics of the alternative chosen, the first phase of sand mining, and/or conditions of an Individual Permit once final permit approvals for sandstone mining have been obtained. While not typically part of environmental review documents, the Preliminary SWPPP serves to illustrate the general content of the SWPPP in managing the potential for off-site stormwater and dewatering discharges, best management practices, inspections and monitoring protocols. .

Bryan Rock Products currently quarries limestone on the Malkerson Sales property and on the Bryan Rock Property and operates under the general non-metallic mineral mining and associated activities general permit MNG490080 (General Permit). They will continue to operate under this permit and their SWPPP until sandstone mining commences. If sand and gravel mining in the northern portion of the Malkerson Sales property is mined before the commencement of sandstone mining or under a separate IUP, the operator will obtain a General Permit and finalize a SWPPP based on the relevant elements of this Preliminary SWPPP.

The Site is considered to be within the J1 subsector, which includes construction sand and gravel and industrial sand mining areas, and J2 subsector, which includes crushed and

broken limestone mining and quarrying areas. This Preliminary SWPPP assumes that the Site will continue to qualify for the General Permit and that process water will not be comingled with off-site stormwater or dewatering discharges. If site operations do require comingling and subsequent discharge to a surface water of process water as a result of transporting sand slurry to the active dewatering cell, an individual permit will be obtained which can address monitoring of dewatering discharges that have comingled with slurry water and the Preliminary SWPPP will be updated to reflect the requirements of the individual permit.

The goal of this Preliminary SWPPP is to eliminate or minimize contact of stormwater with significant materials that may result in pollution of stormwater runoff and identify and correctly manage non-stormwater discharges. This Preliminary SWPPP has been prepared to address site specific conditions at the Site and to document the Best Management Practices (BMPs) used to comply with required stormwater control measures that address potential pollutants associated with quarry operations utilizing accepted engineering practices. Once finalized the SWPPP will remain on-site, or if there is no suitable on-site storage location, may be maintained at a readily available off-site location.

The Site encompasses 682 acres situated between U.S. Highway 169 (US 169) and the Minnesota River. The Union Pacific (UP) mainline runs through the Site. Trunk Highway 41 (TH 41) is located along the northern limits of the Site and 145th Street West (145th Street) is located near the southern boundary of the Site. The Site consists of several parcels owned by two separate property owners: Malkerson Sales, Inc. (Malkerson Sales), and Bryan Rock Products, Inc. (Bryan Rock). Site activities include clearing and grubbing, stripping, blasting, extraction, crushing, screening, washing, sorting, stockpiling, commercial sales and Site reclamation.

## **2.0 SITE MAP**

- 2.1 Figure 1: Area Map, Figure 2: Site Map, and Figure 3: Erosion and Sediment Controls illustrate the following items:
- 2.2 Location of the Site in relation to surface waters (Figure 1): Surface waters located on the Site include Gifford Lake, a floodplain wetland complex and two wetland basins that are located outside of the mining limits. The Site is located near and is tributary to the Minnesota River. There are small creeks running into the Minnesota River and some isolated wetland basins located within one-mile of the Site.
- 2.3 Location of all impaired waters within one-mile of the Site (Figure 1): The Minnesota River is an impaired water located approximate a quarter mile west of the Site. Impairments include mercury in fish tissue, mercury in water column, PCB in fish tissue, and turbidity. The Site is located within 1 mile of other impaired waters but is not tributary to them. These include Sand Creek and an unnamed creek locally known as Picha Creek, as well as several

creeks located west of the Minnesota River. Sand Creek is an impaired water located approximately three quarters of a mile west southwest of the Site. Sand Creek impairments include Fishes bioassessments and Turbidity. Picha Creek is located approximately 0.6 miles southeast of the Site, just south of County Road 14. Impairments for Picha Creek include Fishes bioassessments. The permittee will, on at least an annual basis, review the current EPA approved list of impaired waters and the TMDLs to determine if and to what extent the Site's Pollution Prevention Plan must address any changes to impaired water status in proximity of the Site.

- 2.4 Location of all outstanding value resource waters (OVRWS): MN Department of Natural Resources (DNR)-designated trout waters, and wetlands within one mile of the Site (Figure 1): There are no OVRWS or DNR designated trout streams within one mile of the Site. There are several isolated wetland basins as well as larger wetland complexes associated with the floodplain of the Minnesota River within one mile of the Site
- 2.5 Direction of stormwater flow indicated by arrows (Figure 1): Existing stormwater flow patterns are illustrated by arrows. As quarry activity advances, existing stormwater patterns will be altered and stormwater that currently drains off site will be redirected internally through the quarry area where it will be treated prior to discharge or infiltrated on site.
- 2.6 Topography of the area (Figure 1): This figure shows USGS ten foot topographic contours.
- 2.7 Location of all activities and materials (Figure 2): Activities at the Site include stripping topsoil and overburden from areas to be mined, blasting, extraction, crushing, screening, washing, stockpiling, loading, hauling, sales and reclamation activities. A maintenance shop may be constructed at the sand processing plant to perform equipment maintenance. Currently there is limited equipment maintenance conducted on-site and equipment is brought to the operator's main shop located off-site, but in the vicinity for major equipment maintenance and repairs.
- 2.8 Water supply wells (Figure 2): There is one production well located on-site. There are two potable water supplies on-site in future mining areas that will be abandoned prior to mining that area. There is one potable well next to the scale house on Malkerson Sales property and one potable well in the stable area that will be lowered or sealed to accommodate mining.
- 2.9 Location of all structural BMPs (Figure 3): Location of all structural BMPs including stormwater management features, culverts and drainage systems are illustrated on Figure 3.

- 2.10 Location and description of any non-stormwater discharges: Excess quarry dewatering may be discharged periodically from the Site. Dewatering discharge will depend upon the area of dewatering, the phase of mining, and on-site infiltration systems and/or ponding areas. There are no other non-stormwater discharges from the Site. Washwater generated from aggregate washing is recirculated through on-site sedimentation ponds and is not discharged off site. Washwater from the sand washing wet plant will be discharged to a water treatment plant for clarification and then recycled for reuse in the sand processing wet plant. Equipment washing and scale cleaning (no degreasers, solvent's or detergents are used) and water used on haul roads for dust control will be infiltrated on-site.
- 2.11 Dewatering points: (Figure 3): To be determined depending upon alternative, phase, and water appropriation/mitigation permitting requirements. Dewatering will progress across the areas where sandstone mining will occur. The dewatering locations will depend upon the phasing and location of current mining activity. Dewatering will likely begin in the southern portion of the Site and move northward as mining progresses in phases. Dewatering activity will be subject to a MNDNR Water Appropriations Permit.
- 2.12 Non-stormwater discharges that might discharge off site include mine site dewatering discharges. Water from the dewatering activity will be used to supply make up water to the wet plant, for dust control, periodic aggregate washing, and infiltrated as mitigation for the dewatering activity. It is anticipated that during the early stages of a given phase, the volume of dewatering discharge will be handled entirely on-site. Any excess water from dewatering activities that cannot be infiltrated on-site will be discharged through a pretreatment basin and control device to Gifford Lake or to the floodplain wetland. Dewatering Discharge Points will be determined depending upon alternative, phase, and water appropriation/mitigation permitting requirements and their location(s) noted on SWPPP figures.

Pretreatment will include BMPs, such as a sedimentation basin, designed based upon the amount of total suspended solids present in the discharge. The outfall will direct the discharge over riprap, or other energy dissipating device to reduce flow velocities and eliminate downstream erosion and sedimentation. The discharge will be monitored for compliance with the NPDES discharge limits (current permit requirements for dewatering discharges from silica sand mining operations include Nitrite Plus Nitrate, Total (as N), Nitrogen, Kjeldahl, Total, pH, Total Suspended Solids, (TSS) and Flow. Dewatering points are expected to change over time depending upon the location of mining and associated dewatering activity.

Discharge locations and flow estimates will be documented in the final SWPPP, but dewatering discharge not directed to a mitigation device or used as make-up water for the wet plant will be to the wetland complex and/or MN River. Flow estimates will depend upon the alternative built and the phase of mining and the rate at which dewatering

discharge is used in the chosen mitigation if necessary. Excess dewatering discharge is expected to range from 0 to 2,500 gpm over the life of the mine.

Location of all overflow points from dewatering discharge control devices: (Figure 1): To be determined depending upon alternative, phase, and water appropriation/mitigation permitting requirements.

2.13 Surface water intakes: There are no surface water intakes located on or near the site.

### **3.0 POTENTIAL SOURCES OF POLLUTANTS**

The following are potential sources of stormwater pollution and corresponding Best Management Practices (BMPs) implemented at the Site:

3.1 Excavation areas: Sediment picked up in runoff contacting areas stripped in preparation of quarry activity as well as exposed mining faces and quarry floor is a potential source of stormwater pollution at the Site. As materials are removed the elevation of the excavation area lowers below surrounding grade and the areas drains internally instead of draining off-site. Substantial portions of the Site currently drain internally.

BMPs: Perimeter controls are established prior to stripping areas that have the potential to drain off-site. Silt fence, diversion berms and swales, and/or vegetated buffers are established around areas where soils are exposed as part of the mining, reclamation, or plant construction that have the potential to drain off-site. Areas exposed to stripping operations are minimized to only those areas that will be active in the upcoming mining season.

Because the Site is within one mile of, and tributary to, an impaired water, stabilization of graded areas that drain off-site begins immediately upon conclusion of temporary or final grading of an area and is completed within seven days after grading that portion of the Site has been completed. Stabilization includes seeding and mulching to reestablish vegetation. Progressive reclamation reduces the size of a disturbed area that potentially could produce off-site stormwater discharges. A temporary sedimentation basin will be constructed to treat stormwater runoff if an area of land disturbance (from stripping, grading, mining, reclamation, etc.) is five acres or more in size and drains off-site.

3.2 Crushing, screening equipment: Fugitive dust from processing equipment can settle on and nearby equipment and be picked up by runoff. Crushing and screening equipment is portable and moves with the advancement of mining.

BMPs: Crushing and screening equipment is located on the floor of the mine in areas that drain internally. Preventative maintenance is performed on a routine basis. Equipment is

inspected daily during normal operations. Leaks or spills are promptly cleaned up and reported to the supervisor and the Minnesota Pollution Control Agency's (MPCA) State Duty Officer as required.

- 3.3 Overburden, waste, raw and final and product stockpiles: Topsoil, overburden, and natural aggregates, asphalt and concrete for recycling, are significant materials stored on-site. During active mining and processing, small surge piles of raw material are created that feed into the processing equipment.

BMPs: Product stockpiles are located on the floor of the mining area. Stormwater is directed away from material storage areas to internal stormwater ponds and/or infiltration areas. The winter stockpile of washed sand will be partially recessed below the surrounding grade and the floor of the stockpile area will be graded to direct runoff from the winter stockpile to sediment treatment areas.

- 3.4 Waste products: Certain size sands that cannot be incorporated into a marketable product are used as part of the reclamation materials. Concrete and asphalt waste is hauled to the Site for processing and reuse.

BMPs: Waste material from the sandstone mining activity that is not marketable is conveyed and/or slurried back to the excavation and used as reclamation backfill material.

Concrete and asphalt materials hauled to the Site for processing and recycling will be conducted on the floor of the limestone quarry or floor of the sand and gravel mine. The location will change from time to time and will generally be located near the limestone processing plant.

- 3.5 Concrete and asphalt are stockpiled in a "chunk pile" until sufficiently volumes accumulated to economically process for recycling. This is typically approximately 50,000 tons. The material is crushed and screened and blended with virgin aggregates to produce recycle base materials and Recycled Asphalt Paving (RAP) that is fed into an asphalt plant to produce various asphalt mixes. Stockpiles are located on the floor of the mine to reduce fugitive dust and noise emissions during processing. BMPs include screening the waste for unauthorized material, directing stormwater that contacts stockpiled materials internally, watering haul roads to and from the recycle area, and limiting size of unprocessed recycle stockpiles. Metals recovered from the recycling operation will be transported to the Dem-Con metal recycling facility. Sediment Washing: The Site operates a wash plant that removes fine sediment from the crushed limestone. A new wash plant will be constructed for the sandstone.

BMPs: Sedimentation ponds are established adjacent to the aggregate washplant on the floor of the quarry. These ponds treat and recirculate the washwater back to the washplant

for reuse. The sand wet plant will be equipped with a water treatment plant. Clarifiers will treat the water which will be recirculated through the wet plant.

- 3.6 Material loading/unloading: Material loading occurs from the product stockpile areas located on the quarry floor. Material loading for the sandstone will be adjacent to the dry plant and railyard.

BMPs: Aggregate loading occurs in recessed portions of the Site where stormwater contacting the loading areas infiltrates or is directed to sedimentation ponds prior to discharge from the Site. Sandstone loading will occur in the plant area. Any stormwater generated in the loading/unloading areas that is not infiltrated will be treated in a sedimentation basin prior to discharge from the Site.

- 3.7 Areas where spills and leaks may potentially contribute pollutants to stormwater: Areas where the processing equipment and loaders operate are typically located on the floor of the quarry. Spills during equipment fueling operations or leaks in the equipment may be a source of pollution to stormwater discharges.

BMPs: Use of conveyors and/or slurry lines limit the amount of mobile equipment operating at the Site. Preventative maintenance is performed on a routine basis. Equipment is inspected daily during normal operations. Leaks or spills are promptly cleaned up and reported to the supervisor and the Minnesota Pollution Control Agency's (MPCA) State Duty Officer as required.

- 3.8 Vehicle and equipment maintenance, washing and fueling: Vehicle and equipment maintenance activities are performed on-site. Oil changes are conducted by facility personnel on the floor of the quarry.

BMPs: Hazardous wastes are not expected to be generated at the Site. Hazardous materials will be limited to Materials of Trade (MOT) carried in a service truck which will be used to perform routine maintenance on operating equipment. MOT are materials, other than hazardous waste, that is carried on a motor vehicle for the purpose of supporting the operation or maintenance of a motor vehicle including its auxiliary equipment (e.g., engine starting fluid or spare wet batteries carried on a tow truck); or by a private motor carrier, including a vehicle operated by a rail carrier, in direct support of a principal business that is other than transportation by motor vehicle (e.g., landscaping, plumbing, or welding services).<sup>1</sup>

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<sup>1</sup> Minnesota Department of Transportation (Mn/DOT). Minnesota Commercial Truck and Passenger Regulations Fact Sheet: Materials of Trade, St. Paul, MN. Available at: <http://www.dot.state.mn.us/cvo/factsheets/hm200mot.pdf>

Portable drip pans are used during oil changes. Used oil is collected by facility personnel in a leak-proof metal container, and is hauled off-site to be recycled. Other materials that are not considered hazardous but are expected to be on-site during operations include engine oil, grease, hydraulic fluid and anti-freeze. These materials will be stored inside the shop. No engine degreasing is performed on-site. Major equipment repairs are conducted off-site. All fuels are stored in accordance with MPCA regulations including registration of tanks and secondary containment. Mobile equipment is fueled within the quarry by a fuel service truck over a designated fueling area. The fuel service truck comes to the Site loaded with fuel, typically once per day. Operators park their equipment at designated fueling area and the fuel service fuels them. The mobile fueler carries a spill kit. The mobile fueler may also drive to the location of a processing spread if run on a generator and fuel the generator tank at its operating location. Employees are trained on proper fueling procedures. Topping off fuel tanks is not allowed. Spills are reported to the appropriate supervisor immediately. Equipment washing is occasionally performed on site. No detergent is used.

- 3.9 Roads and vehicle parking: There are two main Site Access points onto US 169 and TH 41 as well as internal haul roads within the Site.

BMPs: The main access points and scale area within the Site are blacktopped for several hundred feet into the Site to reduce dust and tracking. There are two designated parking areas, one adjacent to each of the scale houses near the main Site entrances off of State Highway 41 and US Highway 169. Additional paved parking areas may be constructed adjacent to the sand plant office and shop area. Paved areas are swept as needed to prevent sediment from being tracked off-site. Internal gravel haul roads are watered to reduce wind transport of sediments. Perimeter screening berms are used to reduce fugitive dust emissions from leaving the Site.

- 3.10 Chemical additives and dust suppressant use:

Currently dust suppressant usage is approved by the MPCA at an application rate approximately 3,000 gallons per application, up to three applications per year. The calcium chloride is in a solution that ranges between 25 and 40% calcium chloride. The application will be made up to three times per year for each site.

The final SWPPP will include an inventory of chemicals to be used in the wet plant. These are expected to include polyacrylamide and polyDADMAC. The inventory will include:

- a. The name of the additive.
- b. The process for which the additive will be used.
- c. The proposed method of application, application frequency, and daily average and maximum rates of use.

d. The date of MPCA approval. MPCA approval is required for any additives that are new, increasing in usage, or not previously approved.

#### **4.0 NON- STRUCTURAL AND STRUCTURAL BEST MANAGEMENT PRACTICES:**

Best Management Practices (BMPs) are in place at the Site and additional BMPs will continue to be implemented at the Site as mining progresses and Site conditions change. BMPs have been implemented to address potential pollution associated with the mining and processing activities that are conducted on site, control stormwater flows, prevent comingling of authorized non-stormwater discharges, and provide treatment of stormwater that has contacted significant materials prior to discharge from the Site.

##### **4.1 Non Structural BMPs:**

4.1.1 Minimize the disturbed area open at any given time by stripping only those areas necessary to accommodate the pace of mining activity at the Site. Reclamation will be progressive, reclaiming areas where mining activity has been completed.

4.1.2 Use of swales and drainageways rather than pipes for stormwater conveyance. Vegetation is established throughout portions of the existing drainageway which helps to reduce the velocity of flows through the system thereby reducing erosion and gullyng.

4.1.3 Establishment of Vegetation: Perimeter berms have been constructed around portions of the quarry. Vegetation has been established on these berms. Additional berms will be constructed as mining progresses across the Site. The berms will be stabilized within 7 days of final grading and vegetation established to control erosion and prevent off-site sedimentation.

As areas are mined and backfilled they will be sloped to achieve final grades. Areas draining off-site will be stabilized within 7 days of final grading. Stabilization will include seeding and mulching. Erosion control matting may be used in areas of concentrated flow or steeper slopes as may be necessary to stabilize the area.

4.1.4 Silt fence: Silt fencing is to be used as needed for erosion and sediment control along perimeter areas that may temporarily drain off-site during stripping and overburden removal. These areas are located along the wetland complex west of the Renaissance Festival parking area and in the southern most parcel of the Bryan Rock property. Silt fencing will be maintained as needed and removed from the Site once mining has redirected surface water from the stripped area internally and/or all disturbed area draining towards the silt fence has been stabilized and successfully vegetated.

4.1.5 Establishment and protection of vegetated buffer areas around wetlands. Quarry activity will be setback from the wetland complex along the southern portion of the Malkerson Sales property as quarry activity moves through the Renaissance Festival booth area and southern parking lot. Existing vegetation will be preserved and maintained along the entire edge of the floodplain wetland. The vegetated buffer area will provide for pollution and sediment removal by filtering overland sheet runoff before it enters the wetland.

4.1.6 Good Housekeeping: The Site employs good housekeeping practices to help reduce potential pollutants from contacting stormwater runoff. These include:

- Routine pavement cleaning and sweeping of Site access points to prevent tracking of dirt and fugitive dust and to periodically remove debris.
- Litter Control: an adequate number of trash receptacles are provided for employees and customers to prevent litter and waste around the facility. Litter and other wastes are routinely picked up from outside areas.
- Materials Storage: Materials such as grease, paints, detergents, pesticides and herbicides are stored in the shop and properly labeled.
- Training: Routine employee training is conducted on good housekeeping practices, and spill prevention and response.

4.1.6.1 Equipment/vehicle washing without detergents in designated area where the washwater is directed to an infiltration area.

4.2 Structural BMPs designed and implemented at the Site:

4.2.1 Flow diversion, dikes, and sediment traps are used as needed for erosion and sediment control along perimeter areas that may temporarily drain off-site during stripping and overburden removal. These areas will be located along the wetland complex west of the Renaissance Festival and southern parking area and in the southern most parcel of the Bryan Rock property. Perimeter controls will be maintained as needed and removed from the Site once mining has redirected surface water from the stripped area internally.

4.2.2 Riprap and/or other appropriate outlet protection measures are provided at culvert and pond outlets to prevent erosion.

4.2.3 Temporary stormwater ponds are located throughout the floor of active mine areas to collect stormwater runoff and allow it to infiltrate and/or evaporate. The locations of these infiltration areas are expected to move from time to time as mining progresses through the site.

4.2.4 Stormwater features (ditch and ponds) located along the northern boundary of the Bryan Rock property and through the central portion of the Malkerson Sales property are part

of a regional stormwater conveyance system that includes sedimentation basins that treat runoff from the Louisville and Dem-Con Landfill's and stormwater from the east side of US 169. Stormwater from these areas discharges through a trestle beneath the railroad tracks and onto the Malkerson Sales Property. Stormwater continues down the slope to the floor of the quarry and through a series of ditches located on the Malkerson Sales property. Currently the stormwater comingles with portions of stormwater runoff from the mining operations, but as sandstone mining progresses the mining operations will drain internally, and the discharges will not comingle. These ditches will be rerouted during active mining and a permanent open channel established as part of Site reclamation to accommodate peak flows through the property.

Currently stormwater is infrequently discharged from the landfill because the ponds have been constructed for the final capped condition of the landfill and the current pond capacity handles most runoff events. As the landfill reaches final grade and the low permeability cap and vegetative cover is installed, discharge from the ponds will occur more frequently. (Note that discharge of runoff from active landfill cells is not permitted. Runoff is contained within the active cell where it percolated through the refuse. The leachate collection system captures the runoff in the form of leachate in the lined area of the landfill. The discharge from the Dem-Con Landfill is subject to an industrial NPDES permit. Water quality BMPs are required to treat stormwater runoff and discharges off-site are required to be monitored for a variety of parameters and meet benchmark standards. Therefore, there is no anticipated impact on MJS stormwater quality from the Dem-Con Landfill. The Louisville Landfill is capped with vegetation and stormwater ponds as well

Monitoring of stormwater discharges from MJS, required under their NPDES permit will be done to the extent practical, prior to comingling with stormwater from off-site sources. For the most part, untreated stormwater that has contacted significant materials (disturbed soils, stockpiles, etc.) from MJS will not comingle with stormwater in the regional stormwater conveyance channel.

- 4.2.5 Drainage ditches: Stormwater runoff from the floor of the active quarry on the Malkerson sales property is directed to one of several drainageways that are situated throughout the floor of the quarry. Portions of these ditches are vegetated, reducing the velocity of flow through the system and filtering sediment. The drainage ditches collect and direct stormwater runoff to a stormwater pond located along the western boundary of the property, which discharges off Site into a floodplain wetland.

4.2.6 Sedimentation Basin: Currently there is a stormwater basin (S4) that is a part of a portion of a larger floodplain wetland complex (B4) that was modified many years ago by the placement of berms at its south and west sides. S4 was constructed years ago and sediments have built up to the pond's outlet structure, a 60" diameter corrugated metal pipe. The outlet discharges to the floodplain wetland B4 to the south and west via a culvert that connects the two wetlands at its south side. The floodplain wetland B4 eventually drains into the Minnesota River.

S4 was not engineered when it was constructed and has limited sediment treatment capacity under its current conditions. Based on aerial topography of the area, it has a surface area of approximately 0.56 acres and receives drainage from the upstream watershed of over 1,300 acres as well as on-site drainage areas. Routine maintenance of the pond will be required in order to restore effective treatment for sediment removal. Additionally, the outlet structure could be modified to increase dead storage and more effective treatment of stormwater. Any work in S4 will need to comply with applicable WCA rules and permitting requirements. (S4 is not USACE jurisdictional.)

4.3 Additional BMP's may be added as needed to insure that all discharges meet the terms of the NPDES permit, that violations of water quality standards do not occur, that floating solids or visible foams are not discharged except in trace amounts, and that oil or other substances are not discharged in amounts that create a visible color film. All outlets from the Site will be located on the ground with protective measures such as riprap at the outlets to prevent erosion. Where active mining areas discharge to wetlands, pretreatment in a sedimentation basin is required. Additional temporary sedimentation basins or infiltration areas may be required as quarry activity progresses through the Site.

## **5.0 MANAGEMENT AND RESPONSE**

5.1 Annual Review: This Plan will be reviewed at least annually and will be modified if:

- There is construction or a change in design, operation, or maintenance at the facility that affects stormwater and wastewater management or compliance with this permit;
- A new impairment or a new impaired water is identified within 1 mile that the Site drains to;
- An inspection identifies deficiencies in the Plan and/or BMPs;
- Additional stormwater control measures and BMPs are necessary to meet applicable water quality standards or to address exceedances of intervention limits; or
- There is an unauthorized discharge from the facility. Unauthorized releases will be reported in accordance with the Permit.

In addition to modifications to the text portion of the SWPPP, figures included in the SWPPP will be updated as applicable to reflect any changes in mine phasing, operations, and/or the mine's BMPs.

- 5.2 Availability: The final SWPPP must be kept at the Site when the Site is active and must be available to the MPCA within 72 hours of a request for a review. Electronic access of the plan is acceptable if no office is located on-site.
- 5.3 Responsible Individuals: The Site leader is the person responsible for managing, implementing, maintaining, modifying, and ensuring compliance with the Preliminary SWPPP including reporting requirements. Team members are personnel responsible for managing and implementing the Preliminary SWPPP.

Site Leader: Mr. Matt Bryan

Team Members: Mr. Greg Stepka

Additional team members to be added once sandstone mining commences.

- 5.4 An employee training program has been implemented to inform appropriate personnel of the components and goals of the plan. Training events occur in April of each year as well as on-going discussions during biweekly team meetings.

## **6.0 INSPECTIONS**

The facility shall be inspected at least once per calendar month when the Site is active and staffed to ensure that the SWPPP is followed and that MJS is in compliance with the requirements of their stormwater permit. Monthly inspections are not required if the Site is inactive and unstaffed, but BMPs must be maintained. A minimum of one inspection per calendar year will be conducted during a runoff event and one monthly inspection must occur during a snowmelt event. If a BMP is identified as not properly functioning, it shall be replaced, maintained or repaired within seven (7) calendar days of discovery. If a BMP cannot be replaced, maintained or repaired within seven (7) calendar days, a backup BMP will be implemented.

A written record of all inspections is to be retained by Merriam Junction Sands. A copy of the inspection report from is included as Attachment 1. Inspection and maintenance information will be recorded on this form in writing and the records will be retained with the SWPPP. Inspections include:

- 6.1 Date and time of inspections;
- 6.2 Name of person conducting the inspection;
- 6.3 An evaluation of the facility to determine that this Plan accurately reflects conditions as described above. At a minimum, storage tank areas, waste disposal areas, maintenance

- areas, loading/unloading areas, and raw material, intermediate product, by-product and final product storage areas shall be inspected;
- 6.4 An evaluation of all structural and non-structural BMPs to determine effectiveness and proper function;
  - 6.5 An evaluation of the facility to determine whether new exposed significant materials or activities have been added to the Site since completion of this Plan;
  - 6.6 Recommendations for corrective actions, and corrective actions taken (including dates, times and party completing maintenance activities); and
  - 6.7 The inspection conducted during the snowmelt event must include a visual assessment of the runoff to identify and visible sheens or films that indicate the presence of oil or grease. If sheens are present in surface discharges, corrective actions to prevent sheens must be implemented and documented in the Preliminary SWPPP.

## **7.0 STORMWATER MONITORING**

Each outfall will be monitored for Total Suspended Solids (TSS) during stormwater runoff from active Site operations. Monitoring results will be submitted on the Discharge Monitoring Report form provided by the Agency. This facility must monitor for Total Suspended Solids (TSS) which has an intervention limit of 100 mg/L.

Two samples will be collected at the monitoring outfalls and analyzed for TSS in a calendar year in order to determine an annual average concentration for each intervention limit parameter. The two samples will be collected on two separate runoff events, one in the spring and one in the fall, if possible, for each calendar year discharge is authorized under this permit. More than two samples may be taken during separate runoff events and used to determine the annual average concentration for TSS. If a sampling result is less than the method detection limit, use a value of zero of determining the annual average concentration. Samples will be collected during the first 30 minutes of a measurable runoff event at the monitoring outfall and sampling events will be at least 72 hours apart, to the extent feasible.

The monitoring location is in a location that:

- Is below the most down-gradient BMP from the source but prior to discharge from operational control.
- Minimizes or eliminates sampling of stormwater from off-site sources.
- Receives discharge from an area of industrial activities, processes, and significant materials exposed to stormwater.

Currently the outlet from S4 is monitored. Although this pond receives runoff from off-site areas, currently flow from these areas is limited to larger stormwater events when storage east of US 169 is exceeded. Once the Dem-Con Landfill is capped, more frequent off-site flows are anticipated and the location of monitoring may be modified. Future mining may

require the establishment of additional monitoring locations (for example Gifford Lake for sand and gravel mining activity, Bryan Rock property south of 145<sup>th</sup> for limestone mining activity) until these areas can be modified to drain internally.

An exceedance of the TSS intervention limit does not constitute a violation of the permit. However, in the event of an exceedance, Merriam Junction Sands will perform any necessary corrective action(s) to address stormwater control measures including maintenance of or implementation of BMPs. Failure to respond to an intervention limit standard is a violation of the permit.

If the Site is temporarily inactive during a monitoring term, monitoring is not required, but the Annual Report must indicate the inactivity and indicate that permanent stormwater BMPs remain in place. Should the Site become active, a sampling must begin for the year the Site becomes active.

If there is no discharge during the sampling period, the sampler shall check the “No Flow” box and note the conditions on the Discharge Monitoring Report Form.

If the discharge event is an overflow caused by a rainfall event, the sample(s) shall be collected within the first 30 minutes of the measurable runoff event. If it is not possible to collect the sample(s) within the first 30 minutes, the sample(s) shall be collected as soon as practicable after the first 30 minutes and documentation must be included with the Comments field of the Discharge Monitoring Report Form that explains why it was not possible to collect the sample(s) within the first 30 minutes.

The Discharge Monitoring Report Form will be submitted within 21 days after the end of each calendar year.

Samples collected as required by the NPDES Permit must be representative of the discharge. Samples must be analyzed by a laboratory certified by the Minnesota department of Health. All sample preservation and test procedures must comply with 40 CRF Part 136 and Minn Rules 7041.3200. MJS must maintain records of the sampling events for a period of at least three years and include the following information for each sampling event:

- The exact place, date and time of sample;
- The date of the analysis;
- The name of the person who performed the sample collection;
- The analytical techniques, procedures and methods used; and
- The results of the analysis.

Reporting of monitoring results below the reporting limit (RL) of a particular instrument must be noted as “<” the value of the RL. “Not-detected”, “undetected”, “below the detection limit” and/or “zero” are not acceptable reporting results and are permit reporting violations.

Regional stormwater runoff that passes through the Site will not be monitored by MJS. Runoff that enters the Site from the Dem-Con Landfill is monitored by the landfill operator in accordance with their industrial stormwater permit prior to discharge from their facility.

## 8.0 NON-STORMWATER DISCHARGES

### 8.1 Quarry Dewatering Discharge Monitoring

Quarry dewatering: Periodic dewatering will occur throughout the life of the project. A portion of the dewatering discharge will be routed to wetland mitigation devices and a portion will be directed to the wet plant to meet make-up water requirements and a portion will be used for dust control. Dewatering discharges will be pumped to the wet plant to supply make-up water to the plant and infiltrated on-site to maintain groundwater base flows to the adjacent wetland complex. Excess dewatering discharge may be directed to other infiltration areas located on-site, but depending upon the sequence and phase of mining, some excess dewatering discharge may be discharged through a control device and discharged off-site. The control device will be adequately protected from erosion and scour and will be dispersed over natural rock riprap or other accepted dissipation measures.

Dewatering discharge will be sampled and monitored to meet the requirements of the NPDES Permit. Monitoring will be conducted downstream of any treatment device and prior to leaving the Site boundary. The current General Permit requires monitoring in accordance with the following SD 004 requirements for silica sand mines. The General Permit conditions including monitoring parameters are updated periodically and may change over the project’s life.

Parameter	Monitoring requirements								
	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period
Flow	Monitor only. calendar quarter total	million gallons		Monitor only. calendar quarter average		million gallons per day	once per quarter	Measurement, Continuous	Jan-Dec
Nitrite Plus Nitrate, Total (as N)				Monitor only. calendar year average		milligrams per liter	once per year	Grab	Jan-Dec
Nitrogen, Kjeldahl, Total				Monitor only. calendar year average		milligrams per liter	once per year	Grab	Jan-Dec

pH			6.5 calendar quarter minimum		8.5 calendar quarter maximum	standard units	once per quarter	Grab	Jan-Dec
Phosphorus, Total (as P)				Monitor only. calendar quarter average		milligrams per liter	once per quarter	Grab	Jan-Dec
Solids, Total Suspended (TSS)				25 calendar quarter average	45 daily maximum	milligrams per liter	once per quarter	Grab	Jan-Dec

In addition, the following parameters will be sampled and analyzed prior to permit expiration and submitted with the application for permit re-issuance. Samples will be representative of mine dewatering discharge activity:

- Total Dissolved Solids;
- Hardness;
- Oil & Grease and surfactants;
- Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc; and
- Aluminum, barium, boron, cobalt, iron, magnesium, manganese, molybdenum, total tin, and total aluminum.

Once a large enough surface water feature has been excavated, fine sands will be slurried into one end of the excavation. Under the General Permit, off-site discharge of dewatering water is only allowed if the dewatering discharge has not comingled with process wastewater. If dewatering discharge includes comingled slurry water or any other type of process water, an Individual Permit will be required. If on-site infiltration capacity and make-up water use cannot adequately manage the volume of dewatering discharge, an individual Industrial Stormwater Permit will be obtained and an outlet control device will be constructed to discharge the excess water from the dewatering activity.

- 8.2 Additional non-stormwater discharges allowed under the permit that are generated at the Site include wash water from washing operation, uncontaminated scale deck wash water that does not use detergents, solvents or degreasers, stormwater and deck wash water collected in holding tanks under scales, wash water associated with mobile equipment that does not use detergents, solvents or degreasers and water used for dust control on crushers, conveyors associated equipment and Site roadways. These non-stormwater discharges are not allowed to be comingled with stormwater runoff that leaves the Site. These non-stormwater discharges must be collected, contained or infiltrated into the ground.

## 9.0 SPILLS AND LEAKS

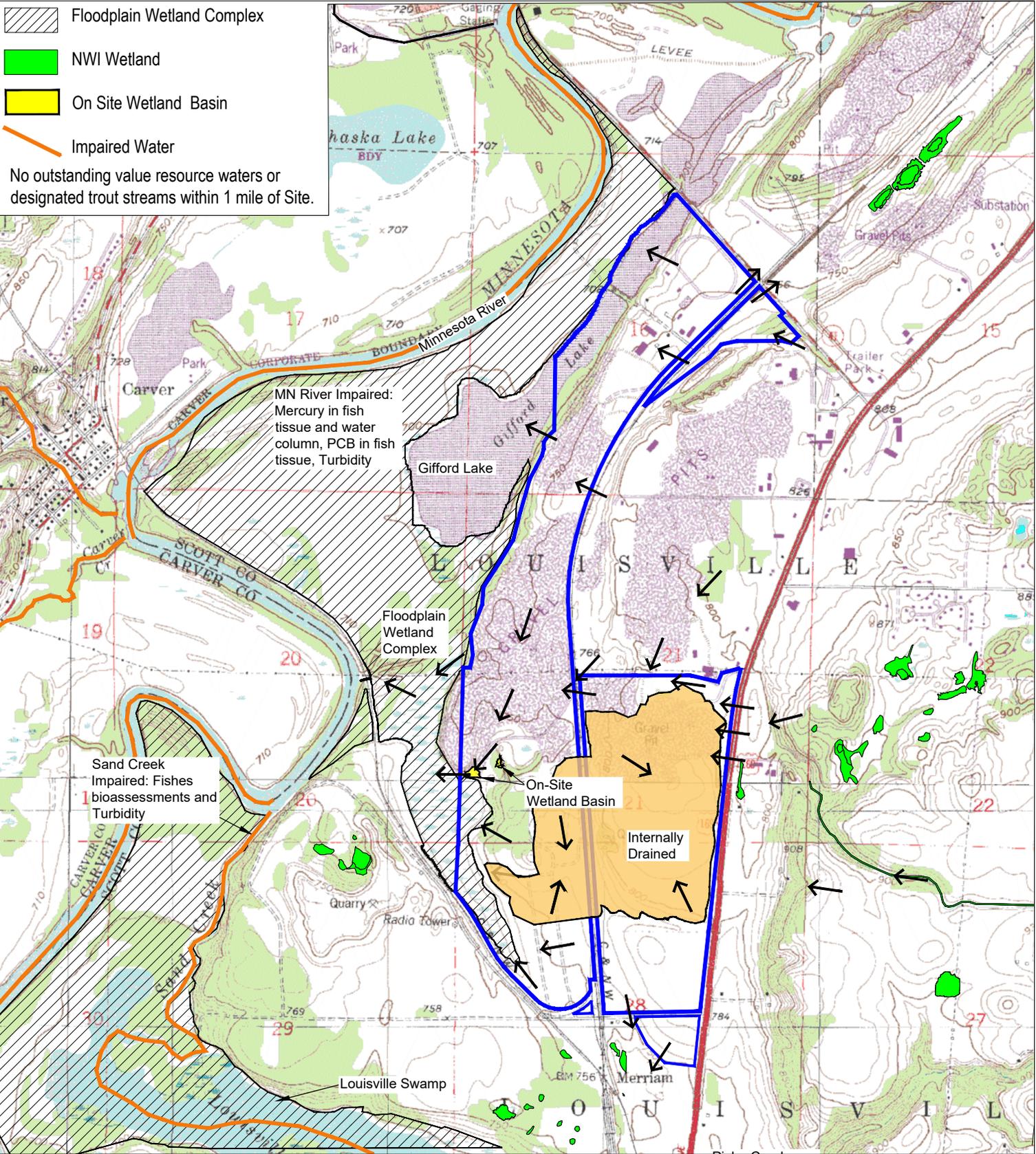
MJS will develop a Spill Prevention and Response Plan in accordance with Federal Environmental Protection Agency Chapter 40 of the Federal Code of Regulations and Minnesota Statute 115 E which will be incorporated by reference into the final SWPPP. At a minimum the following components will be incorporated into the spill plan in accordance with Section 2.6.68 of the General Permit:

- a. The Permittee shall report and document spills or leaks (as defined in Minn. Stat. Section 115.061) that occur in exposed areas, or that drain to a monitoring location.
- b. Material handling procedures, storage requirements, and cleanup equipment/materials and procedures necessary to recover as rapidly and thoroughly as possible spills or leaks pursuant to Minn. Stat. Section 115.061. All methods and procedures must be made available to appropriate site personnel.
- c. Contact information for individuals and emergency and regulatory agencies that must be notified in the event of a spill. When a spill or discharge of a potentially polluting material occurs, the Permittee shall immediately notify the Minnesota Department of Public Safety Duty Officer at 1-800-422-0798 (toll free) or 651-649- 5451 (metro area) per Minn. Stat. Section 115.061. [Minn. Stat. ch. 115]

#### **10.0 GENERAL REQUIREMENTS:**

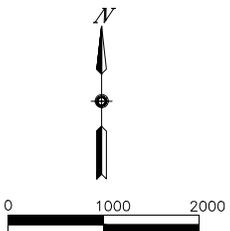
Merriam Junction Sands will follow all of the general requirements of the NPDES General Permit MNG 490000 as may be updated through the permit reissuance process for nonmetallic mining and related activities issued for the Site, including but not limited to pollution prevention plans, inspections, and reporting.

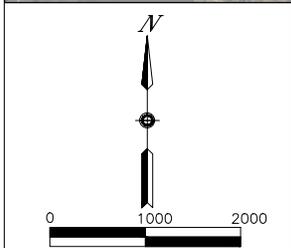
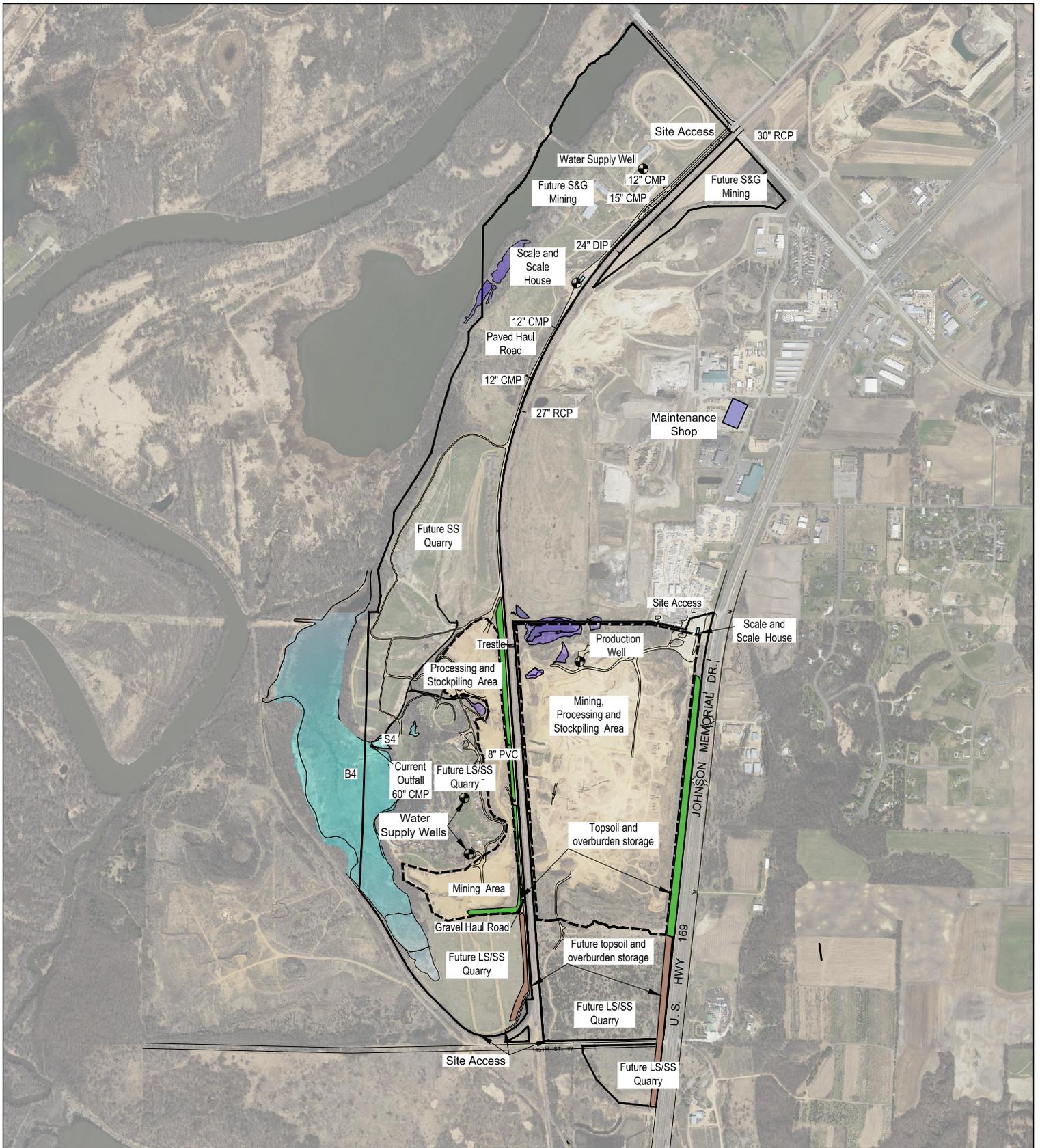
## Figures



**Figure 1**  
**Area Map**

Preliminary SWPPP  
Merriam Junction Sands  
SHAKOPEE, MN

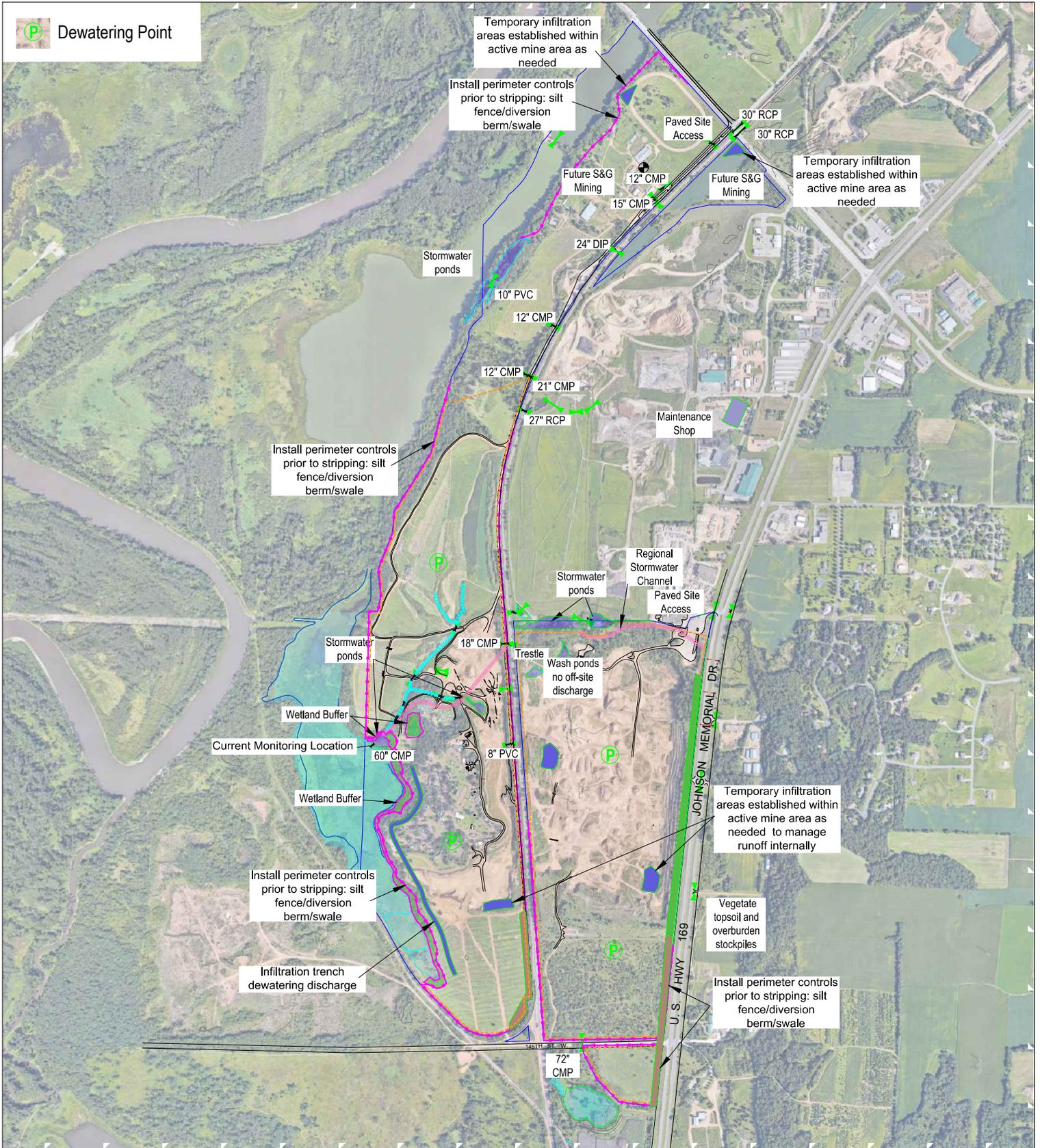




**Figure 2**  
**Site Plan Map**  
 Preliminary SWPPP  
 Merriam Junction Sands  
 SHAKOPEE, MN

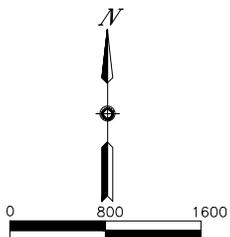


**P** Dewatering Point



# Figure 3 BMPs

Preliminary SWPPP  
Merriam Junction Sands  
SHAKOPEE, MN



Attachment 1  
Site Inspection Form



# Industrial Stormwater Site Inspection Form

NPDES/SDS Industrial Stormwater Permit

Doc Type: Self Audit

**Instructions:** This inspection form is intended to meet the requirements listed in Part III.F of MNR050000. Unless otherwise authorized, inspections shall be conducted by the Permittee once per calendar month for a total of 12 inspections per year. A minimum of one of the 12 inspections should occur during a runoff event. The Permittee can decide when this runoff event inspection will occur.

## Facility Information

Facility name: \_\_\_\_\_ Date: \_\_\_\_\_

Facility address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Site contact name: \_\_\_\_\_ Inspector name: \_\_\_\_\_

SIC Category: \_\_\_\_\_ Runoff event:  Yes  No

Permit no./Facility ID no.: \_\_\_\_\_ Weather: \_\_\_\_\_

Narrative activity and/or SIC Code(s): \_\_\_\_\_

## Inspector Information

Date (mm/dd/yy): \_\_\_\_\_ Inspection number: \_\_\_\_\_

Name: \_\_\_\_\_ Trained for these duties:  Yes  No

**Describe duties being performed:**

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### Have the following areas been inspected at your facility?

a. Bulk storage areas (tanks, drums, fuels, pallets, etc.)  Yes  No

**Describe findings:**

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**Actions needed:**

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b. Waste disposal areas  Yes  No

**Describe findings:**

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**Actions needed:**

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c. Maintenance areas  Yes  No

**Describe findings:**

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**Actions needed:**

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d. Loading/Unloading areas  Yes  No

**Describe findings:**

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**Actions needed:**

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e. Raw material, intermediate product, by-product and final storage areas  Yes  No

**Describe findings:**

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**Actions needed:**

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*Areas described in a.-e. above should be inspected in every inspection*

### BMP Evaluation (Stormwater Control Measures)

Evaluate all structural and non-structural Best Management Practices (BMPs) to determine whether they are properly functioning.

BMP type	Function	Description of condition

### New Materials and Activities

Describe below any newly exposed materials and activities since the last inspection. Be sure that these materials are accurately noted in the Stormwater Pollution Prevention Plan (SWPPP).

Materials and activities	Date exposed

## Runoff Event Inspection

Was the runoff inspection conducted during a storm event?  Yes  No

For the inspection conducted during a runoff event, it is important to visually inspect discharges (runoff) for contaminants (sheen, rusty color, milky or translucent, sediment (muddy), etc.). Describe below the discharges that you observed.

Discharges observed (Y/N)	Describe discharges (color, transparency, volume, etc.)
<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Yes <input type="checkbox"/> No	

**What changes should be taken to help clean up these discharges:**

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## Oil and Grease Inspections

Is this facility required to inspect for oil and grease sheen?  Yes  No

Was the inspection conducted during a snowmelt event?  Yes  No

**Results from oil and grease inspection:**

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## Stormwater Pollution Prevention Plan (SWPPP) Updates

Does your SWPPP accurately describe site conditions?  Yes  No