

NON-METALLIC MINING RECLAMATION PLAN NARRATIVE

Operator: Haas Sons, Inc.

Owner: Haas Sons Properties LLC

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Summary

This reclamation plan has been developed to provide information about the existing site of the proposed mine, the proposed site operations, and how the mine will be reclaimed to the proposed post mining land use.

This reclamation plan is for a 35.2 woods located south of 295th St, and 1/2 mile east of hwy 27 in the town of Holcombe. The land is currently natural forest land and is used as a wildlife habitat.

The operator will mine a sand and gravel deposit that is located on a glacial outwash which is characterized as the melt water stream sediment from the Chippewa Lobe. Most of the site will be mined below the water table and reclaimed as a wildlife pond. Shore land areas surrounding the pond that are mined above the water table will be seeded to native grasses.

A wetland delineation was completed by MACH IV Engineering and Surveying. All mining activities will occur outside of the delineated wetland.

Initial site plan

This section is to be used with the initial site map

1. **Soil Information**

A horizon – 4” of topsoil

B horizon – 24”-48” clay subsoil

Source of information: We dug test holes with a backhoe to determine the soil horizons. Also, the USDA soil survey indicates that there is approximately 6" of topsoil and 30" of subsoil at the site. See attached soils map.

There are no known utilities at this site.

2. **Description of Materials to be extracted**

Sand and gravel will be extracted and processed at the site.

3. **Extraction and processing to be conducted at the Site**

Sand and gravel will be mined crushed, washed and then removed from the site.

Material below the water table will be extracted by way of dredging. A portable crushing and washing plant will be used to process the material and stockpile it on site. Materials within the mine will be excavated and transported using bulldozers, excavators, loaders and conveyers.

Sand and gravel will be excavated from the mine above the water table in one lift approx. 10-15 feet deep. An area in the floor of the mine will be excavated below the water table to create a pond. No high capacity wells will be installed or used to support sand and gravel processing.

No flocculants or other chemicals will be used to support sand and gravel processing. No waste materials that are generated off-site will be hauled to the mine, stockpiled or used in site reclamation.

4. **Volumes of Materials**

Sequences of mine cells are planned to systematically mine and reclaim the site. The anticipated area of disturbance and estimated volume of raw materials to be removed during the life of the mine is as follows.

(Estimated Cubic Yards of Raw Material)

Pit	Area (acre), includes berms, roads, etc.	During 1 st two years	During Full Life of Operation
Total	31.2 Acres	200,000 cubic yards	998,400cubic yards

5. **Storm water Permits/Management**

At a minimum storm water will be contained within the mine boundaries for all rainfall events according to the 10 year 24 hour frequency storm (4.1 inches).

Soil berms created during topsoil and subsoil stripping will be stabilized and used to contain and direct storm water runoff towards the excavated floor of the mine where it will infiltrate. Storm water will be managed this way over the entire life of the mine.

Site operations

This section should be used with the site operations map

1. **Erosion Control & Permits**

Silt fence will be installed around topsoil pile and berms during site operation. All topsoil and subsoil piles will be graded to a slope of 3:1 or flatter and seeded to further control erosion during site operation.

Berms will be stabilized using best management practices including seeding, mulching, erosion control mat, hydro-seeding, etc. Erosion and sediment control best management practices will be installed as determined by the Wisconsin Erosion Control Product Acceptability List (PAL) Channel and Slope Erosion Control Matrices. Silt fence and/or sediment logs will be installed on either side of the driveway at the intermittent stream crossing.

2. **Reclamation Activities During Operations**

A process of contemporaneous reclamation will be used to systematically mine and reclaim the site. Under this process the site will be reclaimed as soon as possible after materials have been extracted and processed using the planned sequence.

North of the intermittent stream, north areas will be restored as mining continues south. South of the intermittent stream, south boundaries will be partially restored as mining continues north, and the pond is created. As will southern east and west boundaries.

At the beginning of the mining operations all of the topsoil (estimated 6 inches) will be stripped and stockpiled in berms. Following topsoil stripping operations all of the subsoil (estimated 20 inches) will be stripped and mostly stockpiled in berms inside of the topsoil area. After subsoil is piled, leveled, and sloped, some topsoil will be applied and area will be seeded. All berms will be shaped to a 3:1 slope or flatter and seeded with DOT Seed Mix 20. Berms will be managed to prevent the growth of weeds and invasive species using best management practices, including selective herbicide application. Mining operations will then excavate, process, and remove sand and gravel from the site.

Final grading of the bottom will occur as sand and gravel is mined.

When excavation of sand and gravel is completed rough grading work will be performed to create slopes around the perimeter of the mine that are 3:1 or flatter and extend below the surface of the water. Subsoil will then be placed over the slopes (this includes a minimum of 2 feet vertically below the water line) and flat lying areas of mine to a depth of 10 inches or more.

Topsoil will then be placed over the subsoil to a depth of 6 inches or more

The site will then be seeded. Areas with slopes steeper than 3:1 will have straw mulch applied. Areas flatter than 3:1 will not receive mulch, unless it is determined that mulch is needed for stabilization.

Reclamation test plots will be established within the first two years of mining. Test plots will be established for each post mining land use. These test plots will be monitored and used to help determine success in future areas of mine reclamation.

3. **Timetable/Sequence of Operations**

Location Activity

Start mining at the north end of the site operations map. We will mine South through the pit evenly, at an elevation above groundwater (approx. 1047) to the south boundary.

After mining above water table is complete, we will dig a pond approx. 10-20ft deep starting at the south end and moving north, until the area south of the unnamed tributary, becomes a pond.

4. Timetable

Estimated period of operation/extraction:

pit	20 years
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(C) Site Reclamation

1. Disposition of Structures and Roads

A gravel driveway will come southeast off of county 295th. It will be approximately 1000 ft long, and turn south to cross the unnamed tributary, and access the pond. This driveway will provide access possible future residential lots and to the wildlife pond.

Structures such as a scale house, and scale will be removed prior to final reclamation. The pond created will remain in place as shown on the Final Site Map (See Maps). There are no areas of concentrated flow entering, leaving, or within the reclaimed mine site.

2. Soil Reapplication

Overburden piles will be leveled off or used on slopes. This work will be done with scrapers or bulldozers. Slopes will be stabilized using best management practices including seeding, mulching, erosion control mat, hydro-seeding, etc. Erosion and sediment control best management practices will be installed as determined by the Wisconsin Erosion Control Product Acceptability List (PAL) Channel and Slope Erosion Control Matrices (attached).

Subsoil material will then be removed from the berms with excavators or loaders and transported in dump trucks to the area in the mine to be reclaimed. Trucks will be routed to limit traffic over areas where subsoil has already been applied. Trucks will dump subsoil and bulldozers will spread the material to be 24 inches thick on the slopes and floor of the mine. The use of tracked equipment while spreading subsoil will limit soil compaction.

Topsoil material will then be removed from the berms with excavators or loaders and transported in dump trucks to the area in the mine to be reclaimed. Trucks will be routed to limit traffic over areas where subsoil or topsoil has already been applied. Trucks will dump topsoil and bulldozers will spread the material to be 6

inches thick on all surfaces above the water table, and two feet vertically below the water table. The use of tracked equipment while spreading topsoil will limit soil compaction.

In the event that rubber tire equipment cannot be routed to prevent subsoil and topsoil compaction deep tillage equipment will be used to alleviate compaction in the upper 12 to 14 inches of the soil profile.

Soils testing will be performed following procedures established in the Wisconsin Nutrient Management Standard 590 to determine the organic matter, phosphorus, potassium and PH. Soil amendments (including lime and fertilizer) will be applied based on the soil test results to meet the fertility requirements needed to achieve the intended post mining land use.

3. Safety Assurances

Given the slopes on the reclaimed mine site and the post mining land uses there are very limited safety concerns. The pond will have a 3:1 slope that extends 6 feet below the water line. Areas reclaimed as Wildlife habitat will have 3:1 slopes.

4. Seeding Plan

Seeding will be selected to achieve the post mining land use that is planned for each designated area. Areas that will be reclaimed to wildlife habitat will be seeded to native grasses. Seed will be broadcast seeded and rolled to improve seed – soil contact. DNR Seed Mix 2 will be used in these areas and applied at the rates listed (see attached). The wildlife pond area will be allowed to vegetate below the water line using natural seed distribution without seeding by the operator.

5. Future Use

The mine site will be reclaimed to establish a post mining land use as wildlife pond habitat below the water table, native grass prairie above the water table, and low density residential development, as shown on the Final Site Map.

Wildlife Pond Habitat Post Mining Land Use

Areas of the mine that are below the water table will be reclaimed as a Wildlife Pond.

The proposed performance measures used to determine reclamation success are:

- a. The establishment of a mine soil profile with a minimum of 6 inches of topsoil and 24 inches of subsoil.
- b. The establishment of full plant rooting depth.
- c. The establishment of target soil chemistry and fertility to achieve and sustain the post mining land use.
- d. The establishment of the shore land seeding so that:
 - i. All species in the seeding are present.
 - ii. No more than 50% of the total vegetation is one species from the seed mix.
 - iii. Biomass shall be a minimum of one ton per acre per year.

- e. The establishment of irregular shorelines that vary in shape and slope.
- f. The establishment of shoreline slopes that vary from 3:1 to 10:1 and extend a minimum of 6 feet vertically below the water line.
- g. The establishment of a minimum of 6 inches of topsoil placed along the shoreline and on the slope a minimum of two feet vertically below the water line to encourage vegetative growth.

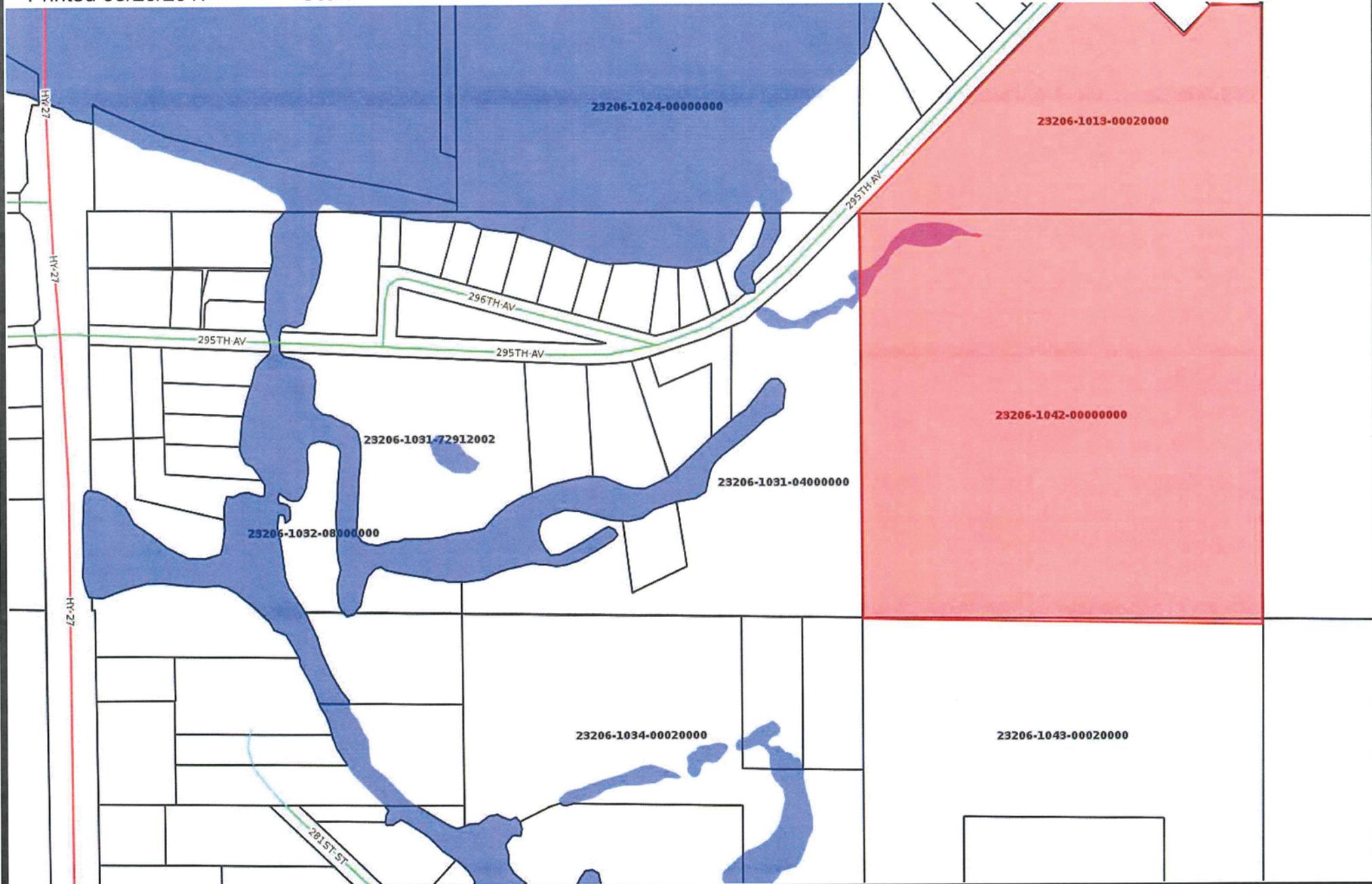
Site monitoring will be conducted to assess the success of vegetation establishment and monitor the site for invasive or noxious plant species. Areas poor vegetation establishment shall be examined to determine the cause. Invasive or noxious species will be spot treated with herbicide according to the product label or hand removal and disposed of properly.

Location Map



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Scale = 1:425'



Disclaimer: This map is a compilation of records as they appear in the Chippewa County Offices affecting the area shown and is to be used only for reference purposes.

PAL Erosion control Matrices

CHANNEL EROSION CONTROL MATRIX

(Concentrated Flow Application)

TYPE OF EROSION CONTROL DEVICE	PERMISSIBLE SHEAR LBS./F.	DITCH GRADE															REMARKS
		< 2%			2% - 4%			4% - 6%			6% - 9% *			9% - 12% *			
		Max. Length (ft.)			Max. Length (ft.)			Max. Length (ft.)			Max. Length (ft.)			Max. Length (ft.)			
		300	600	1200	300	600	1200	300	600	1200	300	600	1200	300	600	1200	
Seed with properly anchored mulch	0.6	██████████															Anchor mulch per specifications.
Sod ditch checks with seed and mulch	N/A	████████████████████			C												Install one ditch check for every 1 foot of drop. Sod stakes required.
Temporary ditch checks (hay bales or approved manufactured alternatives listed in the WisDOT PAL)	N/A	██████████████████████████████															Install one ditch check for every 2 feet of drop. Maximum 200' spacing. Not recommended for slopes less than 1%.
Sod ditch liner	1.0	██████████															Upstream end must be buried. Additional sod stakes required.
Double netted light duty (WisDOT Class I Type B) erosion mat	1.5	██████████████████████████████															Only mat type products allowed.
Sod reinforced with a double netted jute (WisDOT Class II Type A) erosion mat	1.5	██████████████████████████████															Upstream end must be buried. Additional sod stakes required. Two bid items needed.
Stone or rock ditch checks, or Rock-Filled Filter Bags	N/A	●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●												Use No. 2 coarse aggregate, railroad ballast, or breaker run. Install one ditch check for every 2 feet of drop. Use in conjunction with a channel lining.
Medium duty coconut erosion mat (WisDOT Class II Type B or C)	2.0	●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●									
Heavy duty synthetic (WisDOT Class III Type A) erosion mat or turf reinforcement mat (WisDOT Class III Type B)	2.0	●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●									Germination may be a problem with Class III Type A mats. An ECRM is required for initial erosion protection for Class III Type B mats.
Heavy duty synthetic turf reinforcement (WisDOT Class III Type C) mat	3.5	●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●						An ECRM is required for initial erosion protection. Contact manufacturer if higher shears are needed.
Riprap ditch checks	N/A	●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●						Place top of downstream ditch check level with bottom of upstream ditch check. Use in conjunction with a channel lining.
Heavy duty synthetic turf reinforcement (Class III Type D) mat	5	●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●						An ECRM is required for initial erosion protection. Contact manufacturer if higher shears are needed.
Light riprap	4	●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●						Outfalling, overtopping and scour need to be addressed. Use 2' minimum ditch depth.
Medium riprap	5	●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●						
Heavy riprap	8	●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●			●●●●●●●●●●●●●●●●●●●●						

Riprap measures apply to all ditch types. Use of these measure requires engineering judgement and design.

CHANNEL EROSION CONTROL MATRIX

(Concentrated Flow Application)

TYPE OF EROSION CONTROL DEVICE	PERMISSIBLE SHEAR LB/S.F.	DITCH GRADE															REMARKS
		< 2%			2% - 4%			4% - 6%			6% - 9% *			9% - 12% *			
		Max. Length (ft.)			Max. Length (ft.)			Max. Length (ft.)			Max. Length (ft.)			Max. Length (ft.)			
		300	600	1200	300	600	1200	300	600	1200	300	600	1200	300	600	1200	
Grouted rip rap	N/A	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	Address outfalling, overtopping and scour. Line with Grotex fabric Type "HR", (see Chap. 10, Const. Detail and special provision). Use 2' minimum ditch depth.
Articulated Concrete Block Type A	5	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	ACBs apply to all ditch types. Use of these measures requires engineering judgement and design.
Articulated Concrete Block Type B	10	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	
Articulated Concrete Block Type C	15	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	
Articulated Concrete Block Type D	20	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	
Articulated Concrete Block Type E	30	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	●●●●●●●●●●●●●●●●	
Standard Ditch Section		<p>Erosion control for ditches not conforming to the typical at right, that complies with FDM procedures 11-15-1 Figures 6 & 7, should be designed according to FDM Chapter 13.</p>															
KEY		<p>Effective range of device for Sandy or Clayey Soil: ●●●●●●●●●●●●●●●●</p> <p>Device applicable, may not be cost effective: ●●●●●●●●●●●●●●●●</p> <p>"C" effective for clayey soil only: ○●●●●●●●●●●●●●●●●</p> <p>Not applicable. Use in conjunction with other BMPs: ○●●●●●●●●●●●●●●●●</p> <p>ECRM - Erosion control revegetation mat. All Class I and II mats are ECRMs. TRM - Turf reinforcement mat. FDM - WisDOT Facilities Development Manual BMP - Best Management Practice PAL - See Note 6</p> <p>* For ditch grades over 9% special design considerations may be required. ** Soils that are not sandy should be treated as clay soils.</p>															
		<p>NOTES</p> <ol style="list-style-type: none"> 1) Ditch flow rates used to develop bar chart are based on a 60 ft. right of way from pavement centerline and a 2-Yr. rainfall event for temporary liners or a 25-Yr. rainfall event for permanent (Class III mat or riprap) liners. If the drainage area extends outside the 60 foot right of way or unusual flows are expected, use the shear stress column values to determine the suitability of a liner. See FDM procedures in Chapter 10 and in Section 13-30-10. 2) Erosion mats shall extend upslope 1.0 ft. min. vertically from the ditch bottom or 6" higher than the design flow depth. There shall be no joints within 18" of the low point. 3) Cost shall be a consideration in the selection of these devices. 4) Add sediment traps at the bottom of channel slopes. 5) Refer to FDM Chapter 10 for any channels exceeding the limits shown. 6) Approved materials for erosion products are referenced from the Wisconsin Department of Transportation Erosion Control Product Acceptability Lists (PAL), found at the web site: http://www.dot.wisconsin.gov/business/engrserv/pal.htm 7) On long or steep channels that require a higher class mat, use the appropriate lower class mat for the first 300 ft to 600 ft of the channel. 8) Effective erosion control involves minimizing the amount of time soil is exposed and the selection of a combination of practices, and not reliance on just one practice. 															

SLOPE EROSION CONTROL MATRIX

Benches	Consider benches when cuts exceed 20', bench at approximately 15' vertical intervals to collect and drain water. Treat benches as channels (ditches). Adjust elevations to provide drainage. Consider flumes at transitions.
Intercepting embankments	Used to intercept runoff from abutting lands. Flumes may be necessary to direct runoff.
Silt fence	Used at toe of slopes to intercept and detain small amounts of sediment. Use only WisDOT approved silt fence as listed in the PAL.
Temporary ditch checks or Erosion bales	Used at toe of slopes to intercept and detain small amounts of sediment.
Slope drains/flumes	May be necessary on slopes (see channel matrix for design guidance).
Sediment traps	Used to trap sediment laden runoff. Could be used at the inlet or outlet end of slope drain.
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><u>KEY:</u></p> <p>Not applicable. Use in conjunction with other BMPs: </p> <p>Effective range of device for Sandy or Clayey Soil: </p> <p>Device applicable, may not be cost effective: </p> <p>* Soils that are not sandy should be treated as clay soils.</p> <p>ECRM - Erosion control revegetation mat. All Class I and II mats are ECRMs.</p> <p>TRM - Turf reinforcement mat.</p> <p>FDM - WisDOT Facilities Development Manual</p> <p>PAL - See Note 5</p> </div> <div style="width: 45%;"> <p><u>NOTES</u></p> <ol style="list-style-type: none"> 1) Cost shall be a consideration in the selection of these devices. 2) Designers should review FDM Chapter 10 prior to selection of erosion mats. 3) Install intercepting ditches to limit slope lengths to 15' vertical intervals. (See FDM Chapter 10) 4) Refer to FDM Chapter 10 for any slopes exceeding the limits shown. 5) Approved materials for erosion products are referenced from the Wisconsin Department of Transportation Erosion Control Product Acceptability Lists (PAL), found at the web site: http://www.dot.wisconsin.gov/business/engrserv/pal.htm 6) On steeper slopes that require a higher class mat, use the appropriate lower class mat or seed and mulch for the first 30 ft to 60 ft of the slope. 7) Unless project conditions require otherwise, seed and mulch all slopes that are flatter than a 5% grade, regardless of length. If practicable, bench the slopes. 8) Effective erosion control involves minimizing the amount of time soil is exposed and the selection of a combination of practices, and not reliance on just one practice. </div> </div>	

Seeding Plan

WORKING DRAFT - NON-METALLIC MINE RECLAMATION - POST MINING LAND USE

CATEGORY OF POST MINING LAND USE	SUB-CATEGORY	LAND COVER	DEVELOPMENT DENSITY/INTENSITY	PUBLIC ACCESS/USE
Wildlife Habitat/Conservancy	Terrestrial	Grassland/Prairie	No Residential, Commercial, or Industrial Development	No Public Use -vs-
	Mixed	Grassland/Prairie/Forest Savannah		Defined Public Use
	Aquatic	Wet/Sedge Meadow		
		Shallow ponded/Deep Poned		
Agricultural	Ag Production	Cultivated cropland; Row Crop	No Development •Non-Irrigated •Irrigated	No Public Use -vs-
		Cultivated Cropland; Forage Based		Defined Public Use
		Pasture		
		Other		
Forest	Forest Production	Even aged species	No Development	No Public Use -vs-
		Mixed aged species	Low Density	Defined Public Use
Residential	Ag/Forest Residential		Low Density	Defined Dev. Plan
	Res Subdivision		Med. Density	
			High Density	
Commercial	Light		Low Intensity	Defined Dev. Plan
	Heavy		Med. Intensity	
			High Intensity	
Industrial	Light		Low Intensity	Defined Dev. Plan
	Heavy		Med. Intensity	
			High Intensity	
Institutional	Public Inst.			
	Private Inst.			
Any other land use category that may currently or potentially apply to the subject mine site, as defined in an approved comprehensive plan or zoning ordinance.				

MIX 1 - PASTURE

Common Name	Scientific Name	Lb./Ac.*	Price/Lb.	Price
Timothy	<i>Phleum pratense</i>	4	\$ 1.50	\$ 6.00
Tall Fescue	<i>Festuca arundinaceae</i>	5	\$ 1.50	\$ 7.50
Canada Wild Rye	<i>Elymus canadensis</i>	3	\$ 12.00	\$ 36.00
Agricultural Rye	<i>Secale cereale</i>	4.5	\$ 1.00	\$ 9.00
Alfalfa**	<i>Medicago sativa</i>	10	\$ 4.00	\$ 40.00
Alsike Clover**	<i>Trifolium hybridum</i>	4.5	\$ 2.00	\$ 9.00
	Total	31 lbs.	Total	\$ 107.50

MIX 2 – STABILIZATION/WILDLIFE/GRAZING (Mix 3 would be suitable too)

Common Name	Scientific Name	Lb./Ac.*	Price/Lb.	Price
Agricultural Rye	<i>Secale cereale</i>	4	\$ 1.00	\$ 4.00
Timothy	<i>Phleum pratense</i>	2	\$ 1.50	\$ 3.00
Tall Fescue	<i>Festuca arundinaceae</i>	3	\$ 1.50	\$ 4.50
Switchgrass	<i>Panicum virgatum</i>	1	\$ 13.50	\$ 13.50
Big Bluestem	<i>Andropogon gerardi</i>	1	\$ 10.50	\$ 10.50
Canada Wild Rye	<i>Elymus canadensis</i>	3	\$ 12.00	\$ 36.00
Alsike Clover**	<i>Trifolium hybridum</i>	4	\$ 2.00	\$ 8.00
Red Clover**	<i>Trifolium repens</i>	4	\$ 2.00	\$ 8.00
Alfalfa**	<i>Medicago sativa</i>	5	\$ 4.00	\$ 20.00
	Total	27 lbs.	Total	\$ 107.50

MIX 3 – NATIVE MIX FOR WILDLIFE/PASSIVE RECREATION

Common Name	Scientific Name	Unit	Unit/Ac.*	Price/Unit	Price
Big Bluestem	<i>Andropogon gerardi</i>	lb.	1	\$ 10.50	\$ 10.50
Canada Wild Rye	<i>Elymus canadensis</i>	lb.	3	\$ 12.00	\$ 36.00
Switchgrass	<i>Panicum virgatum</i>	lb.	1	\$ 13.50	\$ 13.50
Indiangrass	<i>Sorghastrum nutans</i>	lb.	3	\$ 16.00	\$ 48.00
Purple Prairie Clover**	<i>Dalea purpurea</i>	oz.	2	\$ 4.50	\$ 9.00
Canada Tick Trefoil**	<i>Desmodium canadensis</i>	oz.	5	\$ 20.75	\$ 103.75
New England Aster	<i>Aster novae angliae</i>	oz.	0.2	\$ 48.75	\$ 9.75
Purple Cone Flower	<i>Echinacea purpurea</i>	oz.	4	\$ 4.50	\$ 18.00
Dotted Mint**	<i>Monarda punctata</i>	oz.	4	\$ 51.25	\$ 205.00
Bergamot**	<i>Monarda fistulosa</i>	oz.	5	\$ 25.75	\$ 128.75
Yellow Coneflower	<i>Ratibida pinnata</i>	oz.	3	\$ 4.50	\$ 13.50
Blackeyed Susan	<i>Rudbeckia hirta</i>	oz.	0.5	\$ 3.00	\$ 1.50
Blue Vervain	<i>Verbena hastada</i>	oz.	1	\$ 6.75	\$ 6.75
	Total		~9.5 lbs.	Total	\$ 604.00

MIX 4 – WET SOILS/POND EDGE/WEDLAND AREA

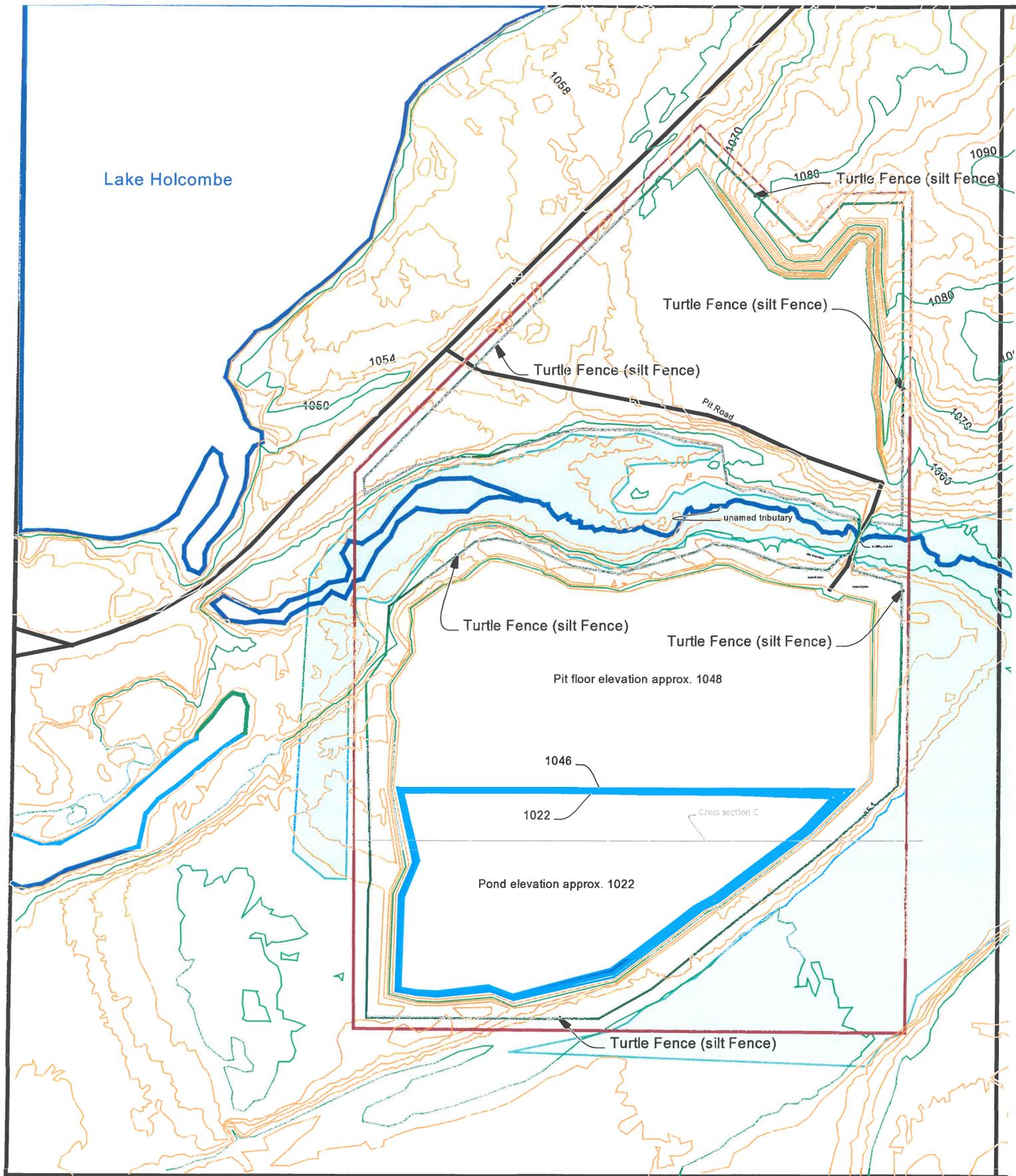
Common Name	Scientific Name	Unit	Unit/Ac.*	Price/Unit	Price
Canada Wild Rye	<i>Elymus canadensis</i>	lb.	3	\$ 12.00	\$ 36.00
Switchgrass	<i>Panicum virgatum</i>	lb.	1	\$ 13.50	\$ 13.50
Timothy	<i>Phleum pratense</i>	lb.	2	\$ 1.50	\$ 3.00
Blue Joint Grass	<i>Calamagrotis canadensis</i>	oz.	3.2	\$ 56.25	\$ 180.00
Annual Oats	<i>Avena sativa</i>	lb.	8	\$ 2.00	\$ 16.00
Alsike Clover**	<i>Trifolium hybridum</i>	lb.	1	\$ 2.00	\$ 2.00
Red Clover**	<i>Trifolium repens</i>	lb.	1	\$ 2.00	\$ 2.00
Culver's Root	<i>Veronicastrum virginicum</i>	oz.	2	\$ 77.00	\$ 154.00
Canada Tick Trefoil**	<i>Desmodium canadensis</i>	oz.	5	\$ 20.75	\$ 103.75
Blackeyed Susan	<i>Rudbeckia hirta</i>	oz.	0.2	\$ 3.00	\$ 0.60
Smooth Aster	<i>Aster laevis</i>	oz.	2	\$ 48.75	\$ 97.50
New England Aster	<i>Aster novae angliae</i>	oz.	0.6	\$ 30.75	\$ 18.45
Joe Pye Weed	<i>Eupatorium maculatum</i>	oz.	1	\$ 36.00	\$ 36.00
		Total	~17 lbs.	Total	\$ 662.80

* Seeding rates assume broadcast seeding and may be multiplied by 0.5 to approximate rates if drilled.

** Denotes legumes, which must be inoculated according to the seed provider's instructions prior to seeding.

Pricing for native species found at Agrecol in 2012.

<http://www.agrecol.com>



site operations map 2

200 ft

- Roads
- Wetlands
- Major contours
- Minor contours
- Property boundaries
- Water
- Underwater minor contours
- Underwater major contours

0 200

