



## UNLD Dredging Work Plan

Dated 07/10/2023

ATTN: Todd Weik

**Koontz Bryant Johnson Williams, Inc.**

W336 N6978 Stonefield Court

Oconomowoc, WI 53066

### Overall Scope of Work Plan

Eco Waterway Services is engaged to hydraulically dredge approximately 11,000 insitu cubic yards of material from Upper Nemahbin Lake and Bark River as per the spec plans provided and as described in the Summary of Work and construction documents of the Contract. Material will be pumped into Geo textile tubes at designated laydown site(s), with the carriage return water returning back to the dredged area. This plan is based on information and requirements as provided in the request for bid documents provided by Koontz Bryant Johnson Williams, Inc. Eco Waterway Services (ECO) has also received copies of project permits and this plan is based on compliance with those permit requirements.

### Dredging:

#### Dredge Equipment Specifications: 6" Hydraulic Dredge – Dino 6

Dimensions Length 21 ft. Width 71 in. Height 64 in. Weight (less fuel) 3,800 lbs. Slurry Pump Manufacturer Geoform International, Inc. Material AR Steel, 400-500 Brinell Discharge Diameter 6 in. Expected performance flow rate with use of geo tubes, 800 to 900 gals per min. TDH Supplied with open faced trash impeller enclosed impeller available Working Capacity Working Depth 13 ft. Cut Width 66 in. Travel System Double pulley hydraulic windlass with 2 hydraulic motors Floatation 2 (two) pontoons 26 in. X 22 in. X 192 in. Construction Stainless Steel 16 gauge, 3 separate compartments each float (6 compartments total) Internal stiffeners on all sides Cutterhead Width 66 in. Diameter 14 in. Drive Variable speed duel hydraulic motor Direct Drive Replaceable, hardened steel trencher teeth and mixing paddles Engine Type B3.3 Cummins 4 cylinder diesel Horsepower 65 hp @ 2500 rpm Fuel capacity 30 gallons Oil cooler thermostatically controlled Stainless steel tubing on boom Impeller high-low speed selector valve Instrumentation Tachometer/hour meter Slurry pump hydraulic pressure gauge Cutterhead hydraulic pressure gauge Discharge pressure gauge Safety Engine Shut-Down High engine coolant temperature Low engine oil pressure High hydraulic oil temperature Low hydraulic oil level

### Process:

Eco will use a 6" Dino dredge on a cable system to remove an assumed quantity of 11,000 insitu cubic yards of material in the mapped area of the Upper Nemahbin Lake and Bark River outflow area. Dredge areas will be divided into a North and South dredging area of the bay and then the



river channel. Lake access will be allowed from the river identified by buoys located 10 feet away from the turbidity curtains in place. Turbidity curtains will be placed marking each dredging work area. Dredging will be performed in the North area first, with the dredge operating in a West to East direction coming into/out of shore. We will be stop dredging 5 feet from shore per DNR regulations. Expectations are to dredge approximately 125 to 175 CY of insitu sediment material per day, depending on the dewatering process. Approximately 600 feet of hard pipe will be used to convey the dredge slurry to the Geo textile bags in the designated laydown area. The process of dewatering and solidifying the sediment is expected to reduce the volume of sediment from 11,000 cubic yards to approximately 6000 to 7000 cubic yards to be trucked and disposed of. The composition of the sediment will determine dewatered volume reduction.

### **Site Prep:**

There are various laydown areas as designated laydown site plans.

1<sup>st</sup> Stage: Susan Fisher's Property 34233 Venice Park Rd – Approximate area required of 110' L x 70' W will be prepared for placement of the geo textile tubes. Capacity 1100-1200 cubic yards

2<sup>nd</sup> Stage: John Sommer and Derrick Bay Property 34235 and 34236 Venice Park Rd – Approximate area required of 75' L x 110' W will be prepared for the placement of geo textile tubes. Capacity 1850-1950 cubic yards

3<sup>rd</sup> Stage: Brian Fischer Property 34047 Venice Park Rd – Approximate area required of 480' L x 60' W will be prepared for placement of the geo textile tubes. Capacity 3300-3400 cubic yards.

4<sup>th</sup> Stage (if required): Jeffrey Bourdo, Robert Speer, & John Meier Sr. Properties 34201 to 34149 Venice Park Rd. 50' x 50', 60' x 40' and 65' x 35' areas respectively. Capacity 800-900 cubic yards.

At each laydown location, Eco will place 6mm plastic vapor barrier on the ground and (2) Geo tubes will be placed side by side on the plastic. Haybales and other carriage return water containment measures and erosion control will be placed around the tubes. The carriage return water will follow a defined path back to the lake. Laydown areas need to be relatively flat with minimal slope. Geo tubes will be anchored to stakes to prevent any rolling. Once the (2) Geo tubes are filled to capacity, one more tube will be stacked on top of them for additional capacity.

### **Geo Textile Tubes and Dewatering Process:**

Dredged material (slurry) will be deposited into Geo textile tubes at the site prepared laydown areas. Eco will be using GSI provided Geo Tubes per the tube material specifications in the agreement. To assist in the dewatering process, Eco will be using a coagulant and demulsifier (polymer or flocculant). The polymer will be injected into the hydraulic slurry prior to being deposited into the Geo Tubes. Eco has performed a hanging bag test to validate the proposed combination of polymer/flocculant that will ensure compliance to the WPDES water discharge permit. This polymer pump system will be monitored to ensure acceptable water clarity and



dewatering efficiency of the sediment for compliant water discharge at the entry point back to the lake. During the dredging process, samples of carriage return water will be taken as specified in the WPDES permit to ensure compliance to water clarity specifications. Dredged material will be pumped simultaneously between two tubes at a time with the ability to switch between the tubes when more dewatering time is required as the tubes fill up. Dewatering of the sediment takes time which can be variable in nature. Our expectation is that the sediment will need to stay at the laydown sites for 2 months or so before the trucking disposal plan can be acted on. Upon completion of dredging, **ECO** will remove all hose, equipment, turbidity curtains, site prep material and anything not related to the continued dewatering process. Once the material is considered adequately dewatered for disposal at the farm site, Eco will implement the disposal trucking plan and laydown site restoration as required.

**Reporting/Invoice back up:**

Eco will take beginning and ending sounding measurements for each section of dredging. These measurements are reported to Eco's office on a daily basis. They will report hours dredged, existing water depth to top of sediment before and after dredging, measured at different intervals. With this information we can calculate cubic yards of insitu material removed. UNLD and Todd will receive a weekly report of progress along with a map of the serviced area. UNLD and Todd will receive a monthly summary report along with our monthly progress billing. Sample reports are attached. We have also included an estimate of our anticipated billings and schedule.

Eco will be taking water samples for testing and compliance to the WPDES permit. These test results can take 2 to 3 weeks to receive back from the lab. Although none is expected, but if there are any non-compliance issues identified from the lab results, Eco will correct the dewatering process to become compliant and notify the WDNR. WDNR is aware of the delay between sampling and data results. Eco also will do the monthly reporting required under the WPDES permit thru the DNR's online system. Todd will receive copies of the monthly reports.

**Timing:**

Accounting for weather, maintenance, clogs, set up and take down time, we expect the dredging services of the project to take up to 3 months based on 5-day work weeks. If significant delays occur, Eco may notify Todd and request extended service hours as mutually agreed upon with UNLD and laydown area property owners.

**Disposal Trucking Work Plan:** Eco will provide a disposal work plan once dredging services are completed and we have more information available after sediment has somewhat dewatered.



**Anticipating Start Date: 7-20-2023**

**Project Personnel:**

**Project Manager:**

**Owen Bulls 847-800-8487/262-337-0083**

**Onsite Lead**

**Ben Karczewski 262-510-6786**

**Jordan Christiansen 715-412-1450**

**Reporting Staff:**

**Pat Dalman 262-468-6510**

**Kelly Kcsizmadia 262-337-4630**

Onsite work crew will consist of typically 2 to 4 people depending on dewatering status. One person in the dredge, 2 people at laydown area site. Extra personnel during set up and take down of equipment. Laydown area crew will assist when cable movement of the dredge is required.

**Subcontractors:**

No subcontractors are expected to be used.

**Suppliers:**

**Geo Synthetics, Inc 262-524-7979**

Travis Flatt

2401 Pewaukee Rd, Waukesha WI 53188

Geo textile tubes and turbidity curtains

**Groh Land, Air, & Water, LLC 262-544-0266**

Tim Groh

2417 Pewaukee Rd, Waukesha WI 53188

Polymer and Polymer equipment

**Sunbelt Rentals, Inc 262-521-3100**

Casey

W231 N1125 County Trunk Hwy F

Waukesha, WI 53186

Trash pumps, pipe, construction equipment as needed

**NLS Labs 262-547-3406**

Sara

2420 Grandview Blvd, Waukesha WI 53188

Water Testing Lab



Attachments:

- Sample weekly cubic yard report
- Sample monthly cubic yard report
- Estimated billing/ work schedule