Preliminary Dredge Project Estimate

Huron Pointe- Archer Canal

Harrison Twp. 07/08/2025

Aquatic Hydraulic Dredging, LLC (AHD) has prepared this estimate using all available preliminary data, as well as visiting the site in person to determine the most accurate estimate for your project. The numbers in this estimate were based on dredging the full width of the canal to a max depth of 6.5ft over the entire length of the canal measuring approximately 4,400ft long. This depth is in reference to the water level observed during our onsite visit June 5th, 2025 and based off of an average removal depth of 2.5ft.

AHD has worked closely with another industry professional specializing in geotubes and polymer treatment in order to verify beyond a reasonable doubt that the previously proposed plan and geotube sites will not offer adequate storage capacity to complete this project. Of the 8 samples taken the average percent solids was 32%, with this data we cannot reasonably expect sediment volume to decrease as substantially as the previous plans suggest (See Dewatering Performance Trial). Due to the amount of room needed to place this volume of sediment AHD proposes to instead put the geotubes in the parking lot of the Lake St. Clair Metropark. This area would require further investigation but is assumed to have adequate drainage, be adequately level and have sufficient room to utilize several large geotubes making the project much more practical and simplifying the process logistically.

Timing

This estimate assumes this project must take place after Labor Day during the off season of the park and during reduced boat traffic periods. This project is anticipated to take approximately 3 months to complete. With an assumed start date of September 1st this means our dredge window will be very tight to complete before freeze up. AHD would do our best to target completion in the first year, however, has included "worst case scenario" complete pull out and remobilization cost to complete this project the following fall if required. Regardless of whether the project is completed the first year or not, material haul off could be completed prior to Memorial Day. Most if not all of the remobilization expense could be waived in several cases such as, if allowed extra dewatering time at the park or if we are allowed to finish the project using the park between pardee street and E archer drive for the small amount of material left in the spring.

Pipe route

The pipe route and pumping distance depicted in Fig 1 requires the use of a booster pump which will be installed inline behind the dredge. This pipeline will primarily be floating, clearly marked every 40ft. Where necessary, the pipeline can be sunk and clearly marked so boats can safely cross.

Navigation

Archer canal (depicted in Blue) will be closed to boat traffic for the duration of this project. Other areas of the canal system will also see restricted access due to the dredge pipe route. It is preferred that we completely close off these intersections (circled in Yellow). If either of these must remain open during dredging, it will result in constant monitoring and manipulation of the dredge pipeline to ensure safe access to the canal. The fee to leave either of these intersections open is listed as an additional expense.

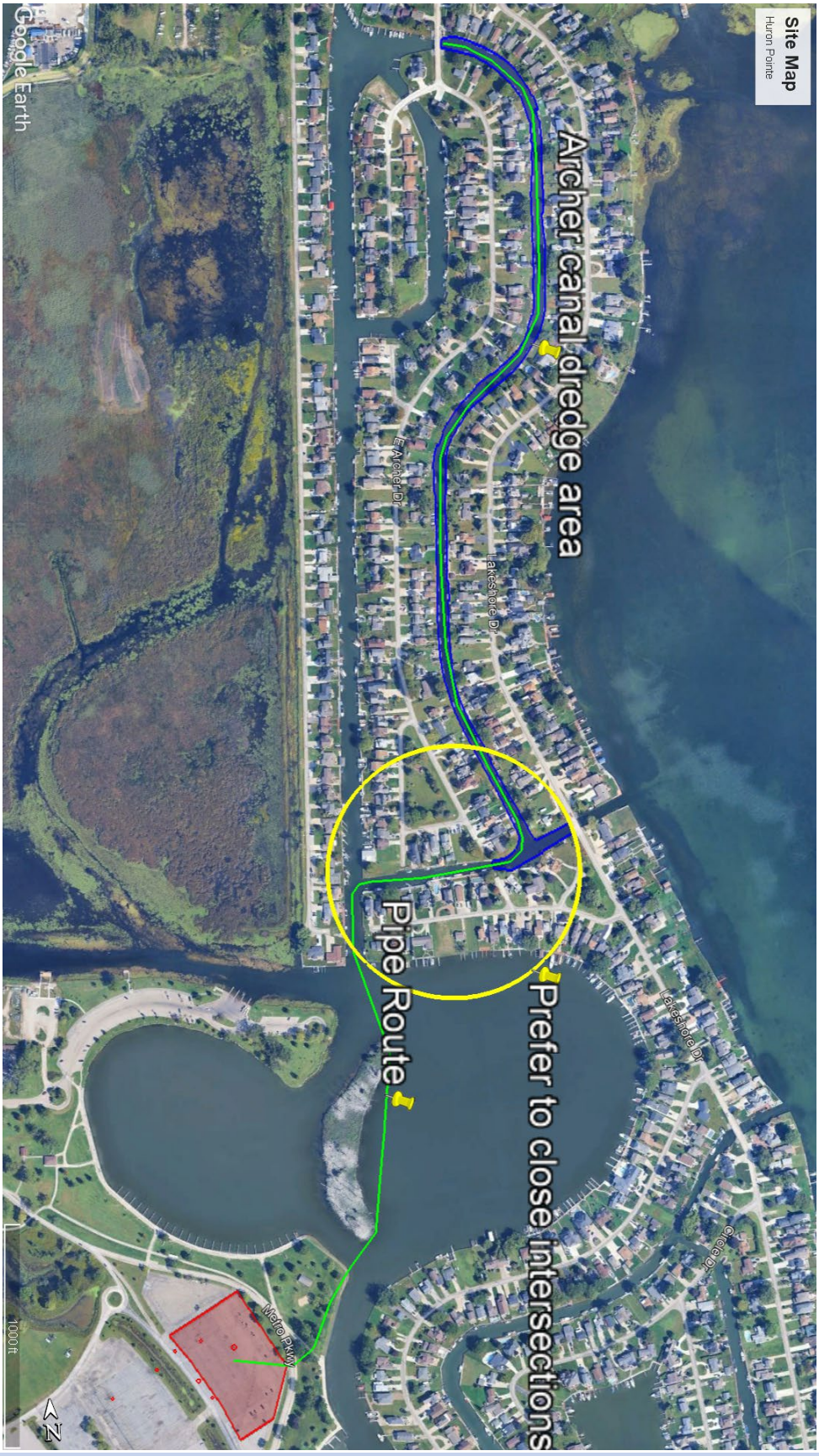

Site Map
Huron Pointe
Google Earth
Archer canal dredge area
Prefer to close intersections
Pipe Route
E Archer Dr
Lakeshore Dr
Lakefront Dr
Cypress Dr
Metro Pkwy
1000 ft
N

Fig. 1

Project Cost

AHD estimates the “all in” dredging cost to dredge the canal as described using geotubes at the Lake St. Clair Metro Park to be **$1,009,500.** This pricing is based on completing the project as described in this estimate with everything included. Of this amount $51,000 was assumed to cover a complete tear down and remobilization if not completed in year 1. It was also assumed we would be required to leave the portion of the canal depicted in yellow open during dredging which accounts for $30,000 of the project cost. If any adjustments or changes are made to this plan it may affect project cost. Most or all of the remobilization fee could be waived in many cases where we may be allowed more dry time at the metro park or an alternative disposal site for the remaining material in the spring. If the project is completed in the fall of 2026 all remobilization fees would be dismissed. If a closer disposal site is used for a remaining small amount of material in the spring, we may be able to offer additional savings beyond the $51,000 remobilization fee. The customer will be responsible for obtaining all permits and permissions required.

How Does It Work?

AHD utilizes hydraulic cutterhead suction dredges. These dredges are equipped with 250hp diesel engines and industrial sand/gravel mining pumps as well as hydraulic cutterheads which are capable of excavating up to 20ft deep and pumping the material thousands of feet through our 8” HDPE dredge pipe.

Pumping Capabilities

Our equipment can pump heavy sand and gravel in some cases up to 3,000' without the need for a booster pump. A booster pump in simple terms increases the volume and in turn the velocity of the water and material traveling through the dredge pipeline thus allowing heavy sediments to stay in suspension. This mixture of water and sediment is called a slurry. With use of a booster pump or even multiple boosters, our pumping distance is vastly expandable. When sand and gravel are not present, organic materials and other light sediments can often be pumped more than a mile without needing to use a booster pump. Although lighter materials can be pumped further, excessive pumping distances and elevations will impact flow volume and limit our production rate.

Pipe Routing and Return Water

In most areas we will be required to have a path not only for the discharge pipeline but also a clear path for clean water to return to the lake, stream or ditch. In routing the pipeline, we look for the path of least resistance while limiting the pumping distance as much as possible. This often means avoiding road crossings. If road crossings are the most practical option to achieve the desired pipeline length or are otherwise unavoidable, we can cross in multiple ways depending on traffic and highway dept. requirements. If an area requires return water as well discharge piping to cross a road, this can affect our preferred methods as well. Where possible we prefer to construct a gravel ramp over the pipe and road. Often due to traffic, we are unable to do this and are required to cut in temporary pipes or a permanent culvert under the road. We can also trench and plate the road where necessary. We typically avoid boring under a road due to cost and pipe size limitations.

When routing pipe across a body of water, we can often limit interference with others using the waterway by manipulating the pipe in a way that best suits the project site. Where little interference is expected, we prefer to float the pipe on the surface of the water being clearly marked every 40ft. This floating pipe can be crossed by trimming out of the water and skating over the pipe. However, we do not often advise this and instead choose to sink specific portions of the pipe where boaters can cross safely. Where required we can sink the pipeline. In shallow waters, sinking the pipe can be hazardous if not extensively marked. In deep water, it is not practical to sink the dredge pipe. The dredge also requires a short string of pipe to be floating behind it to be able to advance forward.

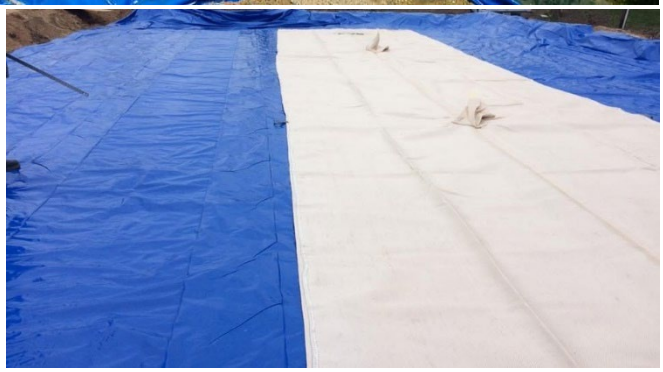
Sediment Disposal

There are many ways to dispose of dredged sediment. Below we explain a couple options that are typically used and their respective benefits and downfalls.

AHD prefers creating our own sediment retention pond when possible, due to it being more flexible and affordable. Using this method, we can typically create earthen berms from the fill dirt already at the sediment disposal site, using these to create a pond. We then use a water control structure to allow the clean water to exit the pond, while the dredged material remains in the pond. When dredging is complete, and after an adequate dry time, we can close the pond using the dirt originally used to construct the berms. AHD offers standard, the removal and stockpiling of topsoil when building a pit, as well as redistributing it upon completion. This leaves the land usable again after we are finished. Topsoil removal and redistribution is only available for projects with a sufficient amount of topsoil. The dredged material can also be hauled out when required. AHD can also offer reseeding based on your specific project needs.

Geotextile Dewatering Tubes

Another sediment retention method is using geotextile dewatering tubes. These tubes use an open weave material to allow water to exit while retaining dredged sediment inside. This sometimes allows you the ability to dredge where you can't create a retention pond. Geotextile dewatering tubes are typically predictable, however they require close inspection, supervision and understanding for their safe operation where a retention pond is typically self-regulating, Geotubes are not. These tubes can sometimes be less intrusive than a retention pond, however still require a large level area not prone to erosion. To achieve this, areas that are not already level will need to be leveled, as well as a liner installed to protect from erosion with berms around the bag to corral the clean water back to the body of water it came from. Depending on many project details, these geotubes often require a flocculation agent such as a synthetic polymer to help with the turbidity of return water as well as to help limit plugging of the tubes pores. This system is referred to as polymer injection and requires a 110v power supply as well as a water supply such as a garden hose from a nearby residence. In areas where typical power and water aren't available, we can substitute using our own generator and pump. Once a geotube is filled with sediment, it is allowed adequate time to dry before it is typically cut open and the material hauled off. Using polymer injection we can typically expect for the material to be dry enough to haul after one month dry time.



Project Expectations and Capabilities

AHD can maintain a high rate of production in many different environments. Our equipment can move bulk sediment most efficiently when it is a material that can be easily agitated such as loose sand, muck or silt. In these types of sediment, we can typically dredge at nearly double the rate as we experience in hardpacked sand and gravel. We aim to achieve 100 linear feet of dredging each day in most cases. In areas with unfavorable conditions such as dense weeds, immense amounts of debris, or dredging multiple feet of hardpacked materials, our speeds may be affected.

Experience and Reputation

AHD is a family owned and operated company with a combined work experience of over 15 years. We specialize in Hydraulic dredging and everything that has to do with it. We pride ourselves on providing premium quality dredging without the premium price. We strive to maintain good communication and remain as open and informative as possible throughout the entire dredge process.

WATERSOLVER v1.0

The estimated geotextile tube capactites and maximum fill heights are derived from inputs using GeoCoPS 3.0 software by ADAMA Engineering, Inc.

INPUT PROJECT INFORMATION	
DATE:	6/23/2025
PROJECT NAME:	Huron Pointe
LOCATON:	Harrison, MI
COMPANY:	Aquatic Hydraulic Dredging
CONTACT:	James Schaedig
APPLICATION:	sediment dredged and dewatered in geotextile tubes

INPUT SLUDGE/ SEDIMENT ASSUMPTIONS		UNITS
VOLUME	**20,370**	Cubic Yards
SPECIFIC GRAVITY OF SOLIDS	**1.6**	N/A
% SOLIDS IN -SITU	**32.0**	%
% SOLIDS PUMPING	**10.0**	%
TARGET DEWATERED % SOLIDS	**40.0**	%
% COARSE GRAIN SOLIDS *	**0.0**	%

*% COARSE GRAIN SOLIDS ARE NOT INCLUDED IN VOLUME REDUCTION CALCULATIONS. HOWEVER, THEY ARE INSERTED BACK LATER. CANNOT EXCEEED IN-SITU % SOLIDS

INPUT PUMPING/ DREDGING ASSUMPTIONS		UNITS
PUMPING FLOW RATE	**2,000**	GPM
HOURS PER DAY	**10**	HOURS/ DAY
PERCENT EFFCIENCY	**65**	%

ADDITIONAL GEOTEXTILE TUBE INPUTS	
MATERIAL TYPE	**Silts and/or Organics**
PERCENT OF MAX FILL CAPACITY	**70%**

OUTPUT - VOLUME INFORMATION		UNITS
TOTAL VOLUME PUMPED	**14,401,590**	GALLONS
VOLUME PUMPED PER DAY	**780,000**	GALLONS
VOLUME PUMPED PER DAY	**3,861.4**	CUBIC YARDS
TOTAL BONE DRY TONS	**6,239.9**	TONS (US)
ESTIMATED BONE DRY TONS PER DAY	**338.0**	TONS (US)
ESTIMATED PUMPING DAYS	**18.5**	DAYS
ESTIMATED DEWATERED VOLUME	**15,740.5**	CUBIC YARDS
ESTIMATED DEWATERED WEIGHT	**15,599.7**	TONS (US)

OUTPUT - ESTIMATED GEOTEXTILE TUBE QUANTITY

CIRC x MAX FILL HEIGHT	L.F. REQUIRED
120 x 9	**1,326**

OUTPUT - ESTIMATED GEOTEXTILE DUMPSTER BAG QUANTITY

DUMPSTER HAULING CAPACITY	**0**	TONS

WS-50 DUMPSTER BAG SIZE	EACH
22.5' CIRC x 22' LENGTH	**#DIV/0!**

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Preliminary Sales Proposal
Aquatic Hydraulic Dredging LLC
Port Huron Project
Dredged sediment dewatered in Geotextile tubes

TO:	Aquatic Hydraulic Dredging LLC James Schaedig	SHIP TO:	Project Site Harrison Township, MI 48045

Assumptions: 20,370-CY of sediment dredged and dewatered in Geotextile tubes.
Dredged sediment conditioned with 1.9-lbs/dry ton dose of Solve 164.

Polymer make-down unit requries power and water (110V, 10Amps / 30 gpm at 60psi)

Proposal	Terms	REP	Ship Date	VIA	F.O.B.	Date
AQU062325	Net 30	WS	TBD	Common Carrier	**Delivered**	23-Jun-25
Quantity	**Item Code**	**Description**			**Unit Price**	**Amount***
1,350 l.f.	Geotextile	Lineal feet of 120' circumference geotextile tubes.			$68.00 /l.f.	$91,800.00
7 totes	Polymer	Solve 164 Tote (2300-lbs/tote) (polymer make-down unit required).			$4,775.00 /tote	$33,425.00
2 months	Equip. Rental	Polymer make-down unit - manually controlled (WSLP1000V2 or similar) water and power required.			$1,800.00 /month	$3,600.00
3 days	Technical	On site technical assistance with polymer and geotextile tubes (1 tech)			$1,200.00 /day	$3,600.00
	Freight	included with items listed above				

Total : $132,425.00

Daniel Wilcox
Danielw@gowatersolve.com

Thank you for this opportunity to provide this sales proposal