

Badger Ash Slurry Pump Off Option

The option for the Badger to pump ash slurry off the ship to a dockside facility or a tank barge is a highly unrealistic and environmentally poor alternative to consider.

Using two pumps to push ash slurry the added distance to containment in either a dockside storage tank or a tank barge will produce approximately 1,200 gallons of slurry per minute. In the 105 minutes that it takes the Badger to discharge all of its ash, that will generate 126,000 gallons of slurry that must be stored. Since this would take place twice a day while the Badger is in port, that would create **252,000 gallons per day**. If this was then hauled away from a dockside storage facility in Ludington by tanker trucks it would take a 12,500 gallon capacity tanker 20 trips per day to haul away that much slurry!

If the slurry is stored dockside, a piping system 70 to 120 feet long along with a large storage tank and pumping station would need to be built. If the disposal of the slurry is estimated at \$0.60 per gallon that would be a daily disposal cost of **\$151,200.00 per day**. That does not include the price of transportation. This would be an insurmountable cost for Lake Michigan Carferry.

The option of pumping slurry into a barge while we are dockside would be equally, if not more impractical. Along with highly cost-prohibitive capital and operating costs associated with this option, there are simply no port facilities that we are aware of on Lake Michigan that are capable of receiving this type of material in this volume (1,764,000 gallons weekly!)

Additionally, the idea of taking nearly 2 million gallons of water from Lake Michigan per week, mixing it with ash to form a slurry, and disposing of it at another facility is a very poor environmental option. For another comparison, the 3.8 tons of ash that the Badger generates daily would be turned into approximately **1050 tons** of slurry daily that would have to be disposed of.

Based on all of this information, it can be concluded that pumping ash slurry off of the Badger is simply not a viable option.

Heritage-Crystal Clean, LLC

Invoice

Page 1 of 1

Service Location: **GRAND RAPIDS**
PO No.:
Service Agreement:
Release Info:

Billing Inquiries: (877) 938-7948
custserv@crystal-clean.com

Remit to:
13621 COLLECTIONS
CENTER DRIVE
CHICAGO, IL 60693-0136



PERE MARQUETTE SHIPPING CO.
ATTN: ACCOUNTS PAYABLE
701 MARITIME DRIVE
LUDINGTON, MI 49431-2095

Invoice No: **12014461**
Date Issued: **03/15/2012**
Account No: **177523**
Item Total: **\$1,632.96**
Pre-paid Amount: **\$0.00**
Current Charges: **\$1,632.96**
Previous Amount Due: **\$3,967.96**
Total Due: **\$5,600.92**

Subject to finance charges if payment not received by 04/14/12

Svc Dt	Work Order	Product Description / Comment	Equip	Qty	Unit Price	Tax Amt	Total Cost
03/15/12	00-004LW4X	VAC LIQUID PICKUP		1,000	\$0.60	\$0.00	\$600.00
03/15/12	00-004LW4X	VAC TRUCK STOP FEE (3 HR)		1	\$500.00	\$0.00	\$500.00
03/15/12	00-004LW4X	VAC HOURLY RATE		4	\$125.00	\$0.00	\$500.00
03/15/12	00-004LW4X	FUEL SURCHARGE - VAC		1	\$32.96	\$0.00	\$32.96

This form (invoice) is deemed part of the above referenced Service Agreement between Heritage-Crystal Clean, LLC and the identified customer and all terms and conditions and certifications contained therein are deemed a part hereof.

Item Total: **\$1,632.96**