

World DREDGING

Mining & Construction

Vol. 54, Nos. 11/12 - 6/22

(LEFT)

**MATTHEWS BROTHERS
DREDGING THE HOUSTON SHIP CHANNEL
WITH LIEBHERR 8200 and
CABLE ARM CLAMSHELL - 17 YD³**

(BELOW)

**PUMP OUT /
TRANSFER EXCAVATOR BARGE,
DEBRIS REMOVAL,
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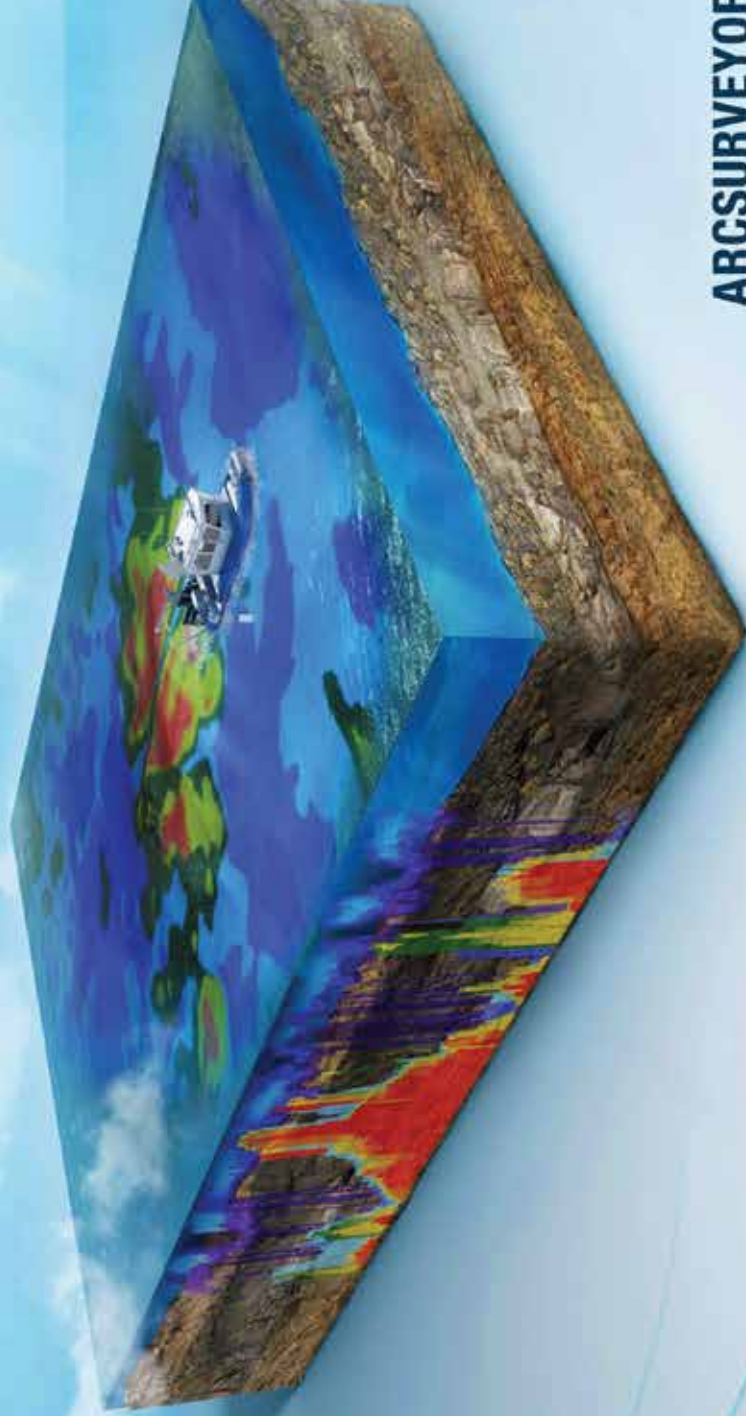
Identify The Resistance Of Material Types

Select The Proper Equipment To Plan
Your Excavation/Cable Route

Quantify Material Types

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Mailing Address

PO Box 17479, Irvine, CA 92623-7479, USA; T: (714) 451 - 2228,
F: (657) 227 - 9383, WorldDREDGING@aol.com, WorldDREDGING.com

Editor / Publisher

Steve Richardson
wdmcsteve@aol.com

International Correspondent

Kurt A. Richardson

Foreign Technical Editor

Dieter Giersch - GierschConsult@gmx.de
Gluckstadt, Germany

Contributing Editor

Baer Charlton - baer@charltonproductions.com
Portland, Oregon, USA

European Office

D. Mark Carter, Manager
South Place, Derby Road,
Haslemere, Surrey GU27 1BP, England / U.K.
T/F: +44 (1428) 64-2208, dWorldDREDGING@outlook.

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**COVER: (LEFT) MATTHEWS BROTHERS DREDGING
THE HOUSTON SHIP CHANNEL WITH LIEBHERR 8200 and
CABLE ARM CLAMSHELL - 17 YD3**

**(BELOW) PUMP OUT / TRANSFER EXCAVATOR BARGE, DEBRIS REMOVAL.
SEE PAGES 18 - 19**

Underwater Visibility Leads to Above Ground Productivity on Port of Kalama Marine Project in Oregon

Portland, Oregon-based Advanced American Construction is a full-service general contractor providing heavy civil/marine, industrial, diving, underwater marine survey, demolition and engineering services to public and private clients throughout the western United States, with particular focus on the Columbia, Snake and Willamette River Systems.

Challenge

Complete dredging, pile driving and dock construction in tight conditions.

Solutions

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system

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Trimble SPS85X GNSS Modular Receiver

Benefits

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methods

Improved pile driving accuracy (~2 inches)

Faster pile placement

More collaborative communication with
owner

Efficient daily burn rate

New techniques—vibratory hammer



Port of Kalama, Columbia River, near Portland, OR.

Located 30 miles northwest of Portland, Oregon (OR), the Port of Kalama sits on the Columbia River. The port's industrial area includes 5 miles of riverfront property adjacent to the 43-ft federally maintained deep draft navigation channel of the Columbia River. Handling well over 13M metric tons of bulk commodities, it's one of the West's largest bulk export gateways.

The marina includes permanent moorage slips, a two-lane boat launch and 140 feet of guest moorage. To meet growing demand, the Port of Kalama looked to build a new 550-foot-long guest dock, including utilities and new access gangways, on the east side of the Port of Kalama Marina.



Trimble Marine Construction software provides
the operator with plan and profile views to ensure accuracy

Heavy civil and marine construction specialists Advanced American Construction (AAC) was contracted to complete the project, which had three major components: marina dredging, pile driving (to support the dock) and dock construction.

Evan Clemson, Vice President of Operations at AAC, said, "We realized before we bid the project that tracking in-progress dredge productions would be critical to the success of the project. We engaged Trimble Marine Dealer Measutronics Corporation to help us combine the best equipment, technology and workflow for success."

As a Trimble Advanced Marine Partner, marine systems integrator and solutions provider, Measutronics has proven advanced skills in systems integration, customer training and support for unique and complex marine solutions.

The AAC/Measutronics partnership that translated into some surprising productivity benefits across the entire project.

One Software Package, Multiple Missions

The first phase of the project required dredging about 8,000 yd³ of material, which included sand, silt, gravel and boulders. AAC and Measutronics determined that a large excavator with a suspended pump and bucket and cutter attachments with a crane and clamshell attachment would be sufficient for the project.

“Everything underwater is a challenge—and there was a penalty for over-dredging past a certain point,” explained Clemson. “We also needed to quantify the dredging totals, which required eyes under water.”

Measutronics recommended equipping the excavator with Trimble Marine Construction, a solution designed to optimize the productivity and efficiency of dredging and marine construction workflows, supported by a single beam echo sounder (SBES) to acquire pre-/post-dredge survey data. The team also set up an SPS total station on the beach to verify positioning.

In advance of project go-ahead, Measutronics’ Nathan Keys, Construction Systems Specialist, trained the two operators from the International Operating Engineers Union Local 701 on the use of Trimble Marine Construction software.

“The entire team, from project manager to the craft level, want efficiency. Our operators, in particular, are very aligned



Trimble Marine Construction software provides 'eyes under water' in turbid or murky water

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Underwater Visibility Leads to Above Ground Productivity on Port of Kalama Marine Project in Oregon

Continued

with the benefits and use of this system,” confirmed Clemson.

With setup complete, the excavator operator was able to track the bucket location in real-time in 3D. At all times, the operator had a visual map of what’s been completed and what still needs to be done.

“Poor choices in managing dredging quantities can raise daily burn rates significantly,” said Clemson. “Overall, we estimate that we saved 15-20% on the dredging phase of this project by having real-time underwater data versus old school methods of measuring and re-digging, revisiting incomplete areas, or over-dredging in certain areas. That’s probably a six figure cost savings on a project this size.”

The underwater measurement and visualization capabilities also minimized the need for divers to verify work completed and quantify production.

Pile Performance

Once dredging was complete, the crew needed to drive 25 piles to support the new dock.

Clemson asked the Measutronics team if he could use a Trimble Marine Construction solution on a vibratory hammer to better measure pile position accuracy for faster and more accurate piling.

“Using conventional methods, we’re usually within 6-10 inches on a good day,” said Clemson. “We were shooting for a pile positioning accuracy of two inches. We were also faster. With the 3D data in the cab, the operator had a frame of reference underwater that provided greater confidence, which in turn drove efficiency.”

The use of Trimble Marine Construction on a vibratory hammer is now an integral part of AAC’s technology toolbox. “We’re always excited to find new ways to use the Trimble systems to make us a better contractor,” added Clemson.

Setting Benchmarks

Overall, AAC realized value of Trimble Marine Construction across the project in five different ways starting with the single beam echo sounder and then the excavator with bucket, excavator with pump, excavator with vibratory hammer as well as the crane with clamshell.


“That’s all a big deal when working underwater, and for sure, the technology makes us more efficient. The lessons learned are also essential to our continuous improvement,” said Clemson.

As an example, dredge quantity measurement is a critical metric for AAC. “On every dredge project, we are very interested in how actual dredge quantities compare to our bid productivity estimates,” explained Clemson. “We’re always looking for a productivity rate at or better than our estimates—and on the Kalama project, we were very close.”

The dredge data provides a foundation for positive conversations with the owner when issues arise on the job-site. He added, “When we came across an area with dredge quantities above our original estimates, we had real data to show the owner and discuss options.”

The data from the Kalama project has also provided benchmark data about material quantities and operator production that will support future bids.

“The efficiency that we saw in the various phases of work on this project clearly made the investment in the technology worthwhile,” said Clemson. “No doubt when we look at daily burn rate, we recouped the initial investment in the Trimble solutions in efficiency and productivity.”

He also noted the value of having Measutronics on the team from the earliest days. “They are fantastic and have helped us on many of these projects over the years. We turn to them for solutions outside the box—and they’re very good at finding an answer. I see a bright partnership in our future as we take on more challenging projects.”
See ad on pg. 9 



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Essential resource management in dredging hydrographic surveying using USV & SV

TN-220033

Dr. Pawel Pocwiardowski

NORBIT, Product Director, Sonar Systems

Introduction

The last couple of years exacerbated the shortage of resources to conduct hydrographic surveys for dredging industry. At the same time the companies started to invest in USVs (Unmanned Surface Vehicles) or small SV (surface vehicles) to improve the mobilization time and reduce the overall “footprint” of the operation. In this paper, we present a paradigm change in managing the essential hydrographic surveyor resources by providing the technology to divide the dredging hydrographic survey into two parts, design and execution of the survey. The survey “design” is done by a hydrographer or survey manager operating from the remote location setting up the essential parts of the survey. Then the survey execution is done by a skipper or USV operator at the actual job site. These two are connected via a dedicated software which seamlessly combines these two functions into one consolidated efficient solution.

The need

It is not a new discovery that the dredging industry requires more and more hydrographic surveys done to facilitate the growing needs for the market. The typical scenario to run bathymetry surveys would be a surface vessel, skipper, hydrographic equipment and hydrographic surveyor being present at the job site from the mobilization (Mob) throughout the survey until the demobilization (DeMob). To address the cost of Mob/DeMob surveying companies have started to invest into unmanned surface vessels (USV) or a surface vessels (SV) already present at the job site to run bathymetry surveys. The big need is to find a way to use the hydrographic resources more efficiently and grow their participation in areas they are essential and limit their involvement in the areas which can be performed by other personnel.

The new paradigm

Companies have their procedures and processes to work with fine tuned over the years of operation. However, ever changing business environment and unforeseen events, such as COVID-19 pandemic, push the innovation forward and lead to inevitable changes improving the efficiency and lowering the operational cost.

The typical paradigm when considering new USV or small SV vessel is a matter of preferences of the business unit, local



Fig. 1 NORdredge dredging survey solution

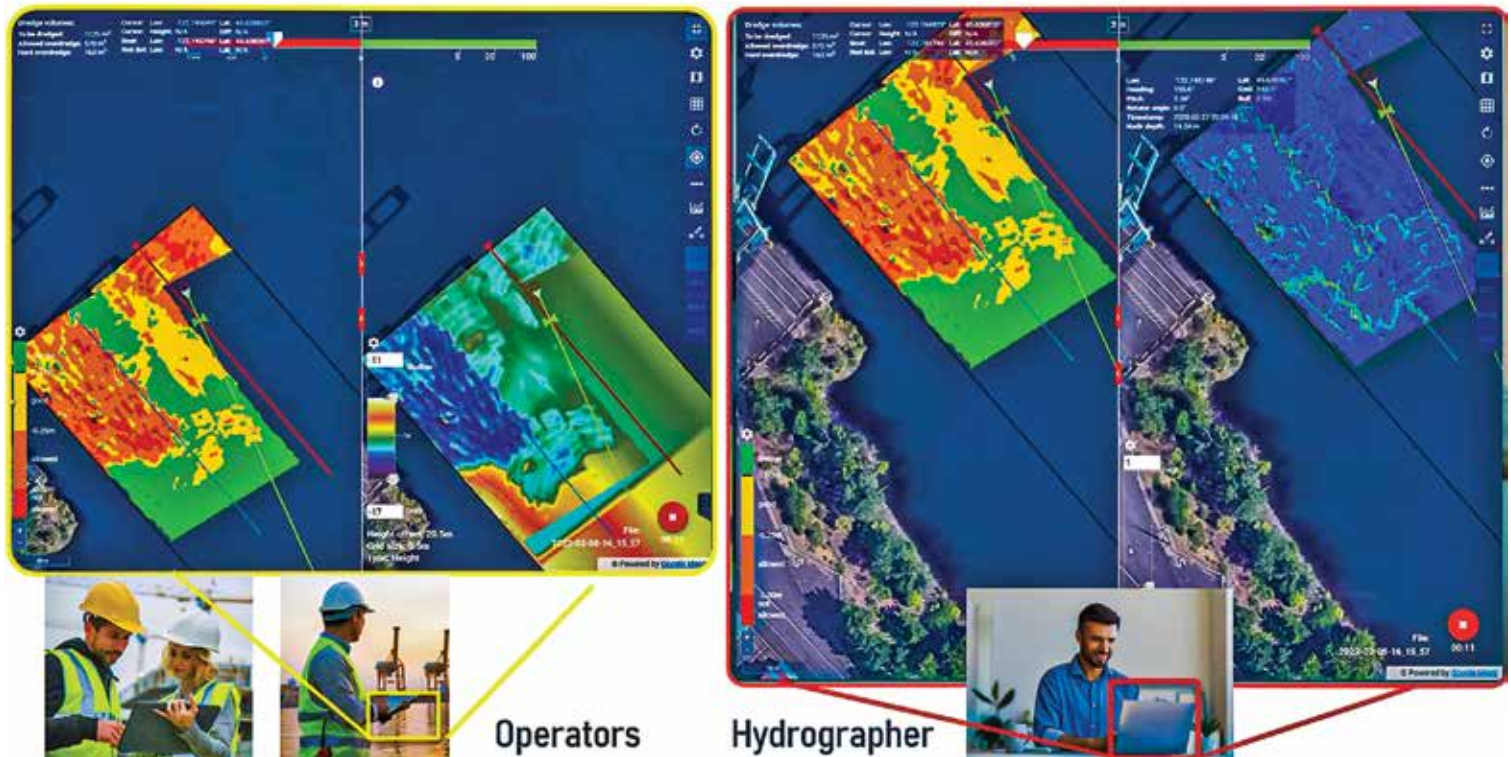


Fig. 2 NORdredge concurrent remote and local access to the survey

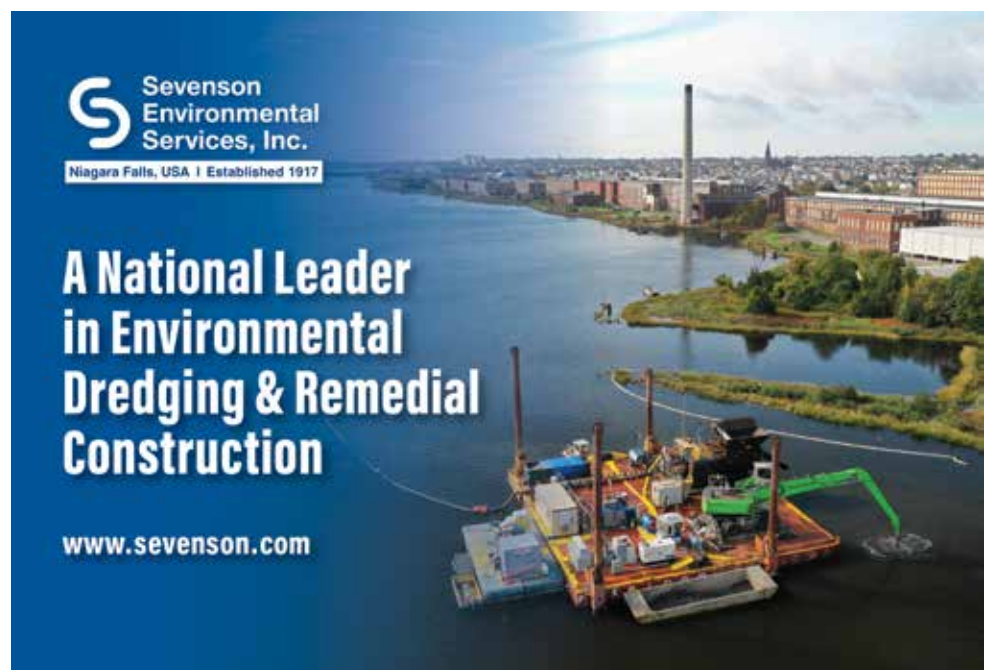
habitation, business networking etc. Companies will start with choosing from variety of the USVs on the market, which fits their needs, budget and feature requirements.

A solution to streamline the USV bathymetry survey is to use integrated NORBIT WINGHEAD multibeam with high grade GNSS/INS navigation, which can be easily mounted on any USV of a choice is an optimal solution to any company who wants to perform high quality bathymetric surveys. The integrated acquisition software (NORdredge) which performs the real time processing is essential for survey efficiency and ease of use. A dedicated real-time processing of the bathymetry and specialized displays allow the operator to quickly assess the required allowances for navigation safety and take a decision whether the dredging is needed or not.

NORdredge is operated from the hand-held device via web browser and contain only necessary tools to perform bathymetry surveys for dredging market. NORdredge natively supports split screen display with the real time depth display and differential depth display. The real time depth display shows the current measured depth while the operation progresses. The cursor informatics displays the needed navigation information. All necessary data are conveniently displayed on the screen and can be hidden if needed. The differential grid on the left-hand side provides immediate information on the area to be dredged by comparing the reference grid to the real time depth and showing in simple colors what and where to dredge.

The essential resources

There is a need to provide an efficient solution to manage the critical resources for hydrographic surveys outlined above.



Essential resource management in dredging hydrographic surveying using USV & SV

Continued

The essential difference between this solution and other dredging survey software is that NORdredge allows a concurrent operation of the remotely located hydrographer and the local operator conducting the survey. The architecture of NORdredge has been designed to facilitate the remote access and perform advanced tasks by the hydrographer while the operator uses the hand-held device to conduct the survey.

There are two key elements to that solution. One is that repeatable operations done by the operator at the site related to the safety of survey, data collection, sound velocity casts and launching and recovery of the vessel. The second is that the mission critical skills performed by surveyors such as preparing and loading the design templates, preparation of the survey lines, setting up the sonar system, ensuring the data is collected with a good quality and finally analyzing and approving the data. NORdredge has been designed to facilitate all the above efficiently and conveniently.

The hydrographer accesses the system on the USV remotely via web browser and sets up the mission. He prepares the design template satisfying the required clearance, ensures that the proper reference system, geodesy and other required items are chosen correctly. He prepares the local station offset file and loads it in the system, so the operator can easily see where to drive the boat. He draws the survey lines over for the vessel to run, which automatically populate on operator display.

He identifies the potential hazardous places by bringing in other information from other sources if needed. With that he prepared the background image overlaid on the map which loads to all connected displays. While the hydrographer sets up the system, the operator uses hand-held device and can observe the effect of that work.

When the survey is prepared, the operator starts the survey and collects the data. Concurrently, the hydrographer can independently access the data with his own displays, checks the coverage, plots and checks the profiles without disturbing the operator. Hydrographer can verify the quality of the data by examining the standard deviation of the collected data and even seamlessly transfer the data to GIS software via build in WMS and WFS interface for further tasks such as report generation, volume computation and other processing tasks. When the survey is over the collected raw data can be reprocessed for the final delivery.

The hydrographer can access several other surveys in a similar manner. Remotely accessing each of the concurrent surveys via NORdredge interface allows him to improve the efficiency and lower the cost to the customer. His work has been optimized and the impact of his skills maximized while at the same time the boat operators conduct the quality survey and perform multiple other tasks.

Conclusions

In this paper we introduce new paradigm in hydrographic surveying for dredging industry. This new approach allows fully utilize the surveyor's experience to prepare and manage the survey allowing to use the needed skills more efficiently to run concurrent remote surveys. At the same time, the solution allows the skipper or the operator to manage the execution part of the survey with simple hand-held device. Dredging companies can lower operation costs by using hydrographers for the critical part of the survey and then utilizing skippers and operators to drive the vessels. At the same time, this technology allows the surveyors to manage more jobs from a remote location as well as optimize the cost of their service.

See ad on pg. 27 ○

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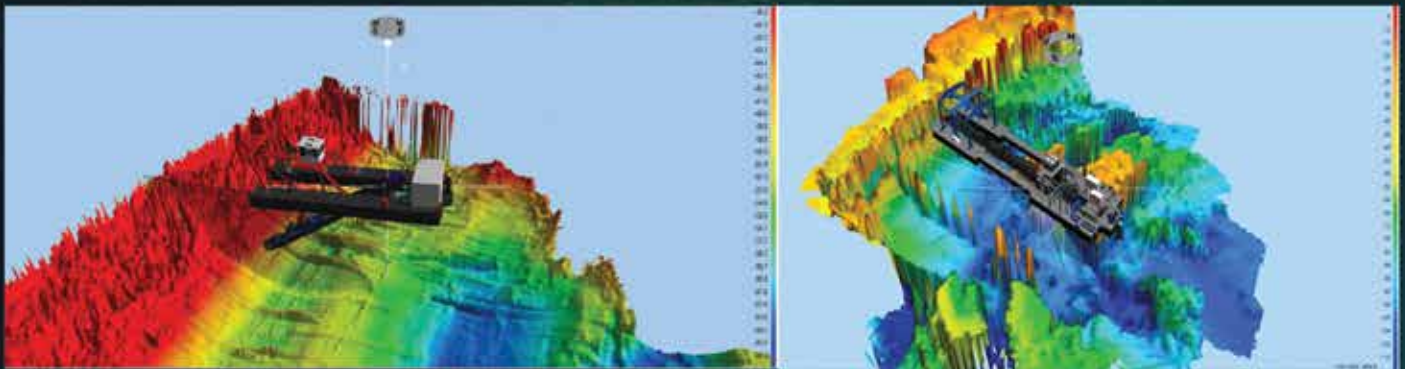
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Eagle Dynamic Solutions receive new Mud Cat 115D for paper-mill lagoon dredging

Eagle Dynamic Solutions of Evans, Georgia (GA), recently took delivery of a brand-new Mud Cat 115D for a paper-mill lagoon dredging project. The project entails dredging a lagoon that is 900 ft. (274 m) x 750 ft. (228 m). They are pumping the paper-mill sludge 1,800 ft. (549 m) with a 20 ft. (6 m) decline. Eagle chose to use a 10 in. (254mm) discharge line instead of the standard 8 in. (203mm) line to reduce friction loss and increase pump performance. Drone footage of the project can be viewed here: https://www.youtube.com/watch?v=IyIbzy_mAGw



*Eagle's Mud Cat 115D systematically cuts parallel rows using its 4-point cable drive propulsion system.
Note the heavy solids at the left of the photo.*

“We added the Mud Cat 115D to our fleet to give us larger pumping capabilities for large pond dredging jobs. In the past, we used 6-inch dredges on the project, and the 115D nearly doubled the pumping capacity of our smaller machines. Our operators have noticed the quiet cab when operating the dredge and less strain on the machine when pumping denser material. We look forward to using this dredge on other projects in the future,” said Evan Morgan, Director of Sales, Eagle Dynamic Solutions.

Eagle had their Mud Cat 115D configured with a Krohne flow meter mounted in an accessible section of the hull with an easy-to-read digital gauge inside the operator's cabin to give the operator real-time pump flow in gallons per minute (gpm). Additionally, Eagle opted for Mud Cat's Autec radio remote control with a digital depth gauge, which provides flexibility to work in toxic ponds where it is not safe for personnel to be on the dredge.



*Mud Cat's Flow Sense gives the operator real-time pump flow measurements from
the convenience of a digital gauge in the climate-controlled cabin.*

RIGHT: The Autec radio remote control allows the dredge to work unmanned in challenging environments.

“We greatly appreciate Eagle’s continued confidence in our dredge products and their decision to upgrade their auger dredge fleet with a versatile Mud Cat 115D. The MC 115D offers production, versatility, stability, and durability that is unmatched by other 8 inch auger dredges on the market,” said Ryan Horton, Vice President. *(Reprinted from DredgeWire)*



Eagle’s Mud Cat 115D at EDT’s ISO 9001:2015 certified factory.

Contact: Ryan Horton, sales@mudcatdredge.com, Tel: 913-642-5100, www.mudcatdredge.com, Ellicott Dredge Technologies 1750 Madison Ave., New Richmond, WI 54017. See ad on pg. 21 ○



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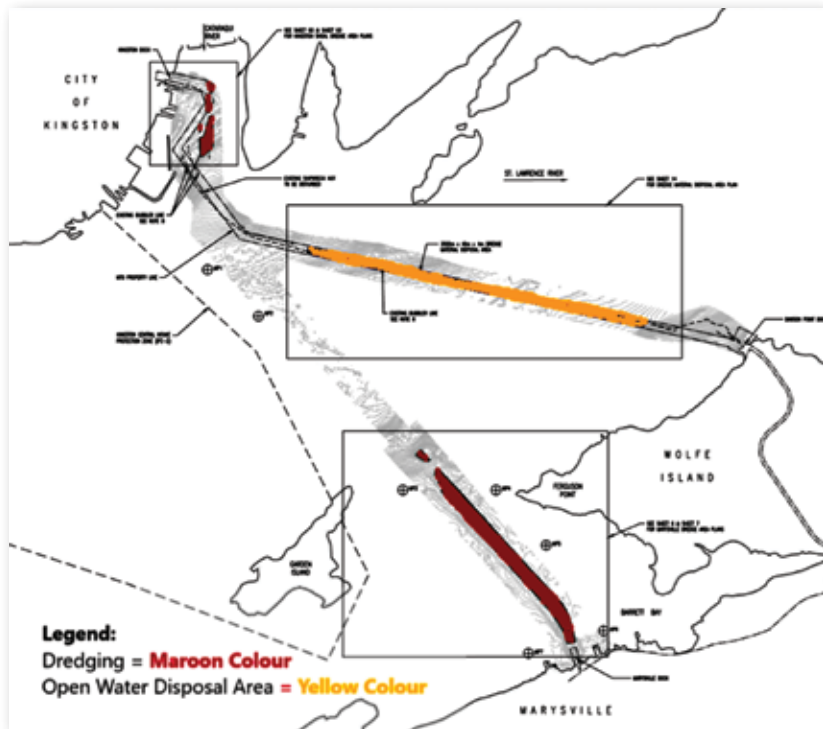
Efficient dredging in the 1000 Islands



Efficiency is key in dredging. Technology plays a large role in making project sites more efficient. Unfortunately positioning software, although a widely used technology in the industry, is often underutilized. This is due to keeping it simple but there is also a gap in training and understanding of what positioning software can do and how easy it can be to use. ClamVision software has been a valuable tool in the toolbox of many dredgers for over 20 years. It is not complicated to use and is backed by dedicated people. This short article describes how ClamVision software helped a company, who had never used positioning software before, be successful on their project by simply utilizing the software and complimentary support given.

Where Lake Ontario meets the St Lawrence River sits the largest of the 1000 Island archipelago. Wolfe Island, Ontario, Canada is a 30,000-ac island and is home to around 1200 residents. In the summer months the population more than doubles as people flood in to enjoy what the island and surrounding areas have to offer. Access to the island is by ferry only and is provided by the Province of Ontario's Ministry of Transportation at no cost to its passengers.

The current ferry named the Wolf Islander III is a 55 car/ 294 passenger boat that has operated between the city of Kingston and the island port of Marysville since 1975. Due to the age of the ferry, the growing number of people living and visiting Wolfe Island, and the need for greener transportation methods,

the Ministry of Transportation Ontario (MTO) has funded an upgrade. MTO took receipt of the Wolfe Islander IV in September of 2021. The new 80 car/399 passenger ferry is fully electric with dual diesel generators for full backup and





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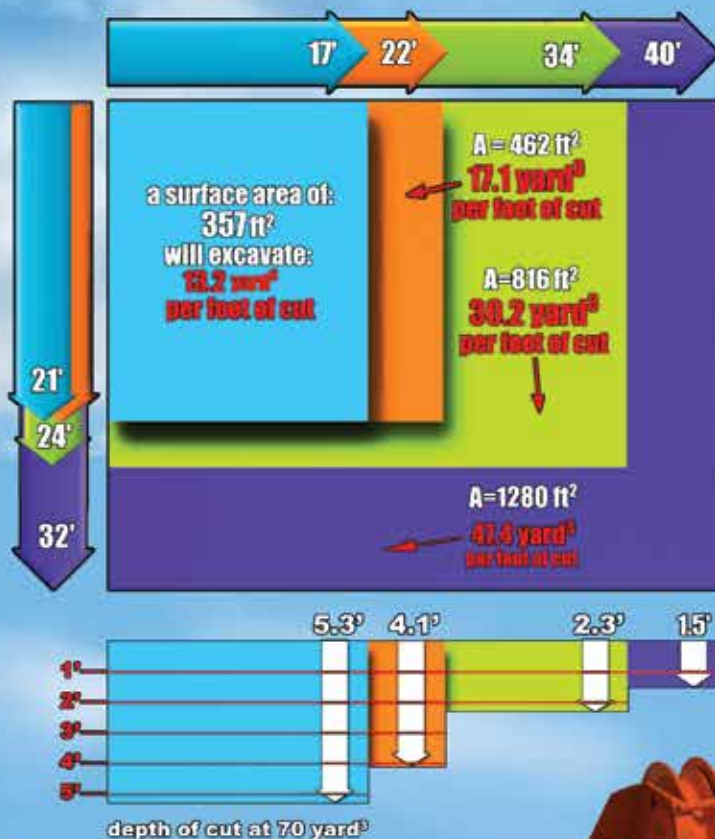
GAMMAG's Tipper is a cost-effective, high resolution and efficient means to pinpoint and avoid submerged location and site of stationary, buried or migrating target pipelines, debris or cables of any composition at virtually any depth.

COMPETITIVE ADVANTAGES

- Magnetic Telluric method
- Combines and enhances Seismic and Resistivity methods
- Target information wealth
- Depth selectivity employs simple relational physics
- True 3D results

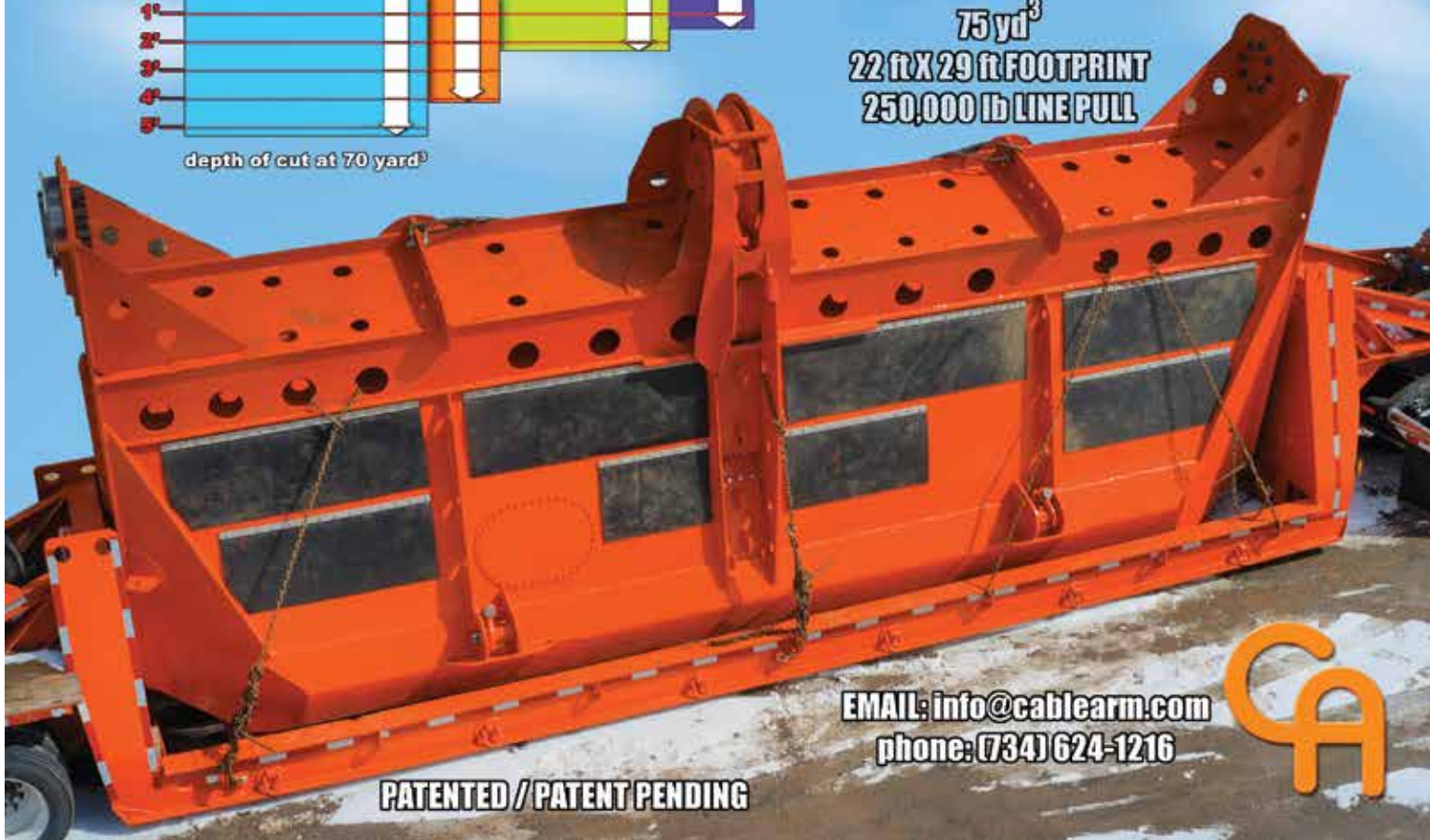
CONTACT:
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mmound@gmail.com

FOOTPRINT IS KEY TO PROFITABLE SHALLOW-CUT SEDIMENT REMOVAL



As crane technology progresses, so too must dredging buckets. A trend toward larger cranes, with more lifting capacity will inevitably result in larger, heavier buckets. Cable Arm Clamshell is at the forefront of this trend by providing operators with sediment buckets that have the largest footprint for their bucket volume, while continuing to be a leader in shallow-cut buckets. Our oversquare footprint allows the operator to maintain a shallow cut, while maximizing cut volume. Our dewatering plates squeeze the excess water from sediment to reduce the amount of free water present in your material, reducing disposal costs. Here at Cable Arm, we seek to provide you with a quality sediment bucket that reduces unpaid overdredge, material transportation and disposal costs, and overall cycle count.

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PATENTED / PATENT PENDING

THE PERSISTENT ISSUE OF DEBRIS

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PUMPOUT BARGE TO INLAND DISPOSAL
AREA**

**LIEBHERR 8300, 27 YARD CABLE
ARM CLAMSHELL BUCKET**

**18 in PUMP, 35,000 ft TO INLAND DISPOSAL
AREA**

Matthews Brothers Dredging has been dedicated to researching and developing ways to improve the dredging process that takes place at marine terminals along the Gulf Coast. In our experience, we have found that very few terminals have a sufficient budget built in to cover the cost to maintain adequate depths year-round. Some of the reasons for this budget crisis stem from challenges such as:

- Placement area availability
- long permit process
- placement area size and location
- high cost of standby time for trash and debris and dock traffic
- high cost associated with shutting down a dock to dredge (Loss of revenue)

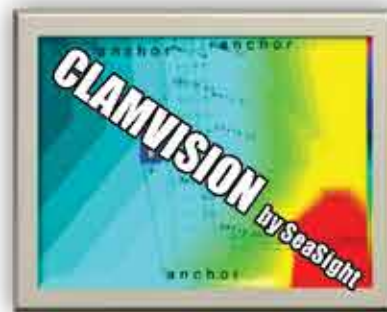
Mechanical over Hydraulic Method

Matthews Brothers Dredging uses a clamshell dredge to remove the sediment from the dock. The clamshell loads a barge that is placed along side of the dredge and a tug boat transport the barge to the placement area.

Some of the advantages of using the clamshell method include:

1. Dredging Accuracy:

- a. Horizontal GPS Positioning: The clamshell dredge is outfitted with a positioning system that gives the operator the position of the dredge, the crane boom, and the clamshell bucket. This allows the operator to see what areas have been dredged and what areas need to be dredged. An electronic version of the most recent hydraulic survey can also be uploaded on to the computer to show the operator how much material he should expect to remove.



Operator's Screen View

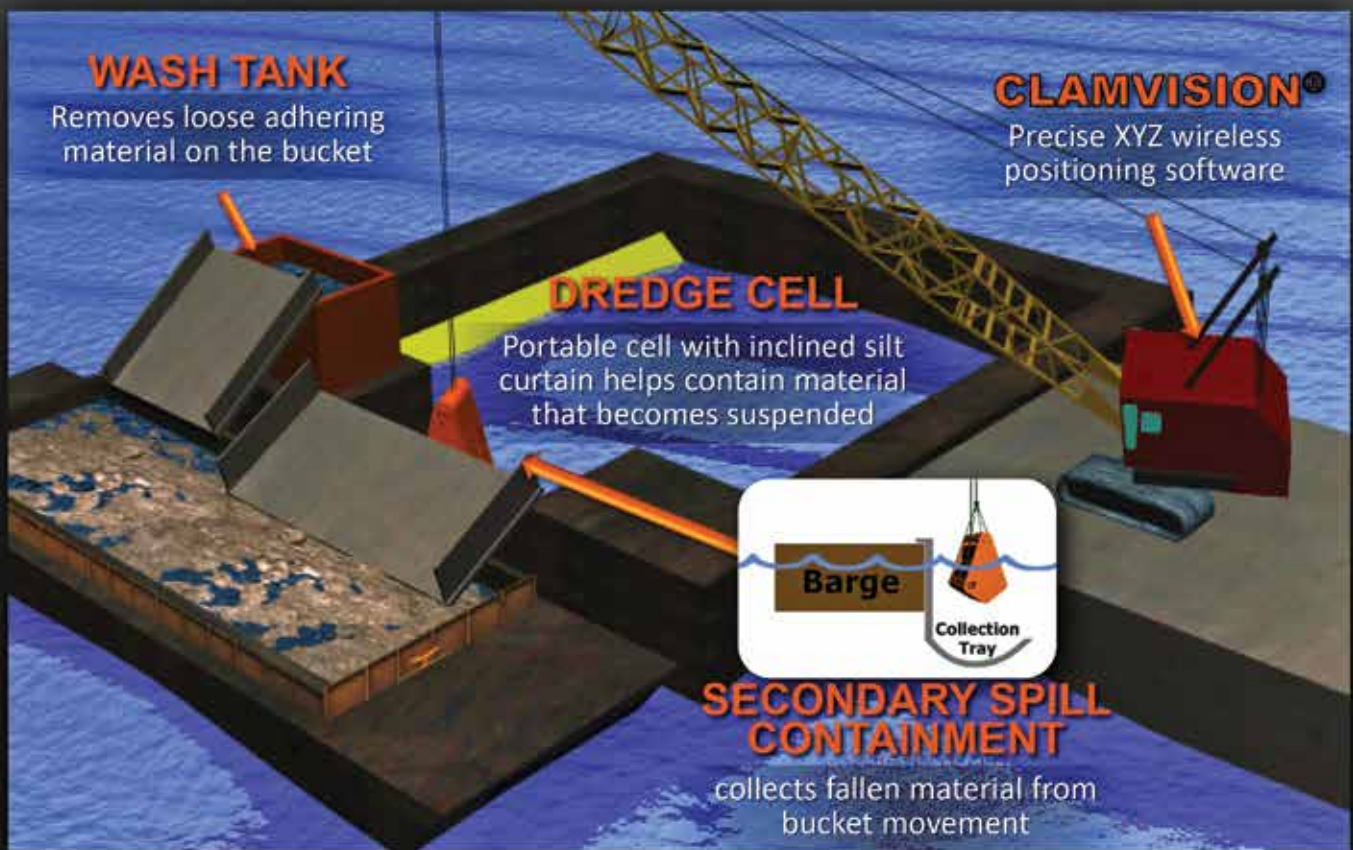
- b. Depth: Matthews Brothers Dredging uses a few different methods to ensure the dredge is reaching the target depth. Check surveys are performed regularly throughout the project and immediately uploaded to the dredge computer. A 16 cubic yard level cut clamshell bucket is used to remove the dredge material from the dredge template, this eliminates the "pot holing" effect often seen by clamshell operations. An electronic tide gauge is also set up on site that transmits a tide reading to the dredge computer, calculates the tide corrected dredge depth, and displays it on screen for the operator to see.

2. Mobility: A mechanical dredge does not require the use of a pipeline at the dredge location. This gives the dredge the ability to move within minutes if necessary. During the mobilization phase of a dredge project, a clamshell dredge operation will not interfere with the dock space. This allows the client to continue normal operations without having to contend with pipeline construction that can block access to the dock or take place on the property itself. This may also allow a dock to continue operations at berths where the dredge is not currently dredging. If a dock consists of 6 berths, only one or two may be shut down while the others are still generating revenue.
3. Handling debris in the dredge template: While debris may impede overall production, a clamshell dredge does not shut down when debris is encountered in the dredge template. The dredge will take whatever it picks up and place it in the barge. The debris is dealt with on the unloading operation away from the dredge site.

Once the material has been removed from the dredge area and placed in the barge, a tug boat transports the material to the placement area. This method is more efficient for placement areas that are several miles away from the dredge area, especially when dealing with small quantities.

Once the barge reaches the placement area, a Mechanical over hydraulic barge unloader begins unloading the dredge material. A hydraulic excavator/material handler uses a 4-yard clamshell bucket to grab the material from the barge and place it in a slurry box mounted on the unloading barge. The slurry box is equipped with a screen to catch large debris before entering the slurry box and eventually the dredge pump. The screened material is then transported by a dredge pump from the slurry box to the placement area through a pipeline. This method is the most efficient way to unload dredge material from a barge as well as separate and manage debris.

REDUCE TIME - CUT COSTS



COMPLETE ENVIRONMENTAL DREDGING SYSTEM

An environmental dredging project should never fail to meet its cleanup goals, it should surpass them! To ensure this, careful attention must be given to each component within the operation. From the machinery to the crew, hardware to software, each one plays a vital role to help keep our waterways clear of contamination.

Cable Arm, Inc located in Trenton, MI has spent 30 years in the environmental dredging community. Within this time - buckets have evolved to reduce sediment loss and increase the ratio of contaminated sediment removal. The new digital world has brought with it gauges, sensors, GPS, and sonar imagery,

giving a new level to accuracy, and tested field operations have established a tried and true method resulting in post dredging samples as low as 1ppm of PCBs. Cable Arm, Inc is not only the leader when it comes to incorporating the latest technology with its advanced ClamVision positioning software, but is also the leader in innovative environmental clamshell bucket designs within the entire marine community.

Ensure your environmental dredging system is properly equipped for low water content and minimal turbidity. Use Cable Arm's environmental clamshell buckets and wireless dredge positioning software, ClamVision®.

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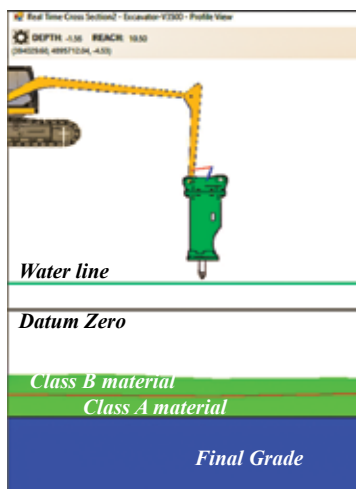
Patent & Patent-Pending

Efficient dredging in the 1000 Islands

Continued

hybrid capabilities. But, before the ferry can take on passengers significant upgrades to the docks and route must be complete.

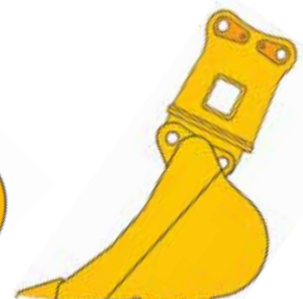
A local firm, Kehoe Marine Construction, was awarded the contract to dredge the ferry route. Roughly 24,000 m³ of rock and till needed to be removed along with 135,000 m³ of soils and 4,500 m³ of contaminated soft sediment. A total area of over 204,000 m² needed to be deepened to ensure the safe passage of the ferry. For such a large area three crews were deployed



to maintain the project schedule. Two of the crews operated a Cat 336F and CAT 336NG with the sole purpose of breaking rock and other Class A material, while the third crew ran a CAT 352 with a 12-foot arm extension. The Cat 352's only role was the excavation of both the broken Class A and softer Class B material.

There were several types of material on the riverbed that needed to be removed. Rock, hard till, mud, and sediment were all present and needed to be located. Some materials were tested as not just contaminated but hazardous as well and needed to be disposed of differently than the non-hazardous materials. So how did the operators know the where, what, how? ClamVision software in combination with survey support. ClamVision software showed the operators where the material was based on survey data collected by Kehoe's engineering resource, Riggs Engineering. A simple display showed multiple surface lines in a cross-section format, in real time, so the operator knew where his tool was relative to each material line. With the ability to know what areas should be worked by each machine there was no searching, no trial and error. Efficiency went up as did production.

Another efficiency boost was how ClamVision handled the variety of tools used to remove the materials from the bottom of the ferry route. Each CAT 336 machine had a toothed bucket, a ditching bucket, a ripper, and multiple large pneumatic hammers. There were also extensions made for the smaller tools to enable a deeper reach. The CAT 352 was equipped with a toothed bucket and a Cable Arm Environmental bucket. Keeping track of the many tools,



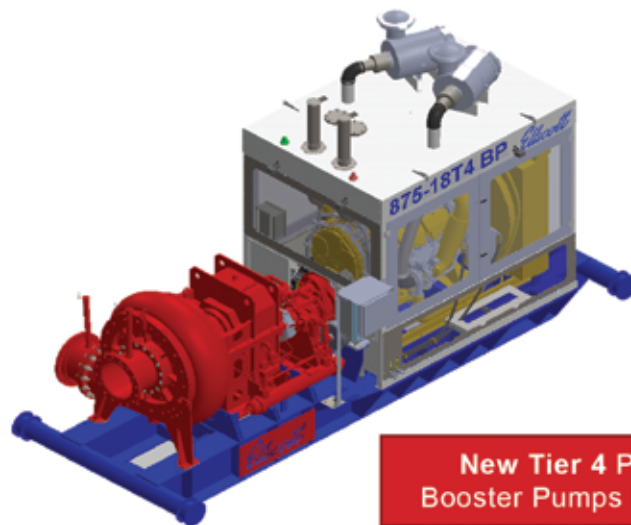
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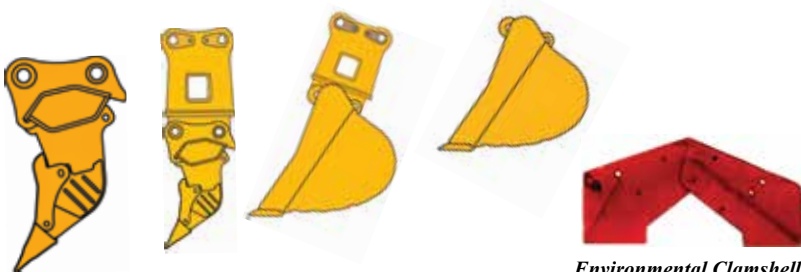
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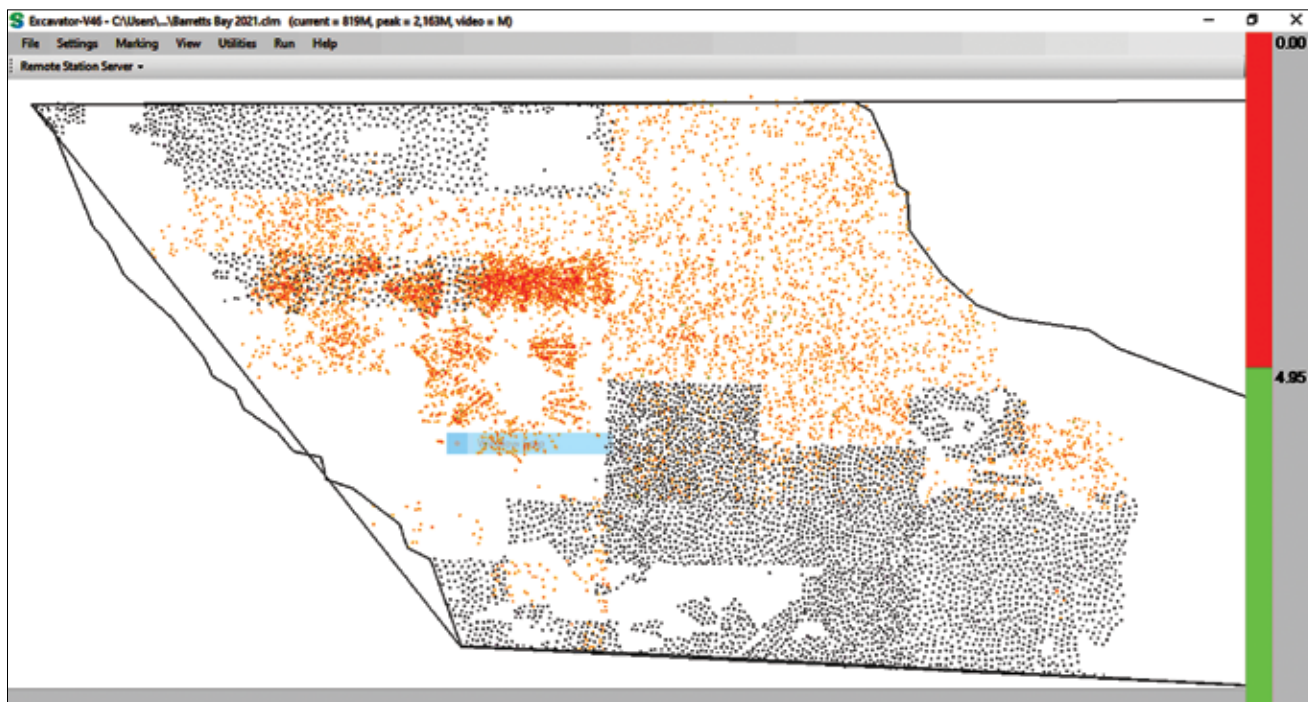
Efficient dredging in the 1000 Islands

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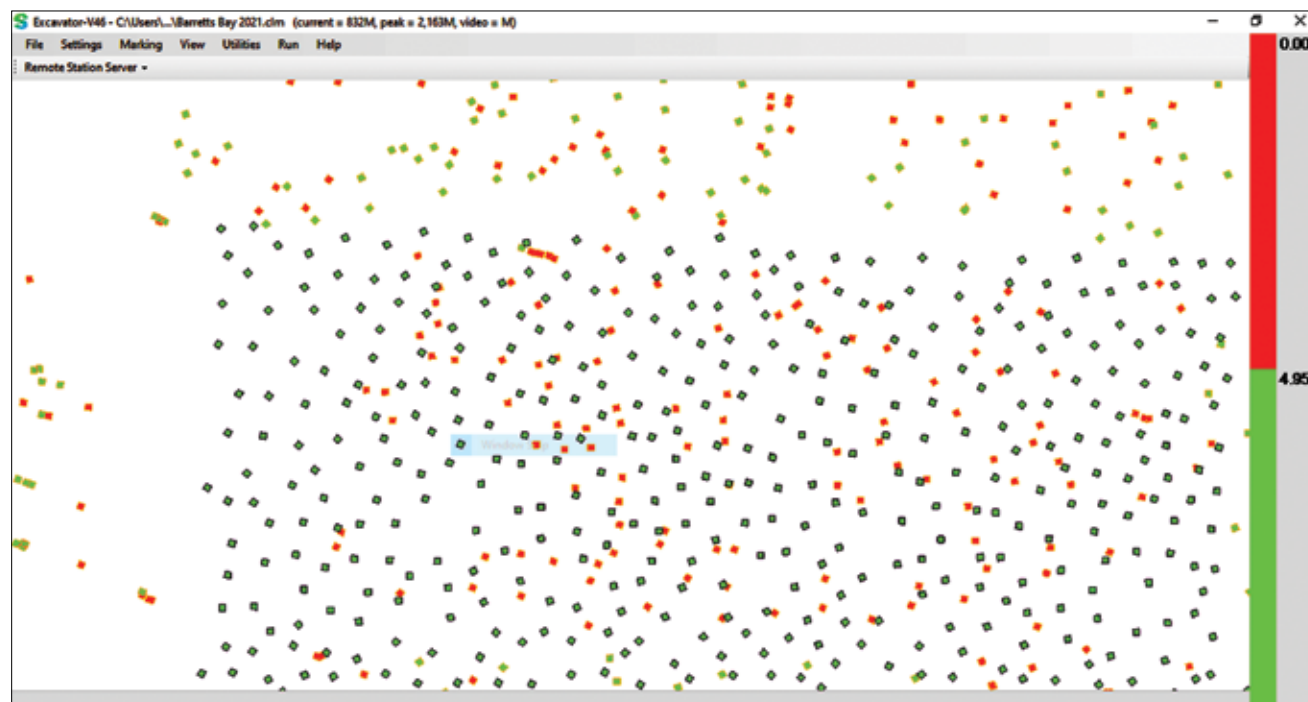
and their calibrations was a functionality added to ClamVision at the request of Kehoe Marine. All the operators had to do was press the T button on the keyboard to toggle between tools after they made the physical switch. Once the tool switch was complete, they would touch the water's surface to check the depth readout in ClamVision matched the current water level and back to work they went.



Environmental Clamshell



*ClamVision plan view zoomed out to show large area worked by multiple machines.
Orange marks represent remote machines work, black marks represent local machines work.*



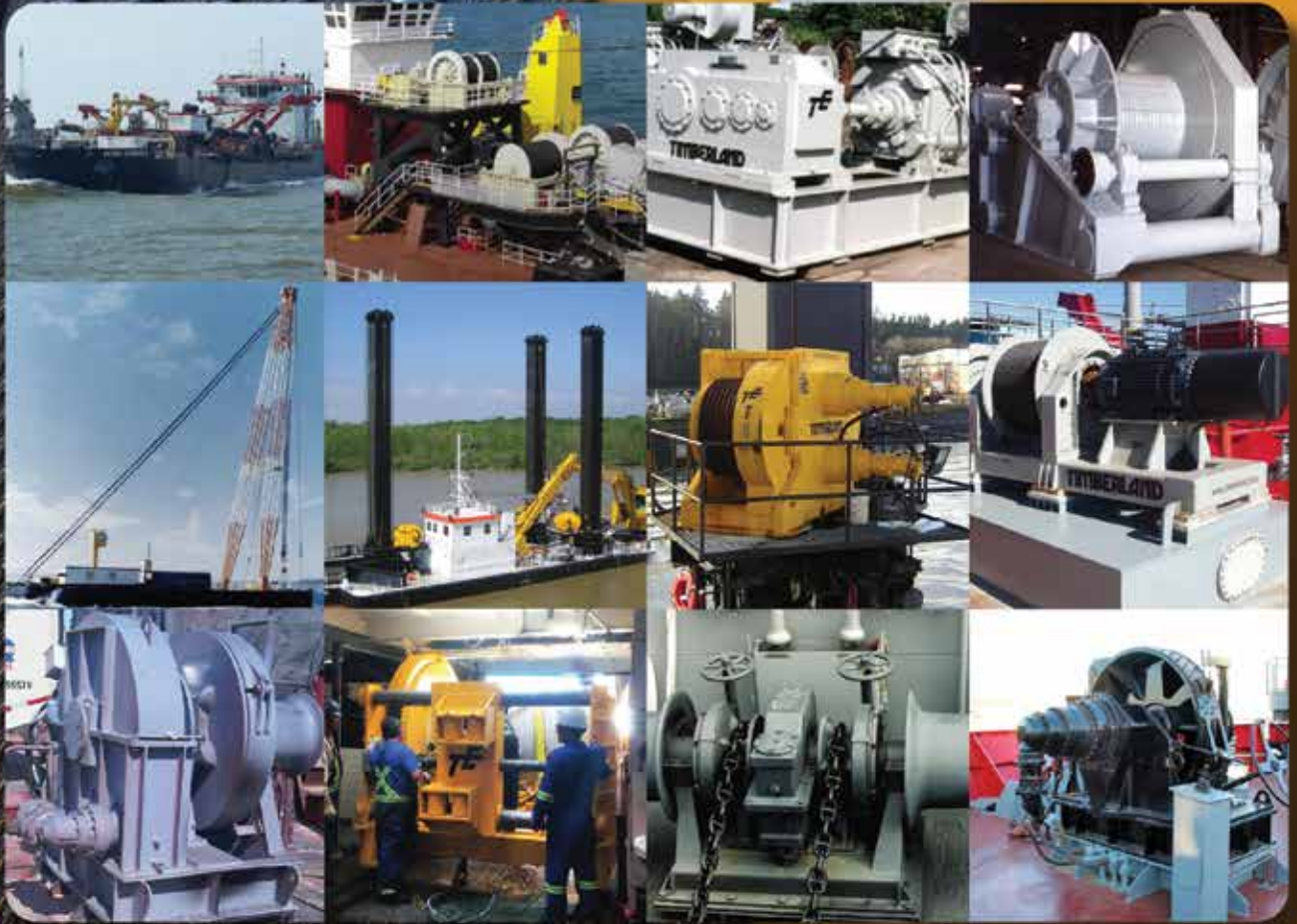
ClamVision Plan View zoomed in to show remote machines work (orange outline with red fill) not to grade. The local machines work (black outline with green fill) to grade.



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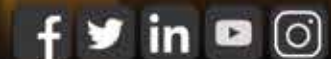
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Efficient dredging in the 1000 Islands

Continued

ClamVision was utilized in keeping all three machines up to speed on what work has been done and where. The two CAT 336 machines were responsible for breaking the rock and till while the CAT 352 came behind and removed the broken pieces. This meant that the 2 rock breakers had to know where the other has worked and whether they made grade or not. The third machine needed to know what areas the two breakers had finished. To solve this problem each ClamVision system broad-casted its sensor data over a wireless network for the other systems to listen to. With this, each machine can see the other machines and the work they do. This prevented unnecessary searching for material, no unnecessary reworking of areas, and areas that had been worked but wasn't to grade were easily found and completed. And what's more is the cleanup machine knew what areas were good to clean up and report as finished.

To gain reach the CAT 352 it was equipped with an extension at the end of the stick. The extension had its own linkage and provided a mounting point for the bucket sensor that was much safer as it would be farther from the material being dredged. The problem was that the two linkages did not move at the same rate. This meant that we had to add capability to ClamVision to accommodate the new linkage method. Once that problem was solved the sensor was mounted safely 6 feet above the lower bucket linkage while keeping accuracy and precision of the tool position and depth at .1 feet.

Another use for ClamVision was on the tugboat. Dredged material that was not contaminated was dumped within a narrow strip, 40 m x 2500 m, of water in the St. Lawrence River. ClamVision showed the real time position of the dump scow as well as the dump zone giving the tug operator the ability to dump in the right location from the surface of the water. The real issue was that the riverbed was 30 meters below the water. For the material to land within the narrow strip of riverbed the tug crew had to judge the movement of the falling material based on the current and water conditions.

A ClamVision license not only enables the software to run real time data but also enables full support for the crews from Sea Sight Systems & Services, LLC., or Sea Sight Systems. As mentioned earlier in this article, this was Kehoe Marines first experience using software systems of this nature. Much of the crew did not have any experience with computers or software. Regardless of their experience they took to the systems well. They instantly saw the benefit of the information they were given and wanted to use it. But there were many questions and explanations along the way. Sea Sight Systems fielded calls and remote desktop sessions whenever asked without delay. Sometimes they just needed a sanity check or a refresher on how to customize what they were seeing. Sometimes they were busy and wanted us to make changes just to save time. In a short amount of time Kehoe Marine was self-sufficient in using Clamvision. We all know things happen on projects and Sea Sight Systems is there to help.

In conclusion a well-known positioning software can help increase production through efficiency in many ways. Speak with your provider to make sure you are using your package to its fullest. There are only a few packages, like ClamVision, available with over 20 years of experience with a vast variety of projects. Utilize the support available by your system provider, Sea Sight Systems considers themselves a partner in the projects its products are used on and will help in any way. And finally, the crew wants to use the software as soon as they see its benefits and will catch on quickly if it's easy enough to use and they feel comfortable knowing they will receive help when they need it. <https://seasightsystems.com/> ○



Dredge Masters Ghana & IHC Dredging boost African capacity

IHC Dredging and Dredge Masters Limited commissioned two Beaver® cutter suction (CS) dredges and marine equipment. The commissioning was done by His Excellency, Nana Addo Dankwa Akufo-Addo, President of the Republic of Ghana, during a ceremony that took place on Wednesday 25 May in Ghana.

The support of His Excellency, the President of the Republic of Ghana, and his strong vision for the Republic of Ghana is greatly appreciated by all parties. The commissioning of the dredges and equipment provides this African company with cutting edge marine technology, to be operated by local engineers and technical staff. This capacity will be a major breakthrough in the African region.

Dr. Joseph Siaw Agyepong, Chairman of the Jospong Group stated, “Our objective is to be the most successful African Holding company, leading in every sector we operate. With our mission ‘improving the lives of people’ dredging has become an important part of our group.”

Captain Kahn, Director of Dredge Masters Limited, commented, “Dredge Masters is operational for over 5 years now and has an ambition for substantial growth in the region by supporting local parties in the development of their dredging capacity. We aim to become the leading provider of dredging, marine and related services in Africa through sustained, environmentally friendly and effective standards. To do so, we partner with organizations who are able to supply us with the best suitable equipment and knowledge. This has resulted in the partnership with IHC Dredging.”

IHC Dredging offers Dredge Masters a total solution for their dredging needs and access to the latest technology. In addition to two Beaver 50® dredges, IHC Dredging has delivered two Delta Multi Craft work boats to perform all supporting operations. Furthermore, a critical spare parts package, training package, planned maintenance system and two discharge pipeline systems are included.

Catina Gesellschaft, Director PMG Dredging Standard Modular vessels, commented, “IHC Dredging is proud to have partnered with Dredge Masters and we are honored with the confidence Dredge Masters has placed in our company. Together we can make an impact in Ghana and the region. We look forward to provide support building local dredging capacity and enhancing technical knowledge.” www.royalihc.com



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Shipbuilders Council of America honors Bollinger for safety - 17th consecutive year

Recently in Lockport, Louisiana (LA) Bollinger Shipyards (“Bollinger”) was presented with the 2021 “Award for Excellence in Safety” by the Shipbuilders Council of America (“SCA”) for its exceptional record of safety in the shipyard industry. Bollinger has been the recipient of the prestigious award for Excellence in Safety for 17 consecutive years – an unprecedented streak in the shipbuilding industry. Bollinger also earned the Shipbuilders Council of America awards for Significant Safety Achievement and Improvement in Safety.

SCA, the national association for the shipyard industry, presented the award to Bollinger’s President and CEO Ben Bordelon at its annual meeting in Washington, D.C. in recognition of the company’s exceptional record of safety, enhancement of operations and promotion of safety and accident prevention over the past year.

The award is notable as 2021 presented a number of acute challenges, including the global COVID-19 pandemic and a historic storm season. A number of Bollinger facilities experienced significant damage as a result of Hurricane Ida, which made landfall in August 2021 near Port Fourchon, Louisiana as a powerful Category 4 storm – the strongest storm on record to make landfall in the state. Employee safety remained a top priority throughout the rebuilding and recovery process.

“While Bollinger Shipyards is always proud to be recognized as an industry leader in workplace safety amongst our peers, this year’s award is especially meaningful after everything our employees experienced in 2021,” said Ben Bordelon, Bollinger President and CEO. “Despite the challenges presented by the ongoing global pandemic and the devastating loss following Hurricane Ida, the men and women of Bollinger maintained their commitment to upholding the highest level of safety in our industry – the Bollinger Standard. I want to commend the resilience and dedication of our employees who continued to work safely and efficiently to deliver high quality vessels for our customers on schedule and on budget.”

“We’re proud to recognize Bollinger and its hardworking men and women who lead the shipyard industry’s culture of safety year after year,” said Matthew Paxton, SCA President. “Despite the unprecedented challenges faced by the shipbuilding industry over the past year, Bollinger took the necessary action to protect the health and safety of its workers while continuing to keep its yards open and working, showcasing why it continue to be a maritime industry leader in workplace safety.”

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Jan De Nul's crane simulator for offshore installation vessels *Voltaire & Les Alizés*

Jan De Nul Group ordered a high-end crane simulator covering its two Next Generation Offshore Installation Vessels *Voltaire* and *Les Alizés*, soon to be delivered. The crane simulator will be based on real physics and the actual vessel models, enabling Jan De Nul to train its crew-members and realistically simulate complex offshore installations in a complete safe environment, in the most severe conditions. The partner for the development of this simulator is the Norway-based company OSC AS (previously known as Offshore Simulator Center).

3D-render of the crane set-up (R)

This autumn, Jan De Nul welcomes two new Next-Generation offshore installation vessels:

the Jack-Up Installation Vessel *Voltaire* and the Heavy Lift Vessel *Les Alizés* will be a serious size larger than their look-alikes currently available on the offshore installation market. Thanks to their size and unrivalled lifting capacity, both vessels will be able to install future wind turbines at sea. Current offshore wind turbines go up to 15 MW. What comes next - and very soon, because the industry is evolving at a rapid pace - are turbines up to 20 MW. No other vessel on the market today can handle these giants. That first is reserved for *Les Alizés* and *Voltaire*.

The Jack-Up Installation Vessel *Voltaire* (R) will be equipped with a 3,000-tonnes Leg Encircling Crane (LEC), the Heavy Lift Vessel *Les Alizés* (L) with a 5,000-t Tub Mounted Crane (TMC). In order to train future operators, deck crew, superintendents and bridge crew to work with these giant cranes in a safe and

realistic environment, Jan De Nul ordered a high-end crane simulator with OSC AS.

A digital twin and multipurpose training device

This device will offer the chance to operators, deck crew, superintendents and bridge crew to train the specific skills and techniques required to operate the cranes, in a safe but realistic environment. It will allow them to prepare for different work situations, such as working in extreme weather conditions, with heavy loads and strict installation tolerances. Various mission equipment, such as the motion-compensated pile gripper, including the communication and interactions between the different persons involved in lifting procedures, will also be a key aspect of the training package.

New simulator center


This full-scale simulator will be installed in the new dedicated simulator center in Jan De Nul's new office building in Belgium. The vessel operator station will have a real-life bridge desk where systems as the Dynamic Positioning (DP) system, Ballast and Heeling system and Jacking system can be controlled. www.jandenul.com, www.osc.no ○



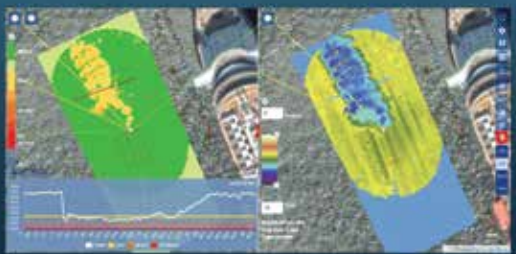
Weeks Marine Updated Clamshell

*Headed for the East Coast for
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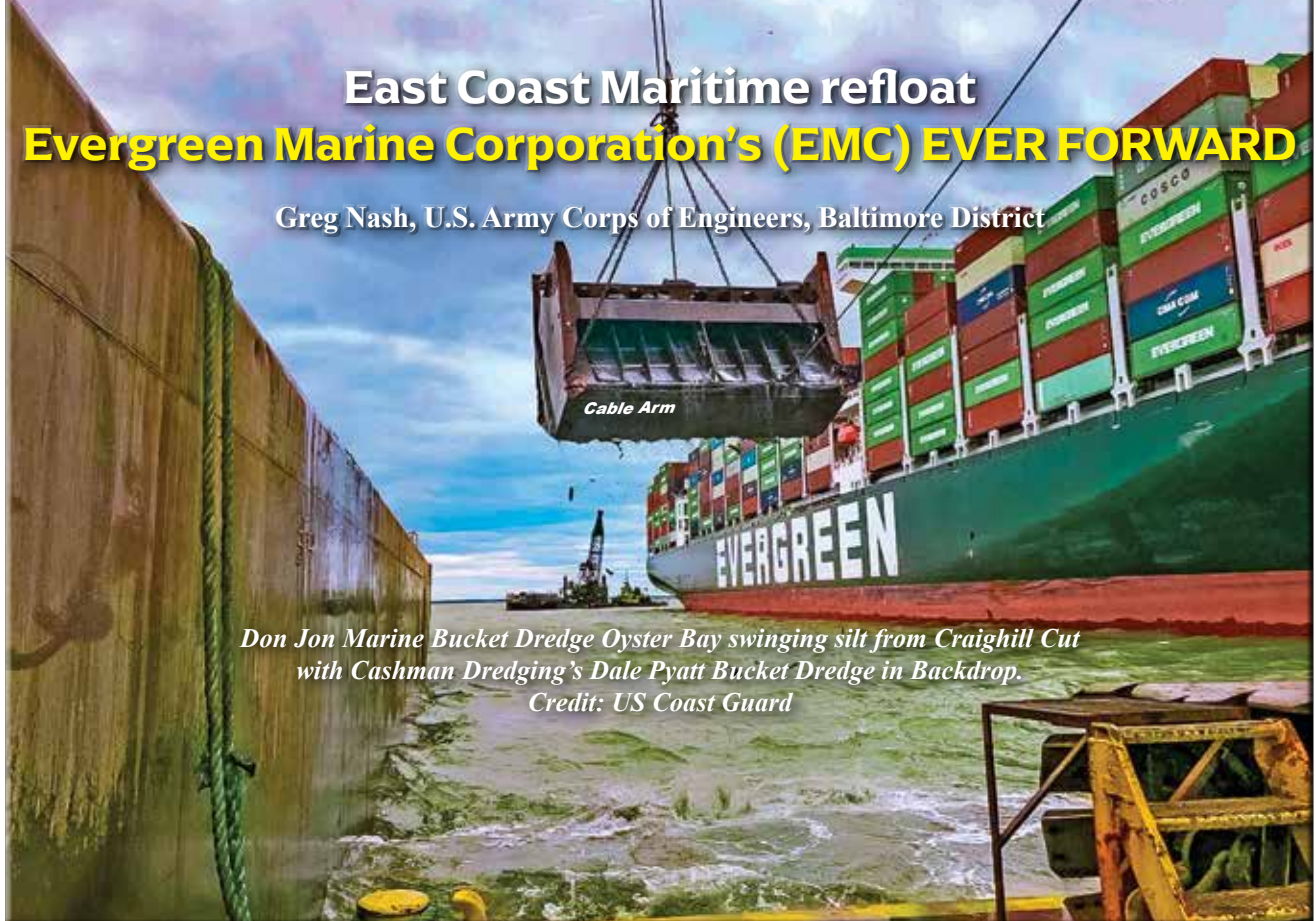


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East Coast Maritime refloat Evergreen Marine Corporation's (EMC) EVER FORWARD

Greg Nash, U.S. Army Corps of Engineers, Baltimore District



*Don Jon Marine Bucket Dredge Oyster Bay swinging silt from Craighill Cut with Cashman Dredging's Dale Pyatt Bucket Dredge in Backdrop.
Credit: US Coast Guard*

East Coast maritime responders recently refloated the Evergreen Marine Corporation's (EMC) EVER FORWARD, a 1,096-foot container ship that suffered a grounding incident in mid-March in the Chesapeake Bay near the Craighill Channel, part of the 50-foot channel system leading to and from the Port of Baltimore.

The U.S. Coast Guard, Maryland Department of the Environment, and the EMC led a 35-day salvage operation, employing extensive dredging and push-and-pull tugboat operations to remobilize the ship. The ship, while carrying 4,964 containers, missed a turn while leaving Baltimore, causing its stoppage in shallow waters near Pasadena, Maryland.

The Journey

These response agencies worked tirelessly for weeks, using full-spectrum services such as dredging and marine construction operations alongside tugs; and deck, crane and pull barges to ensure continued safe maritime travel for other vessels while minimizing economic impacts.



A 45-foot Response Boat – Medium crew from Coast Guard Station Curtis Bay, in Baltimore, patrols Tuesday, March 29, 2022, alongside the grounded container ship Ever Forward in the Chesapeake Bay near Craighill Channel. The Ever Forward departed Baltimore March 13 en route to Norfolk, Virginia, when it grounded. (U.S. Coast Guard photo by Petty Officer 1st Class Cynthia Oldham/Released)

“The vastness and complexity of this response were [historical], as an

incident like the EVER FORWARD grounding, in type and duration, is a rare occurrence,” said Capt. David O’Connell, commander of Coast Guard Sector Maryland-National Capital Region. “It was the collaboration of each responding agency, Evergreen Marine Corporation, and dedicated responders that resulted in the successful refloating of EVER FORWARD while ensuring the safety of the public and response personnel, mitigating pollution potential, and minimizing economic impacts.”

(R) The U.S. Army Corps of Engineers, Baltimore District’s CATLETT navigates past the box ship EVER FORWARD during hydrographic survey operations at the Craighill Channel near Annapolis, MD, April 20, 2022. The District performs hydrographic surveys of completed and



and federally maintained Federal Navigation Projects within the boundaries of the mid-Atlantic region, making their findings available for users of the channel. (U.S. Army photo by Greg Nash)



High Stakes

The Port of Baltimore handles approximately 43.6M tons of commerce per year, and generates more than 15,330 direct jobs, \$2.6B in business revenue, \$3.3B in personal wages and salaries, and \$395M in state, county and municipal taxes annually.

Due to the interconnected nature of each response agency’s assigned missions, they routinely work closely


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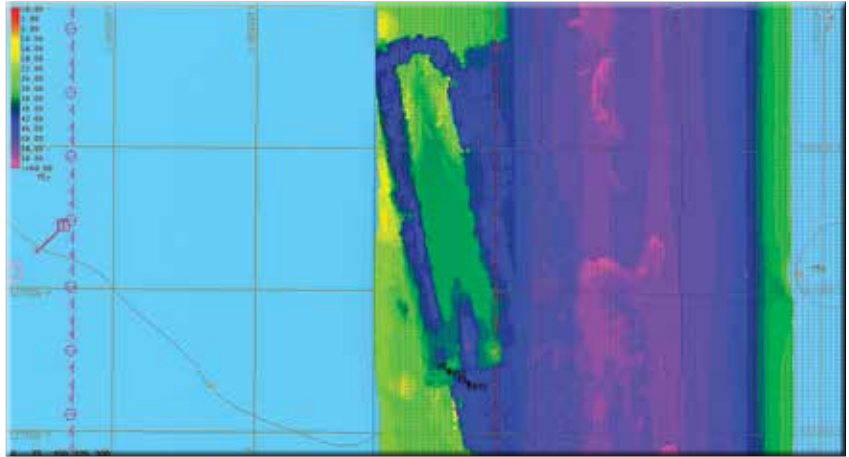
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East Coast Maritime refloat Evergreen Marine Corporation's (EMC) EVER FORWARD

Continued

together and perform related functions to provide safe navigation within the nation's federal waterways. Knowing the potential drastic impacts of grounding incidents, they conducted swift and well-rehearsed planning, execution and post-assessment phases to get the job done safely.

A map depicts dredging efforts, highlighted in royal blue, surrounding the Taiwanese vessel operator Evergreen's box ship EVER FORWARD, highlighted in dark green, as it sits grounded in the Chesapeake Bay outside the Craighill Channel near Annapolis, MD, April 20, 2022. The U.S. Army Corps of Engineers,



Baltimore District, manages the federal channel by performing hydrographic surveys that map waterway floors. Their survey vessels can effectively consolidate underwater data to most accurately depict waterway features to include water depth, topographic features, and tide measurement. (Courtesy photo)



Container removal operations for Ever Forward (Photo by Petty Officer 3rd Class Kimberly Reaves, U.S. Coast Guard District 5)

Scaled Efforts – Win-Win Solution

After two unsuccessful refloating attempts using tugs near the end of March, the salvage experts determined the best path forward to remobilize EVER FORWARD was to unload 500 containers and continue dredging to a 43-foot depth, and then employ pull barges in addition to tugs to free the vessel.

The U.S. Army Corps of Engineers, Baltimore District's Regulatory Branch participated in meetings and provided necessary information regarding Department of the Army authorizations available to cover the work associated with vessel removal. In total, more than 213,000 yd³ of material were dredged and placed at the U.S. Army Corps of Engineers, Baltimore District's Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island. There were no indications of fuel leakage or pollution stemming from the initial grounding or during refloating efforts.

“Approximately 2M yd³ of material need to be dredged from Maryland approach channels to the Port of Baltimore each year. A disruption in the routine maintenance dredging, or channel restriction or closure due to another incident such as a grounding, would significantly affect local and regional economies,” said Graham McAllister, USACE, Baltimore District, Navigation chief. “Placing the dredged material – both from the salvage effort and routine maintenance – at Poplar Island presents a ‘win-win’ scenario for the mid-Atlantic from an economic and environmental perspective.”

“Using the dredged material to restore Poplar Island ensures the vital waterways remain open while developing more than 1,700 ac of diverse habitat, which serve as a resting and nesting site for migratory and shore birds,” McAllister added. “In rebuilding the island, dredged material is placed and shaped to create wetlands and upland habitats to serve as homes for fish, shellfish, reptiles, amphibians, birds and mammals.”



Port of Baltimore's Executive Director William P. Doyle - Maryland Port Administration surveying grounding site of the Ever Forward during heavy fog conditions in March, 2022. (Credit, Maryland Port Administration)

Ensuring Safe Conditions

The U.S. Army Corps of Engineers, Baltimore District, Navigation team also contributed to the effort by executing hydrographic surveys to ensure the Craighill Channel's conditional safety immediately following the grounding and after the successful refloating effort. While EVER FORWARD grounded outside of a federal channel, the hydrographic survey confirmed the refloating efforts did not have an adverse impact and showed channel depths of 50 feet or deeper.

This rapid response provided shipping companies and vessel pilots with confidence that the channel was free of potential hazards to deep-draft vessels scheduled to call in Baltimore.


Mission Accomplished

According to former Maryland Environment Secretary Ben Grumbles, the tenured partnership with the Coast Guard, EMC, and other agencies heightened Chesapeake Bay's protection and pollution prevention measures.

“We remain focused on moving forward to the environmental restoration

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East Coast Maritime refloat Evergreen Marine Corporation's (EMC) EVER FORWARD

Continued

and compensation phase," Grumbles said. In a corporate statement, Evergreen Line representatives stated, "We are deeply appreciative of the efforts put forth by the U.S. Coast Guard, Maryland Port Administration, local and federal environmental protection agencies, and the many private service providers that were engaged, all of whom worked tirelessly to bring this event to a successful conclusion." ☺

*Grounded container vessel refloated in the
Chesapeake Bay*

*Photo by
Petty Officer 3rd Class Breanna Centeno
U.S. Coast Guard District 5*



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