

Dredging Out Maximum Profits

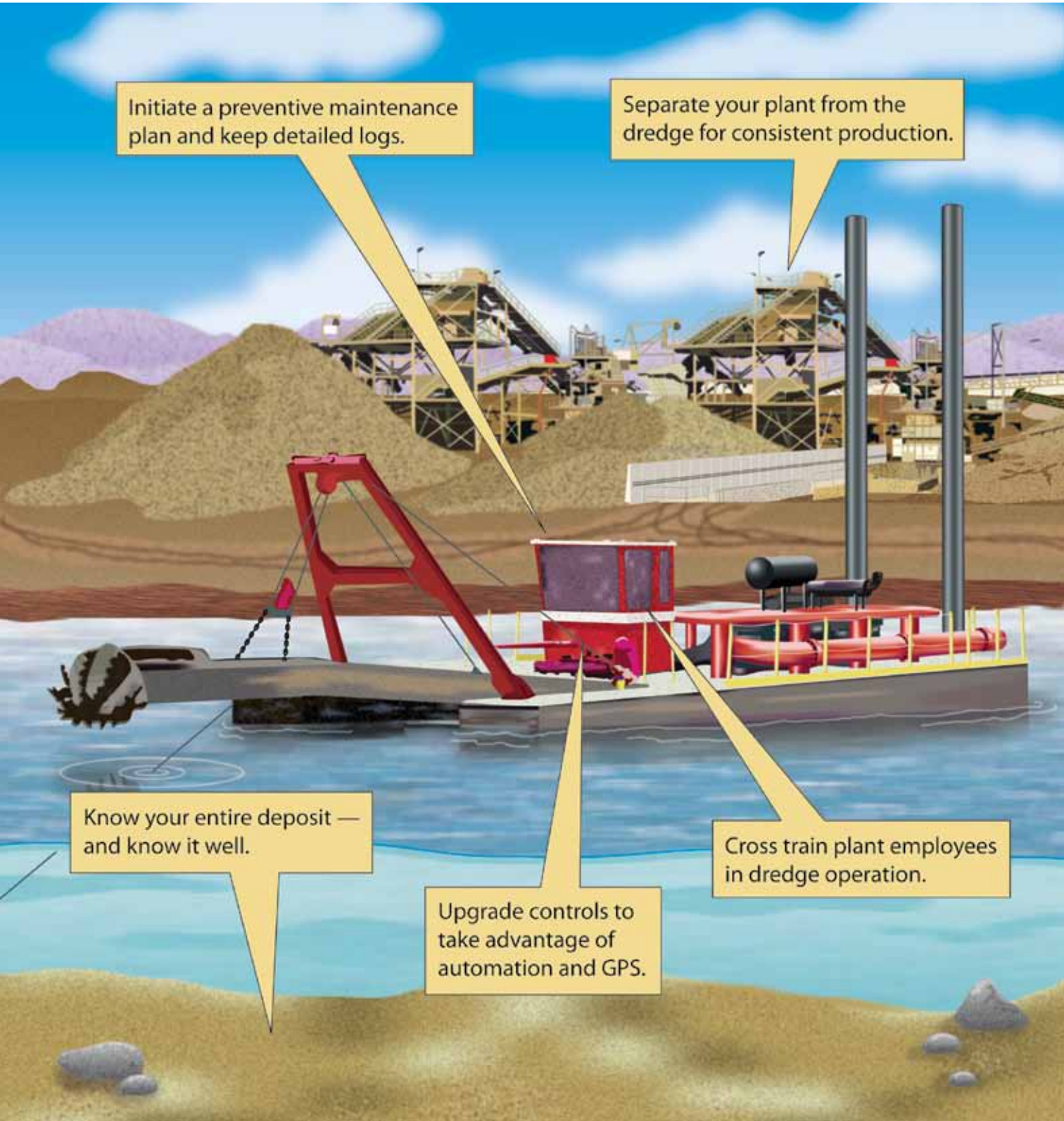
Initiate a preventive maintenance plan and keep detailed logs.

Separate your plant from the dredge for consistent production.

Know your entire deposit — and know it well.

Upgrade controls to take advantage of automation and GPS.

Cross train plant employees in dredge operation.



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In the same way that a quarry's efficiency begins with the blast, the dredge is the starting point for a water-based sand operation to measure its own efficiency. Because every other process downstream is affected by production from the dredge, the operation's bottom line often hinges on avoiding common dredging blunders, while putting sound practices into play.

"Possibly the biggest mistake I've seen operations make is not really knowing the deposit," says Jerry Mock, operations manager for The Shelly Co., a Thornville, Ohio-based subsidiary of Oldcastle Materials Group. "Whether you're purchasing a new dredge, or if you've bought an operation that maybe mined with a dragline or an excavator and you're considering a dredge, you need to take boring samples throughout the property and do thorough testing on the deposit."

Mock says that not only will testing give operations a picture of the entire deposit to help create or modify a mine plan, but it can also help avoid production-killing surprises when moving the dredge, because deposits can change even within the parameters of one site.

Bill Wetta, CEO of Dredging Supply Co., based in Reserve, La., says another pitfall that can affect a mine's production is the practice of putting the "low guy on the totem pole" into the position of running the dredge. The operator's position is typically a lonely, dull job. "And because of that, often

the company ends up with the lowest-paid employee to run the dredge, but they're putting all their eggs into that basket for the entire operation," he says.

Wetta explains the situation can especially create problems with older dredges, which don't have modern tools that allow the operator to really see what the dredge is doing. "The material is running at 16 to 17 feet per second, and if the plant tells the operator that the dredge isn't running right, there's a time lag between the dredge and the plant. They're telling him information that — for him — has happened in the past, and the situation might have changed." The resulting confusion can create production problems for the entire operation.

"It's true that the operator can make or break the dredge," Mock notes. "That's why the dredge operator is the most valued employee."

Rick Parton, director of mining for Sahara Sand, a division of Silvi Co., based in Morrisville, Pa., agrees, citing his practice of also hiring operators who understand the need for preventive maintenance as part of their jobs. "We require pre-shift inspections — on a daily, weekly, and monthly basis — in an organized program where the operator actually inspects all components," he says. "Things such as oil sampling and keeping track records help prevent items from breaking that are beyond the operator's control. This has helped reduce our downtime."

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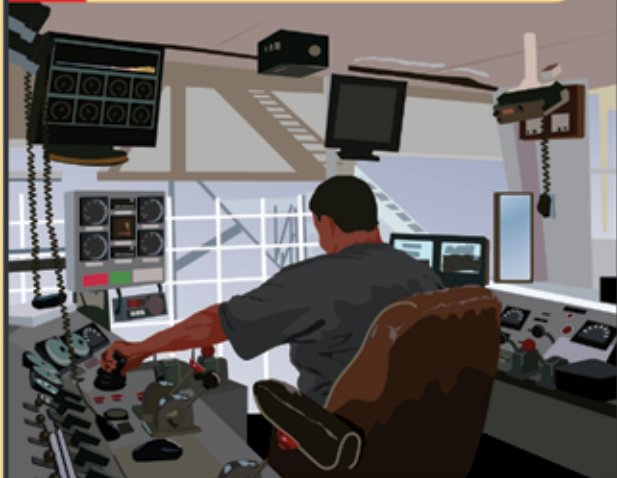
Test the deposit



Whether they are dredging an entirely new deposit, or have acquired an existing site, dredge owners should always fully test the deposit by taking boring or core samples throughout the property. Not only will this help the operator and the dredge manufacturer to make better equipment choices, but it also is invaluable for creation of the mine plan.

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Operator training is key



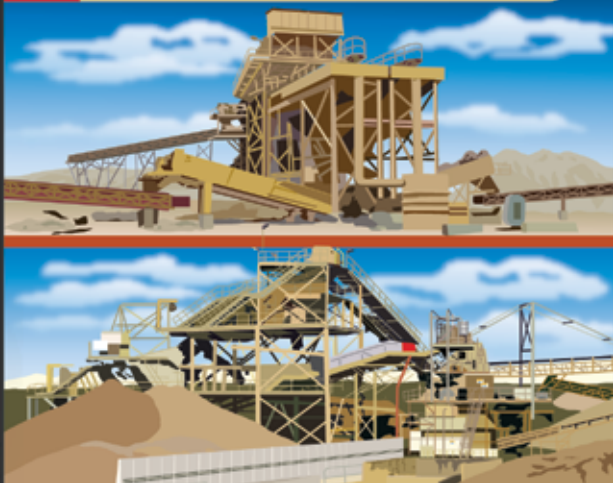
Even though running a dredge can be a lonely, dull job, owners should resist the temptation to make the dredge operator's job an entry-level position, at the bottom of the plant's pay scale. Extensive training, with emphasis on safety, must be a priority. Cross training among plant employees, including dredge operation, can help to reduce chances for downtime, while ensuring better overall production.

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2 Separate the dredge and plant



It pays to separate the plant from the dredge. When it is tied to a plant, if the dredge is down for any reason, it can also shut down the entire facility. A dredging operation can experience inconsistencies — with differing shifts between the dredge and the plant. By allowing the two to run independently, the whole operation can achieve more consistent production.

3 Conduct preventive maintenance



Maintenance programs should include daily, weekly, and monthly pre-shift inspections of dredge components, using a checklist. This practice will help to prevent items from breaking that are out of an operator's control when the plant is running. Oil sampling and oil change schedules are especially important to follow because contaminants can create wear and other problems that lead to downtime.

5 The trend toward electric



Environmental risks encountered with diesel engines can include fuel spills during transfer and operation, or in the event of a sinking dredge. Because of these concerns, as well as increasing emissions regulations and the unstable cost of diesel fuel, many dredge operations are opting for electric engines with new dredge purchases, and some owners are switching their diesel engines for electric power.

6 Automation provides production boost



If a new dredge is not an option, most existing dredges will accept a retrofit for automated controls that can monitor production and flow. In addition, GPS can aid in mine planning. For less than the annual cost of one employee, retrofitted automation controls can provide an option for dredge owners to upgrade their operations — often providing production increases that can reach 30 to 40 percent.



William (Bill) J. Wetta, P.E., is CEO of Dredging Supply Co., Inc. (DSC), based in Reserve, La. DSC was established in 1992 by Thomas Wetta III, along with his two sons, Bill and Bob Wetta. DSC has remained a locally owned, family-operated business since its inception. Wetta leads the company's engineering department, staying on top of the latest dredging and engineering trends.



A third-generation expert in the aggregate business, Jerry Mock has more than 34 years of experience in mine management. As aggregates operations manager of The Shelly Co.'s Thornville Division, Mock oversees multiple limestone quarries and sand & gravel operations. He has received the Rocky Award from the Ohio Aggregates & Industrial Minerals Association; Mock is also a member of the National Stone, Sand & Gravel Association's Dredging Committee.



Rick Parton has been director of mining operations for Sahara Sand, a division of Silvi Group companies, based out of Fairless Hills, Pa., since 2001. He has designed and built two Sahara Sand plants in middle New Jersey for Silvi. Prior to joining Sahara Sand, Parton worked for Hanson Aggregates for 33 years, the last 10 years of which he was operations manager for five large stone quarries in Eastern Pennsylvania.

OPERATIONS ILLUSTRATED

Voices of Experience

William Wetta

The biggest advances in dredging equipment have been in the automation arena, says Bill Wetta, CEO of Dredging Supply Co. And while a new dredge will usually contain automated controls, “the cheapest place to update your old dredge is to add a few simple electronic pieces to the dredge. It’s an easy way to increase your production, while lowering your cost per ton,” he says.

The beauty of this option is that many automated controls for dredges are entirely retrofittable. “This holds true for hydraulic and mechanical dredges,” Wetta notes, adding that upgrades can often net an operation a production increase of 30 to 40 percent — for less than the annual cost of one employee.

Automated dredging controls that monitor production and flow can help put the dredge operator and the plant on the same page, providing information for both in real time.

In addition, controls that create a consistent flow can also lower operational costs. “In a hydraulic dredge, plugging the line is every operator’s nightmare, so a lot of times you’ll get an operator who will pump more water than necessary to avoid plugging,” Wetta says. “Two-thirds of your operational costs are for pumping water, so the plant is paying a ton of money to pump more water than necessary.” He explains that automated controls will slow down the flow, but they will speed it up automatically to accommodate for cave-ins or potential plugging. “In the end, you save on fuel, plus you get better, more consistent production,” he adds.

GPS is another simple dredge addition that can reap great rewards. “Not only does it help with the mine plan, but it also keeps you from leaving underwater mountains, or leaving your tailings on top of good material,” Wetta says.

Jerry Mock

Just as an inexperienced dredge operator can create bottlenecks, so can poor planning around shift changes on the dredge, says Jerry Mock, operations manager for the Shelly Co. “For example, at the end of first shift, if it takes the operator 20 minutes to raise the ladder and go to shore, then the second shift operator talks to him a few minutes before heading out to the dredge — ultimately you lose an hour of production,” he says.

Mock’s solution was to purchase additional boats so that the second shift operator reaches the dredge before the first shift operator completes his shift. “We’ve picked up an additional five to six hours of production a week with this practice,” he says.

The Shelly Co.’s philosophy is that, because the sand plant ultimately relies on production from the dredge, the dredge operator should be well trained and well paid. “We put the most experienced operators we can find on the dredges,” Mock says, “and we’ve learned that the ideal operators are loners who want to do a good job without being bothered.”

But at the same time, Mock also believes in cross-training employees throughout the plant. “You can’t have enough people trained to operate the dredge,” he says. “If you have someone on there who’s not trained, you can plug the system, and then you’re down for days.”

The Shelly Co. also emphasizes safety in all of its training. “We operate year-round, and we’re operating on water. So all of our employees need to understand the additional safety priorities that come with working on water,” Mock says.

For minor fluctuations in dredge production, or the possibility of dredge downtime, Mock says he has learned that it pays to separate the dredge from the sand plant, dredging to a surge pile.

Rick Parton

“The best practice we have with our sand operation is the organized preventive maintenance program that we’ve created,” says Rick Parton, director of mining for Sahara Sand.

Parton says his challenge has been to write a program that operators will actually follow. Its plan has helped to prevent items from breaking that are beyond the control of the operator.

“We require our operators to do daily, weekly, and monthly inspections, filling out complete logs showing everything that happens on the dredge,” he says. “Right now it’s a written log, but we’re working on a program that will be computerized, which will provide automated alerts for the operators.” Parton says this will allow him to go back two or three years and know exactly what happened on a dredge on any particular day.

“Oil sampling, with track records, is especially important,” Parton says. “If you have contaminants in the oil, they’re going to cause problems down the road. So a program that sets up a complete oil sampling at ‘X’ hours and a full oil change at another ‘X’ hours is best.” He explains that contaminants in the oil can include water, which commonly breaches the oil reservoir on the dredge and causes component wear. “Without regular sampling, you wouldn’t know if there was water in the oil, and before you know it, you’re into downtime,” he adds.

According to Parton, it isn’t unusual for Sahara Sand’s dredge operators to fill two pages with information over the course of a single shift. He says the system has paid off because he is able to track lost hours and work on eliminating plant bottlenecks. “The success of our operation, to me, is the preventive maintenance programs we’ve put in place,” he says. “We’re eliminating potential downtime — which we all know is money out the door.”