

# *Willard Says.....*

## Success Story #1

relates how another Midwest sand and gravel producer has produced and profited far more than planned after buying a linear cutter dredge us. It is a story about a progressive producer who came to us with a set of requirements for a dredge. We met and exceeded their goals and they are delighted.

This company possesses two rare qualities—a relentless search for ways to improve profits and excellent management. These folks closely manage their people, strive constantly to better understand their business, constantly ask questions, listen to answers and form an opinion. Then they act.

We designed the machine and this customer uses it properly to obtain *average* rates of production that most dredge “experts” will brush off as being impossible especially given the operating depths.

It ain't bragging if you can do it. This producer is doing it and continues to refine his operation and enjoy increasing dredge production and increasing profits.

This producer had no experience at hands-on dredge mining. They were, however, familiar with their competitors' dredge operations, which they characterized as “poor.” They were looking for a hydraulic dredge to mine their 100-foot deep deposit and had set a very modest production goal of 200 tph.

We delivered a diesel powered 10-inch dredge with a 90-foot-long linear cutter ladder which included the provision for extending to 120 feet. Instruments and controls included a velocity meter and a CONVAC system.

Initially they pumped into a settling pond that was too small with the result that a considerable portion of the fine sand was washed back out into their pit. Dredging started out at 20 feet and production averaged 300 tph as determined by dividing the number of tons taken out of the bermed enclosure and carried to the dry process plant by the dredge operating hours. Through the first season they worked the mining depth down to 40 feet of depth as they increased the surface area of the pit. Average production for the year worked out to be about 290 tph.

Before startup the second season, we installed our Linear Cutter Automation Package (LCAP) on the dredge. Production increased about 50 tph and the average for the year was about 310 tph from an average depth of 45 to 50 feet.

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The LCAP automatically operates the hoist winch and the linear cutter. The winch keeps the suction inlet immersed in the bank of pumpable solids and CONVAC controls the production of solids. When the chain stalls, LCAP automatically frees it and restores normal digging function without operator intervention.

Installing LCAP resulted in a notable increase in production and reduced the operator's workload. There were periods of 10 to 20 minutes when the operator did *nothing* but observe conditions while full, continuous production flowed into the settling pond.

As depth increased another problem reared its ugly head: ladder-sticking cave-ins. The deposit is laced with thin layers of clay that tend to prevent small cave-ins and promote larger ones. The automated performance of the dredge reduced the operator's awareness so he missed seeing the signs of impending cave-ins and the ladder got stuck two or three times the second season.

Before the third season we installed a Snatch Back system on the dredge. This included modifying the hydraulic circuitry and installing an oversize tail line winch. The Snatch Back system gives the operator a one-pushbutton, get-the-hell-out-of-here, way to scoot away from under the cascade of solids siding down the bank to pile up where the suction inlet used to be. When the Snatch Back button is depressed the brakes are released on the front swing winches and a high flow of hydraulic oil is directed to the tail line winch to tow the dredge rapidly backward 30 or 40 feet. The ladder can't get buried if it ain't there.

If the operator gets antsy, pushes the Snatch Back button and no cave-in happens it takes less than a minute to move the linear cutter back into the solids bank to resume normal production. The short interruption in production is a small price to pay to not be there when a big cave-in does happen.

The Snatch Back system worked like a charm except for a couple times when the operator did not push the button. Average production was still over 300 tph and the depth increased at times to 55 feet as the pit area became larger.

At the start of the fourth season, the dredge discharge was moved from the settling pond to the top of a new process plant. The dredge is now delivering a continuous flow of slurry to a new classifier plant. Dredge production is averaging between 275 and 300 tph from an average depth of 60 feet.

Now the process plant's fine sand screw is too small and production has to be limited to keep from overloading it. A larger screw will be installed so that the dredge can produce at its maximum rate.

The instruments and controls we installed on this dredge enable the operator to maintain a constant flow (velocity) and solids (density). A uniform rate of flow is an absolute necessity to maximize the yield of specification products out of a classifying tank. The ability to control density means that the operator can keep the process plant running at capacity without overloading the undersized fine sand screw.

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This dredge does not have a ladderpump or a suction jet assist. It is a simple, well run, hullpump dredge with some sophisticated instruments and controls. 9 out of 10 dredge experts/builders will likely tell you that an average of 300 tph from a depth greater than about 35 feet with a 10-inch pump will require either a jet or a ladderpump. The fact that this simple dredge can accomplish these rates of production from a depth of 60 feet means substantial savings to the owners.

Sixty feet is about as deep as they plan to mine at present so production will stay in the 300-tph range. A suction jet assist will be installed at a later date when the ladder is extended to a total length of 120 feet.

Our “kiss” (Keep It Simple Stupid) philosophy of dredge design means these folks paid much less for the dredge, avoided the complexity of a ladderpump dredge and do not have the operating costs that accompany a suction jet assist system despite the fact that they are mining 60 feet deep.

I read with interest magazine articles announcing the commissioning of new sand and gravel dredges. Various features are described, however, a careful reading seldom reveals even a vague reference to production accomplishment. There are no claims of production—great or mediocre or poor—by the owners. The reader is left with the message that all one has to do is buy a new dredge and satisfactory production will happen.

Reality does not bear this out. Many new dredges suffer from the same old problems that have always plagued dredge production: intermittent production; misapplied or ineffective digging devices; and widely fluctuating discharge flow. It is amazing how many such owners, suffering poor production, will not acknowledge that they have a problem and refuse to even consider ways to improve production. Perhaps they think they do not have a problem. I can only conclude that all businessmen seek to do business in the most profitable way possible is wrong.

We offer efficient, productive, profitable dredge performance unmatched by our competitors. We welcome opportunities to demonstrate our accomplishments. Tell us what you want. We will prepare a proposal, show you successful, profitable dredging in action and deliver an efficient, productive dredge that will make you money, now and in the future.

Comment, question, criticism, information on products mentioned? Contact [Willard@willardsays.com](mailto:Willard@willardsays.com).