

Otay River Pump Station: A Fairy Tale Ending

How do you recover from weekly plugging of new, 200 HP submersible sewage pumps?

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The Otay River Pump Station (ORPS) was upgraded in 2003, to feed effluent to the City of San Diego's newly constructed South Bay Water Reclamation Plant. The South Bay WRP provides reclaimed water for industrial and agricultural customers in the South Bay area of San Diego.

All sewage pumping stations are important, but ORPS is unusually important since it provides the majority of the influent for the South Bay Water Reclamation Plant, via the Grove Avenue Pump Station. Without the flow volume from ORPS, the South Bay WRP would have to shut down, and because San Diego is a semi-arid desert region and imports 80% of its potable water, the reclaimed water is a valuable resource.

In December of 2006, the City started looking for a solution to the ragging/plugging and bearing failures that were occurring regularly in the three (3), 200-HP submersible sewage pumps at ORPS. Barik Demasi, the City's Pump Station Operations Supervisor, commented that one or more of the ORPS pumps would plug on a weekly basis. This would require 4 to 5 maintenance personnel to be called in for emergency overtime, usually very early in the morning (2-4 AM) to unplug and or make repairs to the pumps. It took extra personnel for the work because the pumps were not only large and cumbersome, but they were also located in a Permit Required Confined Space.

In March of 2007, the City gave up hope of trying to make the existing pumps work and began the process of purchasing a 200-HP, 10,000 GPM @45 ft TDH Vaughan submersible chopper pump.

The City chose to sole source the 200-HP Vaughan pump based on previous experience with Vaughan chopper pumps. After almost a year of operating the first Vaughan pump at ORPS without any pump failures or stoppages, two more 200-HP submersible Vaughan pumps were ordered and installed at the pump station.

City operation personnel report that the Vaughan pumps have not plugged even once over



the three years since the first Vaughan pump was installed at ORPS. Furthermore, the issue of ragging of the valves and pumps downstream of ORPS at the Grove Avenue Pump Station has also been eliminated by the chopper pumps.

The following is a portion of the Sole Source Memo written by City Engineering Staff to explain the reasoning for purchasing a Vaughan Chopper Pump:

"There have been continual mechanical problems and weekly plugging due to rags. Removing any of the large 200-HP motor/pumps is difficult and time consuming....We have made adjustments to try and get the existing pumps to perform....We have also had numerous meetings with [the original] vendor's representative to determine what can be done to get their pumps to perform adequately. We are now at the point where we do not believe these are the right pumps for this particular application.

"The Point Loma Wastewater Treatment Plant has over 30 Vaughan Chopper pump installations in our raw sludge recirculation and scum operations. All the installations have been effective in eliminating ragging and clogging. At the City's Metro Biosolids Center (MBC), Vaughan chopper pumps were installed to address a major problem in their sludge dewatering transfer system. Prior to installing the Vaughan chopper pumps, MBC staff were removing and cleaning out the dewatering pumps weekly. The Vaughan chopper pumps resolved the plugging problems and for the last 1 ½ years, the Vaughan chopper pumps have not clogged or bound up.

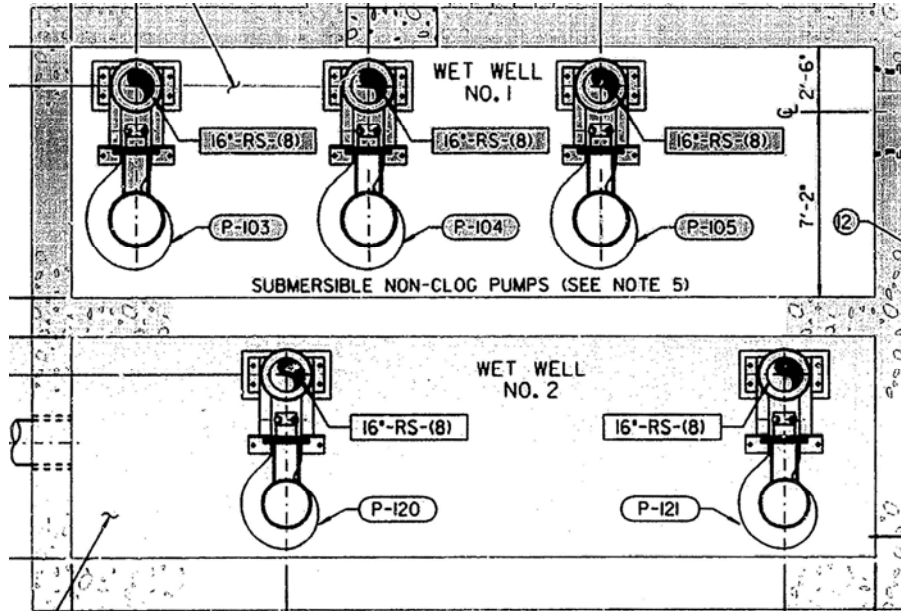
"Our engineering staff believes that the Vaughan chopper pump is what we need at ORPS to deal with the large quantities of rags that are received. We also believe this will help or eliminate the ragging issues at the Grove Avenue Pump Station and the South Bay Water Reclamation Plant. We are not aware of an "equal" to this pump."

With the success of the 3, 200-HP Vaughan pumps in ORPS wet well #1, Pump Station Operations and maintenance personnel asked the City engineering staff to order two new 40-HP Vaughan chopper pumps to replace the existing 40-HP "non-clog" submersible pumps in

ORPS wet well #2. The new pumps should be shipped and installed as of this writing in July 2010. These last two pumps complete the retrofit of the Otay River Pump Station.

Both the 200-HP and 40-HP Vaughan submersible chopper pumps were able to match the performance and efficiency of the originally installed "non-clog" sewage pumps with no penalty in power usage. Modern Vaughan chopper pumps can provide upwards of 70% efficiency.

Vaughan Company Inc, Montesano, WA, 360-249-4042; www.chopperpumps.com.



Above, Plan View of Wet Well #1 (3, 200-Hp pumps) and Wet Well #2 (2, 40-HP pumps) at ORPS

Below is an Elevation View of Wet Well #2 showing the 3, 200-HP pumps.

