


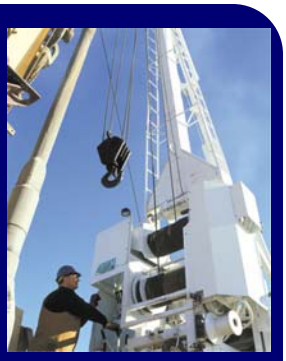

The Hole-Water Report

SPRING 2008

MWP has more than 60 Years Experience with

Flowserve® / Byron Jackson®

Municipal Well and Pump has a proven history of installing and repairing Byron Jackson submersible pumps & motors since 1948. Here is one job from the history files that highlights our experience.

Project of Distinction:

In February, 2002, the City of Waukesha WI., population over 66,000, declared their Well #10 a repair emergency. The 1,000hp Byron Jackson submersible motor had failed. In 1997, Waukesha had decided to convert their deep set 2,500gpm oil lubricated pump to a submersible. A 750hp Byron Jackson submersible was installed. From 1997 to 1999, the unit experienced multiple failures, with down the hole run times never exceeding 30 days. For the last repair, the previous contractor suggested changing to a 1,000hp unit and switched the seal to a mechanical seal. This unit failed also.

12 Week Turn Around: Municipal Well & Pump was ready for the challenge. A proposal was presented to the City of Waukesha to repair the 1,000hp motor, 15MQH-9 stage bowl assembly capable of 2,500 gpm. It took some convincing since everyone assumes there is only one qualified BJ contractor in the Midwest.

Once the contract was awarded, Municipal Well & Pump picked up the equipment from Waukesha in February, 2002. The 1,000hp motor was rewound, the thrust bearing rebuilt and the mechanical seal was replaced. The well pump was installed and started up on May 15, 2002.

Since the installation, the equipment has operated for a minimum of 12-hours per day, 365 days per year. Nearly 6 years later, that translates to over **3 billion gallons of water pumped**!

The Rest of the story: It is still operating, without a lost day of production. Today, with a new treatment plant in place, the City of Waukesha is running the well 24 hours per day, 365 days per year.

Whether your Byron Jackson mercury seal or mechanical seal motor is 10hp or 1,000hp, MWP is qualified to handle all of your BJ pump pulls, repairs and installations.

Notable Byron Jackson Projects:

- Crystal Lake, IL • Well #7 • 250hp, set to 724'
- Sycamore, IL • Well #5 • 200hp, set to 460'
- Rochelle, IL • Well #11 • 300hp, set to 430'
- Wauconda, IL • Well #5 • 30hp, set to 108'
- Brookfield, WI • Well #24 • 250hp, set to 645'
- Pewaukee, WI • Well #4 • 200hp, set to 705'
- Waukesha, WI • Well #10 • 1,000hp, set to 795'
- Waukesha, WI • Well #6 • 400hp, set to 640'

MWP HIGHLIGHTS

- **New Projects Include:**
  - Marshfield, WI - drill new well
  - Island Lake, IL - drill new well
  - Crystal Lake , IL - Well 16 Maint & Rehab
  - Stevens Point, WI - Well #5 Rehab
- **Upcoming Trade Shows**
  - WRWA Technical Conference in Green Bay, WI - April 8 thru 11

OTHER FEATURES IN THIS ISSUE

Municipal Well & Pump is an Employee Owned Company

In Wisconsin: 1212 Storbeck Drive, Waupun, WI 53963 **In Illinois:** 1206 North Wind Drive, Sandwich, IL 60548

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MWP adds a Foremost DR24HD Drill Rig

Fyre Lake National
Sherrard, IL

Riverdale Golf Course
Sheboygan, WI

December, 2007 - Municipal Well and Pump expanded our drilling operations with the addition of a 2007 Foremost DR24HD drill rig. MWP chose the Foremost rig for its dual rotary (barber), reverse circulation capabilities. This allows the flexibility to drill in overburden formations, plus it provides excellent productivity in open hole applications. With its heavy duty design, this rig is capable of large diameter, deep hole work.

Drilling began at Fyre Lake National Golf Club & Marina in Sherrard, IL. This high end, Jack Nicklaus design course set in the rolling terrain and woodlands of western Illinois, was a challenging start for the new rig. Working through the extreme conditions of winter and tough site conditions the crew barber drilled an 18" upper hole to 176' and then drilled 12" open hole down to 660'. It was a good 1st test and the rig performed great.

The next project was a 24" barber job in Hennipen, IL. We drilled 24" casing down to 140', set 16" casing with 15' screen, installed gravel pack and then extracted the 24" casing as we grouted. This job was completed successfully in 8 working days.

We moved next to Sheboygan, WI to drill an irrigation well for Riverdale Golf Course. The well was a 12" barber hole to 124' and 12" open hole to a final depth of 500'.

Currently, we are drilling a municipal well for the City of Niagara, WI. This site has arsenic concerns which eliminates the use of air on the formation. As a result, we are utilizing the rigs reverse circulation capability which keeps the air inside the drill pipe and away from the formation.

With the addition of this rig, MWP is staffed and equipped to handle your next well!!

Grafton Eliminates Dual Aquifer & Improves Production with AirBurst

Results at Grafton:

Original Well Stats
- Static = 74 ft.
- 600 GPM
- Drawdown = 126
- Specific Cap = 4.76

Prior to Rehab
- Static = 118 ft.
- 400 GPM
- Drawdown = 92
- Specific Cap = 4.35

After Rehab
- Static = 100 ft.
- 670 GPM
- Drawdown = 80'
- Specific Cap = 8.38

Estimated Savings versus drilling a new Well = **$300,000**

The Village of Grafton, WI Well No. 3 was an existing dual aquifer well constructed to a depth of 1,050 feet. Due to a 42 foot drop in static water level the well could only be pumped at 400 GPM (see stats). Additionally, the DNR wants to eliminate dual -aquifer wells wherever feasible. The Village had determined they were willing to comply as long as it would not adversely affect the quality and quantity of water.

Phase I - Isolate the upper limestone and seal off the shale liner and sandstone aquifer below to create a single aquifer well. Municipal utilized ***AirBurst® Technology*** to develop the limestone aquifer, installed a packer to isolate the limestone from the lower portion of the well, and then performed a 24-hour test to determine the output of the proposed reconstruction of the well.

The test pumping proved that the limestone would produce at least 600 GPM at a pumping level of 200 feet!

Phase II -The lower sandstone aquifer was backfilled with chlorinated pea stone to 870 feet, the shale liner was perforated and then neat cement grout was installed to 555 feet. This completely sealed off the shale liner and the lower aquifer. After the grout was set, another 24-hour test was performed on the limestone aquifer. The SWL had come back to 100 feet, and the well produced 650 GPM with a SC of 4.62, or approximately what the well produced at the time of construction with ***two aquifers!***

Phase III - MWP installed new pumping equipment based on the new well conditions. As the well recovered from the dual aquifer, "stealing" of water into the sandstone, the static water level recovered to 93 feet, or 25 feet higher than when the well was taken out of service for the work. Additionally, the pump produced 670 GPM. In the end the SC was 8.38, **nearly a 200% increase with 1/2 the original well**!!

In conjunction with the Well No. 7 ***AirBurst® Technology*** rehabilitation of 2006, and the subsequent increase in output of that well, the Village of Grafton is nearly 350 GPM ahead of where they were nearly two years ago with their existing wells and infrastructure. As a result, they have been able to push off drilling of a new well for 1/10 the cost. Result, MWP helped save the Village an estimated **$300,000 or more**.

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