



## Customer Spotlight Case Study

### Genesee County Waste Water Drain Commission

**The Problem:** Genesee County was needing to improve its old Pump Station No. 1 in Flint Michigan. The current station was over thirty years old and would flood two to three times a year. The resulting floods would create a large expense for the commission of repairs and maintenance of the station equipment.

**The Solution:** The Genesee County Commissioner approved the project to replace the outdated Pump Station No. 1. The county hired Hubble, Roth & Clark (HRC) Bloomfield Hills MI, as their consulting engineering firm to come up with a design solution for this equipment. HRC was charged to design a station with peak flow capacity of 60 MGD, to reduce the flooding of the station, provide improved efficiencies, and reliable operations.

The consultant review study included evaluation of submersible type, non-clog sewage pumps or vertical non-clog sewage pumps with immersion motors. Each pump has a capacity of 20 MGD at approximately 75' Total Dynamic Head (TDH). The pump design features required for this project include: a minimum 30" suction and 24" discharge, motor horsepower under 350, Variable Speed Drive System, and the ability to be submerged. As HRC reviewed the specifications, a number of potential manufacturer's were looked at, including Flygt, KSB, and Cornell.



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HRC's recommendation to the county was to proceed with an immersible pump and motor design. This decision was based on the evaluation of efficiencies of the pumps and the costs associated with cooling systems required for the motors. The submersible design required recirculated pumped fluid with a water jacket, cleanout/flushing ports, and a provision for future conversion, if necessary, for an external source of cooling water. The submersible pumps also required extensive monitoring equipment to measure stator temperature. The Cornell Pump Immersible design required a premium efficiency, inverter duty, totally encased vertical motor with shaft sealing system and separate cooling fan. (This design is able to withstand a submergence of 30' for up to two weeks).

Today, the new Genesee Pump Station No.1 is fully functional. The final design called for (4) Cornell Pump Immersible Model 20NHF-VC20 with 350HP, 720RPM Continental Immersible Motors. Recently, heavy spring rains forced the operation of the pump station to it's maximum, reaching and maintaining flows of 76MGD, 16MGD *more* than the design requirements!

Not only were we able to replace the previous Fairbanks-Morse "line shaft" design pumps, but the new combination of Cornell Pump and Continental Immersible Motors has proven to be an efficient and maintenance friendly choice for Genesee County.

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