City Of Charlotte
Department of Public Works

Memo

To: City Council

From: Amy E. Gilson, P.E., Director of Public Works

Date: December 6, 2016

Re: Tirrell Lift Station Generator

At the city council meeting on November 28, 2016 I presented a contract proposal for approval for the design/ build services to replace the generator at the Tirrell Lift Station. Council member Bahmer requested additional information about the generator itself that is budgeted to be replaced in the current fiscal year.

Information that was requested at the June 13th council meeting as part of the budget approval process is:

Year installed: 1979; Type of engine: Internal combustion; Fuel: Diesel;

Hours: 2825.3 (as of 6-14-16)

The new generator will run off of natural gas. This will eliminate the need for the fuel storage tank. Annual fees associated with the fuel tank include registration with the State and a tightness test. Another issue with the UST is maintaining the quality of the fuel that is stored in the tank.

Additional information requested at the November meeting:

There was an issue with the generator on October 14th whereby the breaker for the day tank was tripping the breaker. The day tank is a smaller tank that supplies fuel to the generator from the larger underground storage tank. It was determined that the issue was caused by two room heaters being on the same circuit. The situation was rectified and has not caused a problem since. A copy of that service record is included in the packet.

To give a little history, the current generator is housed in a brick building down behind the City Garage. It is approximately 250 feet from the river. The sewage screening building is approximately 175 feet from the river. All of the sanitary sewage that is generated in the City runs through this pump station and is pumped to the wastewater treatment plant. That's approximately 760,000 gallons per day. The existing generator is a 200 kilowatt unit, and the proposed unit is 150 kilowatts. To put that into perspective, the typical stand-alone household backup generator is between 11-22 kilowatts.

The generator is typically exercised once a month. The test is run at full load for approximately six hours. A report is filled out with pertinent operating information. The operator also checks the water in the radiator, the oil level, and battery levels. If any of these items need to be adjusted, it is done at that time. Elsewhere in the packet you will find records dating back to 2005 of these tests.

The generator has been approved in this year's budget for replacement. The Estimated Useful Life (EUL) of a standby generator such as this one is 25 years. The Tirrell generator is 37 years old. Its fuel source is an underground fuel storage tank (UST) that at a minimum costs $300 annually to register with the MDEQ and $400 annually to perform the required tightness test. We don't believe that the proximity of the UST to the Battle Creek River is an environmentally responsible situation.

While having the City's main sewage lift station this close to the river is not an environmentally responsible situation either, it is a much more manageable risk than a UST. However, if there is a need for the generator to operate the pumps and it fails, the sewage will quickly find its way to the river. Such a situation is not looked upon favorably by the MDEQ, and it has potentially large monetary implications, more than the cost of replacing a generator. Having a reliable backup generator to run the pumps in the event of a power failure is one of the ways we manage that risk. As another layer of protection, we will also be adding an outlet for the portable generator as a part of this project. Currently there is no way we can hook this generator up. While the primary use of the portable generator is the well field, it could be shuttled between both places in a catastrophic event.

We are therefore, again, asking that Council approve the contract with Consumers Energy Engery Services for the design, bidding, and installation of the replacement generator at the Tirrell Lift Station. This price includes all of the engineering, electrical, and the actual generator itself. The quote does not include the removal of the UST, but that will be done at a later date by a qualified contractor.

Please let me know if you require additional information.

Tirrell Lift Station generator showing louvers and muffler.

Generator showing batteries
and oil leak underneath.

These pumps are some of the equipment that are run by the backup generator.

Exterior view of the building showing the louvers and exhaust.

cc: Gregg Guetschow, City Manager

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