



Memorandum

To: Chair John Zech, Honorable Board of Directors, GLWA
From: Navid Mehram, P.E., Chief Operating Officer, Wastewater Operating Services
CC: Suzanne R. Coffey, P.E. Bill Wolfson
Date: October 6, 2021
RE: Portable Generators for the Freud Pump Station

Chair Zech:

At the September 22, 2021 Board Meeting, Director Brian Baker requested additional detail on the feasibility of connecting portable generators to the Freud Pump Station¹. This letter summarizes several technical and coordination meetings held among GLWA; Motor City Electric (MCE), GLWA's electrical contractor; PM technologies (PMT), GLWA's emergency generator maintenance contractor; and DTE Energy. Shortly after the June 25-26 rain event, GLWA asked MCE and PMT to evaluate whether portable generators could function as the third feed or a backup power to one of the transformers powered by the Ludden Substation.

The Switchgears: First, MCE investigated the configuration of the medium voltage switchgear and its feasibility to accept connections from portable generators to power at least three (3) pumps. After several correspondence between MCE and the switchgear manufacture, it was determined that the existing spare 1200-amp breaker within the existing medium voltage switchgear would need to be modified to support a 2000-amp breaker. A 2000-amp breaker can support the electrical demand for three (3) pumps. Although the installation and modification to the medium voltage switchgear could be completed within a few days, the procurement of the needed components was estimated to take 10-12 weeks. Using refurbished components was considered but not pursued because of reliability concerns.

Further, since the switchgear is not designed to receive temporary cabling from portable generators. As such, the rear cover would have to be modified to allow temporary cabling to be connected to the medium voltage switchgear.

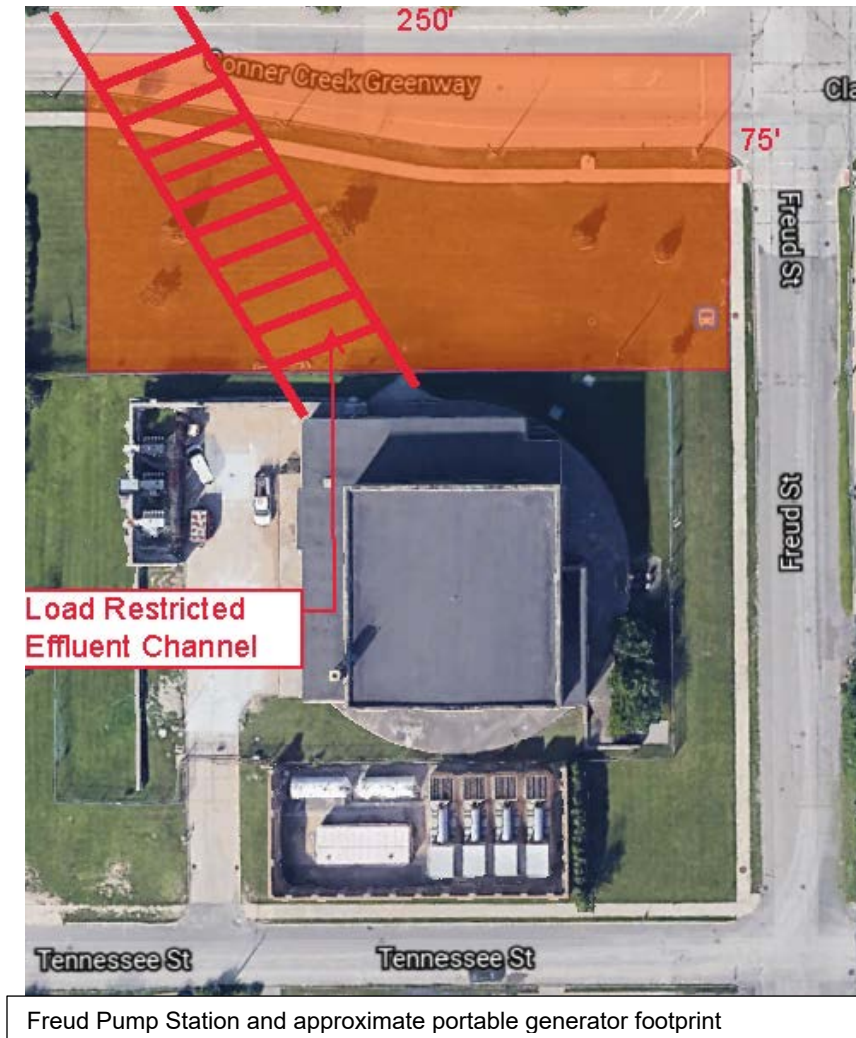
Finally, since the medium voltage switchgear is designed to have open tiebreakers between the three (3) individual buses feed from independent transformers, additional programming would be necessary to avoid back feeding the utility power supply or limiting Freud operations if the Porter line (feeder 132A) experienced an outage. This programming could take an estimate of three to four weeks.

The Generators: The number and size of the portable generators required to support three (3) storm pumps is equivalent to one existing transformer at the Freud Pump Station. GLWA would need six (6) 2000 KW generators, three (3) 5000KVA generators, three (3) step-up transformers

¹ Currently, the Freud Pump Station has backup generators to support an outage to the Porter Substation electrical feed only. These backup generators can operate 2 pumps. As the Board may recall, the June 22nd power outage impacted the two transformers, receiving power from the Ludden Substation. As such, the pump station could not utilize generators to run additional pumps during the June 25-26 rain event.

(480:4800VAC), and associated cabling to connect generators to step-up transformers. The step-up transformers would then connect to the reprogrammed medium voltage switchgear.

Each generator is housed in a 52-foot containerized trailer, and transformers will be placed on platform on grade between the generators and the station. In total, GLWA would need nine (9) 52-foot trailers deployed to the site, requiring 250-feet x 75-feet staging area.



Freud Pump Station and approximate portable generator footprint

The orange box demonstratively shows the required footprint for portable generators relative to the facility. The red hatching is the effluent channel from Freud Pump Station to the Conner Creek Combine Sewer Overflow (CSO) facility. Since the effluent channel is shallow; an engineering review would be necessary to determine the loading capacity on top of the channel.

Conclusion: MCE and PMT agree that the physical limitations, electrical complexity, as well as the deployment timeline severely limit the viability of portable generators. DTE Energy orally concurred with this opinion. Further, it would have been impossible to deploy portable generators in advance of the June 25-26 rain event. As such, GLWA has concluded that portable generators are not a feasible solution for electrical redundancy at the Freud Pump Station.