

# HEBER PUBLIC UTILITY DISTRICT

## REPORT TO BOARD OF DIRECTORS

**MEETING DATE:** May 18, 2023

**FROM:** Madeline Dessert, General Manager

**SUBJECT:** Presentation on condition and possible update to HPUD Wastewater Treatment Plant

**ISSUE:**

Heber Public Utility District Wastewater Treatment Plant is in need of substantial repairs/upgrades in order to function safely and efficiently.

**FISCAL IMPACT:**

Heber Public Utility District has spent upwards of \$300,000 on repairs for the Wastewater Treatment Plant this Fiscal Year.

**DISCUSSION:**

The Heber Public Utility District Wastewater Treatment Plant has recently had Programmable Logic Control (PLC) and electrical equipment failures at the headworks control building, due to old and outdated equipment. Our headworks control room is also exposed to hydrogen sulfide gas which corrodes and shortens the lifespan of the equipment. We currently have most of our treatment plant equipment on manual instead of automatic, as the plant was designed operate. The Heber Public Utility District has been spending an increasing amount on repairing our PLC electrical issues. We have been consulted by Delta Systems engineering that we need to upgrade our PLC and SCADA system in order to avoid continuous costly repairs.

This recommended repair needs to include relocation of the entire electrical system (emergency generator transfer switch, SCADA system, and PLC) about 100 feet to the Southeast. This relocation would prevent corrosion caused by exposure to hydrogen sulfide gas.

Additionally, breathing hydrogen sulfide gas is harmful for the water operators. Continued ingestion of hydrogen sulfide gas causes loss of smell and may cause fainting.

Respectfully Submitted: Madeline Dessert, General Manager  
Attached: Wastewater Treatment Plant Repair Narrative



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### HEBER PUBLIC UTILITY DISTRICT WASTEWATER TREATMENT PLANT

FEBURARY 28, 2023

### NARRATIVE OF RECOMMENDED UPGRADES

Heber Public Utility District owns and operates a wastewater treatment plant and sewer collection system that services the Heber Area. There are currently 1,603 sewer service connections. The sewer service flows into the wastewater treatment plant. The wastewater treatment plant currently has a treatment and discharge capacity of 1.2 MGD (million gallons per day). The wastewater treatment plant was last upgraded in 2012. Recent operational issues at the wastewater treatment plant have rendered notable issues. The notable issues are as follows:

There are Electrical and Control Panels for various facilities that are located within the Headworks Building. The Electrical and Control Panels are isolated within a dedicated and enclosed room within the Headworks Building. Sewer gases emitting from the headworks infrastructure, have made their way into the Electrical and Control Room, which has corroded and affected various electrical and control components within the panels. The corrosion has continued to damage the electrical and control components. This leads to more consistent maintenance and repairs of electrical and control components. The best solution to the issue would be to relocate the electrical and control panels to another stand-alone and dedicated building, at a distance that is clear from the Headworks gases.

The existing SCADA (Supervisory Control And Data Acquisition) of the wastewater treatment plant's controls has not been upgraded since the year 2014. The nine-year-old SCADA system is outdated and in need of replacement.

The Sludge Dewatering facility's high-power consumption, high chemical cost, and Operators' extended time consumption put a strain on the operating budget. The extended time consumption lessens the operators' time for other wastewater tasks. An inexpensive and time-saving solution



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to the issue is to construct and operate additional sludge drying beds. The use of additional sludge drying beds would allow for part-time use of the Sludge Dewatering Facility and allow wastewater operators to focus their attention on other tasks.

The small size of the laboratory and office building hampers the operators' ability to conduct daily laboratory tests as well as organization and file space. The laboratory building and office building have not been upgraded since their original construction in 2002. An increase in the size of the Laboratory Building would allow the operators ample space to conduct tests and an increased size of the Office Building would give the operators ample space to organize project files and SCADA computers.

As previously mentioned, the Headworks facilities emit sewer gases (hydrogen sulfide) that are corrosive to steel and concrete material which are in all and most of the headworks' facilities. The gases have created short lives for the various equipment and components. The constant repair and replacement, such as the concrete walls of the Grit Chamber or steel screens for the Drum Screens, continues to increase operating costs. Capital costs in the replacement of various equipment would benefit the operation and maintenance schedule of the wastewater treatment plant. The installation of Odor Control equipment would also extend the life of any existing equipment and new equipment within the Headworks Building. The existing Influent Channel of the Headworks Facility, located within the Headworks Building, is constructed of concrete with epoxy coating lining. The corrosion by sewer gases has corroded through portions of the epoxy lining and is spalling the existing concrete channel. To save the overall structural integrity of the channel, the concrete, and the epoxy-lined channel needs major repair.

The Regional Pump Station Facility was constructed in the year 2006. Since such date, the sewer gases emitting from the wet well onto the nearby Electrical and Control Panels have corroded electrical components. The frequent breakdowns of the pump system along with diagnosis and repairs have deemed the existing control system to be at the end of its useful life. It would be beneficial for the Electrical and Control Panels to be replaced and upgraded with the latest control equipment.



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There are two existing STM-Aerotor Treatment Units that provide biological treatment of wastewater. The Aerotor Treatment Units are mechanical moving and paddle-mixing systems that were installed in 2014. The Aerotor Treatment Units have been experiencing various issues with the most occurring issue being the breaking of structural beams and chains. However, the concrete structure that houses Aerotor Treatment Units is in good condition. This constant maintenance and repairs of the various components have now deemed the need to conduct a major retrofit of the overall Aerotor Treatment Units. The retrofit of the units would enable the overall life and operational use of the Aerotor Treatment Units.

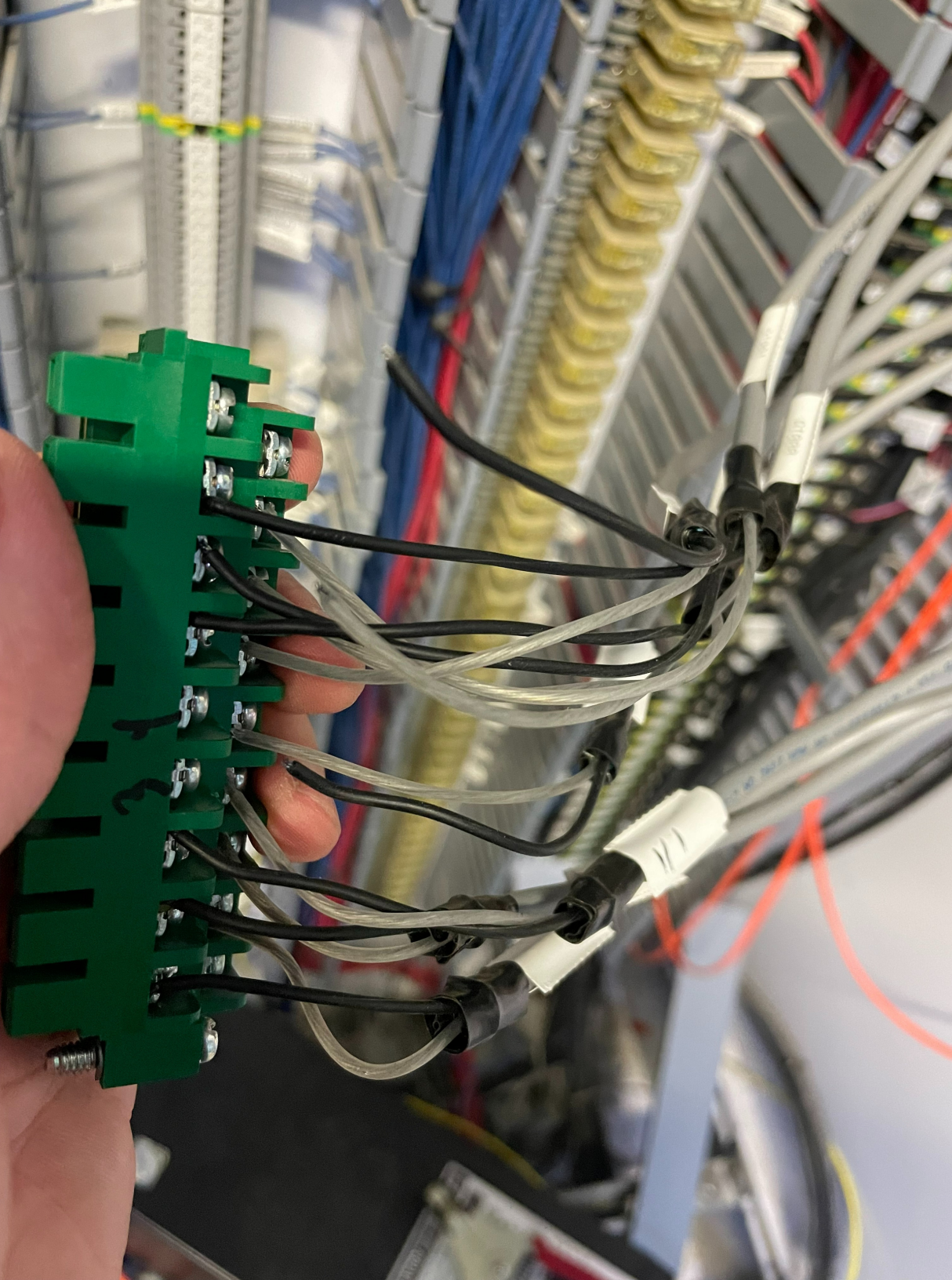
The existing UV (Ultraviolet) Disinfection System is located at the tail end of the wastewater treatment plant process. The UV Disinfection System has two separate treatment systems that are operated as duty and backup. The existing UV system was constructed and implemented in 2012. The controls for the UV System are becoming outdated and in need of an upgrade. There is also a hydraulic bulb cleaning system that needs to be taken out of service for maintenance, which provides the need for a redundant hydraulic bulb cleaning system. The UV System requires the upgrade of the Control Panel, and the implementation of the hydraulic bulb cleaning system will allow operators the ease of conducting repairs without backing up the wastewater treatment plant during maintenance of the existing cleaning system.

HPUD owns various pieces of equipment and keeps spare parts that are used for the maintenance of the wastewater treatment plant and sewer collection system. Such equipment and spare parts are required to be kept indoors in various enclosed facilities, while equipment and spare parts that can be kept outdoors are placed outdoors. Having an enclosed storage facility would greatly benefit HPUD and reduce the number of break-ins. Since some parts are out in the open and visible to a park and the neighborhood there is easy access to that part of the Wastewater Treatment Plant. Showers would be added to the storage area in case of emergency for our operators. It would be suitable to have an enclosed storage area designated for indoor equipment and spare parts, and for any valuable outdoor equipment and spare parts to also be kept in an enclosed area such as a shop building.

Madeline Dessert  
General Manager



Headworks PLC (Programmable Logic Control) is the brains of the automated system that controls the equipment. This also sends out alarms in cases of emergencies or breakdowns.



This is one component of a PLC, each wire must be connected at all times to be able to function. Due to the H<sub>2</sub>S gases these components fail frequently due to corrosion. Each PLC costs about \$4,000.



This shows H<sub>2</sub>S corrosion. This is the headworks circuit breaker, where there is black, and flakey spots that is H<sub>2</sub>S corrosion. The original color should be a silver metallic color.



This is another example of H<sub>2</sub>S corrosion. This is a raw sewage drum screen foundation. This foundation is being corroded by constant H<sub>2</sub>S gasses.





This is another example of H<sub>2</sub>S corrosion. This is a raw sewage inlet, this has been repaired multiple times with fiberglass.



This is another example of H<sub>2</sub>S corrosion. This is a grit separator, which separates hard grit. (Coffee grinds, sand, small rocks)



This is the Aerotor, this introduces oxygen into the aeration system that allows the treatment to progress. These chains are 6-8 years old.