

**Title:**

**Montgomery County Sanitary Sewer District No. 1  
Telemetry Upgrades**

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## 1.0 Document History

### 1.1 Proposal Revisions

Version	Description	Date
1.0	Request for Telemetry System Upgrades	08/16/2021

### 1.2 Author, Company, & Date

Author	Company	Date
Dennis Clark	Lenz Hardware, Inc.	08/16/2021

### 1.3 Distribution List & Company

Distribution List	Company	Date
Diana Schwartz	Chief Plant Operator	08/16/2021

## 2.0 Project Summary

The following project proposal is in regards to the Montgomery County Sanitary Sewer District No. 1, 28 Old Station Road, Nelliston, New York facility Telemetry System and graphical system upgrades. This upgrade proposal shall provide the Montgomery County Sanitary Sewer District No. 1 Wastewater Treatment Plant with new programmable logic controller and touch screen hardware, as well as a maintainable and functional graphical package based on the Microsoft Windows10 platform. To provide two remote pump stations located in Fort Plain and Palatine Bridge with new programmable logic controllers and touch screen hardware. To provide a replacement of a pre-existing radio data system with new data radios, antennae and wiring components. New data radios, antennae and wiring components are to be provided by Montgomery County Sanitary Sewer District No. 1. To provide antennae masts for mounting of radio antennae as well as installation of data radio equipment. Main computer system hardware, Microsoft Windows 10 Operating software and Microsoft Office software to be provided by Montgomery County Sanitary Sewer District No. 1. To provide SCADA system and Telephone Alarm system software for installation on the computer system. To provide connectivity between data radio equipment, programmable logic controllers, computer system and Alarm Dialer call-out equipment at the Main Plant and the Nelliston, Fort Plain and Palatine Bridge pump stations. To provide programming required for interactive operator control of graphical SCADA computer system as well as touch screen programmable logic controllers.

## 3.0 Project Scope

Lenz Hardware shall provide a complete, explicit, and acceptable programmable logic touchscreen controllers system programmed for interactive operator control, as well as a fully programmed SCADA Development Server, along with a fully programmed alarm dial out system. Additionally, Lenz Hardware shall provide all necessary wiring connections for inputs to the programmable logic controllers. Lenz Hardware shall install the data radios, antennae, antennae wire and accessories provided by others. Lenz Hardware shall provide and install antennae masts. The upgrade equipment and software shall communicate over serial media while utilizing serial functional protocols. Lenz Hardware, Inc. will provide upgrade equipment, software programming, installation requirements, and commissioning of the new replacement telemetry system SCADA Development Server of an appropriate point count.

### 3.1 Existing System Description

The present Montgomery Sanitary Sewer District No. 1 telemetry System consists of an obsolete proprietary HMI system running on a Windows 95 operating system. There is a data radio system utilizing Maxon data radios communicating with external modems to assorted Discrete Inputs, Discrete Outputs, Analog Current Inputs. The serial module provides an obsolete protocol via a RS-232 serial slave to the existing graphics communications driver. The Nelliston pump station has an upgraded touch screen PLC for control of the booster pumps. Both the Fort Plain and Palatine Bridge pump stations have hard wired magnetic logic with electrical switches for control of booster pump operation.

## 3.2 Upgrade System Replacement Description

The new programmable logic control Systems Platform shall replace the existing obsolete Montgomery Sanitary Sewer District No. 1 telemetry System. The new programmable logic control Systems is an extremely high performance controller platform which will serve the Montgomery Sanitary Sewer District No. 1 equipment for many years to come.

The programmable logic control Systems shall be programmed utilizing the latest version of downloadable programming software. A copy of Ladder Logic shall be provided to the owner and permanently licensed to Montgomery Sanitary Sewer District No. 1. The program shall be programmed to facilitate any and all control system functionality presently available on the existing system. Any enhancements to the control program shall be discussed with the owner representative prior to implementation. Programming shall be completed in a structured manner and clearly documented regarding the purpose and functionality at the block, rung, and variable level. When appropriate, Word, Excel, PDF, and CAD files shall also be downloaded to the PLC's CPU to facilitate program and system understanding and system troubleshooting. Documentation (provided it will fit in the CPU memory) shall be saved to the programmable logic control CPU and shall be presented to the owner representative for approval during the system commissioning project phase.

The HMI SCADA Graphical User Interface hardware shall be provided by the customer as a desktop unit of substantial performance and specifications, provide a substantial graphic screen, and loaded with Microsoft Windows 10 Pro Operating system. The HMI Development Server of an appropriate point count shall be provided, loaded, configured, and be permanently licensed to the customer by the Integrator. The graphical user interface, which will closely mimic the current operator experience, shall be capable of enhanced functionality such as graphical trending and historical data acquisition.

Graphical pages shall be accessible via a main menu structure and shall utilize present color schemes whenever possible. Graphical System communications shall be implemented and provided via Ethernet to the new PLC system platform. A copy of the HMI SCADA program and the PLC control program shall be presented to the owner representative in their entirety and containing all components.

Installation of the above specified hardware and software shall be the sole responsibility of the Integrator with access granted and facilitated by the owner's project representative. Installation and commissioning shall be designed, managed, and planned with regard to minimal system downtime. Any and all pre-work that can be performed off site prior to the equipment shutdown shall be discussed with the owner representative and completed if so decided upon.

## **4.0 Roles & Responsibilities**

The following is intended to be a general guideline for the Montgomery Sanitary Sewer District No. 1 telemetry Upgrade. Lenz Hardware, Inc. shall perform the upgrades described herein and the owner shall appoint a project representative essential for the successful planning, installation and commissioning of the upgraded systems. At the completion of the project, the owner shall be afforded a fully functional and acceptable system for the Montgomery Sanitary Sewer District No. 1 telemetry equipment. Consequently, it is incumbent upon the Integrator to understand and provide a fully functional system as proposed and agreed upon for the Montgomery Sanitary Sewer District No. 1 telemetry system.

### **4.1 Montgomery Sanitary Sewer District No. 1 telemetry System Roles & Responsibilities**

- 1) Provide a named and accessible owner project representative.
- 2) Facilitate an onsite project kick-off meeting to include owner and integrator.
- 3) Provide an agreed upon shutdown date(s) for installation and commissioning.
- 4) Provide a desktop unit of substantial performance and specifications.
- 5) Desktop unit shall be loaded with Microsoft Windows 10 Pro Operating system.
- 6) Provide a substantial graphic screen with adequate mouse and keyboard.
- 7) Discuss and agree upon overall system architecture and any new functionality.
- 8) Provide a functional data radio system with internal modems, antennae, wire and accessories ready for installation.
- 9) Provide signed change order agreements in a timely manner prior to performance of work.
- 10) Provide Integrator accessibility to facility within reason.
- 11) Owner representative present during system startup and commissioning.
- 12) Project sign-off in a timely manner once contractual obligations of Integrator have been met.

### **4.2 Integrator Roles, Responsibilities, and Deliverables**

- 1) Provide any and all control system equipment with regard to the system upgrade using the agreed upon architecture and bill of materials herein as a guideline.
- 2) Provide a project timeline of all project aspects for owner review a minimum of five business days prior to the project kick-off meeting.
- 3) Provide a fully functional system per Integrator proposal and any agreed upon enhancements.

- 4) Provide any and all PLC programming and/or PLC material for a fully functional system. The equipment BOM herein shall be utilized as a guideline. The Integrator shall include any and all programming and PLC hardware material per submitted proposal.
- 5) Provide any and all agreed upon graphical system programming.
- 6) Provide any and all obsolete system removal in a coordinated and organized manner.
- 7) Provide and install any and all new equipment including but not limited to system wiring and Ethernet cabling.
- 8) Provide new upgrade system prints (per Owner & Integrator agreement) in a timely manner for owner approval prior to system shut-down.
- 9) Provide “As Built” prints (per Owner & Integrator agreement) in a timely manner for owner approval after completion of upgrade system commissioning. Final project sign-off will depend on owner approval.
- 10) As part of final upgrade system documentation, Lenz Hardware, Inc. shall provide traditional PLC program printouts and graphical system information subject to owner approval.
- 11) Provide copies of any and all upgrade system application programs. Any and all programs shall be complete and ready for fully functional loading by the owner or any qualified entity of choice by the owner. Application programs shall be fully documented regarding the final Programming software version.
- 12) Provide Montgomery Sanitary Sewer District No. 1 System with a fully licensed PLC Professional Suite, fully licensed SCADA development server package and fully licensed Alarm Dial-out system.
- 13) The Integrator shall be responsible for choosing and providing the appropriate point count SCADA package which shall encompass individual points and not communicating points via arrays or any such programming.
- 14) Provide Montgomery Sanitary Sewer District No. 1 System with any and all equipment removed from service as it is the owners’ property.
- 15) Provide a six-month warranty for the upgraded telemetry system to the Montgomery Sanitary Sewer District No. 1. If and when issues arise, the Integrator shall respond in a timely manner. Note – damage occurring by outside forces aren’t covered.
- 16) Provide remote monitoring capability.

## 5.0 Commercial Summary

### 5.1 Milestones & Invoicing

Award of Upgrade Contract: .....20%  
 Complete Delivery of Upgrade Material: .....30%  
 Testing & System Commissioning: .....30%  
 Final System Acceptance and Sign-Off: .....20%  
 Date of contract commencement . . . . .upon receipt of all data radio equipment  
 Date of substantial completion . . . . .eight weeks after commencement  
 Date of warranty commencement . . . . .upon substantial completion

## 5.2 Cancellation / Delay of Contract

If the project is halted or delayed by the owner prior to completion, Lenz Hardware reserves the right to invoice the owner for labor, material, and other expenses incurred up to and including the complete project upgrade. Owner delays will compromise the Montgomery Sanitary Sewer District No. 1 System upgrade project schedule and associated Integrator deliverables and will require that project plans and pricing be re-worked to account for those delays. Items provided by Lenz Hardware, Inc. could be subject to delays by its' suppliers and will require a time extension equal the delays incurred.

## 5.3 Order Information

The Montgomery Sanitary Sewer District No. 1 shall provide all order and requested account information to Lenz Hardware, Inc. for the Montgomery Sanitary Sewer District No. 1 System Upgrades. A project purchase order from SI Group will be released provided said Integrator provides and releases any and all requested business data to Montgomery Sanitary Sewer District No. 1. Negotiated project upgrade(s) pricing shall be discussed and agreed upon prior to the release of a purchase order and/or change order(s) to Lenz Hardware.

## 5.4 Proposed Cost:

1. Install new PC Tower and monitor loaded with Windows 10 and Office 365 package.
2. Ethernet Cabling between PLC and new PC.
3. Antenna masts.
4. Install new data radios, antennae, and associated wiring.
5. Input and output wiring between plant instruments and PLC's.
6. Programmable Logic Controller Touch screen with external cards and adapters.
7. Human Machine Interface SCADA graphical program installed on new PC.
8. Alarm Dial-out program installed on new PC.
9. PLC, HMI SCADA and Alarm Dial-out programming for a complete workable system.

**TOTAL COST: \$ 33,975.00**



## 5.4 Attachments

Line No.	Qty	Part No.	Description
1	1	EDGEDR-01-N-20	AVEVA™ Edge 2020 HMI/SCADA software for Windows®: Development + Runtime license – 300 points
2	3	<u>HE-EXL1E5</u>	Horner APG Touchscreen PLC
3	1		TopView Alarm Management and Alarm Notification Software
4	4		AMERICAN TOWER, ROHN TOWER STYLE-AME25 -NEW- 10' TOWER SECTION

Lenz Hardware, Inc. Proposed New Telemetry System Equipment BOM or equal

Line No.	Qty	Part No.	Description
1	4	EL-415U-2-C4	Condor Series I/O Gateway Radios
2	1	ANTBOA4357	Omni-Directional Antenna
3	2	ANTBMYD450G	Yagi Antenna
4	1	ANTBMYD450K	Yagi Antenna
5	1	Assorted	Antenna Cables, Surge Suppressors.
6	1		Computer Monitor
7	1		Computer Tower Loaded with Microsoft Windows 10 Professional and Microsoft Office

Montgomery Sanitary Sewer District No. 1. Proposed New Telemetry System Equipment BOM or equal

