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**WATER POLLUTION CONTROL**

MEMORANDUM

To: Gregg Mandsager, City Administrator

CC: Nancy Lueck, Finance Director  
Fran Donelson, Secretary

From: Jon Koch, WPCP Director

Date: October 12, 2015

Re: Final Eight Lift Station Telemetry and Control Upgrades

**INTRODUCTION:** The WPCP (Water Pollution Control Plant) has received a bid to upgrade the final eight lift stations along with the master control at the WPCP. The upgrades include replacing the discontinued LC3000 PLCs (Programmable Logic Controller) with Allen Bradley Micrologix 1400 PLCs, new Viper ethernet radios, new antennas and updating radio licenses for upcoming FCC narrow band compliance. The bid from Primex Controls (formerly ICS Healy-Ruff) was \$174,680.00. \$180,000.00 was budgeted for this project.

**BACKGROUND:** The WPCP has been in the process of updating all lift station PLC's with Micrologix PLCs since 2012. This equipment is readily available from multiple vendors which allows for more rapid replacement and reduced down time. It is becoming increasingly difficult to find service and parts for the LC3000 which could affect the function of critical infrastructure. Primex Controls was the contractor involved in upgrading the other lift stations and currently has a service contract with the WPCP. In order to maintain continuity in programming and service, Primex was the only vendor submitting a bid.

**RECOMMENDATION/RATIONALE:** Staff recommends accepting the bid from Primex Controls for the Final Eight Lift Station Upgrade Project in the amount of \$174,680.00.

**BACKGROUND:**

1. Specifications and bid

## Standard Terms and Conditions

**Controlling Provisions:** These terms and conditions shall supersede any provisions, terms, and conditions contained on any purchase order or other written form Buyer may use or provide (whether received by Seller prior or subsequent to the date hereof), and the rights of the parties shall be governed exclusively by the provisions, terms, and conditions hereof.

**Quotations and Acceptance:** Acceptance of a quotation, whether by a separate purchase order or by other means, shall constitute an acknowledgement and approval of the quotation as written and an acceptance of the Terms and Conditions hereof. Written quotations shall expire on the date specified in the quotation or, in the absence of such specification, thirty calendar days from the date issued. Seller may, by written notice, terminate a quotation at any time prior to acceptance. Any purchase order received after expiration of a quotation, which Seller honors, shall be subject to all of the Terms and Conditions hereof.

**Submittal Drawings:** Submittal of drawings for approval, if required, will be made after receipt of complete information from Buyer. The quantity of the submittal drawing sets will be specified in the contract documents. Additional sets will be supplied at \$300.00 per set. Return to Seller of two (2) final approved drawing sets constitutes notice to Seller to proceed with manufacturing. If Buyer's order is conditioned upon "engineer approval" Seller requires written notification from Buyer in the form of approved submittal data.

**Intellectual Property:** All software to be developed, devices, designs (including drawings, plans and specifications), estimates, prices, notes, electronic data and other documents or information prepared or disclosed by Seller shall remain the sole intellectual property of Seller. Following acceptance and final payment, Seller shall grant to the Buyer a non-transferable, non-exclusive license to use such material for the Buyer's internal purposes only.

**Force Majeure:** Seller shall not be liable for failure to deliver or perform, for any delay in the performance of orders or contracts, or in the delivery of shipment of goods, or for any damage suffered by the buyer due to such delay or failure, when the delay or failure is, directly or indirectly, caused by or arises from delays of suppliers or carriers or any other cause beyond Seller's control.

**Prices and Taxes:** All project prices are "F.O.B. Shipping Point, Freight Allowed to Jobsite" unless expressly stated otherwise. In other words, Seller shall pay for the freight to Buyer's project site; however Buyer shall bear all risk of loss while items are in transit. Non-project or replacement parts are shipped pre-paid and added to any service related invoices. Prices do not include sales, excise, municipal, state, or any other governmental taxes. Buyer shall be responsible for all taxes.

**Credit Approval:** The credit terms specified on the face hereof are subject to Seller's continuing approval of Buyer's credit. Seller may withdraw the extension of credit and require modified payment terms if, in Seller's sole judgment, Buyer's credit or financial standing is impaired to the point where Seller in good faith deems itself insecure.

**Title, Risk of Loss, Inspection of Equipment:** Title and risk of loss to the equipment shall pass to Buyer upon delivery of the equipment to the carrier. Buyer shall immediately inspect equipment upon receipt and any damage must be noted on the carrier's bill of lading at time of receipt. Seller is not liable for any shortages or nonconformance unless notified by Buyer within three(3) business days of Buyer's receipt of the equipment.

**Changes, Cancellations, Returns:** All changes, cancellations, or returns must have Seller's prior written approval and are conditional on compliance with manufacturer's cancellation/return policies and subject to restocking fees and service charges. Authorized returned equipment must be packaged and shipped prepaid to manufacturer.

**Payment:** Buyer shall pay Seller the full purchase price as set forth in Seller's Documentation. Unless Seller's Documentation provides otherwise, freight, storage, insurance and all taxes, duties or other governmental charges relating to the Equipment shall be paid by Buyer. If Seller is required to pay any such charges, Buyer shall

immediately reimburse Seller. All payments are due within 30 days after receipt of invoice. Buyer shall be charged the lower of 1 ½% interest per month or the maximum legal rate on all amounts not received by the due date and shall pay all of Seller's reasonable costs (including attorney's fees) of collecting amounts due but unpaid.

**Indemnification and Default:** In addition to all other amounts due hereunder, Buyer shall reimburse Seller in full for all collection costs or charges, including reasonable attorney fees, which Seller may incur in the collection of past due amounts from Buyer, including interest on overdue accounts. If Buyer is in default under this or any other agreement with Seller, Seller may defer performance hereunder until such default is cured. Seller shall have no obligation to provide factory startup assistance and or factory training until all invoices (including retentions) for equipment have been paid in full.

**Security Interest:** Seller shall retain a security interest in the equipment until the full purchase price has been paid. Buyer's failure to pay any amounts due shall give Seller the right to possession and removal of the equipment after providing ten (10) days written notice, Seller's taking of such possession shall be without prejudice to any other remedies Seller may have.

**Warranty and Liability:** Buyer shall have such warranty rights, and other such warranty rights, only as may be extended by the original manufacturer of the individual products. The terms and conditions of any such warranty rights are set forth in the Manufacturer's Operations/Maintenance Manual which accompanies each product. These Warranties do not cover anything considered an "Act of God". An "Act of God", is so extraordinary and devoid of human agency that reasonable care would not avoid the consequences. Damages caused by tornadoes, lightning and subsequent utility power supply power surges or variances, perils of the sea, extraordinary floods, fallen trees and severe ice storms are usually considered "Acts of God". Seller does not otherwise offer any guaranty or warranty for the products or assemblies.

Seller disclaims any and all warranties, express or implied, including the warranties of merchantability and fitness, except as may be set forth in the terms and conditions of sale in this Agreement or in any express written warranty which Seller may have otherwise extended to Buyer. To the extent a limited warranty is extended from Seller it shall begin to run from the date of substantial use of the equipment or substantial completion of the project, whichever occurs sooner in time. All warranties shall be immediately voided if anyone other than a Seller's employee or authorized representative makes any changes, additions, deletions, or adjustments to the products, software and computers provided by Seller.

Seller shall not be liable for any damages, charges for labor, or expense in making repairs or adjustment to the product without prior written approval of Seller. Seller shall not be liable for any damages or charges sustained in the adaptation or use of the engineering data or service by Buyer or any third party. Seller shall not be liable for start-up or any other field work performed by personnel other than authorized representatives of Seller unless expressly approved in writing in advance by Seller. Seller shall in no event be liable for any consequential, incidental or liquidated damages or penalties. Seller's liability under this Agreement shall in no event exceed the lesser of (i) the cost of remediating any defect or deficiency in the performance of Seller hereunder, or (ii) the purchase price of the product in respect of which the claim is made.

**Operations/Maintenance Manuals:** Buyer's installation, maintenance and operation manuals will be furnished in the number of copies specified at the time of quotation in contract documents. If none specified, one will be provided at no added cost, with additional copies at \$300.00 each.

**Applicable Law and Forum:** All disputes between Buyer and Seller shall be venued in Hennepin County District Court in the State of Minnesota. Buyer agrees to submit to such jurisdiction and agrees that the dispute shall be governed by Minnesota Law.

To: Muscatine WPCF – Mike Beckman  
Re: Muscatine, IA - System Upgrade

7/9/2015

Attached is our proposal for equipment and services for PLC and Telemetry Controls upgrades at Papoose, Mad Creek, Isset, Progress Park, Cannon, Houser, Tangle Foot, and Tipton. The Master Telemetry Panel will be replaced with a wall mount enclosure and components relocated to the new enclosure.

Radio hardware will be updated with Ethernet based telemetry radios operating on your existing telemetry license of 153.92 MHz. Radio License will be reviewed and updated as needed for the upcoming FCC narrow banding compliance.

Existing controllers will be updated with Allen Bradley MicroLogix 1400 PLC's. RTU polling will be accomplished direct from SCADA over the Ethernet radios. PLC I/O requirements are based on existing system drawings provided by owner.

Stations that have on site generation will not have DC battery back-up added. Existing UPS's will remain in place.

Documentation for existing control panels being updated will use ICS Healy-Ruff standard drawing format. MCC's and remote panels will not be redrawn.

The city and Dan Origer are to coordinate and develop the sequence of operation for each station. The intent is to use sequences from specifications when stations were built. Detailed sequence for pump and valve control for the Papoose and Mad Creek Stations is stated below.

**Mad Creek** – The Mad Creek Pump Station consists of three VFD controlled pumps (Pumps 1-3) for stages 1-3 and a fixed speed high flow pump for stage 4 (Pump 4). The control at Mad Creek is coordinated with valves located at the Papoose station. Mad Creek's flow can be selected to be pumped into the 16" or 24" force mains controlled via selector switches at Papoose or SCADA. Stages 1-3 will be controlled using proportional control governed by 6 set points per stage. Multiple VFD's will operate at the same speed in stages 2 and 3. Automatic Alternation of Pumps 1-3 will occur with a time of day set point.

Set points – Stage # Pump Stop Elevation, Stage # Pump Start Elevation, Stage # Minimum Speed Elevation, Stage # Maximum Speed Elevation, Stage # Minimum VFD Speed, and Stage # Maximum VFD Speed.

Stage 4 will be controlled by a Stage 4 Pump Start Set Point and a Stage 4 Pump Stop Set Point. Once the Stage 4 start time delay is met, the Mad Creek to Papoose Wet Well Valve located at Papoose will be called to open via telemetry. The Stage 4 pump will be prohibited from PLC operation until it receives valve open confirmation. While Pump 4 is operating via PLC control, pumps in stages 1-3 will be inhibited from operation. Valve closure will be based on flow at Papoose being below an adjustable flow set point for a "duration of time" set point. Once these conditions are met, the Mad Creek to Papoose Wet Well valve will be operated close.

This description is only to address a very critical portion of the pump operation. Additional Sequence of Operation for Mad Creek will be derived from the specifications when station was last retrofitted.

**Papoose** – The Papoose Pump Station consists of three VFD controlled pumps. Pump 1 (175 HP) for stage 1 and Pump 2 or 3 for stage 2 (2-250 HP, Lead-Standby Configuration). Stages 1 and 2 will be controlled using

proportional control governed by 6 set points per stage. VFD speeds for each stage are independent from one another since Stage 1 (Pump 1) typically pumps to the 16" force main and stage 2 pumps to the 24" force main. Automatic Alternation of Pumps 2-3 will occur with both pumps stopped.

Set points – Stage # Pump Stop Elevation, Stage # Pump Start Elevation, Stage # Minimum Speed Elevation, Stage # Maximum Speed Elevation, Stage # Minimum VFD Speed, and Stage # Maximum VFD Speed. Set points will have a fixed and differential mode of operation. In fixed mode, the set points will be static where set by the operator. In differential mode, the set points will rise and fall with the river level based on a differential set point. Example: the station is typically operated keeping the wet well level 2' (differential set point) below the river level during high river conditions. If the river level drops and the wet well level remains high, sewage will flow out the spill gates. If the river rises and the wet well remains low, there is increased I & I to pump and risk of damage/collapse from increased hydraulic pressure from the outside of the station into the wet well.

The high flow valve that ties the 16" and 24" force mains together will be called open when the stage 2 pump reaches a high flow speed set point (typically set a 90%). High flow valve will remain open until the pump in stage 2 is called to stop. At this time the high flow valve will close.

This description is only to address a very critical portion of the pump operation. Additional Sequence of Operation for Papoose will be derived from the specifications when station was last retrofitted.

City to operate stations manually during controls cut over.

Should you have any questions or require additional information concerning this quotation please contact me at (515) 450-7652.

Sincerely,

Dan Origer

# BILL OF MATERIALS

## 1. Control Panels Modifications

### A. WPCP Telemetry Master (Demolition of Existing Enclosure and Mounting of New Enclosure by Owner)

1. NEMA 4X Fiber Glass Enclosure (36"x30"x12")
2. 120 VAC Surge Arrestor
3. DC Power Supply
4. Ethernet Switch
5. Allen-Bradley MicroLogix 1400 PLC with I/O and Memory Module – Telemetry Master
6. Relays, Misc.
7. Antenna Surge Arrestor – Existing Relocated
8. Data Radio Viper Ethernet Radio – Existing Relocated
9. Powered from Existing External UPS

### B. Isset

1. Removal LC3000, Radio, Misc. Components (turned over to owner for disposal)
2. Allen-Bradley MicroLogix 1400 PLC with I/O and Memory Module
3. Data Radio Viper Ethernet Radio
4. Ethernet Switch
5. 24 VDC Power Supply
6. Relays, Misc.
7. Telemetry Antenna – Installation by Owner

### C. Mad Creek

1. Removal of LC3000, Radio, Misc. Components (turned over to owner for disposal)
2. Allen-Bradley MicroLogix 1400 PLC with I/O and Memory Module
3. Allen-Bradley PanelView Plus 6 400, 4" Operator Interface
4. Data Radio Viper Ethernet Radio
5. Ethernet Switch
6. 24 VDC Power Supply
7. Relays, Misc.
8. Telemetry Antenna – Installation by Owner

### D. Progress Park

1. Removal LC3000, Radio, Misc. Components (turned over to owner for disposal)
2. Allen-Bradley MicroLogix 1400 PLC with I/O and Memory Module
3. Data Radio Viper Ethernet Radio
4. Ethernet Switch
5. 24 VDC Power Supply
6. Relays, Misc.
7. Telemetry Antenna – Installation by Owner

### E. Cannon

1. Removal LC3000, Radio, Misc. Components (turned over to owner for disposal)
2. Allen-Bradley MicroLogix 1400 PLC with I/O and Memory Module
3. Data Radio Viper Ethernet Radio
4. Ethernet Switch
5. 24 VDC Power Supply
6. Relays, Misc.
7. Telemetry Antenna – Installation by Owner

### F. Houser

1. Removal LC3000, Radio, Misc. Components (turned over to owner for disposal)
2. Allen-Bradley MicroLogix 1400 PLC with I/O and Memory Module
3. Data Radio Viper Ethernet Radio
4. Ethernet Switch
5. 24 VDC Power Supply
6. Relays, Misc.
7. Telemetry Antenna – Installation by Owner

### G. Tanglefoot

1. Removal LC3000, Radio, Misc. Components (turned over to owner for disposal)
2. Allen-Bradley MicroLogix 1400 PLC with I/O and Memory Module
3. Data Radio Viper Ethernet Radio

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4. Ethernet Switch
  5. 24 VDC Power Supply
  6. Relays, Misc.
  7. Telemetry Antenna – Installation by Owner
  - H. Tipton Road
    1. Removal LC3000, Radio, Misc. Components (turned over to owner for disposal)
    2. Allen-Bradley MicroLogix 1400 PLC with I/O and Memory Module
    3. Data Radio Viper Ethernet Radio
    4. Ethernet Switch
    5. 24 VDC Power Supply
    6. Relays, Misc.
    7. Telemetry Antenna – Installation by Owner
  - I. Papoose
    1. Removal LC3000, Radio, Misc. Components (turned over to owner for disposal)
    2. Allen-Bradley MicroLogix 1400 PLC with I/O and Memory Module
    3. Allen-Bradley PanelView Plus 6 400, 4" Operator Interface
    4. Data Radio Viper Ethernet Radio
    5. Ethernet Switch
    6. 24 VDC Power Supply
    7. Relays, Misc.
    8. Telemetry Antenna – Installation by Owner
2. SCADA
- A. Programming to Tie Existing Control Screens/Alarms to New Station Controllers listed above
3. Services
- A. FCC Coordination
  - B. Engineering
  - C. Drafting
  - D. Documentation
  - E. PLC Programming
  - F. Installation
  - G. Testing
  - H. Startup
  - I. Warranty 1 Year
  - J. Freight, FOB Shipping Point

Total Price for the above materials, excluding sales tax is \$174,680.00 USD

Items specifically not included in this proposal

1. Sales or use tax
2. Installation of equipment and job site labor other than as specified
3. Receiving and storage of equipment on the job site
4. Installation materials, brackets, wire, clamps, piping, junction boxes, etc., not specifically described in our material list.
5. Performance, payment or equipment bond of any kind
6. Installation of any instruments
7. Field Terminations
8. Mounting of any control panels or hardware
9. Mounting stands, brackets, channel strut or field assemblies of any kind.
10. Permits or Bonding
11. Fiber optic cable, connectors, patch panels, termination and/or testing

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12. Electrical testing services