

TECHNICAL SPECIFICATIONS

Project Data Requirements.

- Pump station discharge flow shall be reported every five (5) minutes.
- Pump station discharge pressure shall be reported every five (5) minutes.
- Pump-on and pump-off times shall be reported along with the duration of each pump cycle.
- Wet well level shall be reported every minute (recorded instantaneously with no minimum, average, and maximum).
- Pump speed to be recorded whenever flow is recorded on VFD equipped stations.
- Rain gauge data shall be monitored continuously and recorded in 5 minute increments at an interval of .1 inch or less.

Each station has been individually evaluated to determine exact equipment and installation requirements.

Remote Pump Station Sites:

1. Installation of a single electronic data logger device with cellular dial up modem connection for connection to various new or existing equipment, i.e. flow meters, pressure sensors, level transducers, pump controls, etc. A signal interface cabinet including circuit breakers for new equipment, power supplies for data logger and level transducer, signal isolators and terminal strips for connection to field devices will be installed in each station.

2. Installation of process instrumentation equipment including:

Pump Run: Install/Connect interposing relay in existing pump controls or RTU to provide a dry contact input to the data logger for each pump run condition.

Pump Speed: Connect analog signal output (speed) from each pump VFD, if available to data logger. If no analog output is available investigate and propose suitable options.

Disch. Pressure: Provide/install pressure transmitter on station discharge piping to provide analog signal to data logger.

Station Flow: Provide/install In-line KHRONE Magnetic Flow meters. Connect analog signal from flow meter to data logger.

Wet well Level: Provide/install submersible pressure (level) transducer in wet well to provide analog signal to data logger.

Rain Gauge: Install City provided rain gauges.

3. Mechanical installation of equipment to include the following:

- A. An isolation valve or means of isolation of the force main is required at each pump station.
- B. If draining the force main is not feasible, a pump truck or vactor will be required..
- C. One existing flange face to be utilized for mounting of the flow meter. A flange-by flange spool piece will be utilized where feasible; otherwise, mega flanges will be utilized to expedite the project.
- D. Spool pieces to be provided with Protecto 401 lining.
- E. Provide either double strap service saddles or tap the existing pipe for installation of the discharge pressure transducers.
- F. A PVC stilling well with stainless steel mounting hardware will be installed in the wet well for installation of the submersible level transmitter.

4. Electrical installation of equipment to include the following:

- A. Install data logger, signal interface cabinet, connect to existing 120V lighting panel, and add new circuit breaker.
- B. Install cellular antenna, cable, mast, mounting hardware, etc., run conduit and antenna cable to data logger.
- C. Install electronic flow transmitter, run conduits and cable to flow tube and signal interface cabinet.
- D. Install wet well level transducer in stilling well, run conduit and cable to signal interface cabinet.
- E. Install conduits and 120 VAC power wiring from signal interface cabinet to data logger and flow meter.
- F. Install signal wiring and conduit from signal interface cabinet to data logger.
- G. Test & demonstrate all signal connections to data logger.

In stations which have existing flow meters, level transducers or pressure transducers, Contractor will install necessary electronic signal splitters in the signal interface cabinet necessary to isolate and retransmit existing analog signals to the data logger, while maintaining existing equipment operation.

All conduits installed in wet well to be PVC coated rigid. All conduits interior, exterior and underground to be to be Schedule 80 PVC. Painting of electrical equipment, conduits, instruments, piping etc. NOT required.

Monitoring System Installation Design & Documentation:

Complete monitoring system design, equipment data submittals, layout drawings, connection diagrams, operational instructions, documentation and six (6) copies of operation & maintenance manuals are included.

Typical Monitoring Equipment Provided for each pump station:

Section	Para.	Item #	Qty.	DESCRIPTION
		1	1	Krohne Enviromag ANSI Class 1501b, flanged magnetic flow meter w/transmitter, hard rubber lined, Hastelloy C electrodes, 316SS grounding rings, IP-67 Nema 6 Environmental class.
		2	1	Siemens or Rosemount pressure transmitter w/diaphragm seal, 1/2" NPT process conn. Stainless Steel wetted parts.
		3	1	KPSI 705 series submersible pressure (level) transducer w/surge protection, aneroid bellows, and 2 inch PVC stilling well
		4	1	SEI Signal interface cabinet, Nema 4 for indoor/outdoor installation to include power distribution circuit breakers for equipment, 120VAC surge protector, 24VDC power supplies, interface relays, and signal conditioners (if required)
		5	1	Telog RS-3314 14 Channel data logger w/cellular modem, 120VAC powered, 12VDC battery backed power supply, Nema 4X enclosure.
		6	1	Omni directional 1/4 wavelength dipole antenna, 3db gain w/antenna mast, mounting hardware and 25 ft. cable

Bypass Pump Data Connections

Each station to receive 1 model 93F1222 amphenol receptacle, 1 model 33K9542 Glenair receptacle cap 18 guage/8 conductor wire PN COMTRAN 2800, conduit, hangers, receptacle boxes, and accessories and labor.