

**Project: Monitoring flow in small streams**  
**Client: Brigham City**  
**Location: Brigham City/Mantua, Utah**  
**Year: 1994**

### Application Notes:

Brigham City, Utah is located in the northern part of the state approximately 40 miles south of the Utah, Idaho border and 60 miles north of Salt Lake City. Water for irrigation uses comes from a watershed to the east of the city. The watershed includes several small streams and a small reservoir. (Mantua Reservoir) In order to monitor and maintain its water rights, Brigham City found it needed some way to track the amount of water that was flowing from these tributaries into and out of its canal systems.



*Mantua Wetlands, 2 ft. rectangular weir, custom stilling well, instrumented with a FP10C Float and Pulley attached to a CR10X Data logger.*

### Installation and System Design:



*Box Elder Creek, 9" FRP Parshall Flume with attached 12" stilling well, instrumented with PT1830 DRUCK pressure transducer attached to a CR510 Data logger.*

Six monitoring sites were selected and instrumented with data loggers and water level measurement sensors. Each site had specific requirements; three of the sites had existing stilling wells, and a flume or weir. These sites had been abandoned for several years. Another site required a new weir and stilling well to be built at the entry to a newly constructed wetlands area. The last two sites required the installation of FRP Parshall flumes with attached stilling wells.

At four of the sites that had stilling wells, IEI personnel installed CR10 data loggers and FP10C Potentiometer Float and Pulleys. The Box Elder Creek site (pictured at left) has very high flows in the springtime. The water actually tops over the flume for a couple of weeks during this period. For this site a pressure transducer was installed in the flumes attached stilling well and the cable was run through protective conduit up to the bank where it connected into the data logger enclosure. The conduit was then covered with rocks to secure it. The final site is located in a populated area of the city and required a low profile installation that would not attract much attention. IEI designed a special enclosure to mount directly on top of the attached stilling well. The enclosure housed the data logger, power supply and an ultrasonic distance sensor. It is a compact package that met the requirements of the installation site. Each site is powered by a 12-volt, 7amp hour rechargeable battery and a 10-watt solar panel with a specially designed protection shield to prevent damage from kids throwing rocks at the panels.

At the first of each month personnel from Brigham City visit each site with an SM192 Removable Storage Module and download data from each logger. The Storage module is then brought to the city office where the data is downloaded to a PC. A custom program, that IEI developed, is used to create monthly flow reports and the data is archived.

Intermountain Environmental was contracted to maintain the sites annually. Each spring before the irrigation season begins, IEI personal visit each site, clean and calibrate the sensors, check the power supplies and change out the desiccant in the enclosures.

In 2000 the City of Mantua installed a small SCADA system using the CR10X data logger to monitor their water system, and in 2001 Brigham City added a site to monitor the pumps and water levels in their drinking water tanks. This site is going to be monitored via RF Telemetry

For Information on this project or these products please contact:

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