



## COLORADO

Colorado Water  
Conservation Board

Department of Natural Resources

1313 Sherman Street, Room 718  
Denver, CO 80203

### Description of proposed Abrams Creek stream gage

July 16<sup>th</sup>, 2019

#### Overview:

The proposed Abrams Creek stream gage will consist of a pressure transducer and integrated data logger, located upstream of the JPO Ditch point of diversion. This stream gage will replace an existing Parshall flume that is inaccurate due to the steep channel and turbulent water conditions. In addition, the existing flume poses a physical migration barrier for fish. The proposed stream gage will use natural channel features to establish a stage-discharge relationship for monitoring Abrams Creek streamflow.

#### Equipment:

- Vented pressure-transducer and integrated data logger
- Staff gage
- Metal fence posts, 2-inch PVC or steel pipe

#### Equipment installation:

The pressure transducer will be protected in a 2-inch PVC pipe housing, buried in the stream bank. The PVC housing will be buried in a shallow trench (4-6 inches deep) extending from the stream bank to the telemetry equipment shelter.

A staff gage will be used as a secondary verification of stream stage and will be located adjacent to the pressure transducer, secured to the streambed with a single four-foot long metal post.

The telemetry equipment shelter will consist of a 24 inch x 20 inch x 10 inch electrical box, mounted to two 4 inch x 4 inch treated wood posts. The wood posts will be set in two holes, two feet deep and anchored with compacted crushed gravel. The overall height of the telemetry equipment structure will be approximately ten feet, including the posts, electrical box, and satellite communication antenna. The telemetry equipment will be located outside of the active stream channel and preferably outside of the flood plain.

#### Channel modifications:

A stable channel feature that controls the water level of the gage pool (hydraulic control) is a necessary component to establish reliable stage-discharge relationships. The Abrams Creek stream gage will use natural channel features, ideally stable boulders at the tail of the gage pool, as a hydraulic control. It may be necessary to place boulders and/or modify the channel substrate slightly to establish



a stable hydraulic control and confine streamflow to a single channel. The scope of this channel modification will be limited to placing native material collected at the site in the channel and will ideally only involve rearranging existing material within the channel.

Wading measurements of stream discharge will be performed at all stages of the hydrograph using a flow meter at a suitable stream cross-section in the vicinity of the stream gage. Minimal rearranging of stream substrate may be required to define a uniform cross-section for accurate discharge measurements.

**Timeline:**

Site selection and installation will occur prior to runoff and as early as access to the site is feasible. Approximately May 1 - May 14, 2018 depending on local snow cover. Installation is expected to be completed over a period of one or two days.

Stream discharge measurements will occur periodically on a schedule that corresponds to hydrologic events. Typically weekly observations during spring runoff, bi-weekly observations on the receding limb of the hydrograph, and monthly observations during base-flow conditions.

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