Joe H. Carroll

1125 State Road
Mosier, Oregon 97040
Phone: 541-980-5584
E-Mail: jcarroll@gorge.net

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Jim Britton
Department of the Army
Corps of Engineers, Portland District
PO Box 2946
Portland, OR 97208-2946

Dear Jim,

This letter provides a review of services performed during 2011 under Task Order 25.

Task 1: Reinstallation for the John Day tailwater TDG Monitoring Station downstream of John Day Dam in the Columbia River. The task requirements as specified in the SOW were completed during July, August, and September 2011 at the JHAW TDG fixed monitor system (TDG FMS) location. A new concrete base, equipment post and electronics box were installed at approximately 12 ft higher elevation further up the shore than the existing station equipment (Figure 1). This was to raise all sensitive monitor electronics to a safe elevation well above any historical river elevations to prevent water damage.

The existing 4" pvc instrument pipe was replaced with 6" high-density polyethylene pipe (HDPE). The HDPE has proven extremely resistant to damage, by river flows at several TDG FMS locations operated by the COE Walla Walla District. The 6" pipe has added space for ease of instrument deployment versus the 4" pipe. Two instrument pipes were installed together a distance of 60 ft into the river at normal tailwater elevations of 160 ft ngvd (Figure 2). A 22 ft workboat was used for the final placement in the river. The pipes lie on the bottom of the river and are anchored at three locations in the water. The anchors weigh approximately 200 lbs each and are attached to the pipe using stainless steel clamps, chain, and cabling. There are three additional anchor points above the waterline. The total pipe length was 100 ft, so approximately 30 to 40 ft of pipe will extend up the riverbank depending on tailwater elevations.

The pair of instrument pipes includes a main pipe and an alternate. The main pipe terminates in a 2 ft long junction box that will allow deployment and retrieval from inside the box and hopefully minimize vandalism (Figure 3 & 4). Deployment will be assisted using a ¼" floating poly rope which is in a continuous loop to within 3 ft of the end of the instrument pipe. A TDG instrument can be attached to the rope and then pulled to the desired point of deployment for collecting TDG, temperature, and depth measurements. The last 12 ft of each pipe is perforated with 1" holes bored on 6" centers at 4 different points around the circumference of each (Figure 5).

The electronic box is attached to a 4" X 6" X 8' post 5 foot up from the ground. The post is mounted in a 2' diameter concrete base (approximately 24" X 24"). There is a 6' pole mounted to the top of the post allowing for the installation of the GOES antennae and solar panel at a height of 10-14' from the ground.

A 1.5" PVC conduit pipe is run from the instrument junction box for about 35' to the electronics box. This should protect the instrument communications cable from most interference.

The total length of communications cable required for the TDG instrument in the main deployment pipe should be less than 150'. The alternate pipe will require a 100' communication cable.

Task 2: Reinstallation of the Cascade Island tailwater TDG Monitoring Station downstream of Bonneville Dam in the Columbia River. The task was completed during July, August, and September 2011 at the CCIW TDG fixed monitor system (TDG FMS) location. A new concrete base, equipment post and electronics box were installed at approximately 20 ft higher elevation about 50' further up the shore than the existing station equipment. This was to raise all sensitive monitor electronics to a safe elevation well above any historical river elevations to prevent water damage.

The existing 4" steel instrument pipe was replaced with 6" high-density polyethylene pipe (HDPE). The 6" pipe has added space for ease of instrument deployment versus the 4" pipe. Two 140' instrument pipes were installed together a distance of 80 ft into the river at normal tailwater elevations of 160 ft ngvd (Figure 6). A 22 ft workboat was used for the final placement in the river. The paired pipes lie on the bottom of the river and are anchored at three locations in the water (Figure 7). The anchors weigh approximately 200 lbs each and are attached to the pipe using stainless steel clamps, chain, and cabling. There are three additional anchor points above the waterline.

The pair of instrument pipes includes a main pipe and an alternate. Both pipes terminate on shore and are easily accessible for instrument deployment and retrieval. Deployment will be assisted using a ¼" floating poly rope which is in a continuous loop to within 3 ft of the end of the instrument pipe. A TDG instrument can be attached to the rope and then pulled to the desired point of deployment for collecting TDG, temperature, and depth measurements. The last 12 ft of each pipe is perforated with 1" holes bored on 6" centers at 4 different points around the circumference of each.

Similar to that installed at JHAW the electronics box is attached to a 4" X 6" X 8' post 5 foot up from the ground. The post is mounted in a 2' diameter concrete base (approximately 24" X 24"). There is a 6' pole mounted to the top of the post allowing for the installation of the GOES antennae and solar panel at a height of 10-14' from the ground.

The total length of communications cable required for the TDG instrument in the each pipe should be approximately 200'.

Task 3: Installation of the Willow Creek Forebay Floating Water Quality Monitoring Station Platform in the Willow Creek Reservoir. An 8ft by 8ft water quality buoy was fabricated using marine grade plywood, galvanized hardware, and commercially available foam filled floats during August-September 2011. The buoy was deployed on September 13, 2011 in approximately 55' of water in as area directly north of the boat launch and in the old thalweg (Figures 8 - 12). 350 lbs anchors were used with retractable cable/line combos to hold the float in place. The cables should retract in and out in order to maintain the float in a north/south orientation to maintain good communications as well as a constant compass direction for the wind gage. NWP personnel installed an automated remote weather station at this time.

Respectfully,

Joe H. Carroll

Figure 1. Concrete base and equipment post installed at JHAW for instrument electronics and equipment box installation

Figure 2. JHAW instrument pipe pair extending into the John Day tailrace

Figure 3. Junction box and alternate pipe end at JHAW

Figure 4. Junction box for instrument pipe at JHAW

Figure 5. Instrument Pipe ends showing 1“ holes in the bottom 10 ft

Figure 6. Instrument pipe pair extending into tailrace at CCIW

Figure 7. Anchors attached to instrument pipes at CCIW

Figure 8. Water Quality Float initial launch

Figure 9. Equipment installation on WQ Float

Figure 10. WQ Float with anchor cables

Figure 11. WQ Float Deployment

Figure 12. WQ Float alignment north and south