M E M O R A N D U M

Date: November 6, 2014

To: BCWA

From: **Russell N. Clayshulte, Manager**

Re: **Field-Based Rapid Periphyton Field Estimation Method**

Periphyton (benthic algae) is an important primary producer in the stream system within Bear Creek Watershed. Excessive periphyton growth can be an indicator of impaired water quality. Benthic algal assemblages are attached to substrate in the stream bottom, these assemblages are affected by physical, chemical, and biological disturbances that occur in the stream reach. The more the gravel to cobble to boulder material is covered by periphyton growth, the greater potential for nutrient enrichment. This technique requires the observer to visually estimate 4 spots across transect within a stream reach used in the Physical Stream Indices Survey. Using *BCWA Fact Sheet 46 Rapid Periphyton Estimator*, estimate percent periphyton growth and/or thickness on larger hard substrates, which are gravel, gobble and boulders.

Percent Coverage and Thickness

1. Using the reach established for the BCWA Physical Stream Indices, measure periphyton coverage and/or thickness at 4 areas in selected riffle. For stream characterization, generally sample slow riffles.

2. Start transect at a randomly selected point (throw a pebble) along the edge of stream. Step into the water perpendicular to flow and locate area with hard substrate. Using a white 2-gallon bucket with the bottom cut out, and fitted with line grid that divides the viewing area into 25 points (10 lines), count the number of points in viewing area that have periphyton growth. Record Number. If estimating periphyton thickness, then record a code from Table (below) for each point with periphyton growth. Average the data to estimate periphyton growth thickness. Step forward 3-5 paces and repeat estimation procedure on new area of hard substrate. Record number. Move across stream with last estimation done near far stream bank. You will have estimated periphyton growth at 100 points on the hard substrate areas. Convert the estimates from transect into a percentage. Points with periphyton growth/100 = % coverage.

Periphyton Growth Thickness Estimate

0	substrate rough with no visual evidence of microalgae
1	substrate slimy, but no visual accumulation of microalgae is evident
1	thin layer of microalgae is visually evident
2	accumulation of periphyton layer from 0.5-1 mm thick is evident
3	accumulation of periphyton layer from 1 mm to 5 mm thick is evident
4	accumulation of periphyton layer from 5 mm to 2 cm thick is evident
5	accumulation of periphyton layer greater than 2 cm thick is evident