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To: <rfitzgerald@waterboards.ca.gov>, <MStJohn@waterboards.ca.gov>, <armstrn...
Date: 3/8/2009 9:57 PM
Subject: Listing of Impaired streams and TMDL Implementation, Klamath River

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COMMENTS
2008 INTEGRATED REPORT and DEVELOPMENT OF THE WATER QUALITY RESTORATION PLAN
KLAMATH RIVER BASIN, CALIFORNIA

Comments included herein apply to streams tributary to the main stem of the Klamath River from I-5 Highway on the East to Weitchpec on the South and West excepting the Shasta, Scott and Salmon rivers. Recognizing that terrain traversed by these streams occupy a natural environment that can be somewhat variable from one location to another, not all comments will apply 100% to every stream reach.

Comments and conclusions are derived from observations tempered by a Civil Engineering career with the U.S. Bureau of Reclamation in construction management for water control structures. Several of those years were with a classification of Materials Engineer with soil mechanics responsibility. Also, a lifetime of association with the Klamath River spanning over more than 75 years which included many days hiking and fishing some of these same tributary streams.

It is my interpretation of data made available to me from the California Regional Water Quality Control Board, North Coast Region, that these streams are being listed as impaired for sediment. Sediment, when mentioned in relation to a flowing stream is generally interpreted to be particles which are of sand and soil sizes and will be referred to herein in that context. The sediment of concern is supposedly derived and delivered to the stream in question as a result of human initiated activities such as logging, cattle pasturing, construction, and etc. Such sediment is stated to impact water quality by causing a rise in water temperature as a result of stream bed modification thus impacting the stressed Klamath main stem.

My contention, for reasons explained below, is that listing as impaired for sediment is not substantiated for these streams by any factual data based on site specific testing and instead is included as a result of the belief that the above mentioned activities have been and are taking place; therefor, the streams must be impaired.

First, streams exiting the mountains adjacent to the Klamath River do not, for the most part, occupy stream valleys. They occupy steep canyons with what little flood plain that has been developed, if any, existing near the confluence with the river. As a result, even during low flow periods, water velocity is rapid and turbulent with but few reaches where flow is laminar and sands and silts could settle. Ability of a fluid (water in this case) to transport solids is based on several factors including fluid velocity, size and shape of the solid particles, and specific gravity of the solid particles among other factors based on

specific soils or solids. With this in mind along with stream-flow velocities, on-site visual inspection of these streams will show that very little, if any, residual sediment exists within the flow channel and that the only stream bed modification that can possibly take place would occur during severe winter flood flows. During that time most everything in the channel is moving including much of the gravel, cobbles and boulders that make up the stream bed along with trees from adjacent banks and hills.

Soil particles throughout most of the area in question are of silt sizes rather than the finer clay particle sizes found in other areas. Characteristically, the soils exhibit low plasticity, high dry strength, low wet strength and no or very low saturated strength. With the size characteristics, soil particles will not be transported very far by wind or water unless velocity of the transporting medium is up. With it's dry strength characteristics, a cut-bank, regardless of whether it is on a road or on the stream bank, will stand nearly vertical until it becomes saturated, at which time it will collapse as a mud flow. Some minor spalling may take place over long periods of time prior to collapse. Dust picked up by vehicles on forest roads would not be expected to travel very far to create contamination problems for nearby streams. Unstable soil conditions would only be expected during winter months after extended periods of rainfall when any runoff would be carried through the system by high velocity flood waters. Any detrimental effects caused by sediment during these extreme winter flows will not impact water temperature because of existing ambient temperatures and little or no sunshine.

De-commissioning of forest roads as performed in the past would be a short term detriment to nearby streams and provide no long term benefits. De-commissioning of roads that I have observed consisted of pulling culverts at stream crossings, replacing the culverts with riprap of some sort in an effort to stabilize the stream bank and sometimes pulling soil and rock from the upper road cut-bank to fill in the roadway. In some cases, the road had been essentially abandoned years before and had stabilized it's self. Placing of riprap where the culvert pipe had been removed is in some cases a ticket to disaster on the steep streambeds. A major flood event, such as the 1997 event in many of the streams in question, will undermine the riprap on one or both sides of the stream, forcing these large rocks downstream where they will probably plug the channel and force the stream out of it's banks. Tearing up the roadway and/or pulling down loose soil just exposes that much more loose soil to erosion into the stream. In the long term, the ex-roadway will stabilize it's self as it had before with any crossing streams experiencing an occasional bank failure. The idea of de-commissioning a forest roadway for the sole purpose of returning the forest to it's pristine condition has no business in a water quality improvement study.

Concerning cold water refugia at the mouths of tributaries in question, the largest and most consequential detrimental impact is observed to be caused by extreme winter flood flows and not by impacts due to suction dredging. During extreme flood flows as occurred during the winter of 1964/65 and 1997, heavy debris flows emerged from the mouths of tributary streams at the time the river was also in extreme flood stage. Loss of velocity in the tributary stream as it entered river flood waters caused the debris to be dropped. When flood waters receded, the debris was left as a restriction preventing

tributary water from reaching the river in a concentrated flow. Affected creek water soaked into the gravel and boulders or spread out before entering the river and did not form the refugia that existed before. In some cases, low fall flows did not provide enough surface water passing these restrictions to permit fish to enter the stream.

Classifying streams tributary to the Klamath River as impaired will accomplish little toward maintaining clean water in those tributaries that could not otherwise be negotiated with responsible local agencies while opening the door to irresponsible law suits.

Thank you for the opportunity to comment.

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