

AB2013 102a
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VIA E-MAIL TO

Jennifer Paulson

From: bc98229@comcast.net
Sent: Monday, July 22, 2013 5:26 PM
To: Council
Subject: Middle Fork Nooksack Diversion phosphorous loading into Lake Whatcom
Attachments: Crk_temps.pdf

JUL 23 2013

ALL COUNCIL MEMBERS
WHATCOM COUNTY COUNCIL

Dear County Council Members:

Two reasons have been proposed for ignoring the Middle Fork Nooksack (MFN) Diversion phosphorous loading into Lake Whatcom. Both have flaws. However, the proposed reason #1 provides a rational for treating Basin 3 phosphorus loading differently than Basin 1 and 2.

Proposed Reason 1: "On the warm summer days when the phosphorous comes in from the diversion, the water is really cold. It's glacier water. As it flows into the lake, it sinks down and goes to the bottom. It's not in the photic zone, and it's probably not as active."(Hood, June 18, 2013 Council Minuets)

By the time the diversion water reaches the mouth of Anderson creek and enters the Lake, it has warmed up to about the same temperature as two other Basin 3 tributaries - Austin Creek and Smith Creek. If Anderson Creek phosphorous load is not a problem due to temperature, neither are the Austin Creek or Smith creek phosphorous loads. Temperature data for the three creeks plus Whatcom Creek for comparison are on the attached document (Crk_temps.pdf) extracted from the 2011/2012 Lake Whatcom Report.

Anderson Creek water spends more time in the photic zone than water from the other two creeks because Anderson water has to travel farther to exit the photic zone (photic zone travel distances: Anderson Creek 136', Austin Creek 121', Smith Creek 86'). If Anderson Creek phosphorous load is not a problem due to it's brief photic zone residence time, neither are Austin Creek or Smith Creek phosphorous loads. Distance to base photic zone (-10 meters) is measured on the Lake Whatcom Bathymetric Map & Profile, City of Bellingham 2002.

Proposed Reason 2: "The phosphorous from the middle fork is different. It's mostly inorganic phosphorous attached to minerals. It's not taken up as easily. It takes longer and more energy than the organic phosphorous."(Hood, June 18, 2013 Council Minutes)

Claiming the MFN Diversion phosphorus is not harmful because it is inorganic is not a realistic statement. "Inorganic phosphorus is the form required by plants." (Water: Monitoring & Assessment 5.6 Phosphorus, USEPA). Inorganic orthophosphate is the phosphorus form that is directly taken up by algae. Inorganic phosphorous can attach to particles in the water and be carried along, but that doesn't mean the phosphorous is permanently attached.

Algae grows in the photic zone where there is enough light to support algal photosynthesis. In Basins 1 and 2 this algae growth zone is 75% to 70% of the water volume. However, in Basin 3 the algae growth zone is only 17% of water volume (2011/2012 Lake Whatcom Report). A higher phosphorous TMDL limit for Basin 3 tributaries may be reasonable. It is worth looking at.

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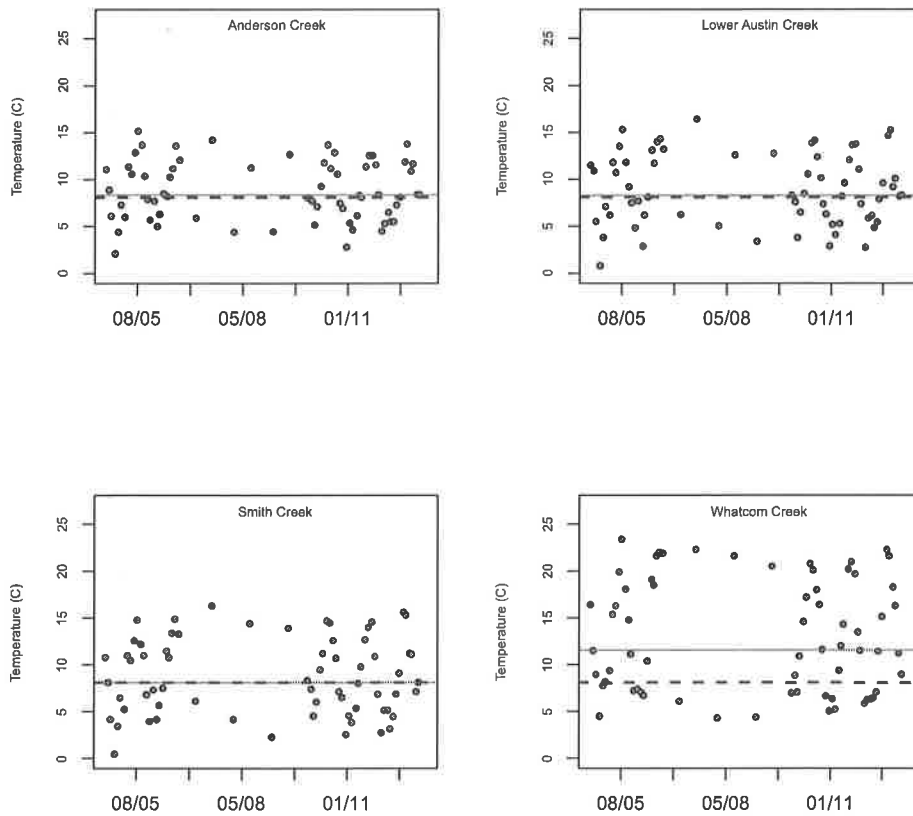


Figure B131: Temperature data for Anderson, Austin, Smith, and Whatcom Creeks. Dashed (blue) horizontal reference line shows the median value for Smith Creek; solid (red) horizontal reference line shows the median value for each creek.

