

## ***Interactive comment on “Long-term changes in sediment phosphorus below a rural effluent discharge” by B. E. Haggard and R. J. Stoner***

**Anonymous Referee #1**

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In general, the manuscript is well written and presents clear and concise hypotheses and objectives. However, before the manuscript should be looked at further there are a few methodological issues that should be clarified.

1) Central to the thesis that sediments control SRP in streamflow is the premise that hydraulics during the study did not change. From the look of Figure 1, it would appear that this was not the case. However, in order to account for variation due to climate, concentration data should be plotted against flow for datasets before and after the treatment was imposed. Hopefully a significant relationship occurs for both datasets between concentration and flow ( $P < 0.05$ ) and an F-test can then be used to determine if the slope of the two regression equations were significantly different from one another and hence not comparable (see Striffler 1965).

Striffler WD 1965. The selection of experimental watersheds and methods in disturbed forest areas. Publication No. 66. IASH Symposium of Budapest. Pp. 464&#8211;473.

2) Determination of EPCo. Normally, this is done with an equilibration time of 24 hrs. However, I have no issue with this as long as all samples were done with the same method. I am of the opinion that most times  $> 1$  min are probably irrelevant considering the time that the water column has to interact with sediments during streamflow. However, what did puzzle me was the acidification to pH 2 of the filtered solutions for SRP determination. There is quite a lot of evidence to suggest that organic P is hydrolyzed by acidic conditions. However, the question is would this have occurred during determination of SRP via the acidic-Mo solution anyway. The authors need to explain why acidification was done (presumably to remove potential interference by organic matter) and if this caused SRP to be artificially increased as a result.

Once these two issues are cleared up, I see this manuscript as making a valuable contribution to the literature.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 767, 2009.

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