Progress Report (July 1, 2014 – November 9, 2015)

Title: Natural Variability in Water Quality and Changes after Forest Harvest in the Trask Watershed

Investigators: PI: Jeff Hatten, OSU FERM; Co-PIs: Alba Argerich, OSU FERM, Sherri Johnson, PNW.

Project duration: July 1, 2014 – June 30, 2016

Objectives:
To improve the current understanding of patterns and causes of variability in water quality across forest watershed landscapes we will characterize natural and post-disturbance variability in stream nutrients at the Trask River watershed. Specifically we will:

- Characterize variability in background nutrient concentrations across time, by analyzing water chemistry samples collected over the pre-harvest period, and across space, by comparing water chemistry data across sub-catchments.
- Analyze responses in nutrient concentrations to forest harvest by comparing pre- and post-harvest nutrient concentrations.
- Compare pre- and post-harvest data to nutrient criteria under consideration for this ecoregion.

Summary of accomplishments toward objectives over past year:

- The database structure of water quality data from the Trask watershed has been completed and data analysis has started (Figure 1). Currently, the dataset contains a total of 1,219 entries including information of stream nitrogen, phosphorus, and carbon concentration collected on 194 dates between 2009 and 2013.
- In fall 2014 we started the collection of storm water samples to capture natural variability in nutrient concentrations during storm events. Until the date, we have collected 160 water chemistry samples and we expect the sampling to continue until the end of the water year.
- In summer 2015 we have analyzed storm water samples from water year 2015.

Problems, barriers, proposed changes to objectives:
For now we have not encountered any difficulties. However, we anticipate possible difficulties related to the uncertain future of the laboratory where we are analyzing all of our samples (the COLLAB) during Peavy remodel.

Planned work:

- **Winter 2015 and spring 2016:** We plan to keep sampling water chemistry to capture natural variability in nutrient concentrations and possible effects to management practices.

- **Winter 2015, spring, and summer of 2016:** Laboratory analysis of storm water samples collected during water year 2016.
- **Summer 2016**: Have the complete dataset of water chemistry data including storm sampling ready to share with the WRC.
- **Fall 2016:** Data analysis and report complete. Presentation of the results to a conference.

List of names and brief overview of graduate and/or undergraduate engagement in project:
Casey Steadman, a PhD candidate, has joined the team on summer 2015. She has been processing and analyzing samples collected during water year 2015 and will continue analyzing the samples collected for water year 2016. During her PhD she will study the fundamental processes and principles of water and nutrient movement through forested watersheds and how these may be impacted by land management activities using data from the Trask Watershed.

List of presentations, posters, etc.:
None to report

List of publications, thesis citations:
None to report

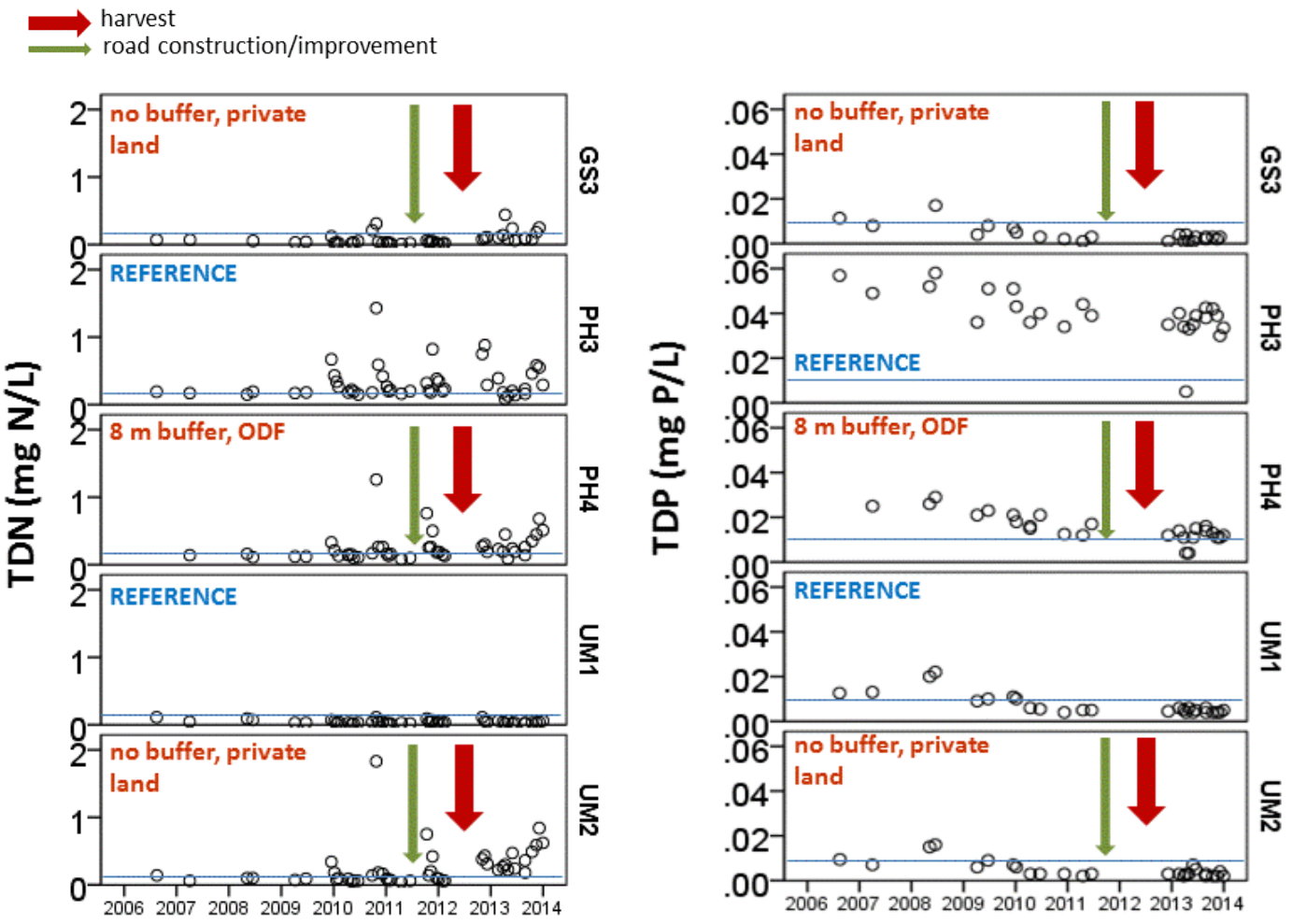

Figure 1. Variability in total dissolved nitrogen (TDN) and total dissolved phosphorus (TDP) in five Trask watersheds. Green arrows indicate road construction/improvement, red arrows indicate forest harvest period, and blue horizontal lines indicate proposed nutrient reference criteria for the ecoregion.