Volunteer Water Quality Monitoring Update

In 2016, there were 12 grab sites sampled monthly by volunteers for water temperature, clarity, turbidity, dissolved oxygen and bacterial content. 6 temperature loggers and 6 U26 dissolved oxygen loggers were deployed by SWC staff in the early summer and retrieved in fall to continuously record temperature (30-minute intervals) and dissolved oxygen (15-minute intervals). We are now summarizing data from our 2016 Volunteer Water Quality Monitoring program to share with partners at the Oregon Department of Environmental Quality (DEQ), Oregon Watershed Enhancement Board (OWEB) and SWC Tech Team.

Our community is closely tied to the streams and lakes in the Siuslaw Watershed because of the many ecosystem services they offer; therefore, most of us are interested in the state of water quality in the Siuslaw. Below is an abbreviated version of our 2016 continuous water quality monitoring summary.

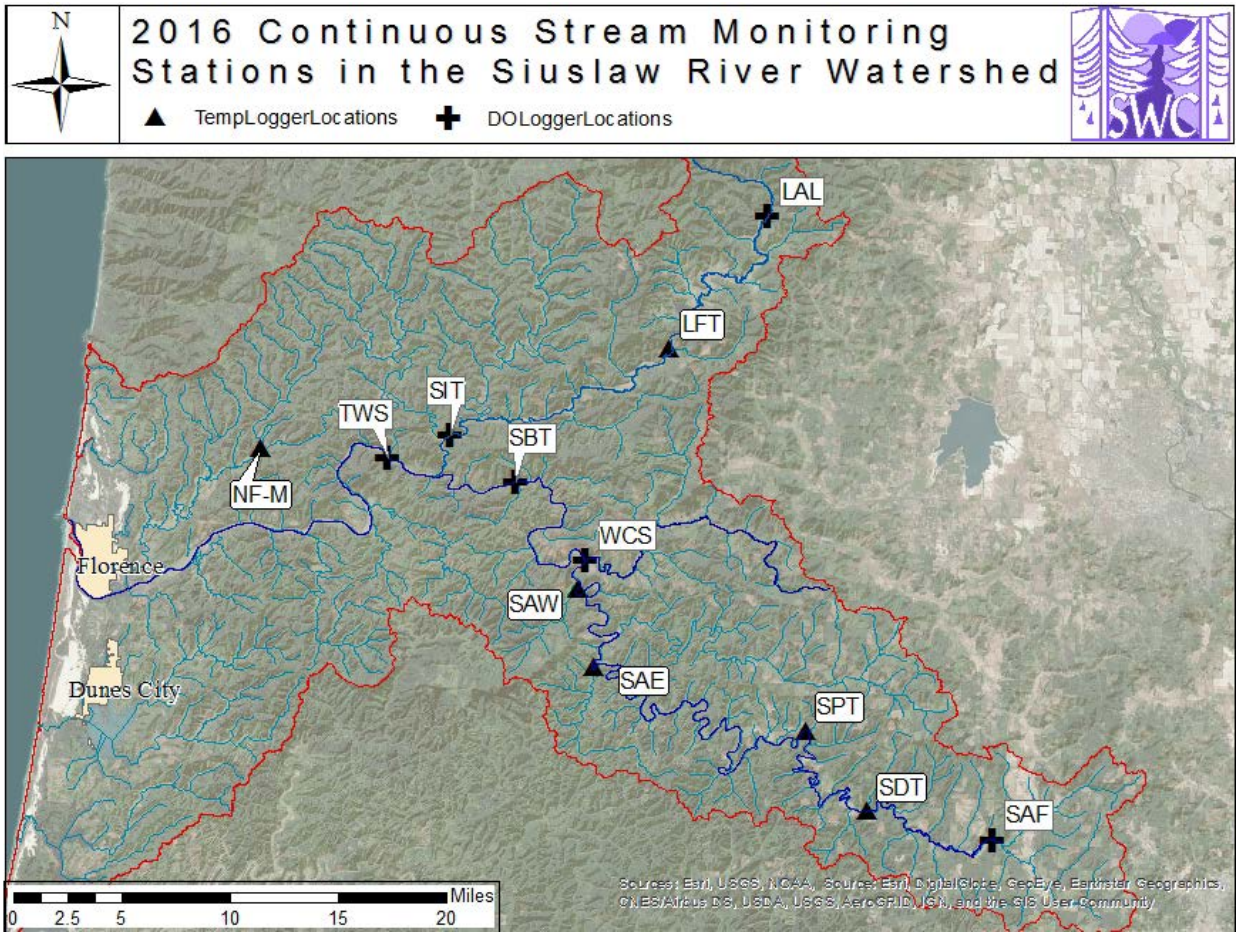


Table 1. Site names and abbreviations

Site name	Site Abbreviation		Site name	Site Abbreviation
Siuslaw River above Fire Road	SAF		Lake Creek below Hult Pond	LAL
Siuslaw above Doe Creek	SDT		Lake Creek above Fish Creek	LFT
Siuslaw below Pheasant Creek	SAP		Lake Creek above Indian Creek	SIT
Siuslaw above Esmond Creek	SAE		Siuslaw above Tide Wayside	TWS
Siuslaw above Barber Creek	SBT		Siuslaw above Whitaker	SAW
North Fork Siuslaw at Minerva	NFM		Wildcat Creek	WCS

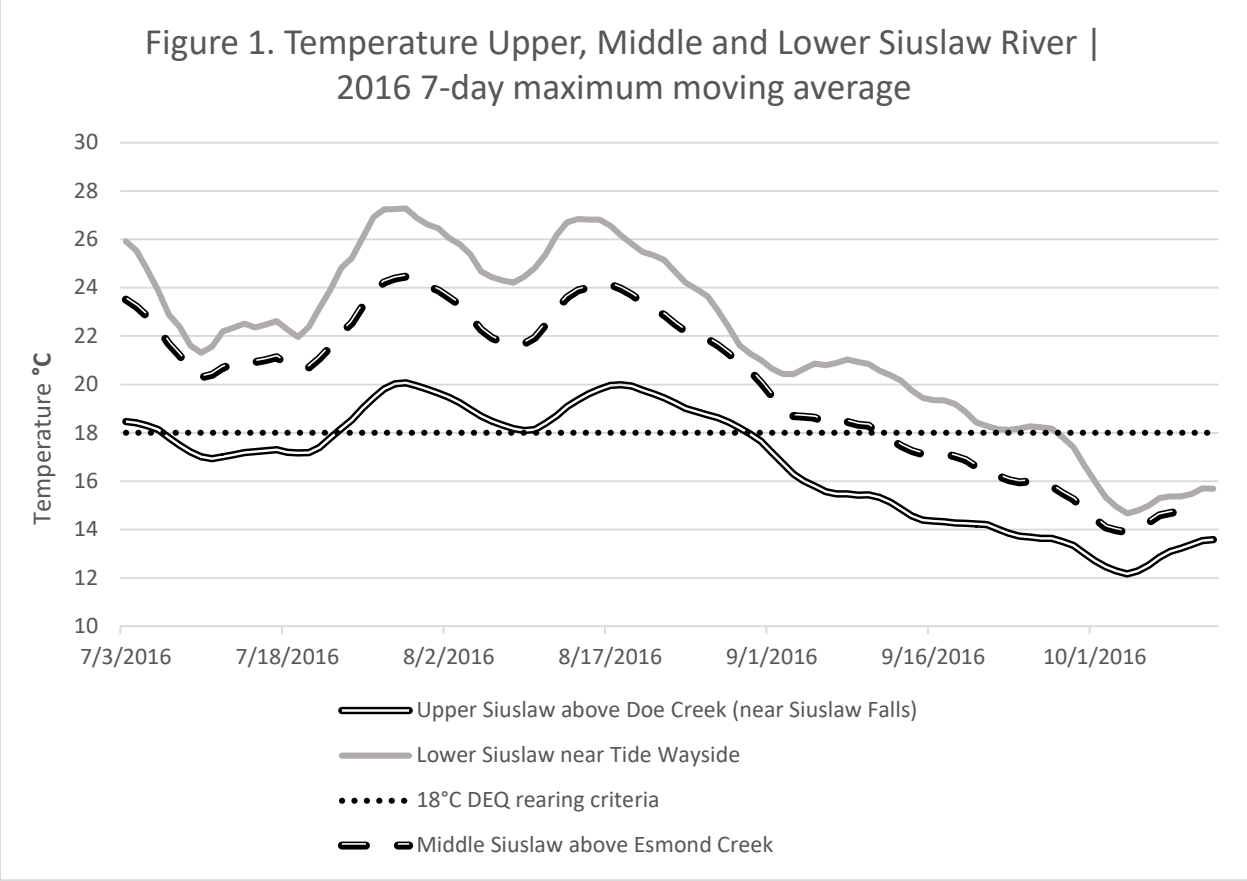
Some segments of the Siuslaw River have been identified as water quality limited by the Oregon Department of Environmental Quality (DEQ) for their temperature, dissolved oxygen and sediment levels. DEQ has seasonal criteria for these pollutants based on many factors including what aquatic organisms like salmon need in order to spawn and rear in our streams (see Pollutant column in tables).

Table 2. Siuslaw Watershed Council 2016 Data

Water Body	Logger Location, LASAR ID	Pollutant	Deployment Period	2016 Logger Data
Siuslaw River Mile 26.3	Siuslaw River upstream of Tide Wayside, 33642	Temperature DEQ criteria: salmon and trout rearing and migration: 18.0 degrees Celsius 7-day-average maximum	5/23/2016 to 10/12/2016	• Max Temp. 28.4°C 83.2°F 7/29/2016 5:15pm • **6/16/2016 to 9/15/2016 92 days with 7-day-average maximum > 18°C**
Siuslaw River Mile 55	Siuslaw River upstream of Esmond Creek, 34881		6/30/2016 to 10/12/2016	• Max Temp. 25.4°C 77.7°F 7/29/2016 5:00pm • **7/10/2016 to 10/4/2016 70 days with 7-day-average maximum > 18°C**
Siuslaw River Mile 95	Siuslaw River upstream		6/30/2016 to 10/12/2016	• Max Temp. 20.6°C 69.08°F 7/29/2016 4:30pm

	of Doe Creek, 34880			• **7/3/2016 to 10/12/2016 42 days with 7-day-average maximum > 18°C**

The SWC 2016 temperature data shows reason for concern through much of the salmon and trout rearing season, with a high of 28.4°C, or 83.2°F, on July 29th near Tide Wayside. Figure 1 graphs the differences in maximum temperature for the lower, middle and upper Siuslaw River. Note that temperature increases as you move downstream. There are multiple factors affecting temperature, including differences in physical channel characteristics (channel roughness, substrate, depth, gradient), amount of direct solar gain on the stream, riparian conditions (shade from tree canopy), and elevation as one goes from the smaller headwater streams toward the estuary. Flow (discharge) also increases so the river responds dynamically to changes in these factors.

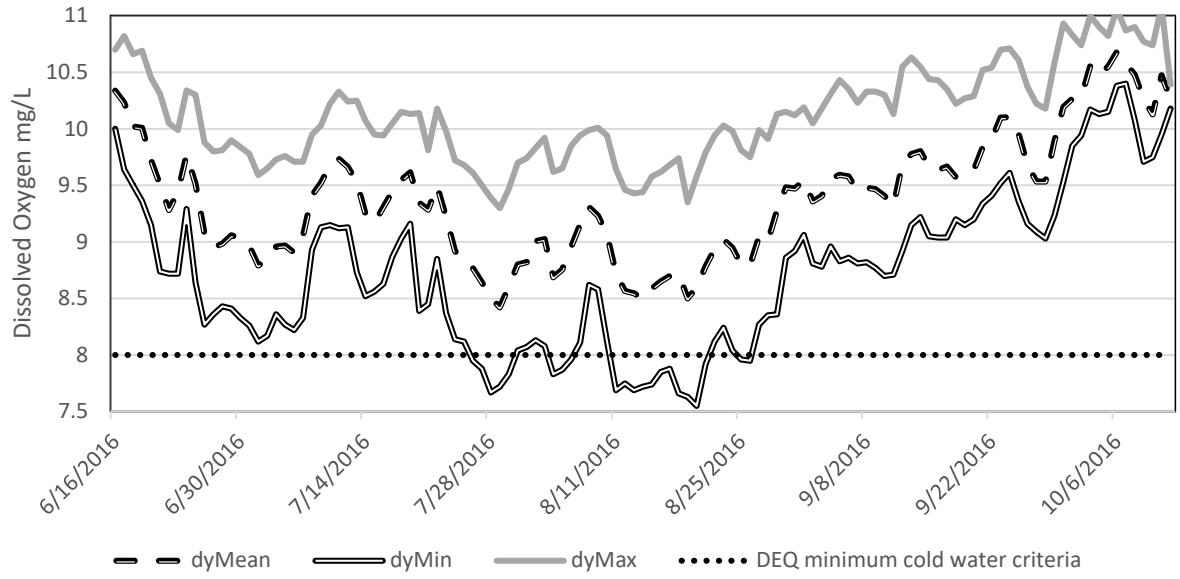


Many aquatic organisms in our streams thrive in cooler water temperatures and most depend on water that is saturated with dissolved oxygen during critical life stages. In Table 2 we compare our 2016 results at two sites to the DEQ criteria.

Table 2. Siuslaw Watershed Council 2016 Dissolved Oxygen Data

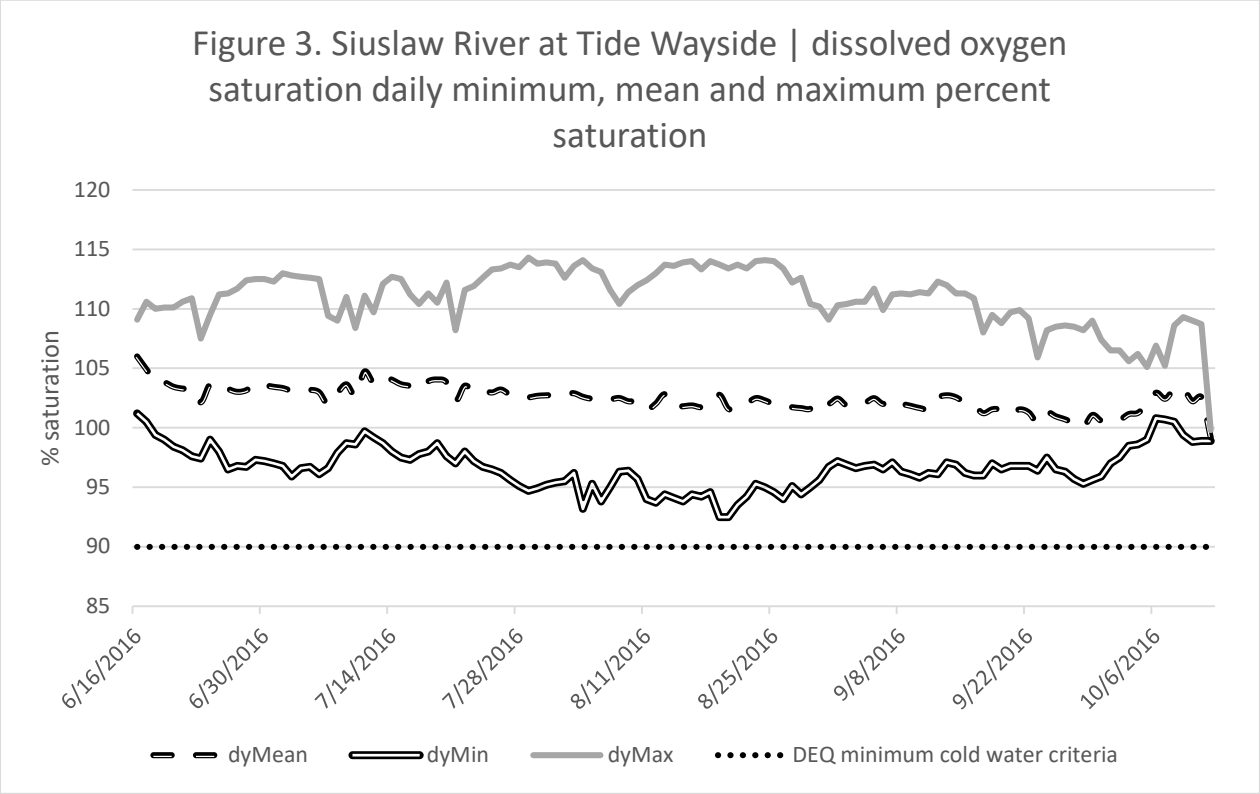
Water Body	Logger Location, LASAR ID	Pollutant	Deployment Period	2016 Logger Data
Siuslaw River Mile 26.3	Siuslaw River upstream of Tide Wayside, 33642	Dissolved Oxygen DEQ criteria – 30-day mean minimum not less than 8.0 mg/l or 90% of saturation	5/23/2016 to 10/12/2016	11 % of samples were above the 8 mg/l criteria, but % saturation levels consistently met criteria
Siuslaw River Mile 32	Siuslaw River above Barber Creek, 34222		6/23/2016 to 10/12/2016	The 8 mg/l criteria were met for 97% of samples and % saturation levels consistently met criteria

Figure 2. Siuslaw River at Tide Wayside | dissolved oxygen daily minimum, mean and maximum miligrams per liter



The SWC 2016 dissolved oxygen data indicate healthy levels of dissolved oxygen at our sampling sites. The Siuslaw remained above the 8 mg/l and 90% saturation through almost the entire deployment period.

Figure 2 graphs the differences in maximum, mean, and minimum dissolved oxygen near Tide, 6 river miles upstream from Mapleton. Figure 3, the max, mean, and minimum dissolved oxygen percent saturation for the Tide site.



We are still evaluating the data and interpreting the results. For more information about the SWC Water Quality Monitoring Program, how we are working with the Oregon Department of Environmental Quality and other partners to monitor stream conditions, or how you can get involved as a volunteer, you can email monitoring@siuslaw.org.