
LAB MEMORANDUM

TO: MARGRET LANG
FROM: CHRIS MOODY, CORY SCHERMESSER, JACOB ROWE, MARIA ESPANOL, MATTHEW BRUDER
SUBJECT: WATER QUALITY
DATE: 12/8/2011

Purpose:

The purpose of this memo is to inform the reader of the water quality in, upstream, and downstream of Humboldt State University's fish hatchery.

Hypothesis:

We have hypothesized, based on measurements taken in the fish hatchery, personal knowledge of Fern Lake, and educated speculation. We believe that Fern Lake will have a higher turbidity and oxygen level, a lower pH and temperature; the creek will have a higher turbidity and pH, relatively the same temperature, and a lower oxygen level.

Results:

	DO (mg/L)	Temperature °C	Turbidity NTU	PH
Lake	5.98	12.53	7.59	6.05
Tank	8.56	14.2	.05	5.5
Fish	8.83	14.5	.37	5.43
Stream	8.1	15.17	9.54	6.06

Summary:

As is evident from the data our hypothesis was not entirely correct; however, it was partially correct. Fern Lake and the creek both had higher turbidity than the fish hatchery. This is most likely due to the fact that the water moving through the hatchery is being continuously run through a sand filter, which would drastically reduced suspended solids in the water. Fern Lake is filled by run off from the surrounding hills which brings with it particulate matter. The creek is filled with water from the hatchery that is used to clean the filters and

the tank, so all the particulate matter that the sand filters pick up as well as that generated by the hatchery, enters into the creek.

Fern lake has a lower dissolved oxygen level, where as the creek, though marginally lower, is essentially the same with a percent difference of roughly seven percent. Our original hypothesis was based on the assumption that Fern Lake must have a higher dissolved oxygen level because the fish in the hatchery would be reducing the dissolved oxygen in the water. Also based on this logic, if we think of the dissolved oxygen decreasing in the same manner as altitude, the creek would have the lowest dissolved oxygen level. However, we did not take into account that the hatchery has lots of agitation in its water causing good mixing between upper and lower levels of water. This mixing is a constant source of dissolved oxygen for the water in the hatchery, and continues as the water leaves the hatchery maintaining similar dissolved oxygen level in the creek. To contrast this agitation, Fern Lake was as still as glass, as well as murky, at the time we collected our data. This left the lake with little ability to replenish the oxygen being metabolized by the degradation of organic matter in the lake. The samples taken from Fern Lake were close to the shore and in shallow water, so this may have affected the data collected.

The temperature in the lake was colder than that in the hatchery and the stream. This is most likely due to the stillness of the lake and the fact that the water in the hatchery and the stream was moving much more than that of the lake. Though the temperature overall was relatively the same.

Conclusion:

The DO levels, temperature, turbidity and PH levels were all higher in the stream than the lake, but the hatchery generated higher DO levels. In conclusion the water quality downstream is not greatly affected by the fish hatchery.