

**NITROGEN GAS DIEL MONITORING
ENNIS NATIONAL FISH HATCHERY
MARCH 11, 1999**

INTRODUCTION AND METHODS

To determine if nitrogen gas levels fluctuate over a 24 hour time period, nitrogen gas measurements were recorded on 6 hour intervals, at three different hatchery locations. The first location was at the trough in the egg incubation area. This water is piped directly from the lower spring to the trough, thus, no supplemental aeration of the water has taken place. The second location was at the head end of tank 12 in the main hatchery building. This water falls through a 5 foot long by 6 inch in diameter packed column. The third and final location was at the hatchery building intake, located at the south east corner of the lower spring. The time intervals were 1600, 2200, 0400, and 1000 hours. Nitrogen gas measurements were made using a Sweeney Saturometer Model DS-1B. Measurements were recorded after allowing the Sweeney Saturometer to equilibrate for five minutes. Dissolved oxygen measurements were taken using a Oxyguard Handy MK II meter.

RESULTS

The following table is a summary of the results.

LOCATION	TIME	% NITROGEN	OXYGEN (PPM)
TROUGH	1600	124.59	6.8
TROUGH	2200	121.92	6.6
TROUGH	0400	121.23	6.5
TROUGH	1000	121.63	6.5
TANK 12	1600	100.07	8.3
TANK 12	2200	100.79	8.2
TANK 12	0400	100.83	8.2
TANK 12	1000	100.68	8.1
LOWER SPRING	1600	118.73	6.7
LOWER SPRING	2200	124.66	6.5
LOWER SPRING	0400	121.23	6.5
LOWER SPRING	1000	122.92	6.6

DISCUSSION AND CONCLUSION

At this point in time, the data suggests there is very little if any diel fluctuation of nitrogen gas in the water used at the Ennis National Fish Hatchery. Variability of measurements within a specific location is probably due to operator and/or meter variability. The packed columns safely reduce the nitrogen gas levels from approximately 122% at the spring to 100% in the raceways.