

Water Quality near Riverine Islands

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The physical properties of the water are vital to organisms throughout the Chilko-Chilcotin River system. While pH, turbidity, water temperature and available nutrients are vital to the invertebrates and the resident and anadromous fish, there did not seem to be any significant differences in water surrounding both the constructive and destructive islands. While water temperature increased slightly (typically less than 1° C) in the slower moving back channels, it is unlikely that temperature encouraged the ecological variations found on land and in the water. When water temperature remains below 13° C, as it did throughout the CCR, it is not likely to be a significant contributing factor for why many of the salmonids prefer the more sheltered channels.

Dissolved oxygen, which is determined mostly by water temperature, organism activity and aeration did not vary significantly between the main channel and the back-water of the islands. The trivial variance is probably due to the slightly increased temperature of the backwater. However both were near complete saturation at their respective temperatures. Both the slower back channel and main channel of each type of island had sufficient water temperature, dissolved oxygen and pH to support abundant aquatic insect and fish life.

Throughout the CCR, pH remained relatively consistent throughout the system. The pH remained constant in both the fast moving main arm of the river and the slower moving waters.

So what makes the water surrounding the islands ideal for juvenile salmonids and what role might turbidity play on juvenile salmonids? The islands, specifically the constructive type, successfully slows the water to form small backchannels and eddies that are ideal habitat for salmonids, specifically juveniles on their way out to sea. It seems like the overarching factor in forming high-quality aquatic habitat was not temperature or dissolved oxygen; rather, the velocity of water surrounding the islands is the predominant factor.

The most important aspect of water quality in regards to juvenile salmonids is turbidity. While it is impossible to define a link between turbidity and juvenile salmon survivability with our data, it would be interesting to study whether the turbid waters benefits the salmon by keeping them hidden from predators on their way out to sea. The juvenile salmonids found in turbid waters in the slower moving island backchannels were significantly less colorful than the fish found in the clearer upper reaches of the Chilko river. More research must be done to determine if the difference in coloration is due to high turbidity or due to another factor.

It was surprising to find that the highly turbid waters of the CCR below Taseko river continued to sustain relatively high diversity and abundance of gill breathing insects of ephemeroptera and plecoptera Orders surrounding both categories of islands.

Water quality is a determining factor in the success of both aquatic insects and fishes of the CCR. However, the effects of the physical aspects of the water do not specifically act on the islands. Instead, both types of islands are able to slow the fast-flowing CCR enough to act as a sanctuary for aquatic organisms.

Tables and Figures

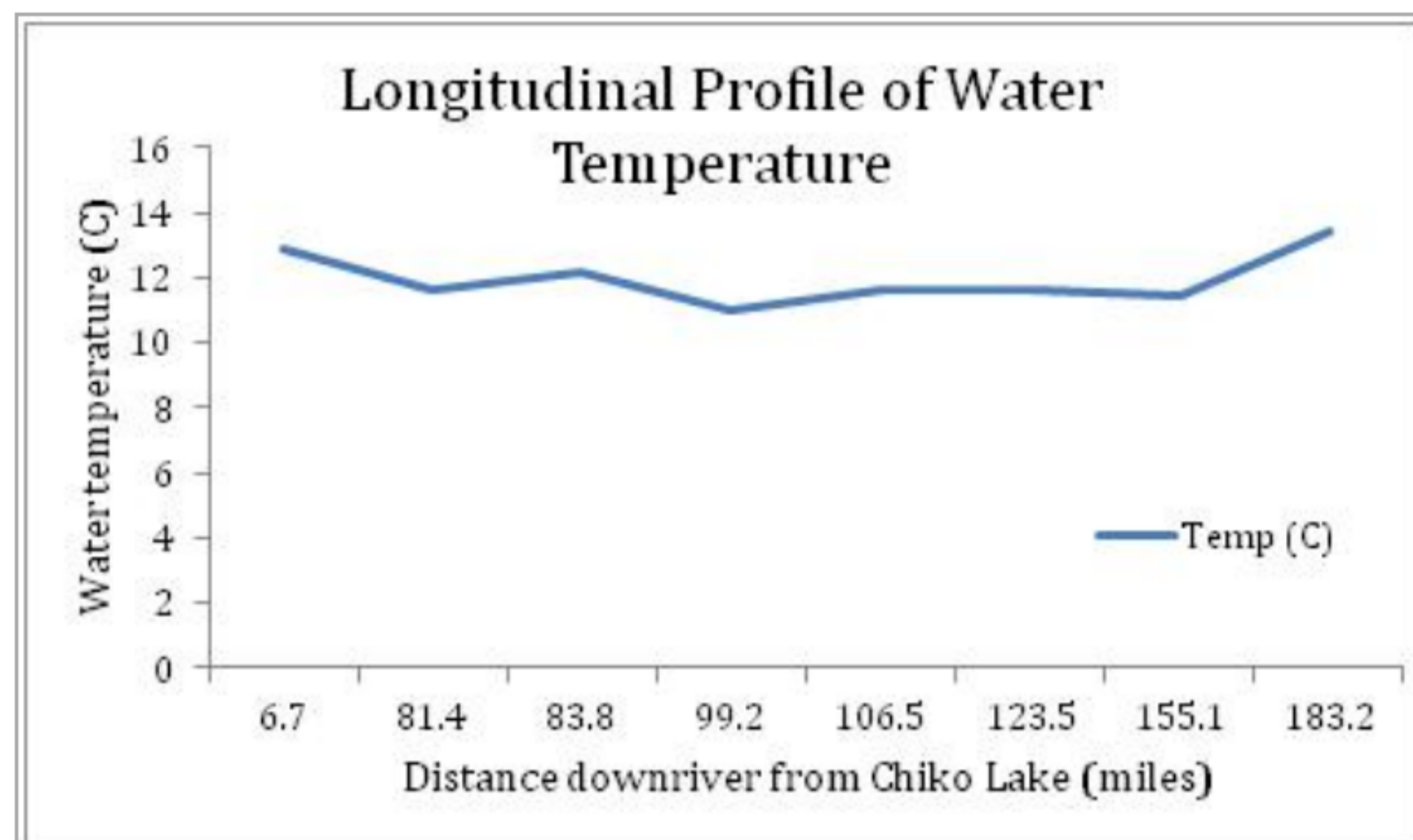


Figure 1.

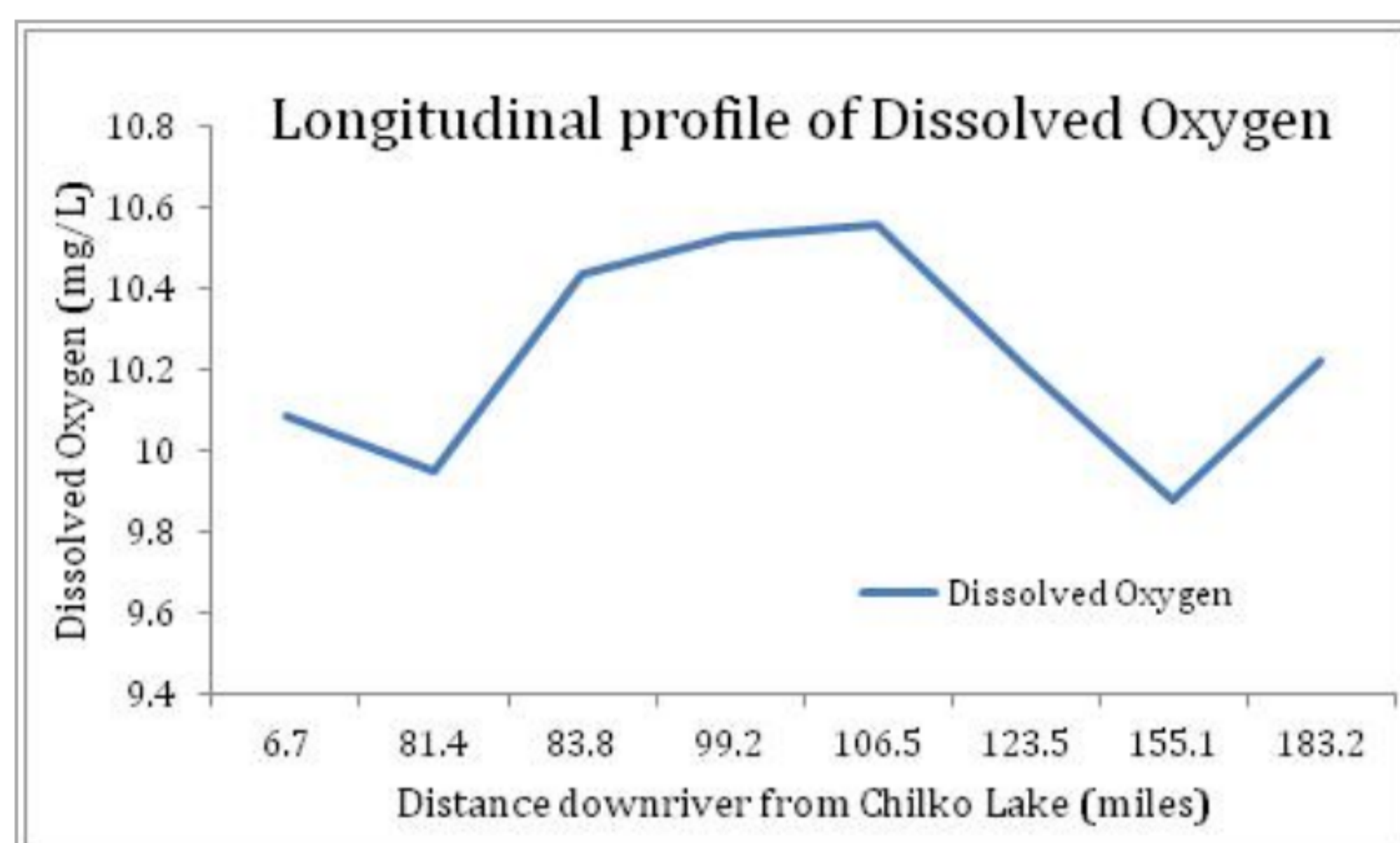


Figure 2.

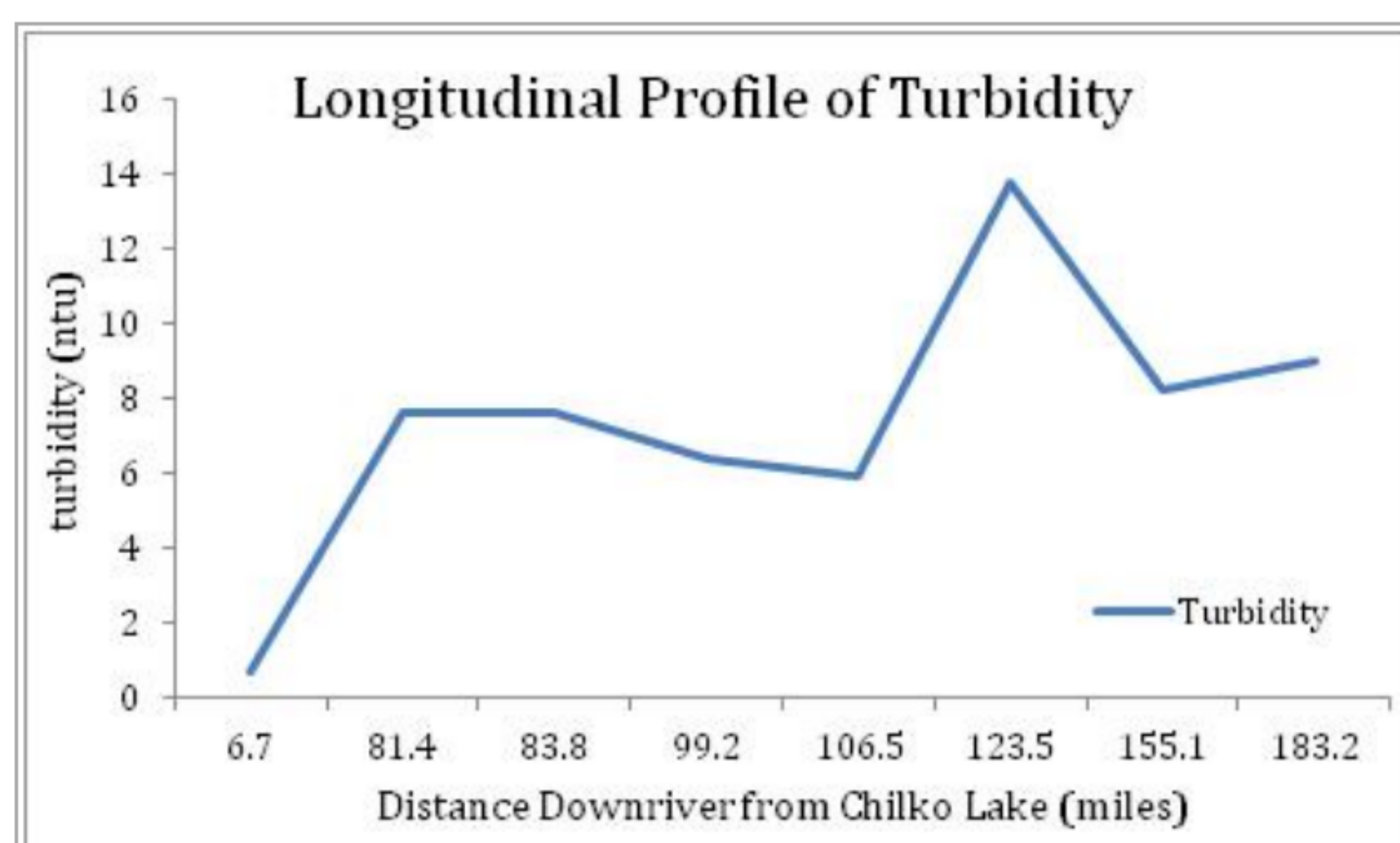


Figure 3.

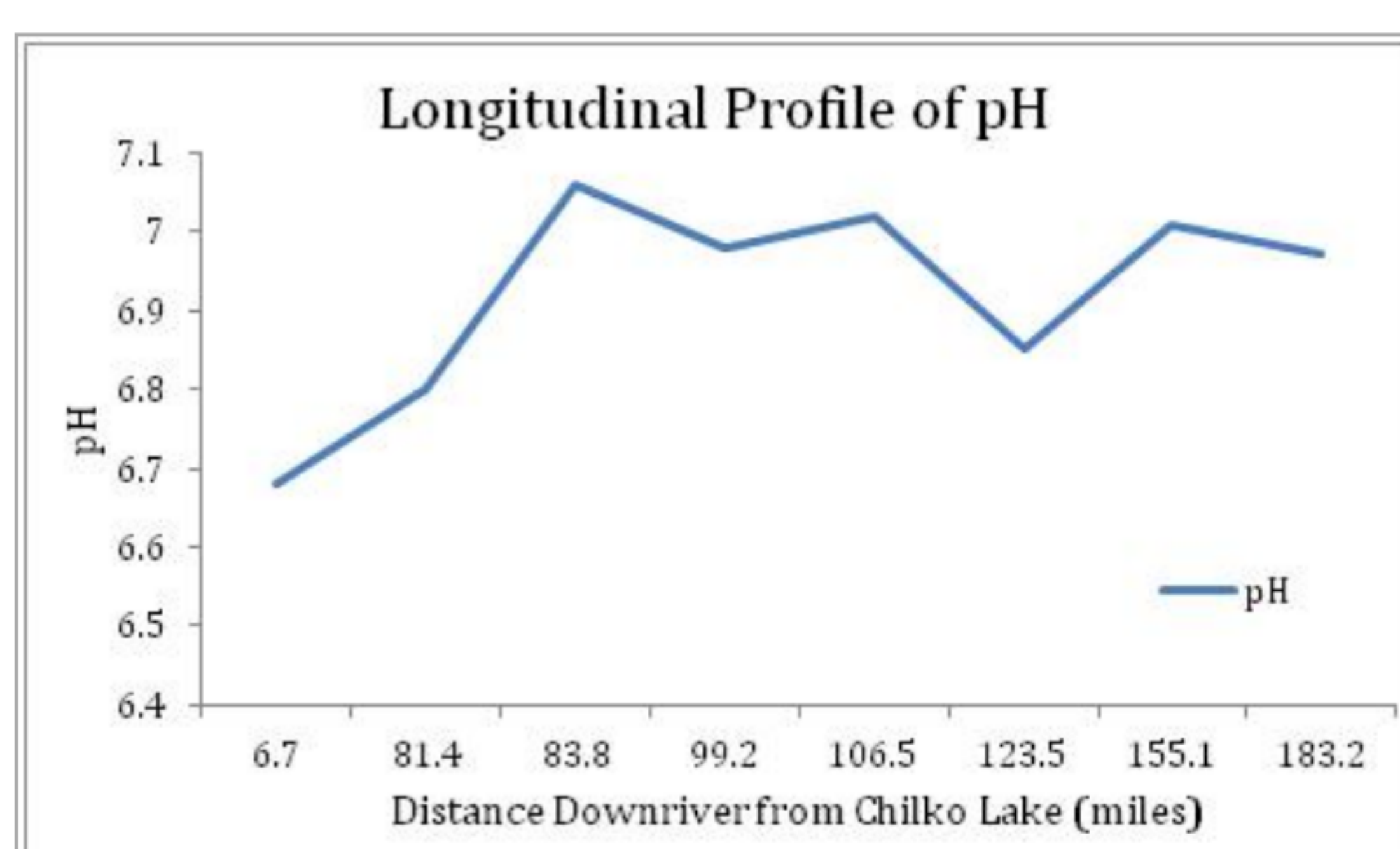


Figure 4.