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The Effects Of Coal Bed Methane Produced Water On Various Macro Invertebrates

The purpose of this study is to see if different levels of coal bed methane produced water diluted into river water affect the survival of Daphnia Magna and Damselfly Nymphs. My Hypothesis is that the survival rate of the macro invertebrates will vary depending on ratio of coal bed methane produced water (CBM produced water) to river water (RW). This experiment was conducted by first obtaining 15 Gallons of water from a Coal Bed Methane water pump leading into a storage pond. 15 Gallons of River Water was then obtained from the Cuchara River. Three cups of water was then placed in 18 one Quart jars as follows: 6 jars of 100% River Water, 6 jars of 50/50 water, and 6 jars of 100% Coal Bed Methane Produced Water. The water was divided into two sets, 9 for Daphnia Magna and 9 for Damselfly Nymphs. Each jar contained 3 macro invertebrates. Every day the jars were tested for survival, pH, and conductivity. For the Daphnia Magna test, the data shows that in the 100% CBM Water, the Daphnia Magna did not reproduce and had much higher fatality rates than in the 100% RW. Also, unlike the 100% CBM Water, the 100% river water Daphnia Magna reproduced until the numbers were too high to get the exact count. As for the Damselfly Nymphs, the survival rate went down much faster in the CBM water, although in the end, the survival rate was the same for all the jars. The practical uses of this project are mainly to pass laws to limit the amount of this water going into the streams and rivers in Colorado.