RESULTS FROM ONGOING WATER QUALITY MONITORING (FEBRUARY 2020 TO PRESENT) OF THE UPPER PECOS RIVER

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Since February 2020, NMHU Environmental Geology students have been collecting biweekly water quality data for the Upper Pecos River (UPR) to establish baseline conditions and determine if waters are meeting water quality standards (WQS) for the Upper Pecos River’s high-quality cold-water designation (NMAC 20.6.4). The team established five monitoring sites along a 25 km stretch at approximately equal distances to capture conditions above an historic mine site (UPR 5 Willow Creek), at the confluence of a tributary downslope of a proposed exploratory hard rock drilling site (UPR 3 Macho Creek), and at several high-use recreation areas (UPR 4 Terrero Village, UPR 2 Dalton Canyon, and UPR1 Pecos Village). The team collected bi-weekly in-the-field physical-chemical parameters (pH, temperature, dissolved oxygen, electrical conductivity) using a USI 556 Multi Probe and collected grab water samples for turbidity analysis in the NMHU Water Resources laboratory using a Hach TL2300 turbidimeter. The majority (99%) of reported turbidity values fell below the 10 NTU threshold. Electrical conductivity increased downstream along the study stretch but remained within the 300 µS/cm threshold. Temperature increased downstream and throughout the summer months, but remained below the 23°C (73°F) segment-specific criterion. Dissolved oxygen values were ≥ 6.00 mg/L in accordance with WQS for most sites throughout the sampling period. The Pecos Village site had < 6.00 mg/L dissolved oxygen on 5 days between June and September corresponding to high stream temperature days. The pH values varied greatly between sites and throughout the study period with average pH values ranging between 6.4–6.8. The pH values showed moderate negative correlations with streamflow and generally decreased downstream possibly reflecting input from natural sulfide-bearing bedrock and historic mine workings. We report that the Upper Pecos River is in good health for its domestic water supply, fish culture, high quality cold-water aquatic life, and other designated uses. Minimizing recreation, reducing trampling, and increasing streamside vegetation along the river banks at the Pecos Village site could decrease temperature and increase dissolved oxygen and overall maintain and improve the health of the river.

New Mexico Administrative Code Title 20 Environmental Protection, Chapter 6 Water Quality, Part 4 Standards for Interstate and Intrastate Surface Waters.

Keywords:
water quality, Upper Pecos River, pH, turbidity, temperature