

## Montana's Hidden Crisis: Nitrates in Rock Creek (Poster)

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Exurban expansion can degrade significantly stream water quality. This study was conducted on Rock Creek of the Clark's Fork of the Yellowstone River in southcentral Montana, USA. The impact from recent exurban expansion was evaluated by a baseline study measuring total suspended solids (TSS), total phosphorus (TP), total nitrogen (TN) and nitrites (NO<sub>2</sub>) and nitrates (NO<sub>3</sub>) together. This was part of a larger study by Montana Department of Environmental Quality to assess water quality, identify sources of pollution and develop total maximum daily loads (TMDL). Water samples were measured for these analytes at nine (2022) and 11 (2023) locations with different land-uses over seven periods (both years). Seasonal spikes, corresponding to runoff (2022, late May), occurred in TSS, TP and TN. Data from 2023 showed similar but reduced levels occurring in June for TSS and TP. Total suspended solids, TP, NO<sub>2</sub> and NO<sub>3</sub> concentrations increased by location year over year, 2022 to 2023. The high relative concentrations of NO<sub>2</sub> and NO<sub>3</sub> in Rock Creek are primarily associated with exurban expansion, a significant threat to stream quality and wildlife habitat in Montana. The results will assist county planners in land use decisions.