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**Analysis of seasonal water-quality data in the Uinta Basin, eastern Utah**

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The Uintah Basin in eastern Utah generally lacks sufficient water-quality data to characterize the area's surface and ground water. As part of a three-year project studying water-related issues affecting conventional oil and gas recovery and potential oil-shale development in the Uinta Basin, this component of the study will establish baseline water quality. New information will help develop environmentally sound water-management solutions for a future oil-shale industry, assessing the sensitivity of the alluvial and bedrock aquifers on lands proposed by the BLM as having oil-shale development potential east of the Green River in the southeastern Uinta Basin.

During spring and autumn seasons in 2009 and 2010, I collected 20 water samples from water wells and surface-water sites in the Uinta Basin. I analyzed a suite of water-quality constituents including general chemistry (including total dissolved solids), nutrients (including nitrate, phosphorous, and ammonia), dissolved metals, and volatile organic compounds (VOCs). Total-dissolved-solids concentrations for all samples range from 172 to 2832 mg/L and nitrate concentrations range from <0.1 to 18.8 mg/L for all sampling seasons. Dissolved solids were the highest from Evacuation Creek during spring 2009 and lowest during flood stages in spring 2010 from the Green River near Ouray, Utah. Most sites have nitrate concentrations below 0.1 mg/L with the exception of alluvial wells in the northwestern part of the study area downgradient from irrigated fields, and a large cattle operation and one bedrock well in the central part of the study area. Some samples had detectable VOCs, but below EPA maximum contaminant levels. Seasonal change in water chemistry is minimal for most water samples.

Potential water-quality degradation may result from an expected increase in mining activity if sound water-management procedures are not implemented. This regional baseline water study will provide GIS-based information to help local planners and potential developers to preserve the quality of ground and surface water by establishing best-management practices through careful land-use planning.