

Geospatial infrastructure for water resource assessment in support of oil shale development in the Piceance Creek Basin, Colorado

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Understanding the spatial and temporal distribution of water resource is one of the key issues for oil shale development in the Piceance Creek Basin in western Colorado. In this ongoing project funded by the U. S. Department of Energy's National Energy Technology Laboratory (DOE/NETL), we have reached a point of delivery for some major milestones. We have built a Geographic Information Systems (GIS)-based and web-based regional/basin-wide water resource geospatial infrastructure for storing, managing, analyzing, visualizing, and disseminating oil shale related data. Geodatabases are the foundation of the geospatial infrastructure, which form the foundation of several analytical models, including a three dimensional (3D) geological model, a watershed-based surface water WARMF model, a MODFLOW groundwater model, and a system dynamic PowerSim model. The above effort could lead to better understanding of the spatial and temporal distribution of water resources in the Piceance Creek Basin and provide an efficient data management platform for future oil shale development in the Western United States.