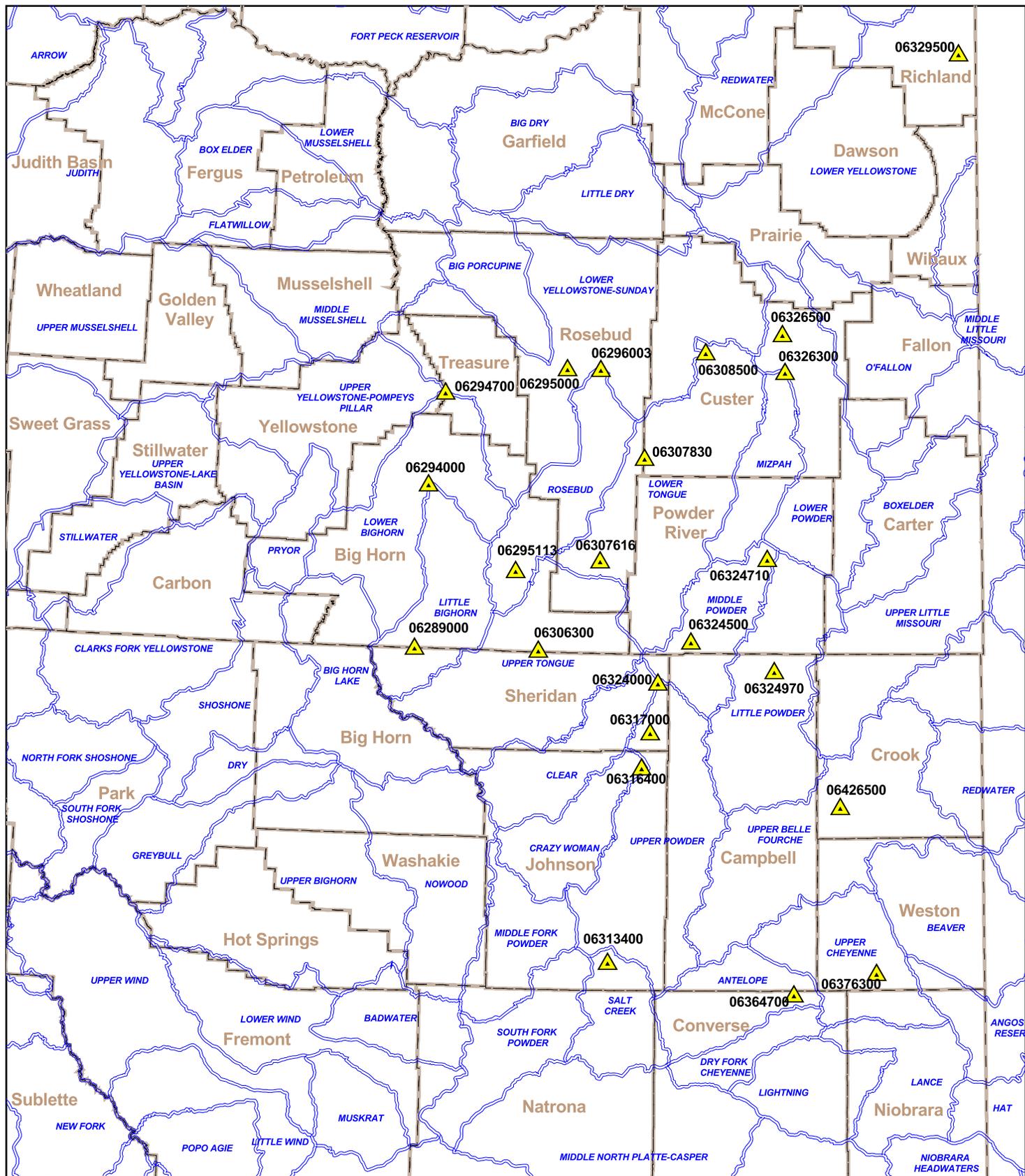


## **1.0 INTRODUCTION**

This technical report on surface water is a support document for two separate Environmental Impact Statements (EIS): the *Final Environmental Impact Statement and Proposed Plan Amendment for the Powder River Basin Oil and Gas Project* (Wyoming FEIS), prepared for the field office of the Bureau of Land Management (BLM) in Buffalo, Wyoming, and the *Statewide Oil and Gas Final Environmental Impact Statement and Amendment of the Powder River and Billings Resource Management Plans* (Montana FEIS), prepared for the field offices of the BLM in Miles City, Montana, and Billings, Montana. The two FEISs are intended to provide an overall projection of impacts associated with development of coal bed methane (CBM) and to address the specific issues that were raised in public meetings about a proposal to develop CBM in the Powder River Basin (PRB). The proposed development of CBM in Wyoming and Montana could not be evaluated in a single National Environmental Policy Act (NEPA) document as a result of the substantial differences in the purposes of and needs for the proposed actions. However, impacts to surface water quality were analyzed cumulatively to address the effects from CBM development in Wyoming on waters that may flow downstream into Montana. This technical document describes the modeling that was used to evaluate the potential impacts to surface water quality associated with proposed CBM development in both states. The analysis described here is focused on the PRB in Wyoming and Montana, as shown in Figure 1-1. The BLM in Wyoming and Montana have coordinated the assumptions and methodologies used in the surface water modeling to support parallel impact analyses in both parts of the PRB.

CBM development has the potential to affect surface water resources. Concern arises from the potential of CBM development to reduce surface water quality. Each productive CBM well completed in the target coal seams produces water in quantities that can be large over the life of an individual well. Produced water would be managed in several ways, including: discharge to local surface drainages (with or without prior treatment), infiltration via shallow impoundments, storage in reservoirs (containment), injection into deeper geologic units via wells, and land application. Options for water management would facilitate beneficial use, where feasible. Modeling was used to predict the effects to surface water quality of increased CBM operations on the main stem streams in the PRB under various water management scenarios.

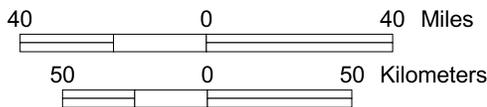


### Legend

-  Monitoring Station
-  Sub-watershed Boundary
-  County Boundary



Scale 1 : 2,600,000



### POWDER RIVER BASIN SURFACE WATER TECHNICAL SUPPORT DOCUMENT

**FIGURE 1-1  
ANALYSIS AREA  
POWDER RIVER BASIN, WYOMING and MONTANA**

Date: 11/05/02

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Prepared By: MSH