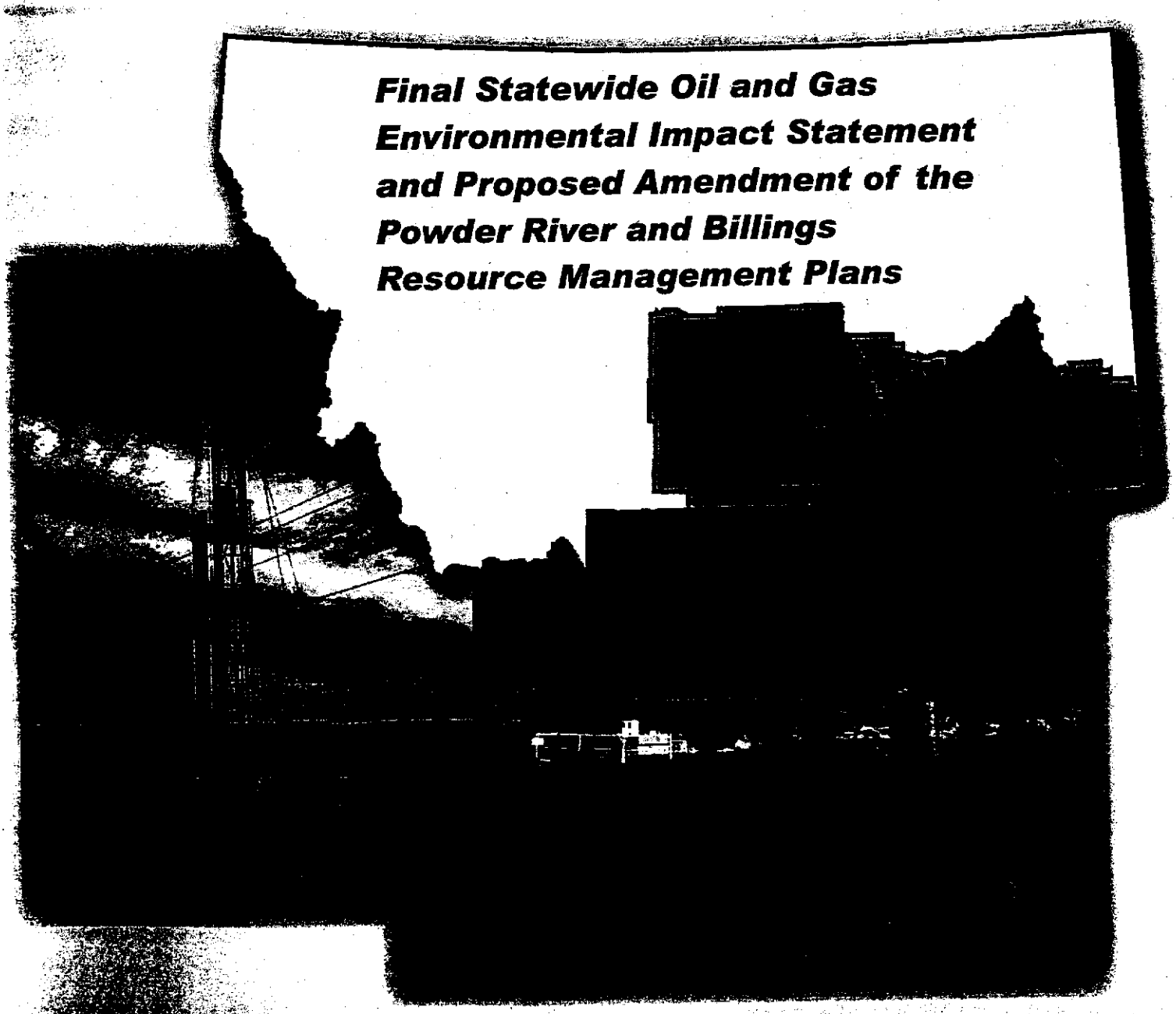
United States Department of the Interior
Bureau of Land Management
Miles City Field Office
Billings Field Office
State of Montana
Montana Board of Oil and Gas Conservation
Montana Department of Environmental Quality

EXHIBIT 2
DATE 2.9.05
HB 491

January 2003

MONTANA

Final Statewide Oil and Gas Environmental Impact Statement and Proposed Amendment of the Powder River and Billings Resource Management Plans



VOLUME I

- Discharge to an impoundment constructed near the ridge-line separating drainages (off-drainage pond) would also result in losses by evaporation and infiltration, but the infiltration and groundwater doming associated with infiltration would have less tendency to intersect ephemeral drainages.

Saline seeps may form below both off-drainage and on-drainage discharge reservoirs as salt-laden waters seep out intersect a confining layer, and flow to the outcrop. All surficial discharges must comply with an MPDES permit. A copy of the Montana general discharge permit for coal bed methane produced water is attached at the end of the Hydrology Appendix. The MPDES fact sheet can be obtained from the MDEQ.

Losses associated with evaporation would reduce water volume, but not reduce salt load, and would increase the salinity of the water remaining in the impoundment. How much evaporation takes place would depend upon residence time in the pond and climatic conditions of humidity, temperature, wind, and rainfall. Increased salinity in the stored water would act upon the pond's soil liner by causing dispersal of the clay particles in the soil. Increased salinity would tend to reduce the pond's permeability, reduce subsequent infiltration, and increase residence time in the pond.

It is likely that water that infiltrates into shallow, unconfined alluvial aquifers would be delayed in reaching surface water but not be completely lost to the system. A Portion of the projected conveyance loss would enter shallow groundwater flow systems and eventually reach streams and rivers.

Surface waters could be impacted by infiltrated water that contacts shallow groundwater sources and eventually discharges into surface water bodies. Infiltrated water that was stored in an impoundment would have elevated concentrations of some constituents as a result of evaporation. As this water infiltrates through the soil and bedrock, changes to its quality would occur from interactions with the soil, rock, and connate water. The impacts from this water would be difficult to quantify as the distance and residence time within shallow aquitards and shallow aquifers affect the quality of the water that might subsequently be discharged into the surface waters.

Produced water would also be placed into impoundments for use by livestock and wildlife. Water placed in impoundments can be lost to evaporation and seepage/infiltration into the soil below the impoundment. Impoundments are usually constructed of native soil present on site, however, local soils vary

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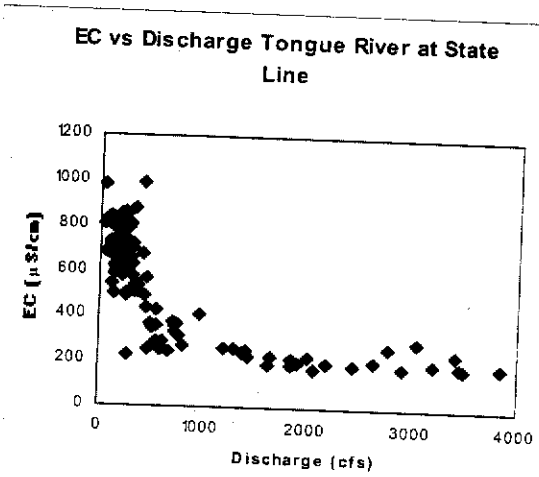
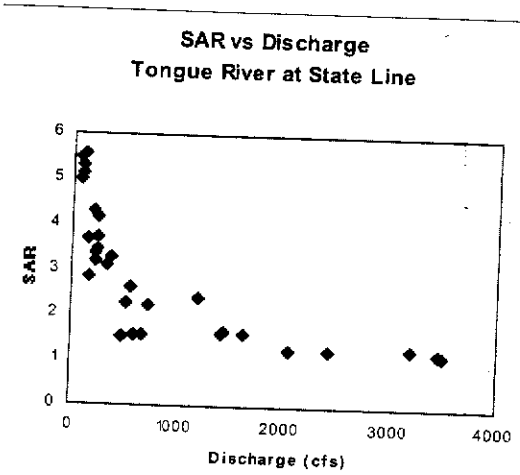
FIGURE 3-4
VARIATION IN SURFACE WATER QUALITY WITH FLOW AT USGS STATION 06306300 ON THE TONGUE RIVER NEAR DECKER, BASED UPON USGS DATA FROM OCTOBER 16, 1985 TO SEPTEMBER 12, 2000





Drainage within the Powder River Basin study area is to the Little Bighorn River, Rosebud Creek, the Tongue River, and the Powder River. All of these streams flow generally north to join the Yellowstone River. The central and southern portions of the Billings RMP area are drained by a series of tributaries that also flow north-northeast into the Yellowstone River; these tributaries are the Boulder, Stillwater, Rock/Red Lodge Creeks, Clarks Fork, Bighorn, and Little Bighorn. Drainage within the northern portion of the Billings RMP area is to the Musselshell River, which flows eastward until it meets the boundary between Musselshell and Rosebud counties—at which point it turns northward and flows into the Missouri River.

The three additional counties of Park, Gallatin, and Blaine each have separate watersheds. Park County is drained by the Yellowstone River, which flows to the northeast. Much of the drainage in Gallatin County is to the Gallatin River, which flows northerly to the Missouri River. However, the eastern portion of Gallatin County is drained by streams that flow into the Yellowstone River. Blaine County is drained by the Milk River, which flows to the east and into the Missouri River.

Surface water can be impacted by cultural activity such as agriculture and industry. When groundcover is broken it exposes soil to wind and water erosion, leading to suspended sediment being brought to bodies of surface water. Artificial impoundments can cause infiltration into the soil and migration into surface water. Accidental releases of wastes can migrate into water bodies.

Watershed water-use statistics in Table 3-5 apply to those watersheds shown in Map 3-8. Table 3-5 presents data about the quantity of surface water and groundwater used in each water-use category. These data cover the area projected to have maximum CBM potential but similar data is available for other areas of the state (USGS 1995). Surface water in these watersheds is the dominate source of water, however locally groundwater use is important for public and domestic drinking water, and for stock water.

The Clean Water Act of 1972 and amendments require states to adopt standards for the protection of surface water quality. These standards are designed to maintain water quality sufficient to support the beneficial uses of the water body. Montana water bodies are classified according to the present and future beneficial uses that they normally would be capable of supporting (75-5-301 MCA). The state Water-Use Classification System (ARM 17.30.621-629) identifies the following beneficial uses:

- Drinking, culinary use, and food processing
- Aquatic life support for fishes and associated aquatic life, waterfowl, and furbearers
- Bathing, swimming, recreation, and aesthetics
- Agriculture (crop irrigation, stock watering, etc.) water supply
- Industrial (coal mining, electrical power generation, etc.) water supply