THE STATE OF WYOMING

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Updated Permitting Options
for Coal Bed Methane Permit Applications

Revised: December 10, 2001
by Gary Beach, Administrator, WQD

This information is being provided to replace of the October 29, 1999 memorandum from Gary Beach regarding permitting options and the August 4, 2000 memorandum on assessing irrigation suitability. As a result of revisions to Wyoming Water Quality Rules and Regulations, Chapter 1 (July 2001) and other department actions such as the formalization of the agreement with the State of Montana regarding discharges to the Powder and Little Powder Rivers, the older guidance is no longer appropriate. The information contained in this document is provided to give basic guidance on completing applications for coal bed methane discharge permits. Supplemental information is also provided in a memo from Gary Beach dated September 20, 2001 and applicants should also use the most current CBM permit application form for guidance. Major changes in recent permitting approaches include the following:

- Points of Compliance (POCs) no longer need be specified in applications, unless an applicant wants to retain a downstream POC;
- Main-stem mixing analyses are no longer required, however applicants proposing discharges into the Powder River drainage (Option 2) will be encouraged to utilize water management techniques that minimize the quantity of water that reaches the main-stem;
- Samples for aquatic life limited constituents, except for aluminum and selenium, are to be analyzed for dissolved constituents instead of acid soluble portion. Aluminum and selenium should be analyzed for their total recoverable form;
- SAR and irrigation-based specific conductance limits will not be included in permits for discharges to the Powder and Little Powder rivers except where existing irrigation diversions exist within tributary systems receiving effluent prior to confluence with main stem water bodies; (See recent instruction memo from Gary Beach dated November 19, 2001.)

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- Aquatic life based effluent limits will be applied to closed basin systems (Option 1B) except where a use attainability analysis has been conducted that supports the reclassification of the system to a class 4c water; and

- Water balances are needed to illustrate total containment (non-discharging for off-channel or closed basin) reservoir systems. Water balances may not be necessary for on-channel reservoirs except where on-tributary irrigation exists and the blending of effluent with precipitation runoff is necessary to achieve irrigation suitability.

Revised Permitting Options

The following represent the revised options for the various site-specific configurations for discharge. The applicant should indicate within the application package the option being selected.

Option 1A - This option is reserved for facilities where discharge will be to reservoirs constructed in upland areas where there is no potential for stormwater runoff to enter the reservoir, the reservoir is not located in a drainage or alluvial deposit of a drainage, and the reservoir will be constructed such that no surface discharge from the reservoir will occur. Effluent limits will be established in permits for these facilities which are protective of the livestock and wildlife uses. A water balance should accompany the application to demonstrate that water losses attributable to infiltration and evaporation are at least equivalent to the predicted discharge rate plus the volume of water that would enter the reservoir (i.e., fall directly onto the surface of the reservoir and some minor contribution of surface runoff around the pond) during a 100-year/24-hour storm event. The siting of these reservoirs must also assure that there will not be a direct subsurface hydrologic connection to surface waters. If there are questions about this subsurface connection, then certain types of geologic information or shallow groundwater monitoring may be necessary.

Option 1B - This option is reserved for facilities where discharge will be to reservoirs constructed in closed class 3 basins. Closed basins are drainages that terminate in playas or depressions (also class 3) that have no outlets to drainage systems of the state. This option is available when a reservoir constructed in such a basin is designed such that no discharge from the reservoir will occur. Effluent limits will be established in permits for these facilities that are protective of the livestock and wildlife uses specified in the application, and aquatic life. A water balance must accompany the application to demonstrate that water losses attributable to infiltration and evaporation are at least equivalent to the predicted flow rate plus the volume of water that would enter the basin from the drainage area during a 100-year/24-hour storm event. If there are downstream irrigation water rights within the closed basin, this option may not be applicable or effluent limits for SAR and Electric Conductivity may have to be set. The permit application should include information concerning hydrologic connection in the closed basin if downstream irrigation exists.

Option 2 - This option is for facilities which discharge into drainages that are class 2 or are tributary to class 2 water systems, regardless of whether a reservoir(s) is being proposed for construction within the drainage. Effluent limits will be established in permits for these facilities that are protective of:

1. The basic designated uses of agricultural and wildlife;
2. Aquatic life protection in Class 3 drainages unless a UAA has been done to justify the drainage as a Class 4 and;

3. Aquatic life, fisheries, and human health if the discharge water could reach Class 2 or 3 drainages.

For discharges into the Belle Fourche or Cheyenne River drainages, effluent limits of 2000 umhos/cm for specific conductance and 10 for SAR have been established as protective. These limits may only be increased where the applicant provides a demonstration of why alternate effluent limits will provide adequate protection of irrigation uses.

For discharges to the Powder River and Little Powder River systems, if irrigation existed before CBM development on a tributary where discharge is occurring, effluent limits for SAR and specific conductance and/or additional permit conditions will be included to protect the downstream irrigation practices.

Option 2 Evaluation of Downstream Irrigation Practices.

For Option 2 discharges into tributaries of the Powder or Little Powder River, where downstream irrigation activities existed before CBM development, applicants shall be expected to develop an irrigation use protection plan that meets, but is not limited to at least one of the following concepts:

(1) Meet at the first downstream point of diversion or use, the representative baseline specific conductance and SAR values of the main-stem;
(2) Meet at the first downstream point of diversion or use, the representative baseline specific conductance and SAR values on the tributary system;
(3) Provide a demonstration that change in specific conductance and SAR levels at the point of diversion or use resulting from CBM discharge can be tolerated by the soils and crops without a significant reduction in crop productivity;
(4) Provide a plan to segregate CBM discharge from natural runoff or obtain zero flow at the point of diversion during the irrigation season and to avoid adverse effects during the non-irrigation season.

The information necessary to support an irrigation use protection plan may vary with the approach selected above, but should include consideration of the following elements:

(1) An evaluation of traditional irrigation practices and the ability of the discharge water to meet representative main-stem or tributary values at point of diversion or use;
(2) If applicable, development of critical information about the most sensitive soils and crops on downstream irrigated lands;
(3) A description of the changes that may have to occur in traditional irrigation practices to implement the plan;
(4) A description of all entities that must share in implementation of the plan;
(5) If necessary, a monitoring plan to gauge changes on irrigated areas and make adjustments before substantial adverse effects may result.

It is DEQ's desire to be consistent in setting permit limits for operations in a common sub-watershed. To promote consistency, requirements will be applied consistently within the options selected to protect downstream irrigation activities.

It is highly recommended that operators contact the appropriate WDEQ staff member (see final paragraph) to discuss the type of information that will be needed to support a site specific approach for protecting irrigation if you wish to pursue something different from the permit limits for irrigation protection on the Belle Fourche or Cheyenne River drainages, or for Powder or Little Powder River basins where irrigation diversions are present within the tributary.

Discharges to Tongue River

For discharge proposals into the Tongue River drainage, until such time as an agreement is formulated with Montana and the Tribes regarding discharges to the Tongue River, alternatives under which permitting can be considered include Options 1A and 1B, unless the quality of water discharged into the Tongue River system is similar to the quality of water in the Tongue River.

Contacts:

If further information is needed, please contact Kathy Shreve (307- 777-7543) or Jason Thomas (307-777-5449) for assistance in completing applications; Eric Hargett at (307-777-6682) for information on permit conditions for discharges in the Powder, Little Powder or Tongue River Basins; or Becky Peters at (307-777-6354) for information on permit conditions for discharges in the Belle Fourche or Cheyenne River basins. For general information on permit status, you can contact Becky Peters at email: bpeters@state.wy.us.

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