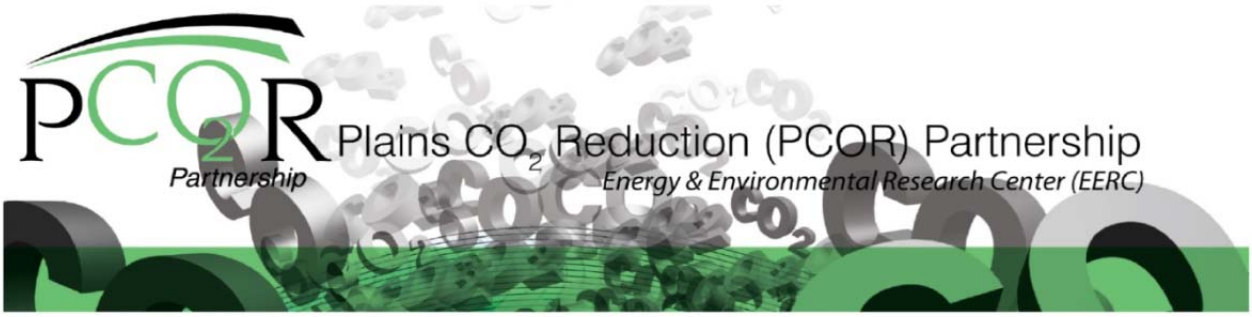

PERMITTING REVIEW – BASIC EPA REQUIREMENTS

Plains CO_2 Reduction (PCOR) Partnership Phase III
Task 3 – Deliverable D4

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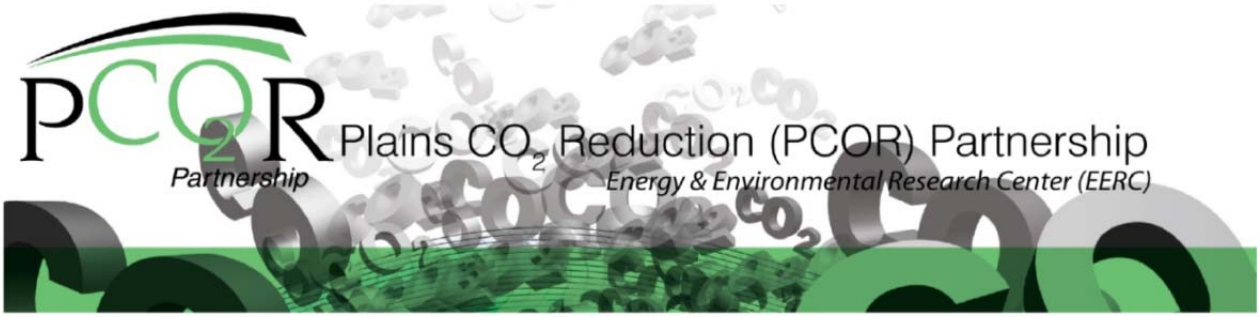
TABLE OF CONTENTS

LIST OF TABLES



PERMITTING REVIEW – BASIC EPA REQUIREMENTS

INTRODUCTION

This brief document is intended to provide its readers with a synopsis of the necessary requirements to conduct a geologic carbon dioxide storage project in the United States. The information provided gives a broad overview of the regulatory requirements and the authorities involved. As of this writing, the U.S. Environmental Protection Agency (EPA) has the authority to permit carbon dioxide geologic storage wells in all 50 states. Additionally, EPA requires geologic storage projects to comply with the Mandatory Reporting of Greenhouse Gases Rule (MRR; 40 CFR 98).

Because of the evolving nature of regulatory frameworks at various levels of government as well as daily changes in congressional reporting, this document is intended to provide general overviews of rules and policies and can be considered to be up to date as of September 30, 2011, unless otherwise noted.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Underground Injection Control

In December 2010, EPA finalized the requirements for a new well class (Class VI) under the authority of the Safe Drinking Water Act's Underground Injection Control (UIC) Program. The rule establishes federal requirements for the underground injection of carbon dioxide for the purpose of long-term underground storage, or geologic storage.

There are numerous elements to the Class VI Rule that deal with various aspects of permitting and operating a UIC Class VI injection well. These elements include the following:

- Site characterization requirements
- AoR (area of review) delineation and reevaluation
- Well construction and operation requirements
- Testing and monitoring requirements
- Site-specific project plan development

- Financial responsibility for the life of the project
- Postinjection site care monitoring
- Injection depth waiver
- Provides consideration for wells transitioning from Class II (enhanced resource recovery wells) to Class VI (direct geologic storage wells)

Additionally, there are a series of guidance documents that have been developed or are being developed to provide information and possible approaches for addressing each of these elements. These guidance documents follow the sequence of activities that an owner or operator will perform over time at a proposed and permitted geologic storage site.

In the final rule, EPA gave states a deadline of September 6, 2011, to apply for primary enforcement responsibility, or primacy, over Class VI wells. There were no states that met this deadline; therefore, as of September 7, 2011, EPA will directly implement the Class VI Program nationally. As a result, in order to permit a carbon dioxide geologic storage project, potential owners or operators of a CO_2 geologic storage well will need to submit a permit application to the appropriate EPA regional office. States in the Plains CO_2 Reduction (PCOR) Partnership are divided among three different EPA regions. Table 1 illustrates the appropriate region for each state.

Table 1. EPA Regional Divisions

EPA Region	State
Region 5	Minnesota, Wisconsin
Region 7	Nebraska, Iowa, Missouri
Region 8	Montana, Wyoming, North Dakota, South Dakota

Direct federal implementation of the Class VI program will remain in effect until such time that a state-submitted primacy application is approved by EPA. As previously mentioned, any state has the right to apply for primacy, if they so chose.

Please refer to EPA's Web site, http://water.epa.gov/type/groundwater/uic/class6/gsclass6wells.cfm, for additional information on the UIC Class VI program.

Mandatory Reporting of Greenhouse Gases Rule

EPA finalized its MRR, which consists of Subparts A though UU, late last year. Subpart RR refers to the injection of carbon dioxide for geologic storage. This subpart covers any well or group of wells that injects CO_2 for long-term geologic storage and all wells permitted as Class VI wells (see previous section for more information on this new well class). Such facilities are required to report:

- Source(s) of CO_2.

- Mass of CO_2 received.

- Mass of CO_2 produced (i.e., mixed with produced oil, gas, or other fluids).

- Mass of CO_2 emitted from surface leakage.

- Mass of CO_2 equipment leaks and vented CO_2 emissions from sources between the injection flowmeter and the injection wellhead or between the production flowmeter and the production wellhead.

- Mass of CO_2 stored in subsurface geologic formations.

In addition, Subpart RR reporters must also develop and submit a monitoring, reporting, and verification (MRV) plan to EPA, receive an approved MRV plan from EPA, implement the EPA-approved plan, and submit annual reports. Each MRV plan must have the following elements:

- Delineation of the maximum monitoring area (MMA) and active monitoring area (AMA).

- Identification and evaluation of the potential leakage pathways and an assessment of the likelihood, magnitude, and timing of surface leakage of CO_2 through these pathways to the MMA.

- A strategy for detecting and quantifying any surface leakage of CO_2 in the event leakage occurs.

- An approach for establishing the expected baselines for monitoring CO_2 surface leakage.

- A summary of considerations made to calculate site-specific variables for the mass balance equation.

The AMA is the area that will be monitored over a specified time interval chosen by the reporter, which must be greater than 1 year. The MMA includes the extent of the free-phase CO_2 plume over the lifetime of the project plus a buffer zone of one-half mile. All of the area of the MMA will eventually be covered by one or more AMAs.

For additional information on the MRR Subpart RR, please refer to EPA's Web site, www.epa.gov/climatechange/emissions/subpart/rr.html.

SUMMARY

Carbon, capture, and storage (CCS) technology and policy development continue to advance at the state, provincial, and federal level. As these activities evolve, the PCOR Partnership will continue to evaluate their potential effects on CCS technology development and, where necessary, will provide technical input and guidance to regulators and those making policy

decisions. As new rules and regulations progress and are finalized, the PCOR Partnership will continue to provide its members with the latest, most current, information.

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