



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

999 18th STREET - SUITE 500

DENVER, COLORADO 80202-2466

Ref: 8WM-DW

All Commenters On:
Amoco Production Company
Nitrogen Injection Permits

RE: Issuance of Final UIC Permits Numbered:
CO2556-03105, Simon Land & Cattle #15U-2R Well;
CO2557-03106, Simon Land & Cattle #22-1 Well;
CO2558-03107, Simon Land & Cattle #15U-3 Well; and
CO2559-03108, Simon Land & Cattle #15U-4 Well,
Nitrogen Injection Pilot Project, Ignacio Blanco Field,
La Plata County, Colorado

Dear Commenter:

Enclosed is a copy of the Responsiveness Summary prepared by EPA to address the public comments received on EPA's intent to issue the four Underground Injection Control (UIC) Permits and a single Aquifer Exemption for AMOCO's proposed Nitrogen Injection Pilot Project enhanced recovery injection wells in Ignacio Blanco Field, La Plata County, Colorado. This Responsiveness Summary addresses all comments received following each public comment opportunity; included is a copy of the Memorandum of Understanding (MOU) for Coordination of Oil and Gas Related Actions and Regulation in the San Juan Basin.

Also enclosed is a copy of the Permit Modifications (two pages for the modified permit) resulting from the public comments. Procedures for appealing (to the Administrator) the EPA decision to issue the four AMOCO Final UIC Permits (as modified) are also enclosed. Please be aware that an appeal must be transmitted in accordance with these procedures within thirty (30) days of your receipt of this letter.

Please direct any questions and related correspondence to the attention of Gustav Stolz or Thomas Pike at Mail Code 8WM-DW; you may telephone Mr. Stolz or Mr. Pike at (303) 293-1416 or 293-1544, respectively.

Sincerely,

Thomas Pike, Chief
UIC Implementation Section

Enclosures

To All Commenters:

RE: Amoco Production Company: Proposed 4-Well Pilot
Nitrogen Injection Project; La Plata County,
Colorado, under the following UIC Final Permits

CO2556-03105, Simon Land & Cattle #15U-2R Well
CO2557-03106, Simon Land & Cattle #22-1 Well
CO2558-03107, Simon Land & Cattle #15U-3 Well
CO2559-03108, Simon Land & Cattle #15U-4 Well

Described below are the instructions for contacting the Administrator of the Environmental Protection Agency (EPA) in order to request an Administrative Review of the above-referenced Final Permits. The EPA Region VIII, Drinking Water Branch, Underground Injection Control Implementation Section, is issuing these four permits for the one-year-pilot underground injection of Nitrogen gas for the purpose of evaluating proposed enhanced recovery of methane coal-gas from the Fruitland Coal Formation. A copy of a typical Draft Permit was provided to each commenter at the hearing. Copies were also mailed upon request, so every commenter had an opportunity to review and comment on the Draft Permit prior to Final Permits issuance. Enclosed is a copy of the Responsiveness Summary which addresses each of the numerous written and oral comments. Two new permit conditions (not present in the Draft Permits) resulted from commenters' input and are included in the Final Permits. Copies of the two Final Permit pages which contain the new permit conditions are also enclosed herewith.

ADMINISTRATIVE REVIEW (40 CFR Section 124.19)

1. Any person who filed comments on the Draft Permit decision or participated in any public hearing on such decision may petition the Administrator to review any condition of the draft permit decision.
2. Any person who failed to file comments or participate in any public hearing on the Draft Permit decision may petition for administrative review only to the extent of changes from the draft to the final permit decision.
3. The petition must include a statement of the reasons supporting that review, including a demonstration that any issues being raised in the petition were previously raised during the public comment period or during any public hearing and, when appropriate, a showing that the condition in question is based on:
 - a. A finding of fact or conclusion of law which is clearly erroneous; or
 - b. An exercise of discretion or an important policy consideration which that Administrator should, in his or her discretion, review.

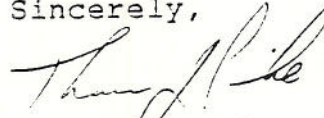
Four UIC Final Permits
Pilot Nitrogen Injection Project
Administrative Review
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4. Such a request must be made within thirty (30) days of service notice of the Regional Administrator's final permit decision, and shall be mailed to:

Administrator, US EPA
401 M Street, SW
Washington, D.C. 20460

5. Please be advised that your comments will have to be received by the Administrator within thirty (30) days of your receipt of the permit, with an additional three (3) day grace period for mail delivery [See 40 CFR Sections 124.19 (a) and 124.20 (d)]. For example, if you receive this notice on November 22, 1991, your response must be received by the Administrator by December 22, 1991.

Sincerely,



Thomas J. Pike, Chief
UIC Implementation Section

RESPONSIVENESS SUMMARY

AMOCO PRODUCTION COMPANY FOUR-WELL PILOT NITROGEN INJECTION ENHANCED RECOVERY PROJECT

CO2556-03105, Simon Land & Cattle #15U-2R Well
CO2557-03106, Simon Land & Cattle #22-1 Well
CO2558-03107, Simon Land & Cattle #15U-3 Well
CO2559-03108, Simon Land & Cattle #15U-4 Well

LA PLATA COUNTY, COLORADO

The Environmental Protection Agency (EPA) made a decision to issue the above-referenced Draft Permits in accordance with the UIC Program regulations. Public Notice of this decision was published in the Durango Herald on July 2, 1991.

During the initial Public Comment Period (July 2, 1991 through August 2, 1991) for the Draft Permits, EPA received a number of comments. A total of five letters and two telephone calls were received in response to the EPA public advertisement of its intent to issue Final Permits for the four proposed nitrogen gas enhanced recovery injection wells to Amoco Production Company. One letter was written by the Director of the Western Colorado Congress (representing approximately 1400 persons) requesting a public hearing because of its members' concerns about air and water quality, wildlife habitat and other surface damage, noise, and the potential of nitrogen gas reactions to generate nitrates and nitrides above and/or below the ground surface. Some of these same concerns were identified by the other respondents.

An EPA review of these comments indicated sufficient public interest and concerns of perceived potential endangerment of underground sources of drinking water (USDW) to justify a formal Public Hearing.

As a result of substantial public interest in the four proposed Amoco nitrogen gas enhanced recovery injection wells Draft Permits, the Environmental Protection Agency (EPA) conducted a Public Hearing in Durango, Colorado, September 25, 1991.

At the Public Hearing, Thomas J. Pike, Chief, UIC Implementation Section, Region VIII, EPA, described the EPA's underground injection control program, its goal of protecting ground water, its requirements concerning well construction, monitoring, and inspections, and its permitting process for injection wells. Gustav Stolz, UIC Petroleum Engineer, Region VIII, EPA, explained technical construction aspects in the Draft Permit for the four proposed nitrogen gas injection wells, together with their locations.

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Twenty four (24) commenters expressed their views orally and thirty (30) commenters expressed their views in writing (on their yellow registration cards) at the public hearing. An additional twenty seven (27) commenters expressed their views in writing subsequent to the public hearing. A summary of the issues and the number of comments on each issue is included below. This includes written and verbal (telephone) comments received during the initial comment period and at the public hearing.

TABLE I. SUMMARY OF ISSUES AND COMMENTS

Issues	Cards	Source of Comments			Total	
		(a) Letter	(b) Verbal	Written		
Grnd. Wtr. Pollution	6	2	15	2	0	25
Gas (N ₂ /CH ₄) in DW	9	2	3	7	1	22
Noise Pollution	15	2	15	11	2	45
Air Pollution	2	2	2	3	2	11
N ₂ Gas Reactions	1	5	7	5	2	20
Well Density	1	0	1	4	0	6
EIS, Env/Surf Impcts	14	4	15	9	3	45
No more Development	5	0	0	3	0	8
Miscellaneous	14	-	-	19	13	46
TOTAL COMMENTS						228

The above Tabulation indicates that a majority of the comments address "surface concerns". The EPA - UIC Program responses to the comments by "Issue" category are:

Ground Water Pollution: Commenters expressed concern about the potential of injected nitrogen gas and produced methane gas migration into underground sources of drinking water (USDW) and drinking water wells. The proposed construction of the enhanced recovery wells should ensure protection of actual and potential future underground sources of drinking water. Each of the proposed injection wells is to be cemented through the overlying USDW formations and the upper confining zone (the 1000-foot Kirtland Shale section) immediately above the Fruitland Formation pilot project coal seam injection zone.

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The construction of each proposed injection well (4), of the existing (1) salt water disposal well, of each Fruitland Coal gas production well (2), and of the plugged and abandoned well (1) within a 1/4 mile radius of the proposed enhanced recovery injection wells is sound and provides protection from migration of injected fluids into actual or potential underground sources of drinking water.

Gas (Nitrogen/Methane) in Drinking Water: The current understanding is that gas migration into some drinking water wells is through conventional Mesa Verde gas production wells (for which there was no requirement to cement off the Fruitland zone). Commenters expressed concern that this could provide potential unique avenues for gas migration into existing shallow drinking water wells. No such unique combination of well(s) construction exists within the Area of Review (AOR) of this nitrogen injection project. However, in order to ensure that this project does not result in nitrogen/methane gas migration into drinking water wells, Amoco is being required to submit a plan for EPA approval for the purpose of monitoring those drinking water wells which are present within the AOR for methane and nitrogen gas. The plan must include:

- a) a satisfactory system of water sampling all drinking water wells which are present within the AOR for the purpose of conducting gas analyses which will identify the presence/absence of methane gas;
- b) a system of gas (methane & nitrogen) content and gas composition (isotopic analyses) for all samples of drinking water which have demonstrated the presence of gas, and which is consistent with the gas analyses procedures employed by the Ground Water Task Force (GWTF);
- c) monthly reporting of the sampling/analyses results; and
- d) a contingency plan to address the situation if analyses results indicate the presence of increased content of nitrogen and/or methane.

The Draft Permits have been changed to include these items; otherwise there have been no changes from the Draft Permit as issued by EPA, copies of which were made available to all interested parties.

Noise Pollution and Air Pollution: Commenters were concerned with the possibility of noise pollution and air pollution resulting from the operation of the proposed project enhanced recovery injection

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and production wells. Notwithstanding the authorization that the approved permits will provide to Amoco's underground enhanced recovery operations, it will remain Amoco's responsibility to comply with all federal, state, or local environmental requirements, including but not limited to the Noise Control Act of 1972, as amended, 42 U.S.C.A. Section 4901, et seq., and the clean Air Act, as amended, 42 U.S.C.A. Section 7401, et seq. As provided by the federal regulations at 40 CFR Section 144.35, the issuance of this permit "does not convey any property rights of any sort, or any exclusive privilege [nor does it] authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations."

In addition, EPA and various other state and federal agencies have entered into a Memorandum of Understanding (MOU) for Coordination of Oil And Gas Related Actions and Regulation in the San Juan Basin. This agreement provides for a third party to review and report on environmental impacts from coal bed methane development in the San Juan Basin. It also calls for the agencies to cooperate in developing best management and regulatory practices to anticipate and respond to issues arising from oil and gas activity in the area.

Nitrogen Gas Reactions: Commenters expressed concern regarding the possible reaction of inert nitrogen gas with other elements and/or compound to generate noxious nitrides/nitrates which could migrate into underground sources of drinking water or into existing shallow drinking water wells. Dr. Ronald W. Klusman, Colorado School Of Mines, submitted for EPA review his conclusion that "... nitrogen flooding does not pose any environmental hazard to deep or shallow groundwaters of the area." At the request of the Region VIII UIC Implementation Section staff, Dr. Klusman's analysis and conclusions were subsequently reviewed by Dr. Hugh H. Russell, Microbiologist, at the Robert S. Kerr Environmental Research Laboratory of the U.S. Environmental Protection Agency in Ada, Oklahoma. Dr. Russell advises that "... all information and assumptions presented by Dr. Klusman seem correct."

Well Density: Commenters expressed concern regarding the increased well density caused by additional injection wells required by the nitrogen (N₂) injection project. The well spacing rules have been established by the State of Colorado Oil and Gas Conservation Commission (COGCC) for gas production wells in the Ignacio Blanco Field. Any increase in the gas production well density rules would be granted only after additional public hearing(s) and on a case-by-case basis as a result of an analysis of technical data that describes specific unique features. Gas well spacing in the

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Responsiveness Summary
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Ignacio Blanco Gas Field has been determined to be 320 acres per well. Because one existing gas producing well (SLC #22-1) in the project is to be converted to nitrogen injection, it required a hearing and subsequent approval of the COGCC. The nitrogen injection pilot project does not alter the field-wide gas well spacing. Should the project be successful, any expansion of this type of project would require additional permitting (and public participation) by the Environmental Protection Agency (Regions VI and VIII), the Colorado Oil and Gas Conservation Commission, the Bureau of Land Management, and the New Mexico Oil Conservation Commission. This N₂ injection project does not permanently affect well density.

EIS, Environmental/Surface Impacts: Commenters expressed concern regarding a variety of surface impacts and strongly suggested that the EPA should develop an Environmental Impact Statement. Section 124.9(b)(6) of 40 CFR provides, in pertinent part, "... UIC ... permits are not subject to the environmental impact statement provisions of Section 102(2) (c) of the National Environmental Policy Act, 42 U.S.C. Section 4321 [NEPA]. It is believed that the Memorandum of Understanding (MOU) discussed earlier would address the surface impact issues that a formal NEPA environmental impact statement would address. A copy of this MOU is attached; the MOU may be considered an integral part of this Responsiveness Summary.

No More Development: Commenters expressed concern regarding the potential for field-wide expansion of similar N₂ injection projects and for additional gas production wells. Natural resource (minerals) development/extraction by the mineral estate ownership is regulated by the State of Colorado on private lands and by the Bureau of Land Management on Federal/Tribal lands. This concern is beyond the scope of those activities regulated by EPA under the UIC Program.

Miscellaneous Issues: There were a number of commenters with a variety concerns which were not addressed under the categories listed and addressed above. These include:

- (1) EPA has already made the decision to issue the permit. In the Public Notice, EPA advised that it "...is hereby serving notice of intent to issue these four UIC permits...". The purpose of the Public Notice was to advise the general public of the EPA preliminary determination to approve the Draft Permits. Copies of typical permits were made available so that the public could comment on the permit issues. In response to the issues raised by the public, EPA has made the permit conditions more stringent, and a final decision was made only at the conclusion of the public participation phase of the permitting process.

- (2) **Objection to an experimental gas injection project.** The injection of gas is included in the UIC regulations; gas injection is routinely conducted for enhanced oil recovery in reservoir partial pressure maintenance projects in areas where there is an excess of natural gas. The injection of gas is not an experimental process. The injection of nitrogen gas, as it pertains to potential reactions with other ions to generate harmful compounds, has been addressed above.
- (3) **Why is there no compensation to the surface owners?** The permit in question is concerned primarily with groundwater protection. Payments to surface owners (and other contractual arrangements between private parties) are outside the scope of EPA's underground injection control program.
- (4) & (5) **EPA should conduct a net pollution audit, with reference to the surface; why does EPA have only underground jurisdiction?** These considerations are not included under the UIC Program regulations, as the "Underground" name of the program implies. However, EPA believes these issues will be addressed under the provisions of the interagency MOU.
- (6) **EPA approves the projects without the people having any say.** The purpose of the public comment period and public hearing was to provide the concerned public with an opportunity to comment; EPA has attempted to respond to the comments as well as possible in this Responsiveness Summary.
- (7) **Conduct a 'net energy gain' analysis.** This activity is outside those activities regulated under the UIC Program. However, EPA believes these issues will be addressed under the provisions of the interagency MOU.
- (8) **The surface owners are totally frustrated because the surface issues are not 'protected' nor considered by the Environmental 'Protection' Agency.** The UIC Program regulations do not address these types of issues; public comment was solicited for the purpose of addressing the specific Draft Permit issues. Broader environmental protection issues will be considered under part 2 of the attached interagency MOU.
- (9) **The "But For" clause:** Comments imply that surface impacts would not be a factor "but for" the down-hole activity. EPA's authority to regulate non-groundwater impacts by means of UIC permits has not been addressed in reported case law. EPA would reiterate that Amoco's permit confers no right to violate any environmental laws, whether or not related to groundwater issues.

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This concludes a review of the public comments. Having reviewed the Administrative Record, EPA has made the decision to issue the Final Permits for the four Simon Land and Cattle Company (SLC) injection wells; one proposed additional operator requirement is applicable to each of the four Draft Permits as a result of the public comments. This requirement addresses the monitoring (periodic sampling and analyses for methane gas and nitrogen gas) of water samples obtained from each drinking water well within the project Area of Review; it will be included as an addition to Permit Condition II. D. 1. These four SLC wells are numbered:

- 1) SLC #15U-2R (CO2556-03105);
- 2) SLC #22-1 (CO2557-03106);
- 3) SLC #15U-3 (CO2558-03107); and
- 4) SLC #15U-4 (CO2559-03108)

*outside of EPA
mtg. 1/15/91*

Memorandum of Understanding
Among
The Bureau of Land Management
Colorado and New Mexico State Offices
and
the Environmental Protection Agency
Regions VI and VIII
and
The Colorado Oil and Gas Conservation Commission
and
The New Mexico Oil Conservation Division
for
Coordination of Oil and Gas Related Actions and Regulation
in the San Juan Basin

The Bureau of Land Management (BLM) Colorado State Office (CSO) and New Mexico State Office (NMSO); the Colorado Oil and Gas Conservation Commission (COGCC); the New Mexico Oil Conservation Division (NMOCD); and the Environmental Protection Agency (EPA), Regions VI and VIII, agree that, due to the heightened interest and demands created by coal bed methane development, the regulatory response to oil and gas development in the San Juan Basin of Colorado and New Mexico requires interagency coordination and information sharing. To this end, the agencies agree to the following:

1. Information Sharing.

To the extent authorized by law, the agencies will share nonproprietary geologic, hydrologic, engineering, and other information and data obtained on the San Juan Basin. The agencies will also keep each other advised of upcoming management decisions and other agency actions relating to oil and gas activity in the basin.

2. Review of San Juan Basin Environmental Analyses

Within three months of the execution of this agreement, the agencies will develop, subject to the approval of the contracting authority of the various agencies, a mechanism for contracting and a formula for funding a third party inventory and review of the existing environmental analyses, equivalent documents, and related information prepared by the various federal and state agencies with jurisdiction in the basin. The third party will inventory and summarize the existing analyses, documents, and information, and do a review for completeness, consistency, and coordination of analysis and mitigation. Within four months after execution of the contract, the review will be completed and a report made to the heads of the agencies. Within thirty days of receiving the report, the heads of the agencies will meet to review the report and determine any further course of action and agency participation.

3. Information Review and Dissemination.

The agencies will develop a means to report to the interested public new information, agency actions, etc., on coal bed methane activity in the San Juan Basin. Initially, the agencies will utilize the San Juan Basin Oil and Gas Coordinating Committee as a means for disseminating information or reports concerning their actions under this agreement.

4. Best Management Practices.

The agencies will work together to develop common best management and regulatory practices to anticipate and respond to issues relating to oil and gas activity in the San Juan Basin. The agencies further agree to consider implementation, within their respective jurisdictions, of the best management and regulatory practices, including those recommended by the technical committees.

5. Technical Committees.

The agencies will form, and provide technical expertise and representation to, ad hoc technical committees for the coordination and determination of best regulatory practices relating to oil and gas activities in the San Juan Basin. Such technical committees will be formed when necessary to resolve technical regulatory issues identified by any party to this agreement. Agency participation on a technical committee will be determined by the issue identified for resolution: each party to this agreement will not necessarily be represented on each technical committee. The committees will work to develop common and best approaches to technical issues, and make recommendations to the appropriate agency officials.

This agreement will become effective as of the date of the last signature to this document. This agreement will be reviewed for adequacy, effectiveness, and continuing need five years from the effective date, unless previously canceled by any party to the agreement by written notice to all other parties.

Bob Moore
Colorado State Director, BLM

10/25/91
Date

Sam Woodard
New Mexico State Director, BLM

4/28/91
Date

J. Stucker
EPA Regional Administrator, Region VI

1/4/91
Date

James H. ...
EPA Regional Administrator, Region VIII

8-26-91
Date

Dennis R. Bicknell
Director, Colorado Oil and Gas
Conservation Commission

9/17/91
Date

Dean ...
Director, New Mexico Oil Conservation
Division

8/23/91
Date