

WMUR:YAY
Docket No. 40-8793

Conoco, Inc.
ATTN: Mr. Terrence W. Quigley
Environmental Engineer
555 17th Street
Denver, CO 80202

Gentlemen:

We have reviewed your in situ environmental report dated December 3, 1981. Based on this evaluation, we have concluded that additional information, particularly in the area of groundwater monitoring, will be required to complete our review. Below are our questions, comments, and requests for additional information:

1. Perforated PVC pipes of the proposed leak detection system (LDS) smaller than four inches in diameter and placed nearer to the bottom of the subgrade trench than indicated in Figure 3.3-16 must be considered. In this manner, a smaller quantity of leakage would be needed to fill up the area between the trench bottom and the perforations in the pipes. Field testing of LDS's at existing licensed facilities have shown that perforated PVC pipes of one inch diameter and within $\frac{1}{2}$ inch of the trench bottom will readily detect seepage.
2. Provide information with regard to the guidelines in Staff Technical Position (STP) WM-8101 "Design, Installation, and Operation of Natural and Synthetic Liners at Uranium Recovery Facilities" (copy attached) in the following areas:
 - a) Subgrade and sand layer preparation (STP Section 3.2)
 - b) Need for diversion ditches (STP Section 3.3)
 - c) Installation and testing of field seams (STP Section 3.4)
 - d) Program for testing permeabilities of sand layer and pond subgrade (STP Section 3.5)
 - e) Program for field-testing effectiveness of leak detection system (STP Section 3.5)

Distribution: w/o enclosure
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*Docket File 40-8793

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- f) Submittal of construction report (STP Section 3.6)
3. Provide additional information with regard to various aspects of your proposed groundwater monitoring programs, as follows:
- a) Provide the proposed locations of injection and production wells and excursion and restoration monitor wells in the R&D Area.
 - b) Provide baseline water quality and water level data for each restoration and excursion monitor well.
 - c) Provide geophysical logs, core logs, well completion details, and well completion techniques for all wells specified in a) above, as well as well integrity testing techniques for the injection and production wells.
 - d) Provide your proposed program for monitoring water levels in the excursion monitor wells.
 - e) Regarding your proposed upper control limits (UCL's) for excursion control parameters, your use of 5 mg/l as the UCL for uranium and your proposal to add 50 mg/l to the highest baseline value for the other excursion control parameters are not acceptable. Based on sampling data provided in your report (Table 2.2-2), uranium concentrations, with the exception of one sample in Well No. D212C, are less than 1.0 mg/l; therefore, use of 5 mg/l as the UCL for these wells is not justified. Also, adding 50 mg/l to the highest baseline value for each well for establishing UCL's for certain parameters would, in some cases, more than triple the highest baseline value, such as the highest baseline value for chloride of 19 mg/l in Well No. 263. This method is not acceptable to the staff for excursion parameters which naturally occur at such low concentrations. Your proposed methods of determining UCL's would not provide early detection of an excursion and would require significant increases above background before an excursion is deemed to occur. In addition, our position is that an excursion is confirmed not only if two parameters exceed their respective UCL's but also if one excursion control parameter exceeds its UCL by 20% or more, on a well-by-well basis.
 - f) In your synopsis regarding your proposed restoration goals, you state p. (4-3) that if the value for each chemical parameter is within either 20% of the original high value or 20% of the

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FEB 11 1982

accepted drinking water limits, whichever is higher, that restoration is considered to be complete. For R&D operations the objective of restoration should be a return to baseline groundwater quality for all indicators in all affected groundwaters. Based on a review of restoration data and background water quality data, a determination will be made on what increment above background may be acceptable for certain parameters. In no case, however, should the potential use of the water be degraded. Where the baseline concentration of a particular indicator is less than drinking water standards, the approximate established state or federal criteria may be used to establish maximum permissible values for restoration purposes.

Additional information regarding guidelines acceptable to the NRC staff for establishing UCL's, for baseline water quality monitoring, for water level monitoring, and for aquifer restoration may be found in Staff Technical Position WM-8102, "Groundwater Monitoring at Uranium In Situ Solution Mines." A copy of this position is attached.

4. Provide information with regard to surety arrangements pertinent to the decommissioning and decontamination of site facilities. Solution mining operations are required to maintain a surety to cover all groundwater and site restoration activities. You should provide a breakdown of all decontamination, restoration, and reclamation costs. Provide the bases for any unit and lump sum costs associated with the surety; discuss how the unit costs were determined, how contractor's estimates were used, and how the lump sum costs were determined. You should state the expected purchase cost and manufacturer of all major equipment, such as a reverse osmosis unit, required for site restoration and decommissioning activities. You should also provide, in detail, the estimated costs of offsite disposal of contaminated wastes and equipment. Any aspects of the site or operation which provide for reduction in normal and reasonable costs should be fully justified and discussed.
5. Provide a table of flow rates and composition of liquid wastes that will be discharged to the evaporation ponds.

On January 19, 1982, Mr. Dan Gillen of my staff telephoned your Mr. Terrence Quigley and requested the submittal of additional geotechnical engineering information. A record of this call is attached and formally documents the requested information.

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FEB 11 1982

Please provide responses to all of the above requested information by March 15, 1982, so that our review may proceed on schedule. Any changes to the original license application or environmental report made prior to our final determination on issuance of a source material license should be submitted to the NRC in the form of replacement pages, figures, charts, graphs or tables. The date of the change should be included on each page of replacement material. You should review the entire application and related documents to eliminate any contradictory statements or proposals which may result from changes to a particular section or chapter.

Additional questions with regard to your pumping test results will be forthcoming in the near future.

If you have any questions on the above, please contact Ms. Yvonne Young of my staff at (301) 427-4649.

Sincerely,

Original Signed by:
J. J. Linehan

John J. Linehan, Section Leader
Operating Facilities Section I
Uranium Recovery Licensing Branch
Division of Waste Management

Attachments:

1. Staff Technical Position WM-8102 DCS# 82 012 70388
2. Record of telephone call to Mr. Quigley
3. Staff Technical Position WM-8101 DCS# 81 0714 0824

2/9/82 MAG II

Revision No. 1

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JAN 22 1982

WMUR:DMG
Docket No. 40-8793

MEMORANDUM FOR: John J. Linehan, Section Leader
Operating Facilities Section I
Uranium Recovery Licensing Branch
Division of Waste Management

Yvonne Young, Project Manager
Operating Facilities Section I
Uranium Recovery Licensing Branch
Division of Waste Management

FROM: Dan M. Gillen, Project Manager
New Facilities Section
Uranium Recovery Licensing Branch
Division of Waste Management

SUBJECT: INITIAL REVIEW OF PROPOSED EVAPORATION PONDS FOR
CONOCO'S RUBY RANCH IN SITU PROJECT

I have reviewed the geotechnical aspects of the proposed evaporation ponds as presented in section 3.3.4 of the applicant's December 3, 1981 report entitled "Ruby Ranch In Situ Project Environmental Report". Based on my review, I find that although borings have been made at the proposed site of the ponds, a geotechnical report presenting the results of the borings, results of subsequent testing, and a set of construction specifications must be submitted prior to completion of my review.

In order to lessen the impact on the review schedule that might occur due to time spent in the preparation of the outstanding geotechnical report, I obtained your approval to telephone Mr. Terry Quigley of Conoco in advance of a written request. By telephone call on January 19, 1982, I discussed the results of my review with Mr. Quigley. At his request, I outlined the basic items that should be included in the outstanding geotechnical report for the evaporation ponds.

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JUN 22 1982

- 2 -

The outline discussed with Mr. Quigley is as follows:

I. General description of the boring investigation performed and subsoil conditions encountered.

II. Boring logs

A. Plan showing location of holes.

B. Logs of all borings.

1. Description of all materials encountered.

2. Standard Penetration Test values (blow counts).

3. Surface elevation at each boring.

4. Depth of samples; Type of samples.

5. Elevations where groundwater was encountered.

III. Results of testing

A. Foundation materials.

1. In situ permeability tests.

2. Natural moisture content and dry density.

3. Atterberg limits.

B. Embankment materials: moisture-density relationship.

IV. Construction specifications

A. Preparation of foundation

1. Scarification and proofrolling.

2. Approval by engineer.

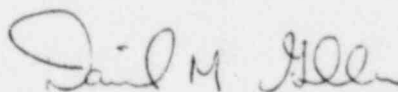
B. Earthfill placement

JAN 22 1982

- 3 -

1. Embankment material
 - a. Moisture and density specifications.
 - b. Lift thickness.
 - c. Frequency of testing.
 - d. Maximum allowable size of fill material.
 - e. Specification to prevent placement of frozen materials.
2. Drainage blanket
 - a. Moisture and density specifications.
 - b. Frequency of testing.
 - c. Gradation requirements.
- C. Liner and leak detection system installation and testing
(Mr. Quigley was referred to the Branch Position on Liners).

When Mr. Quigley informed me that it was likely that Chen and Associates would prepare the report, I pointed out the fact that they have previously prepared an acceptable report and set of construction specifications for the Uranerz in situ project. I informed him that our scheduled date for Conoco's response is February 19, 1982 and asked that he let me know if problems develop in submitting the report by that date.



Dan M. Gillen, Project Manager
New Facilities Section
Uranium Recovery Licensing Branch
Division of Waste Management