



Jack Rathfield DM
PO 3

PDR 40-8714

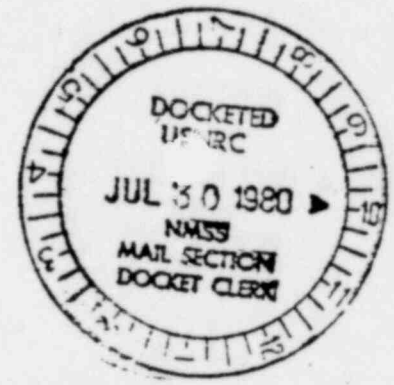
MEMORANDUM

TO FILE: Cleveland-Cliffs Iron Company, Collins Draw, 3RD, Campbell County, Wyoming

FROM: Margery Hulburt, Chief Hydrologist *MH*
Kathy Muller, Hydrologist *KM*

DATE: July 15, 1980

SUBJECT: Fourth Hydrologic Review of Leach Field Application



I. General Comments

The leach field was approved on April 25, 1980 with conditions on its use to be set at a later date. This memorandum recommends conditions to be satisfied 1) before use of the leach field and 2) by a specified deadline, either before or after the leach field is put into operation.

II. Conditions to be Satisfied Before Use of the Leach Field

1. RE: Baseline Sediment Quality (Table IV, Page 13).
 - a. The baseline core analyses should be submitted. These analyses should include the parameters outlined in Jim Wolf's memo of April 16, 1980.
 - b. Soil sample depths should be included.
 - c. The results of these analyses should be used to propose limits of sediment contamination beyond which the sediments must be excavated and removed to a licensed tailings disposal area.
2. RE: Moisture Block Monitoring Program (Page 2).
 - a. Notification procedures should be consistent with Water Quality Division permit condition 5. Land Quality Division should be notified after verification of any moisture change greater than 5% over established baseline moisture conditions.
 - b. The radius of influence or detection of the moisture blocks should be given.

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add'l info.

3. RE: Suction Cup Monitoring (Page 2).

Chemical limits should be proposed for radium -226, selenium, arsenic, uranium, ammonia - nitrogen, total dissolved solids, chloride, and sulfate beyond which control measures must be taken or the leach field shut down and cleaned up.

III. Additional Conditions

1. RE: Geologic Cross-Sections.

Two detailed geologic cross-sections should be drawn from the surface to the 50-foot shale using the new core hole data.

2. RE: Soil Bulk Density (Page 7).

Cleveland Cliffs should give documentation as to why 108 lb/ft^3 is an acceptable value for bulk density. It is not sufficient to simply say the value is acceptable. If this bulk density was measured, the method should be provided.

3. RE: Moisture Distribution (Page 9).

The reasons for assuming a uniform 29% saturation should be addressed. How closely is this assumption met at the site? What data supports this assumption? How sensitive are the calculations to an error in this assumption?

4. RE: Unsaturated Flow.

The following comments from Kathy Muller's June 6, 1980 memo should be addressed:

- a. The effect of batch discharge on the assumption of unsaturated flow should be analyzed. This batch process may result in pressure head distributions causing saturated flow.
- b. The effect of hysteresis in the soils should be addressed in relationship to the flow system.
- c. The effect of sodium discharge and a change in permeability of the drain field should be considered.

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5. RE: Computer Model.

The following comments from Kathy Muller's June 6, 1980 memo should be addressed:

- a. The assumptions made in describing the flow system, by the included equations, should be clearly enumerated. The degree to which these assumptions are met should be addressed.
- b. A sensitivity analysis of the error introduced into the results by an error in input parameters should be included.
- c. All graphs of flow paths should be labelled.

MH:lv

cc: Dennis Morrow ✓
Jim Wolf

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MEMORANDUM

TO FILE: Cleveland-Cliffs Iron Company, Collins Draw, 3RD, Campbell County,
Wyoming

FROM: Kathy Muller, Hydrologist KOM

DATE: July 11, 1980

SUBJECT: Observations During Inspection of the Collins Draw Site on July 1, 1980

Persons Present:

Margery Hulburt, DEQ-LQD
Dennis Morrow, DEQ-LQD
Kathy Muller, DEQ-LQD
10-12 Cleveland-Cliffs Personnel and Consultants
Truman Louderback, Cleveland-Cliffs

Site:

The plant seemed well maintained except for the room containing the yellow cake. That room had yellow dust on the floor and various pieces of equipment. The well field pad and the pressure control system for the wells seemed correctly designed. However, it should be noted that inflatable packers are being used on injection/production wells to prevent leakage of the lixiviant into the upper section of damaged casing. The soil moisture blocks were in place in the leach field, but the leach field is not in use at this time. Phreatophytes (cottonwoods) can be observed on Collins Draw above and below the site.

Meeting:

The procedure for setting upper control limits was discussed. The results of the meeting were:

1. Present Two Sets of U.C.L.'s:

Cleveland-Cliffs is presently operating under two sets of U.C.L., one for DEQ and another for NRC. DEQ offered its assistance at resolving this situation.

2. Statistical T-Distribution, Versus Chet McKees' Method: (Throwing out the high value and then using the upper range as an excursion indicator.)

DEQ-LQD agreed to consider the alternative method if data and comparisons were submitted.

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2. Well by Well U.C.L. versus Aquifer U.C.L.

DEQ prefers to stay with the present well by well method in order to retain the earliest warning of an excursion as opposed to the aquifer U.C.L. suggested by Cleveland-Cliffs.

4. Proposed Two U.C.L. Method:

Cleveland-Cliffs proposed using 2 sets of upper control limits; one by the present method, and a second by Chet McKee's method applied on an aquifer basis. Whenever either scheme indicated an excursion, a meeting would be held with DEQ to determine if the excursion was "Real". This proposal was rejected by DEQ.

KM:lv

cc: Margery Hulburt
Dennis Morrow ✓

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