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LBP-89-35

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges
John H. Frye, III, Chairman
Dr. James H. Carpenter
Dr. Jerry R. Kline

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In the Matter of
Kerr-McGee Chemical Corporation
(West Chicago Rare Earths
Facility)

Docket No. 40-2061-ML

ASLBP No. 83-495-01-ML

November 22, 1989

MEMORANDUM AND ORDER
(Ruling on Motions for Summary Disposition)

The history of this proceeding is set out in LBP-89-16, 29 NRC 508 (1989) and need not be repeated here. Pursuant to the schedule contained in LBP-89-16, Illinois moved for summary disposition of certain contentions¹ and Kerr-McGee cross-moved for judgement in its favor on all contentions. In an unpublished Memorandum and Order of November 14, we denied motions for summary disposition of contentions 4(a) and 3(g)(2). We will resolve those contentions in an initial decision following a hearing scheduled for December

¹Illinois' October 2 unopposed motion for leave to amend Appendix A to its motion is granted.

14 and 15. The remaining contentions are resolved in this Memorandum and Order.

Before turning to the motions for summary disposition, we must address two collateral matters. First, we must decide Kerr-McGee's motion to dismiss contention 4 as a sanction for Illinois' alleged failure to fulfill its obligations. Second, we must decide Kerr-McGee's motion for this Board to protect its jurisdiction by issuing an order directing Illinois not to file a final application for an amendment to its agreement with NRC which would enable it to assume jurisdiction over the mill tailings which are the subject matter of this proceeding.

KERR-MCGEE'S MOTION FOR SANCTIONS

Kerr-McGee believes that Illinois' efforts in advancing and briefing contention 4 reveal that it has not adequately fulfilled its obligation to thoroughly examine the relevant facts available to it and fully advise the Board in regard to them. Kerr-McGee urges that we dismiss contention 4 as a sanction. Needless to say, Illinois opposes this result.²

Kerr-McGee's complaint is quickly answered. However one may characterize the quality of Illinois' presentation of contention 4 and its motion for summary disposition, it

²See Kerr-McGee's opposition to Illinois' motion and cross-motion for summary disposition of August 22, pp.5-14; Illinois opposition to Kerr-McGee's cross-motion of September 21, pp.2-4.

is clear that Illinois did not fail to comply with any affirmative obligation to disclose information in response to discovery requests or otherwise. Even were we to agree with Kerr-McGee that Illinois' motion suffered from insufficient preparation and therefore made our job more difficult, we could not properly dismiss contention 4 as a sanction for not producing higher quality work. The penalty for poor preparation is an adverse ruling on the merits of an issue which, had the preparation been thorough, might have been decided differently. The cases cited by Kerr-McGee do not dictate a different result. Kerr-McGee's motion for sanctions is denied.

KERR-MCGEE'S MOTION FOR AN ORDER
PROTECTING THIS BOARD'S JURISDICTION

On October 27, Kerr-McGee filed a motion seeking an order which would protect this Board's jurisdiction to complete this proceeding. This motion is motivated by the fact that Illinois is seeking to amend its agreement with the Commission under the terms of § 274 of the Atomic Energy Act in order to acquire jurisdiction over the mill tailings located on Kerr-McGee's West Chicago site. If the Commission delegates such authority to Illinois, Staff will seek to terminate this proceeding on the ground that authority to rule on Kerr-McGee's application to dispose of the tailings no longer resides in the Commission. Kerr-McGee asks that we order Illinois not to file a final

application for such authority until a final decision is achieved in this case.

As we indicated in LBP-89-16, we understand and sympathize with Kerr-McGee's frustration at the seeming inability of this Commission to make a decision on its application.³ Its frustration must be compounded by the prospect that, after 12 years and the expenditure of substantial Commission resources, the Commission might delegate authority for the matter to Illinois on the very eve of finally reaching a decision.

Nonetheless, Illinois and Staff correctly point out that we have no jurisdiction to issue such an order.⁴ We are empowered by the Commission to decide issues in controversy concerning Kerr-McGee's application. That authority does not permit us to prohibit Illinois seeking delegation of authority from the Commission pursuant to § 274. Such an application simply does not involve review by an atomic safety and licensing board. It is a separate proceeding before the Commission. Consequently, Kerr-McGee should direct its request for relief to the Commission. The Commission has authority to decide whether it wishes to

³29 NRC at 516-17.

⁴See Illinois' and Staff's responses of November 16 and 17, respectively.

resolve Kerr-McGee's application or delegate authority for its resolution to Illinois.⁵ Kerr-McGee's motion is denied.

CONTENTION 4

Kerr-McGee proposes to dispose of the thorium mill tailings in an engineered disposal cell situated above-grade on its site located within the City of West Chicago. Contention 4 alleges that Kerr-McGee's application does not comply with Criteria 1, 2, 3, 4, 6, 7A, and 12 of Appendix A to 10 CFR Part 40. Briefly, this contention asserts the following.

Staff has misapplied Criterion 1, which states that the general goal of siting and design decisions is permanent isolation by minimizing dispersion by natural forces without the need for ongoing maintenance. This Criterion mandates that remoteness from populated areas, natural conditions which contribute to the isolation of the tailings from groundwater, and the potential for minimizing dispersion by erosion be considered in judging alternative and existing sites. (Contention 4(a).)

Kerr-McGee has not demonstrated under Criterion 2 that economic and environmental costs or the nature of the wastes make it impracticable to dispose of the tailings at an

⁵For the information of the parties and the Commission, we expect to conclude our review in early 1990.

existing large disposal site, or that the advantages of onsite disposal clearly outweigh the cost of perpetual surveillance. (Contention 4(b).)

Criterion 3 states that the prime option for tailings disposal is below grade, but permits above grade disposal where below grade is not environmentally sound or is otherwise impracticable. This criterion requires that above-grade disposal provide reasonably equivalent protection against erosion as below grade. Illinois alleges that the latter requirement will not be met without active maintenance (Contention 4(c)), and points to Criterion 12 for the proposition that isolation must be maintained without active maintenance (Contention 4(g)).

Similarly, Illinois alleges that Criterion 4's requirement concerning the contours of the disposal site (which must be as close as possible to those which would exist if the tailings were disposed of below grade) will not be met (Contention 4(d)), and that Criterion 6's requirement concerning isolation (which must be provided, to the extent reasonably achievable, for 1000 years and, in any event, for 200) years will not be met without active maintenance (Contention 4(e)).

Finally, Illinois alleges that Staff has not determined that Kerr-McGee has implemented a detection monitoring program required by Criterion 7B in order to permit the

establishment of groundwater protection standards under Criterion 5B(1). (Contention 4(f).)

Thus Illinois urges disapproval of Kerr-McGee's proposal on three grounds:

First, that Criterion 1, if properly construed, requires the disapproval of the proposal because of the population density surrounding the site, the proximity of the water table, and the necessity for above grade disposal that makes the disposal cell vulnerable to both human intrusion and natural erosional forces;

Second, that Criterion 2 requires that far more serious consideration be given to disposal at an existing large tailings site; and

Third, that the requirements of Criteria 3, 4, 6, and 12, which all relate to protection against erosion without active maintenance, are not met by the proposal.

These arguments present questions which have not been heretofore considered by the Commission's adjudicatory boards. On November 14, we issued a Memorandum and Order which denied Illinois' and Kerr-McGee's motions for summary disposition of contention 4(a), which deals with Criterion 1, and Kerr-McGee's motion for summary disposition of contention 3(g)(2), which concerns Staff's failure to validate the equation used to evaluate transport of contaminants through the unsaturated zone. We scheduled a

hearing on certain limited factual issues pertaining to those contentions. Following that hearing, we will issue an initial decision explaining in full our reasoning with respect to those contentions. In this Memorandum and Order, we begin our consideration of the motions for summary disposition with contentions 4(c), 4(d), 4(e), and 4(g), which concern Criteria 3, 4, 6, and 12.

Criteria 3, 4, 6, and 12

Criterion 3 states a preference for below-grade disposal and states that, if such is not possible, above-grade disposal is to provide equivalent isolation. Criterion 4 states site and design requirements which must be met by both above- and below-grade disposal cells. Criterion 6 sets performance standards for disposal cells. Criterion 12 provides that no active maintenance should be required in order to preserve isolation.

Contention 4(c) alleges that Kerr-McGee has not demonstrated that its proposed above-grade disposal cell will provide equivalent isolation without active maintenance. Contention 4 (d) alleges that the embankment and cover slopes will not be relatively flat or as close as possible to those which would be provided by below-grade disposal, in contravention of Criterion 4. Contention 4(e) alleges that active maintenance will be necessary to meet the performance standards of Criterion 6, while Contention

4(g) alleges that human intrusion, natural forces, and cell design indicate a significant potential that active maintenance will be necessary. Illinois and Kerr-McGee have moved for summary disposition on contentions 4(c), (d), (e), and (g).

At the outset, we must determine what constitutes active maintenance. Illinois did not address this question in its motion for summary disposition, while Kerr-McGee referred to the definition contained in Part 61, pertaining to land disposal of radioactive waste, in its cross-motion. That definition provides

"Active maintenance" means any significant remedial activity needed during the period of institutional control to maintain a reasonable assurance that the performance objectives . . . are met. Such active maintenance includes ongoing activities such as the pumping and treatment of water from a disposal unit or one-time measures such as replacement of a disposal unit cover. Active maintenance does not include custodial activities such as repair of fencing, repair or replacement of monitoring equipment, revegetation, minor additions to soil cover, minor repair of disposal unit covers, and general disposal site upkeep such as mowing grass.

10 C.F.R. § 61.2 (1988) (emphasis added). Illinois and Staff pose no objections to this definition in their responses to the cross-motion.

We agree with Kerr-McGee that § 61.2 provides guidance which we may use in interpreting Appendix A. We reach this conclusion because the goal stated in § 61.44, elimination to the extent practicable of the need for active site maintenance

following closure, is very similar to the goal of Criterion 12. With this definition in mind, we address Illinois' and Kerr-McGee's arguments.

Contentions 4(c) and (d)

In its motion on contentions 4(c) and (d), Illinois argues that because the 20% slope proposed for the disposal cell's sides, while not prohibited, will require active maintenance over the long term in order to resist erosion, the cell will not provide isolation equivalent to that provided by below-grade disposal. Illinois bases this argument on the affidavit of Dr. Gerald R. Thiers. Dr. Thiers concludes that the cell will not comply with criteria 3 and 4 on the basis of his review of Chapter 3 and Appendix B of the Staff's SFES.⁶

In its opposition to Illinois' motion and its cross-motion on these contentions, Kerr-McGee points out that Criterion 3 requires that above-grade cells provide reasonably equivalent, not equivalent, isolation to that provided by below-grade cells. Moreover, the slope of the sides of the cell, 5h:1v (one foot vertical rise for each five feet of horizontal run), complies with Criterion 4(c). Thus no violation of Criterion

⁶See Exhibit C to Illinois' motion at pp.2-4.

3 is shown.⁷ The specific factual assertions of Dr. Thiers and Kerr-McGee's responses follow.⁸

1. There is no calculation showing that plants proposed to be used in the vegetative cover of the cell will resist wind erosion and there is no documentation showing that the proposed plants will be self sustaining. In response to this assertion, Kerr-McGee cites VI Engineering Report 6-8 to 6-9, App A. and B. Those sections consider potential erosion on the waste cell, but not wind erosion specifically. However, the report recommends that a mix of native prairie grasses, which can grow to 3-7 feet in height and form dense root systems, be used as vegetative cover. According to the report, grass cover is well suited for erosion control because loss of an inch of soil under it could require 1600 years. Id. App. A. p. 7-9, 13. Kerr-McGee proposes to use these grasses and forbs as the initial vegetative cover for the cell. If this cover is to be sustained permanently as a prairie ecosystem it must be burned or mowed every few years, otherwise natural vegetative succession will cause a forest to develop. Thus the fact that the prairie vegetation is not in

⁷See Kerr-McGee's opposition and cross-motion, pp.31-34, 38-42.

⁸See Exhibit C to Illinois' motion, pp2-4; Kerr-McGee opposition and cross-motion, pp34-38.

this sense self sustaining is not a hazard.⁹ Id. App. A, B.

2. Evapotranspiration¹⁰ will not be active during rainstorms to prevent erosion. All parties agree. There is no fact in dispute.

3. Size specification of the proposed intrusion barrier materials has not been given and the proposed materials may weather faster than anticipated. Kerr-McGee points out that this assertion is incorrect. It cites its Engineering Report which describes the requirements for the materials and points out that the intrusion barrier will lie two feet below the surface of the topsoil. Because vegetative cover on the topsoil layer will resist erosional forces, that layer should remain intact during the design life of the cell so that the intrusion barrier is unlikely to be exposed to forces of weathering.¹¹

⁹The NRC Staff submitted the affidavit of Richard H. Pearl which states the same essential facts. Additionally the affidavit states that in the Chicago area erosion results mainly from surface runoff and not from wind erosion. Wind erosion is not a significant factor even for an elevated structure like the disposal cell.

¹⁰Evapotranspiration causes the soil to dry between storms. This enhances the water absorptive capacity of the soil during a storm and reduces runoff that could cause erosion.

¹¹The NRC Staff opposes Illinois' motion and, by affidavit of Mr. Pearl, presents facts in essential agreement with Kerr-McGee. Additionally Mr. Pearl states that the expected life of the clay and cobblestone layer is 40,000 years if limestone cobbles are used and longer if silicate cobbles are used. Limestone cobbles could erode over a period from 300 to 47,000 years depending on the

4. Size gradation of the materials proposed for construction of the six inch gravel blanket is not given, nor is it shown that the materials will resist maximum erosional forces or that they will resist weathering. Kerr-McGee cites IX Engineering Report 9-14 to 9-15 which addresses all Illinois' concerns except for the matter of weathering resistance. Staff previously pointed out that limestone cobbles could erode in from 300 to 47,000 years depending on erosion rates assumed and that it has specified criteria in the SFES for the selection of rock types that would be resistant to weathering.

5. No calculations are provided to show that slopes will not slide during storms, earthquakes, and "static conditions;" Kerr-McGee points out that such calculations were provided in IV Engineering Report 4-15.

6. The proposed 20% slope is contrary to the requirements of Criterion 4(c). Kerr-McGee correctly points out that the 20% slope is, Illinois to the contrary notwithstanding, specifically acceptable under the terms of Criterion 4(c).¹²

erosion rate assumed. The Staff addressed the issue of resistance to weathering in the SFES and provided general specifications for limestone if it is to be used for the intrusion barrier. SFES p. 5-15.

¹²Additionally, Dr. Thiers asserts that the cell contours show an area designed to concentrate runoff contrary to the requirements of Criterion 4(d), that certain documentation required by Criterion 4(d) has not been

In its response to Kerr-McGee's cross motion Illinois asserts that Criterion 3 requires a demonstration that the above grade cell will provide reasonably equivalent isolation to that of below grade disposal. The demonstration requires a comparative calculation of the performance of the above grade and below grade alternatives. That has not been done. Kerr-McGee's citation of Criterion 4(c) to justify 5H:1V slopes on the flanks of the cell does not demonstrate reasonable equivalence and shows Kerr-McGee's misunderstanding of the intent of criterion 3 and 4(c).

Illinois further asserts that Kerr-McGee did not adequately respond to its concerns about sustainability of vegetation because the cell will be covered by prairie which requires active maintenance or by climax forest in which the trees are susceptible to wind toppling. Illinois complains that Kerr-McGee's estimates of soil erosion are wrong because it improperly reduced the probable maximum flood as a design basis. Had Kerr-McGee considered the storm that would produce the maximum flood the calculated erosion would have been greater.

provided, and that there is no documentation that the cell can withstand the maximum credible earthquake, as required by Criterion 4(e). Kerr-McGee correctly points out that these assertions are irrelevant to contention 4(d) which paraphrases Criterion 4(c) and thus cannot be viewed as fairly raising issues outside of the latter's scope.

Illinois is also dissatisfied with Kerr-McGee's response about the adequacy of the intrusion barrier because the Engineering Report does not provide gradation limits for particles in the barrier and the rock and clay mixture will be subject to weathering by wetting, drying, freezing, and thawing. Kerr-McGee has not provided specifications in its Engineering Report for resistance to weathering. Finally, Illinois complains that Kerr-McGee has not considered the probable maximum flood in its design of the six inch gravel blanket and that it is not designed to withstand such an event. Failure of the blanket will cause formation of gullies and release of wastes.¹³

Illinois' arguments in support of its own motion and in opposition to Kerr-McGee's motion raise different considerations. We address Illinois' motion first.

Ruling on Illinois' Motion on Contentions 4(c) and (d)

We conclude that Kerr-McGee is correct in its assertion that Illinois' motion is not based on a thorough technical review of all of the relevant information available to it. Many of Illinois' assertions of inadequacy or noncompliance are based on alleged failure of Kerr-McGee or Staff to supply information rather than on perceived design defects in the cell itself. Illinois' consultant based his critique almost

¹³See Illinois' opposition to Kerr-McGee's cross-motion for summary disposition, pp.39-43.

entirely on review of Chapter 3 of the SFES. That chapter generally describes the proposed action and alternatives in only 22 pages. The Staff may not have anticipated in that chapter every detail some later reviewer would have liked. However, chapter 5 of the SFES describes the environmental consequences of the project and alternatives in more detail. Kerr-McGee's Engineering Report provides even more detail. Each of Illinois' allegations cites error or omission of some kind in documentation. In each case the Kerr-McGee and Staff have answered by pointing to the relevant documentation. These responses are adequate answers to Illinois' complaints.¹⁴

¹⁴For example the botanical reports appearing in chapter 6 of the Engineering Report provide answers to concerns about wind erosion and sustainability of vegetation. The Board finds that those reports constitute a prima facie case that wind erosion will be negligible because the vegetation will form a root system in the soils and it will stand up to seven feet above the surface. The prairie vegetation to be used is native to Illinois and it persisted without human management for thousands of years prior to settlement. If there is no management of prairie vegetation it will eventually become a forest populated by native trees which have lower potential for erosion than prairie. See SFES Table 5-5.

The State assertion about evapotranspiration in a rainstorm is true. However, this fact is immaterial because it is absurd. It is beyond credulity to postulate that significant evaporation occurs during a rainstorm or worse, that it could be large enough to curtail runoff caused by a storm.

The Staff view on erodability of the cobbles in the intrusion layer for example is that even limestone cobbles may last for 40,000 years. In context however, this is the conclusion of a contingent analysis in which it is first postulated that the covering soil layers will be removed by some unknown mechanism exposing the cobble layer to erosional forces. Under foreseeable conditions the cover

The purported facts presented by Illinois to support a conclusion that the Kerr-McGee has not satisfied its burden of demonstrating that the waste cell does not comply with Criteria 3 and 4(c) have been refuted by Kerr-McGee and Staff. Illinois' assertions are either incorrect or immaterial to the decision. They are based on a misunderstanding of the proposal or an inadequate review of the available record.

Illinois' assertion in its brief that the flanks of the waste cell are too steep to prevent erosion must also be dismissed as speculative. It is undisputed that the flanks are designed to have slopes of 5h:1v which is permitted by Criterion 4(c). Without supporting reasons, applicable to the West Chicago site, the Board may not order more stringent requirements for slopes of the waste cell than permitted by regulation. Illinois' motion for summary disposition of contentions 4(c) and (d) is denied.

Ruling on Kerr-McGee's Motion on Contentions 4(c) and (d)

In opposing Kerr-McGee's cross-motion, Illinois presses its claim that either a prairie or forest vegetative cover has

layer will erode in 243,000 years over the top and 15,100 years over the flanks and the intrusion layer will not be exposed. See SFES p.5-13 to 5-15 and Table 5.5.

The Board finds that Kerr-McGee has supplied information on rock size and has calculated resistance to erosion for materials in the six inch gravel blanket which the State claims is missing. IX Eng. Rep. 9-14 to 9-15. The SFES addressed the Staff specifications for choice of resistant rock material for the intrusion layer which we find equally applicable to rock used in the gravel blanket. SFES p. 5-15.

flaws which would prohibit a finding that above grade disposal provides reasonably equivalent isolation of waste with below grade disposal without active maintenance. Prairie vegetation is said to be flawed because it will require active maintenance while forest vegetation is bad because the wind will topple trees and provide opportunity for gully erosion which could lead to dispersion of wastes.

The proposed prairie plant community will be maintained by mowing or burning every few years. However, no party suggests that denudation of the cell is a hazard over its design life if the prairie is not maintained as planned. Illinois does not challenge the conclusion of Kerr-McGee and Staff that if the proposed maintenance activity is pursued a prairie will persist, and if it is abandoned the prairie will be replaced by forest without human assistance. The likely pioneer and

climax forests are more resistant to erosion than prairie¹⁵ and no violation of the regulatory goal for isolation of waste without active maintenance would occur if that succession took place. Moreover, the maintenance contemplated by Kerr-McGee to preserve the prairie vegetation is clearly not "active maintenance" as that term is defined in § 61.2.

In its opposition, Illinois also voices concerns over the adequacy of the intrusion barrier. No requirement in Appendix A requires that an intrusion barrier be included in the design of a waste cell, therefore there are no specific regulatory standards the barrier must meet.¹⁶ Because the barrier is part of the design we review it only to determine whether it

¹⁵Illinois' complaint that wind might topple trees in the future is undisputed but its assertion that this will lead to gully formation and release of wastes is an unsupported hypothesis. The prospect that trees on the cell might fall during several hundred years of forest succession is virtually assured given that a pioneer forest will be replaced by a climax forest over that period.

The forest description given in the Ware report makes plain that forests consist of a complex of vegetation that includes many species of closely associated trees and shrubs growing on sponge like absorptive soils. VI Engineering Report, App. B. Staff's analysis attributes erosion resistance to forests rather than individual trees. SFES p. 5-13; Table 5.5. It is a compelling inference that erosion resistance in forests is the collective result of all vegetation present. Illinois' assertion to the contrary lacks factual support. We reject this view as unsupported speculation.

¹⁶External rock cover of impoundments is required by Criterion 4(d) only in the event that vegetative cover cannot be established.

is likely to perform its intended function under conditions likely to prevail during the design life of the cell.

The intrusion barrier is included in the West Chicago design to prevent human and animal intrusion and to provide added assurance of cell stability in the event that the topsoil layer is lost for some unspecified reason during the design life of the cell. Staff's analysis shows that erosion of the surface layer might take place on a time scale well in excess of the design life of the cell and it poses no credible mechanism by which the topsoil might be lost within 1000 years. Nevertheless it concludes that if the soil layer is lost by some unspecified mechanism the intrusion barrier would offer long term protection. SFES p.5-13; Table 5.5. We conclude from the soil erosion data that there is only a very remote possibility that the barrier will be required to perform an erosion control function within the design life of the cell.

Illinois poses its criticism of the design in the form of an allegation that the particle size distribution of the graded clay-cobble layer has not been provided in the documentation. That allegation does not rebut Kerr-McGee's and Staff's evidence or establish the materiality of the missing data.¹⁷ In light of the undisputed purpose and

¹⁷In fact, Staff and Kerr-McGee have provided substantial information on particle size of materials although the final choice of materials has not been specified. Cobbles are defined as rocks 2-10 inches in

regulatory status of the intrusion barrier a complaint of missing information without a showing of its materiality is inadequate to defeat the cross-motion for summary disposition.

Similarly, Illinois' unsupported allegation that weathering of cobbles in the intrusion barrier has not been considered is incorrect and not an adequate basis to defeat the cross-motion for summary disposition. Staff considered the use of limestone cobbles because limestone is common in Illinois. It considered the highly variable weathering resistance of limestone cobbles that might be used in the intrusion barrier and assumes they could last as much as 40,000 years. The life of the intrusion barrier could be extended if silicate rocks were used. However, precise erosion rates of rocks and minerals were not scientifically determined. SFES p.5-13 to 5-15. Nonetheless, Staff's analysis supports a conclusion that the design life of 1000 years is attainable with either limestone or silicate rocks. Illinois has not controverted Staff's analysis.

diameter. SFES App. B, p.B-4 n.a. Clay consists of particles less than 2 um in diameter. Particle size distributions of sand, silt, and clay in several east central Illinois glacial tills and at the West Chicago site are provided. SFES Table 4.15; Table 4.12. Kerr-McGee states that it will use locally obtained borrow materials to make the intrusion barrier and has considered criteria for the suitability of materials. Eng Report IV p. 4-9 to 4-14. While no computations that rely on graded particle sizes in the intrusion layer have been performed, Illinois' assertions fail to establish what computations involving these parameters should have been performed and would have been material to an assessment of the barrier.

In his affidavit supporting Illinois' opposition to the cross-motion, Dr. Thiers points out that Kerr-McGee, while recognizing that the "probable maximum flood" event is generally recognized by the NRC, nonetheless reduced that event to assumption B magnitude.¹⁸ Dr. Thiers asserts that failure to design to the larger event means that gullies will form and eventually lead to a release of the tailings.¹⁹ Appendix A does not specify particular criteria for assessing longevity based on a design flood or storm.

Staff and Kerr-McGee relied on variations of the Universal Soil Loss Equation to estimate erosion of the cell. The Staff used parameters including a rainfall factor derived from 25 years of record expressed in annualized terms to solve the equation. SFES Table 4.3; p.5-12 to 5-13. Kerr-McGee used a more detailed model that permitted individual storm calculations of erosion based on daily climatic data, simulating 100 years of erosion in individual runs. Eng. Rpt. VI p 6-11 to 6-16, App. C. Both conclude that the topsoil of the cell will not be lost by erosion over its design life. There is no indication that the Universal Soil Loss Equation calls for the probable maximum rainfall as an input parameter

¹⁸The assumption B event has a rainfall intensity of 10.1 inches in 24 hours. IX Engineering Report 9-13.

¹⁹See Exhibit A to Illinois opposition to Kerr-McGee's cross-motion, ¶ 3(c) and (e).

for any of the calculations or that it could be meaningfully applied.

The bare allegation that a larger storm event should have been considered is insufficient to call into question the analyses performed by Kerr-McGee and Staff. Dr. Thiers has provided no technical basis for his conclusion that gullies will form leading to a breach of containment and release of the tailings. Moreover, the definition of "active maintenance" contained in § 61.2 contemplates that certain minor repairs to the cell cover are permissible. The damage which Dr. Thiers alleges will take place appears to be of the sort which could be corrected by minor repairs.

In sum, we find that Illinois has failed to controvert the showing made by Kerr-McGee and Staff. While Illinois' point that Criterion 3 requires a demonstration that above-grade disposal provides isolation which is reasonably equivalent to below-grade is well taken, the analyses performed by Kerr-McGee and Staff amply demonstrate that this is so. Kerr-McGee's cross-motion for summary disposition of contentions 4(c) and (d) is granted.²⁰

Ruling on Contentions 4(e) and (g)

In its motion on contentions 4(e) and (g), Illinois argues that the location of the disposal cell within a densely

²⁰For the same reasons, Kerr-McGee's cross-motion on contention 2(k) is also granted.

populated area almost guarantees human intrusion absent a rigorous security program. In Illinois' view, such a program is inconsistent with Criteria 6 and 12. Even with it, Illinois believes that active maintenance would be necessary to assure the integrity of the cap. Illinois again relies on Dr. Thiers affidavit for support.²¹ The factual arguments advanced by Dr. Thiers in ¶ 7 (pp.4-6) and ¶ 8(a)(6) of his affidavit are clearly irrelevant to these contentions. The remaining arguments contained in ¶ 8 (pp.6-7), with the exception of that concerning human intrusion, have largely been disposed of in connection with contentions 4(c) and (d) and are, in any event, unsupported assertions which are insufficient to call Kerr-McGee's and Staff's analyses into question.

Illinois' response to Kerr-McGee's cross-motion also repeats the arguments made in opposition to the cross-motion on contentions 4(c) and (d) which we have rejected. It adds Dr. Thiers assertion that the cell, being located in a populated area, has nearly a 100% probability of being dug into for free fill and/or out of curiosity. Illinois also supports this allegation with reports of intrusions onto the West Chicago site in the recent past.

We agree that some human intrusion onto the site is likely. However, we do not believe that the site would

²¹See Exhibit C to Illinois' motion at pp.3-7.

constitute an attractive nuisance, so as to make such intrusion probable. Moreover, given the design of the cell so as to resist erosion, we do not believe that Dr Thiers has made a case that human intrusion could create damage so extensive that active maintenance would be required to correct it as that term is defined in § 61.2. Consequently, we deny Illinois' motion and grant Kerr-McGee's motion with respect to contentions 4(e) and (g).

Criterion 2

Ruling on Contention 4(b)

Contention 4(b) asserts that Criterion 2 is applicable and that no showing has been made that it would be impracticable to dispose of the West Chicago wastes at an existing large disposal site. In its motion for summary disposition, Illinois points to a statement made by the Commission in State of Illinois (Section 274 Agreement) CLI-88-6, 28 NRC 75. 91 (1988) to the effect that disposal of the tailings at the West Chicago site might violate Criterion 2's bias against the proliferation of small disposal sites.²² Kerr-McGee points out that Criterion 2, which applies to "small remote above ground extraction operations," does not apply to West Chicago

²²See Illinois' motion, pp.31-33.

because of the large volume of tailings there present.²³ In its opposition to Kerr-McGee's cross-motion, Illinois argues that the volume of West Chicago tailings is not large, pointing to larger quantities which have been moved in the Western United States.²⁴

We agree with Kerr-McGee that the West Chicago operation did not constitute a "small remote above ground extraction operation" contemplated by Criterion 2. While the Statements of Consideration which accompanied the proposed and final Appendix A to Part 40 did not discuss Criterion 2, the Draft Generic Environmental Impact Statement on Uranium Milling,²⁵ the conclusions of which were implemented by the notice of proposed rulemaking leading to the adoption of Appendix A,²⁶ provides the rationale behind Criterion 2. Section 12.5 makes it clear that Staff was concerned about the milling of low grade ores, ores which could not be economically transported to mill sites, found in remote locations using semi-portable milling equipment. Thus Criterion 2 was not intended to cover

²³See Kerr-McGee's cross-motion, pp.29-30. Staff concurs in Kerr-McGee's position. See Staff's opposition to Illinois' motion, p.15 and response in support of Kerr-McGee's cross-motion, p.3.

²⁴See Illinois' opposition to Kerr-McGee's cross-motion, pp.35-39.

²⁵NUREG-0511, April 1979.

²⁶See Uranium Mill Licensing Requirements, Final Rule, 45 Fed. Reg. at 65522, October 3, 1980.

operations such as that at West Chicago. Illinois' motion for summary disposition of contention 4(b) is denied and Kerr-McGee's cross-motion is granted.

Criterion 7A

Ruling on Contention 4(f)

Contention 4(f) asserts that, contrary to Staff's position stated in the SFES,²⁷ Criterion 7A requires that a detection monitoring program at West Chicago presently must be in place. Illinois argues that Criterion 7A requires licensees to establish detection monitoring programs so that groundwater standards may be set pursuant to Criterion 5B(1). It further argues that the tailings must currently be managed in accord with Criterion 5B(1), and that, under Criterion 7A, a detection monitoring program must be put in place to support the setting of specific groundwater protection standards.

In its cross-motion, Kerr-McGee argues that Staff correctly concluded that Criterion 7, which concerns pre-operational monitoring at a mill site, does not apply to West Chicago, and that Criterion 7A "...provides greater detail as to how the operational monitoring program is to be designed and implemented."²⁸

²⁷See p.2-23.

²⁸See Kerr-McGee's cross-motion, pp.51-52. Staff agrees. See Staff's opposition to Illinois' motion, p.21, and response in support of Kerr-McGee's cross-motion, p.6. Kerr-McGee also argues that Illinois is attempting to litigate Kerr-McGee's present compliance with applicable water quality standards, a matter which is outside the scope

In its response to Kerr-McGee, Illinois points out that nothing in Criterion 7A limits its application to operating sites and that the Commission did not make a distinction between licensed operating sites and nonoperating sites. Illinois is correct in its observation. However, all parties have overlooked the goals stated in Criterion 7A:

The initial purpose of the program is to detect leakage of hazardous constituents from the disposal area so that the need to set ground-water (sic) protection standards is monitored. If leakage is detected, the second purpose of the program is to generate data and information needed for the Commission to establish the standards under Criterion 5B.

(Emphasis added.) The definitions in the Introduction to Appendix A state that:

"Disposal area" means the area containing byproduct materials to which the requirements of Criterion 6 apply.

Criterion 6 states the requirements for closing the disposal site by placing an earthen cover over the tailings so as to provide for their isolation for 1000 years, to the extent reasonably achievable, and, in any case, for at least 200 years. Thus it is clear that Criterion 7A comes into play when the tailings are placed in the disposal cell. This interpretation is confirmed by the language of Criterion 5B(1) which states:

The Commission [will take action] if needed to accord with developed data and site information as to the flow of ground water (sic) or contaminants, when the

of this proceeding.

detection monitoring established under Criterion 7A indicates leakage of hazardous constituents from the disposal area.

Consequently, while Illinois is incorrect in stating that Criterion 7A presently requires a detection monitoring system, it is correct that one must be in place when the tailings are placed in the disposal cell. To this extent, Illinois' motion is granted and Kerr-McGee' cross-motion is denied.²⁹

CONTENTION 3

Contention 3 attacks the Staff's SFES. It asserts that Staff has failed to follow the requirements of the National Environmental Policy Act and applicable implementing regulations. In particular, in its motion for summary disposition, Illinois asserts that Staff unreasonably

²⁹Contention 3(g)(8) presents a related matter. That contention asserts that the costs which would be incurred for groundwater clean-up, if needed, have not been assessed. In its motion, Illinois argues that a possible result of the establishment of a detection monitoring system under Criterion 7A is the need to clean-up the groundwater. Both Kerr-McGee and Staff oppose, arguing *inter alia* that the need for clean-up is speculative and therefore outside the required scope of the SFES. Kerr-McGee cites Methow Valley Citizens Council v. Regional Forester, 833 F.2d 810, 816 (9th Cir. 1987), rev'd on other grounds, 109 S.Ct. 1835 (1989), quoting Scientists' Institute for Public Information v. AEC, 481 F.2d 1079, 1092 (D.C. Cir. 1973). We agree that it is not necessary to consider potential clean-up costs in the SFES. Whether clean-up is necessary at all will not be determined until a detection monitoring program is in place after the tailings are placed in the cell. Illinois' motion is denied and Kerr-McGee's cross-motion is granted.

restricted the range of alternatives considered in the ways enumerated in contentions 3(a), 3(b), 3(g)(1), and 3(g)(8).³⁰

Ruling on Contention 3(a)

Contention 3(a) challenges Staff's

...assumption that 0.1% of the unpackaged wastes would be disbursed as particulates and gases for every 160 km (100 mi.) traveled during either truck or rail transport to an alternate site is arbitrary and capricious.

Illinois argues that Staff's 0.1% assumption vastly overstates the likely dispersal of the tailings during transportation and therefore overstated the environmental cost of moving the tailings to another site. Illinois supports this argument with the affidavits of Dr. M. Frank Petelka and Mr. Warren D. Snell that espouse the view that release during transport would be considerably smaller than the 0.1% value. In particular, Dr. Petelka describes observations that indicate an actual release rate of 0.01% or less.³¹ Illinois assumes without discussion that the difference is significant.

In its response to Illinois' motion and its cross-motion, Kerr-McGee raises certain procedural objections to this contention, but opposes it primarily on the basis that it does not raise an issue that is material to the selection of an

³⁰See Illinois' motion, pp.12-13.

³¹See Exhibits A and D to Illinois' motion for summary disposition. In its opposition to Illinois' motion, Staff takes issue with the conclusions of Illinois' experts. See Staff's response, pp.9-11.

alternative. Kerr-McGee cites the SFES in Tables 5.18, 5.21 and 5.22 as showing the radiation dose estimates, based on the assumption that Illinois challenges, are not large enough to affect the assessment of alternatives. This is true because the staff's analysis concluded that "the estimated health effects for all alternatives are negligible." SFES, 1-19.³²

The NRC staff supports Kerr-McGee's position, providing the affidavit of Dr. Yuchan Yuan, who states: "A dispersion calculation using a source release factor of 0.1% of Kerr-McGee NRT wastes per 100 mile traveled would result in an increased external radiation level of less than 0.1 mr/yr at locations adjacent to the transportation route. This level is indistinguishable from background radiation level of about 90 mr/yr in the Chicago area."³³

We fail to see the significance of the issue of whether the estimated radiation resulting from transportation losses is negligible or 10 times smaller than negligible. We find that whether the radiation estimate is 0.1 mr/yr, or even smaller as Illinois would have it, does not raise an issue material to the consideration of alternatives. Illinois' motion for summary disposition is denied and Kerr-McGee's cross-motion is granted.

³²See Kerr-McGee's response and cross-motion, pp.54-58.

³³See Staff's response to Kerr-McGee's cross-motion, p.7.

Ruling on Contention 3(b)

Contention 3(b) raises three issues concerning the Staff's alternate site selection process:

1. The site selection method was not based on Criterion 1, 10 CFR Part 40;
2. The site selection method did not apply the same criteria to potential alternative sites and the West Chicago site; and
3. Disposal at an existing uranium mine or mill tailings site in the western United States was not adequately considered.

In its motion for summary disposition, Illinois makes three arguments:

1. A uniform application of the criteria applied to the alternate sites would have resulted in the rejection of the West Chicago site, referring to its argument under contention 3(g);
2. Staff's reliance on increased doses and health risks from transportation of the tailings was improper, referring to its argument under contention 3(a); and
3. Disposal of the Kerr-McGee tailings at a facility in the western United States is feasible.³⁴

In its response and cross-motion, Kerr-McGee characterizes Illinois' first argument as quarreling with the adequacy of

³⁴See Illinois' motion, pp.16-17.

Staff's response to its comments on the draft SFES and raises a number of procedural objections. Staff supports Kerr-McGee's position.³⁵ Given the dictates of Appendix 3 to Part 40, we believe Staff's approach was proper. Therefore we deny Illinois' motion and grant Kerr-McGee's cross-motion for summary disposition of contention 3(b)(i) and (ii). We will set out our reasons for this result in full in our ruling on contention 4(a), which concerns Criterion 1, in our initial decision following the forthcoming hearing.

To the extent that it is relevant to this contention, Illinois' second argument must be rejected for the reasons given in connection with contention 3(a).

This leaves contention 3(b)(iii), concerning disposal at an existing site in the western United States. Illinois points to the Envirocare, Inc. facility in Clive, Utah, as one designed to accept Kerr-McGee type material and one which has accepted materials contaminated with radium from eastern states recently. In response, Kerr-McGee asserts that Staff assessed and properly rejected a western disposal site on the basis of economic costs of transportation, health risks of transportation, and uncertain availability. Kerr-McGee further points out that the West Chicago waste would require 1.8 million drums, far in excess of the number cited in the

³⁵See Kerr-McGee's response and cross-motion, pp.58-61; Staff's response to Kerr-McGee's cross-motion, p.8.

contention, and that the Envirocare facility is not licensed to accept 11e(2) byproduct material.³⁶

The Staff supports Kerr-McGee's motion for the reasons given by Kerr-McGee and concludes that summary disposition is warranted.

In its response, Illinois asserts that both Kerr-McGee and the Staff gave inappropriate weight to and overestimated the economic costs of transportation to a western site. It also attacks the assessment of health risks of transportation as overstated because rail transportation was not considered. Finally, Illinois asserts that disposal in Utah would not meet with any public or regulatory resistance. The Affidavit of Wayne Snell is cited as evidence of the suitability of the Envirocare site.³⁷

Illinois' arguments do not confront the analytical procedure followed by Staff. Staff devoted the major part of the SFES to an analysis of the risks to public health, safety, and the environment if the wastes are disposed at West Chicago or at one of the alternative locations in Illinois. Staff concluded that:

[T]he proposed action would have the smallest overall health effects (action period and long term period). Moreover, the estimated health effects for all alternatives are negligible. Therefore, taking into consideration the long term health and safety benefits of moving the wastes, the additional cost is simply

³⁶Kerr-McGee Cross Motion Exhibit 9.

³⁷See Illinois' opposition, p21-23.

not justified. ...[T]he costs of establishing an off-site disposal area, transporting the wastes to the alternative site, and stabilizing the wastes at that site cannot be justified on the basis of substantially reduced health, safety, or environmental impacts. SFES, pp.1-19 to 1-20.

It is evident from the foregoing that the Staff considered health, safety, and environmental impacts in its review of Kerr-McGee's proposal and, only after finding them negligible at all of the sites, did it reach the conclusion that the cost of transporting the wastes to a new site was not warranted. We find that this analytical procedure does not place undue reliance on economic costs.

It is immaterial whether the Envirocare facility might be a suitable repository. Given Staff's uncontested conclusion that health, safety, and environmental impacts would be negligible at any of the sites within Illinois there is no need to give further consideration to sites more remotely located where transportation costs necessarily would be greater. There simply is no reason to incur large economic costs to relocate the wastes.

We deny Illinois' motion and grant Kerr-McGee's cross-motion for summary disposition of contention 3(b)(iii).

Ruling on Contention 3(e)

Contention 3(e) asserts that costs and benefits to parties other than Kerr-McGee were not considered in the SFES. Illinois did not move for summary disposition of this contention, but Kerr-McGee did. Kerr-McGee points out that a

variety of environmental costs to others were considered in SFES at pages 8-14 to 8-24. Staff concurs in this view.³⁸ Illinois opposes the motion on the ground that consideration was not given to monetary costs that would be associated with the need for a guard to prevent intruders once Kerr-McGee has fulfilled its responsibilities and left the site.

Illinois has not raised an issue that is material to this proceeding. The cost of guard services can not be large enough to influence a cost-benefit comparison among multi-million dollar alternatives. Further, such costs fall on the mill operator, as prescribed in 10 C.F.R. 40, App. A, Criterion 10. Thus they do not involve a cost to a party other than Kerr-McGee and consequently fall outside the scope of the contention. Kerr-McGee's motion for summary disposition is granted.

Ruling on Contention 3(g)(1)

Contention 3(g)(1) asserts that potential alternative sites were rejected based on hydrogeological and demographic considerations which, if applied to the West Chicago site, would also have dictated its rejection. Like contention 3(b)(i) and (ii), it raises issues which are best discussed in connection with contention 4(a) concerning Criterion 1. Illinois' motion is denied and Kerr-McGee's cross-motion for

³⁸See Kerr-McGee's cross-motion, pp.69-71; Staff's response, pp.9-10.

summary disposition of contention 3(g)(1) is granted. Our reasoning will be set out in our initial decision following the hearing on contention 4(a).

Ruling on Contention 3(g)(2)

Kerr-McGee's motion for summary disposition of contention 3(g)(2) was denied in our November 14 Memorandum and Order.

Ruling on Contention 3(g)(4)

Illinois' motion to withdraw contention 3(g)(4) is granted.

Ruling on Contention 3(g)(8)

Contention 3(g)(8) asserts that the cost of necessary groundwater clean up have not been considered. We deny Illinois' motion and grant Kerr-McGee's cross-motion for summary disposition of this contention. Because it is related to contention 4(f) concerning Criterion 7A, our reasoning is set out there.³⁹

CONTENTION 7

Contention 7 relies on LBP-84-42, 20 NRC 1296, 1323 and LBP-85-3, 21 NRC 244, fn 16 at 255, for the proposition that Staff may not properly select the West Chicago site as the best of those considered under NEPA if that site does not meet the Appendix A criteria. Because it is closely related to contention 4(a) concerning the proper interpretation of

³⁹See footnote 29, supra.

Criterion 1, we will rule on it in our initial decision following the hearing on the latter contention.

CONTENTION 9

This contention provides:

In its Order of January 23, 1986 [sic], the Atomic Safety and Licensing Board directed the NRC Staff to respond to certain comments on the DES. (See Order of January 23, 1985, paragraphs 5 and 8 on pages 28 and 29.) The SFES does not include responses to those comments, and, therefore, the NRC Staff has not complied with said Order.

Illinois originally submitted a contention relating to the adequacy of the responses to comments in the FES. Although the contention initially was denied, we subsequently reconsidered and admitted it.⁴⁰ Subsequently, following our direction to the Staff to prepare the SFES,⁴¹ we dismissed the entirety of contention 1 as a sanction for Illinois' failure to comply with its discovery obligations.⁴²

Staff maintains that the dismissal of contention 1 relieved it of any obligation to respond to the comments identified in that contention. Moreover, Kerr-McGee and Staff note that

...the specific matters that Illinois sought to have addressed in the original FES -- alternative disposal sites, the impacts of onsite disposal, and the costs of long-term maintenance and monitoring -- were evaluated anew in the preparation of the SFES. SFES,

⁴⁰LBP-85-3, 21 NRC 244, 260 (1985).

⁴¹LBP-84-42, 20 NRC at 1307-17, reconsideration denied, LBP-85-3, 21 NRC 244 (1985).

⁴²LBP-86-4, 23 NRC 75, 86-87 (1986).

1-1 to 1-18. The new analysis was subject to comprehensive comment by the public, including a variety of State agencies, and the staff prepared a detailed response to each of the comments. SFES, App. H. None of the State's newly admitted contentions relate to the adequacy of the staff's analysis of these comments. At this juncture, further pursuit of issues relating to the FES would serve no real purpose. Accordingly, the contention should now be resolved against the State. See Kerr-McGee's opposition and cross-motion, pp.31-82.⁴³

Illinois maintains that, just as the dismissal of its contention 1 did not operate to relieve Staff of the obligation to prepare the SFES, it did not relieve it of the obligation to respond to comments. Illinois points out that NEPA imposes an obligation on Staff independently of this proceeding. Because Staff admits that it did not respond to the comments in question, Illinois believes that it is entitled to a favorable ruling on its motion.⁴⁴

We believe that Illinois' arguments elevate form over substance. While Staff has an independent obligation to respond to comments on environmental statements, the totality of the circumstances justified, in this instance, Staff's failure to respond. After having failed in its attempt to uphold its FES against Illinois' attack, Staff launched upon

⁴³Kerr-McGee's arguments are set forth in its opposition and cross-motion, pp.79-82; Staff's arguments can be found in its opposition to Illinois' motion, p.22, and its support of Kerr-McGee's cross-motion, p.14.

⁴⁴Illinois' arguments may be found in its motion, pp.42-44, its opposition to Kerr-McGee's cross-motion, pp.52-57, and its opposition to Staff's response in support of Kerr-McGee's cross-motion, pp.7-8.

the preparation and circulation of the SFES. The SFES specifically addresses the areas of the comments which were not responded to. We will not order Staff to respond to comments which were made on a document which has been substantially modified by the SFES without some showing that the SFES somehow has overlooked important matters raised by those comments. Illinois has made no such showing. Illinois' motion is denied and Kerr-McGee's cross-motion is granted.

CONTENTION 2

Contention 2 was advanced at the outset of this proceeding in 1983. It focusses on the engineering design of Kerr-McGee's proposed disposal cell. Illinois did not move for summary disposition with respect to this contention; Kerr-McGee so moved with respect to certain admitted subparts.

Ruling on Contention 2(b)

Contention 2(b) concerns the alleged presence of leachable organic compounds in the tailings. Illinois responded to Kerr-McGee's motion with a motion to withdraw. Illinois' unopposed motion for withdrawal of contention 2(b) is granted.

Ruling on Contention 2(e)

Contention 2(e) asserts that Kerr-McGee's leachate collection system is inadequately designed to perform its function of providing the means of detecting cap failure before contaminants escape from the cell because:

First, it will be difficult to maintain the integrity of the leachate collection pipes when several million cubic feet of waste are deposited over them;

Second, no information is provided as to the size of the pipes and their composition; and

Third, Kerr-McGee has not indicated how failure of the pipes through clogging or collapse will be detected and has not provided for correction of these events if they occur

In its motion, Kerr-McGee notes that it submitted detailed information in its Engineering Report (provided in 1986 after this contention was admitted) regarding the performance of its leachate collection system.⁴⁵ The system is not intended to operate over an extended period because the long term performance of the cell is governed by the cover not the liner. In its view contention 2(e) is simply misguided and summary disposition should be granted.⁴⁶

The Staff supports Kerr-McGee and asserts that the main reason for the leachate collection system is to detect failures in the cell cap during the early years when most of the settling occurs. The pipe system will be disabled by plugging the risers after settlement in the cell becomes sufficiently small to make the likelihood of cap failure

⁴⁵Details are presented in IV Eng. Rep. 4-2 to 4-4; XI Eng Rep 9-10.

⁴⁶See Kerr-McGee's cross-motion, pp.84-85.

negligible. Further, there is no uncertainty about the pipe specifications. The manifold pipes will be constructed of 6 inch diameter 100 psi high density polyethylene.⁴⁷

Illinois opposition relies generally on pages 9 through 19 of the Affidavit of Dr. Gerald R. Thiers who reviewed various portions of contention 4 for Illinois. Illinois believes that Dr. Their's analysis is equally applicable to contention 2(e) but it did not specifically identify the applicable paragraphs. The portions of Dr. Their's affidavit that appear to address issues relevant to contention 2(e) are at pages 14-15, paragraphs h, and j, of his affidavit.⁴⁸ Dr. Their's concern is that leachate might pass through the collection system into the ground water undetected because of differential permeabilities between the clay cap and the clay liner. Kerr-McGee's Engineering Report and the Staff's SFES are assertedly deficient because they do not mention or show the manifold pipes embedded in the berm and they do not give design calculations showing a comparison of expected flows and capacities. Illinois' also asserts that the cover is inadequate to last for an extended period of time without active maintenance and that even with active maintenance the cover could not prevent all infiltration. Illinois concludes

⁴⁷See Affidavit of Paul A. Benioff attached to Staff's response to Kerr-McGee's cross-motion.

⁴⁸See Exhibit A to Illinois' opposition.

that a leachate collection system is necessary to contain contamination that results from cover failure and that it is the only means available to detect cover failure.

Illinois' response does not address the limited assertions of fact contained in contention 2(e). The contention relates only to the integrity of the collection pipes and to the longevity of operation of the leachate collection system. It says nothing about a need for active maintenance of the cell or the prevention of infiltration. None of Illinois' asserted facts address the question of continued pipe integrity or the pipe's potential for clogging and these issues appear abandoned. Neither does Illinois provide any facts showing why Kerr-McGee's design of the system for short term monitoring is wrong and that the leachate collection system should have been designed for long term operations.

Several of Illinois' assertions reflect misapprehension of the Kerr-McGee plan. Illinois' assertion that the system will not prevent all leaching even with active maintenance is undisputed. That assertion comports with Kerr-McGee's rationale for its design of the leachate system whose purpose is to detect leaching. The notion that the leachate collection system must contain all leachate is a misapprehension of the design objective which is to monitor the performance of the clay cap for a short time after installation until settling of the cell has time to occur. Contrary to Illinois' apparent

belief or desire, the system is not designed to be a barrier or diversion for all leachate after the cell is completed.⁴⁹

Illinois' belief that the leachate collection system will fail to detect leachate on account of differential permeability of the clay cap and clay liner rests on a misapprehension of the cell design. The Engineering Report shows that the leachate collection pipes will be embedded in a sand layer which lies above the clay liner. The sand is indisputably more permeable than the clay. The relative permeability of the clay cap and clay liner is therefore irrelevant to the assessment of the leachate collection system capability to detect a failure in the clay cap.

Contrary to Illinois' assertion, the Board finds that drawing SK-265 and SK-266 in the Engineering Report shows both the locations of embedded pipes in the berms of the waste cell and their diameters. This assertion is based on misreading of documents and presents no material issue of fact in need of hearing. Because the intended purpose of the leachate collection system is to provide for monitoring leachate and not to intercept and divert all flow, the assertion that no comparison of flow volume to capacity has been made is immaterial to an evaluation of the system performance. Any

⁴⁹The leachate collection system will be pumped during construction to prevent leachate from entering the lower clay layer because the clay cap will not be in place. However this contention specifies no concerns about performance of the leachate system during construction.

large volume of flow could be sufficient to detect a failure in the clay cap. Illinois provides no facts to suggest that the fluid capacity of six inch perforated pipes embedded in sand is even definable much less that it is material to the assessment of system function.

The Board concludes that there exists no issue of material fact in dispute on Contention 2(e) and that Kerr-McGee is entitled to a favorable decision with respect to it. Accordingly, Kerr-McGee's motion for summary disposition is granted.

Ruling on Contention 2(k)

Contention 2(k) asserts that the disposal cell will not maintain its integrity against natural erosional forces over the long term. Kerr-McGee's motion for summary disposition of contention 2(k) is granted for the reasons given in connection with contention 4(c) and (d).⁵⁰

Ruling on Contention 2(p)

Contention 2(p) alleges that there will be both short and long term impacts on Kress Creek and the west branch DuPage River resulting from deposition of suspended solids, that neither the Staff nor Kerr-McGee has indicated what levels of contamination in runoff will be deemed acceptable from a public health and environmental standpoint, and that neither

⁵⁰See footnote 20, supra, and accompanying text.

has shown that measures can and will be taken to limit contaminant releases to such levels.

In its motion, Kerr-McGee asserts that it has developed a construction program that is designed to assure avoidance of adverse impacts on Kress Creek. The Engineering Report shows that potentially contaminated runoff will be diverted to a temporary detention/sedimentation/treatment system. Discharges from the system will be monitored and all applicable release criteria will be satisfied.⁵¹ In contrast, Illinois' response focusses on an alleged need for long-term control of contaminants in storm runoff.⁵²

We have found that Illinois has failed to advance a credible basis for the proposition that the cell will not adequately resist natural erosion and human intrusion. That being so, we must assume that the cell cap will remain intact and that there will be no long term impacts from sediment on Kress creek or the West Branch DuPage river beyond the 10-year

⁵¹See Eng. Rpt. IX 9-11 to 9-18; SFES, 3-7, H-524 and H-526. Staff supports Kerr-McGee. See Staff's response, pp.17-18.

⁵²Illinois alleges that the spillways and sedimentation/detention structures on the periphery of the waste cell are designed for a storm that is less than that required by NRC for long term control and that failure of these elements could lead to deposition of suspended solids including tailings into the water bodies. Illinois also alleges that Kerr-McGee's plan to monitor and treat runoff water will require active maintenance which is contrary to Kerr-McGee's position that no active maintenance is required. See Illinois' response to Kerr-McGee's cross-motion, pp. 10-13.

monitoring period. Surface runoff after the initial construction and monitoring periods will be "clean." The site will be vegetated and landscaped and therefore it will not be a significant source of suspended solids in runoff water. Nevertheless runoff water from the site will be directed to a detention pond before water is released to a storm sewer system. SFES p. 5-24; Eng Rpt IX p 9-10 to 9-18. None of these facts have been controverted by Illinois. We find that there is no potential for long term impacts on Kross Creek and the West Branch of the DuPage River. Kerr-McGee's motion for summary disposition of contention 2(p) is granted.

Ruling on Contention 2(s)

Contention 2(s) alleges that Kerr-McGee did not give serious consideration to below-grade disposal at another site and has not demonstrated that above-grade disposal at West Chicago will provide equivalent isolation. All parties agree that this contention is duplicative of contention 4(c) and (d). Kerr-McGee's motion for summary disposition of it is granted for the reasons given in connection with contention 4(c) and (d).

Ruling on Contention 2(u)

Contention 2(u) alleges that Kerr-McGee's proposed disposal cell will require long term maintenance. All parties agree that this contention is duplicative of contention 4(e) and (g). Kerr-McGee's motion for summary disposition of it is

granted for the reasons given in connection with contention 4(e) and (g).

Contention 2(w)

Contention 2(w) alleges that Kerr-McGee's proposed disposal cell is inconsistent with Criterion 1. All parties agree that this contention is duplicative of contention 4(a). Kerr-McGee's motion for summary disposition of it will be dealt with in our initial decision following the hearing on contention 4(a).

ORDER

In consideration of the foregoing, it is hereby ORDERED

1. Illinois' and Kerr-McGee's motions for summary disposition of contentions 3(g)(2) and 4(a) are denied.⁵³

2. Illinois' motion for summary disposition is denied and Kerr-McGee's cross-motion for summary disposition is granted with respect to the following contentions: 3(a), 3(b)(i), 3(b)(ii), 3(b)(iii), 3(g)(1), 3(g)(8), 4(b), 4(c), 4(d), 4(e), 4(g) and 9.⁵⁴

⁵³See our unpublished Memorandum and Order of November 14.

⁵⁴The reasons for our rulings on contentions 3(b)(i), 3(b)(ii), and 3(g)(1) will be contained in our initial decision following hearing on contentions 4(a) and 3(g)(2).

3. Illinois' motion for summary disposition is granted in part and Kerr-McGee's cross-motion for summary disposition is denied in part with respect to contention 4(f).

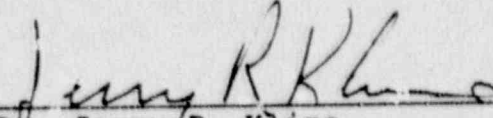
4. Kerr-McGee's motion for summary disposition of contention 3(e) is granted.

5. A ruling on motions for summary disposition of contentions 2(w) and 7 will be given in our initial decision following the forthcoming hearing on contentions 3(g)(2) and 4(a).

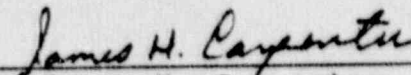
6. Kerr-McGee's motion for summary disposition is granted with respect to contentions 2(a), 2(k), 2(p), 2(s), and 2(u).

It is so ORDERED.

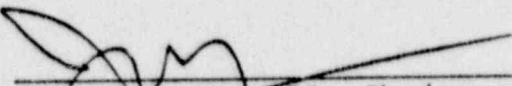
Atomic Safety and Licensing Board



Dr. Jerry R. Kline
ADMINISTRATIVE JUDGE



Dr. James H. Carpenter
ADMINISTRATIVE JUDGE



John H. Frye, III, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland
November 22, 1989

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

KERR-MCGEE CHEMICAL CORPORATION

(West Chicago Rare Earths Facility)

Docket No. (s) 40-2061-ML

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing LB MEMO AND ORDER DATED 11/22 have been served upon the following persons by U.S. mail, first class, except as otherwise noted and in accordance with the requirements of 10 CFR Sec. 2.712.

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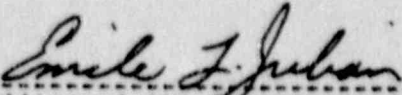
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22 day of November 1989



Office of the Secretary of the Commission