PDR 40-8745

National Wildlife Federation

NATURAL RESOURCE CLINIC
FLEMING LAW BUILDING
BOULDER, COLORADO 80309
303/492-6552

July 18, 1980

Director
Division of Waste Management
United States Nuclear Regulatory Commission
Washington, D.C. 20555

RE: Docket No. 40-8745
Bison Basin Project--Comments on Draft Environmental Statement

Dear Sir or Madam:

The National Wildlife Federation is America's largest private conservation organization, dedicated to the wise use and conservation of the nation's resources. We are pleased to comment as follows on the Draft Enviironmental Statement Related to Operation of the Bison Basin Project NUREG-0687.

GENERAL COMMENTS

In general, we believe that there are four major deficiencies in this draft environmental statement: lack of adequate attention to effects on migratory antelope and other wildlife; lack of preoperational monitoring; failure to justify foreclosure of the "no action" alternative, and failure to consider adverse effects of possible leach solution excursions into strata below the ore zone.

A. ANTELOPE MIGRATION AND OTHER WILDLIFE IMPACTS. NRC concedes, at page 3-46 that the project area is a "migratory route for one of the few remaining migratory antelope herds". Without any further analysis, NRC concludes at page 4-17 that "impacts on wildlife will be minimal" because of the "small area of disturbance".

NRC states at 4-13 that only 13.6 acres will be fenced, and that this is "unlikely to impede movement of migratory antelope".

We feel that this incompletely answers the question. The project obviously will create noise and spread human activity over a much larger area than 13.6 acres, affecting wildlife, including antelope, in a broad zone surrounding the project.

Comment

The Bureau of Land Management is planning extensive allotment fencing in this area. Will the project fence, in conjunction with the BLM fence, have a cumulative adverse effect?

We are not told how much noise or construction activity the project will entail. Clearly such activities as well drilling, building the evaporation pond, and running diesel generators will deter wildlife from using the area. Neither are we told the periods during which antelope migrate through this area.

The applicant should undertake, and NRC should insist on, a study to determine the likely impacts of the project on migratory antelope. Critical migratory periods should be identified, and the applicant should commit, through license conditions, to avoid major construction, well drilling, or other sources of disturbance during the (presumably brief) migratory period, if the study determines this to be necessary.

NRC should cooperate with public land agencies and state wildlife officials to ensure that antelope migration is undisturbed.

B. PREOPERATIONAL MONITORING. There are no preoperational monitoring data in three key areas: air quality, wildlife populations, and ground water quality in the area below the ore zone.

It is clear that NRC has already allowed, without adequate preoperational study, extensive disturbance of area wildlife populations. We will never know what the wildlife species diversity and distribution was, because it was disturbed before any studies were done. No further disturbance should occur until field work provides reliable and thorough information on these populations. Literature searches, while useful, generally only show what might exist in the area; it is clear from the draft statement that the bulk of the information on wildlife comes from sources other than field work and direct observation.

The same is true of air quality. NRC projects violations of emission standards for NO_2 and TSP, but is allowing the applicant to submit supposed "baseline" data from stations miles away. If violations occur, it will therefore be very hard to separate background from project-generated emissions.

Finally, NRC apparently disbelieves that any contamination of aquifers below the ore zone is possible. No monitoring of these strata will be undertaken. It is possible that NRC may be wrong. It would be helpful to have some baseline data on water quality in these lower aquifers should it later turn out that NRC was wrong.

C. DOWNWARD MIGRATION. NRC believes so strongly that there will be no downward migration of leach field solution that no monitoring of underlying strata is proposed. Page 4-10. NRC is so certain of this conclusion that no physical testing of possible connection to lower layers was required. Page 3-22.

Yet sources of potential downward migration , and sources of possible lateral migration below the ore zone and below the lowest monitor may well exist.

There is an unspecified number of exploratory drill holes of unspecified depth in the area. They are apparently plugged--even if plugging was done to specification--at best by bentonitic mud plugs of limited effectiveness and durability.

There are numerous faults in the ore zone.

Finally, there are several "sandy intervals" below the ore zone. While it is stated that these are "laterally discontinuous", no basis is stated for this conclusion, which we therefore find unconvincing.

In short, several available mechanisms exist for downward migration and/or for lateral excursions below the lowest monitor well. We therefore believe that NRC is wrong in not requiring monitoring of the lower zones, which are described and characterized in a most sketchy and contradictory manner.

D. THE "NO ACTION" ALTERNATIVE. As explained below, we do not believe that NRC has adequately justified foreclosing the "no action" alternative. While a range of forecasts of future growth is nuclear energy, and of future demand for uranium exist, NRC's estimates are clearly outside of the reasonable range. Indeed, NRC includes projections for 1979, rather than actual figures. Comparing those projections to the actual figures shows the projections to be in serious error. This casts grave doubt on the accuracy of the other projections included.

These inaccurate projections serve as the sole basis for rejecting the "no action" alternative. They do not form a sufficient basis for foreclosure of that alternative.

SPECIFIC COMMENTS

1. Page 1-4. The discussion at 1-4 under the heading "Need for Action" is certainly not an adequate basis for the conclusion that there is an "apparent need" for the Bison Basin project sufficient to justify an end to further consideration of the "no action" alternative. NRC is treating a two-paragraph quote from one study--and a somewhat dated study at that--as the conclusive word on a complex and rapidly changing subject.

Let us examine, for example, the projection that nuclear capacity (not output) will "grow to at least 380 gigawatts by the year 2000". At present, installed and operating nuclear capacity is 53.7 gigawatts (Energy Information Administration Annual Report to Congress 1979, Vol. 2). Therefore, to reach the 380 gigawatt

figure, over 325 gigawatts of nuclear capacity would have to be built by the year 2000.

If half of the generating capacity built between now and the end of the century is nuclear capacity, then total new capacity in the next 20 years would be 650 GW--more than all existing generating capacity of all electrical utilities in the United States at the end of 1979 (597.5 GW).

There were by the end of the first quarter of 1980 72 commercial reactors in operation or start-up testing (including Three Mile Island Unit 2). This is up only slightly from the 69 operating reactors two years previously.

At the end of the first quarter of 1980, 87 reactor construction permits had been granted, up one from the 86 permits at the end of the first quarter of 1978.

At the end of the first quarter of 1980, 14 construction permits were pending--less than one third of the number two years earlier (45). Three reactor units have been ordered, down from 11 at the end of the first quarter of 1978.

No new reactor units have been ordered for over a year, and no orders appear to be in sight. In fact, the trend has been just the opposite. Four planned reactors were cancelled in March, 1980. One was cancelled in February. Five were cancelled in January. Two were cancelled in December, and two in November.

In fact, since January 1, 1976 there has been a net of 60 cancellations of planned nuclear reactors. The rate of cancellation has increased:

YEAR	NET CANCELLATIONS
1976	1
1977	14
1978	15
1979	20
1980 (first quarter)	10

The proportion of electicity produced by nuclear plants has declined from 12.5% in 1978 to 11.5% in 1979 to 10.3% in the first quarter of 1980.

Even if all nuclear plants now ordered or in the permitting process are completed (a most unlikely prospect), and added to all existing reactor units, total nuclear capacity would be less than 170 gigawatts. This is much less than half the 380 gigawatt figure given.

The purpose of this comment is to assert that statements such as section 1.4 on page 1-4 do nothing to add to understanding of

the problems of energy supply or nuclear fuel requirements. The figures given are not even in the right "ball park" unless we assume a major and rather startling shift in historical trends.

Given a ten year lead time for nuclear plant construction, plants on line by 2000 will have to be ordered by 1990. This would mean an average of over 20 reactor orders a year for the next ten years--an extremely sharp reversal of recent history.

NRC gives not a shred of evidence that such a dramatic break is imminent, and does not give the slightest hint of that kind of unprecedented events might lead to such a development.

If the final environmental impact statement is to have any meaning, it must adopt a more pragmatic and realistic approach. Certainly the "no action" alternative should not be dismissed based on fanciful and nearly impossible estimates such as this one. NRC itself states at 2-3 that uncertainties "preclude rational forecasts past 1988".

If the 380 GW figure is not a rational forecast it can't justify foreclosing the "no action" alternative. Even if it is a "rational forecast", it is nonetheless almost certainly wrong.

2. Page 2-1. In section 2.1, the alternative of no licensing action is rejected as not "in the public interest". The only basis for this conclusion is a reference to "Sect. 1.4".

As indicated above, section 1.4 consists of nothing more than an inflated, almost impossibly high forecast of future nuclear capacity through 2000. NRC itself indicates at 2-3 that rational forecasts cannot be made past 1988.

How can a forecast which NRC admits is not rationally based serve as the basis for foreclosing the "no action" alternative?

3. Page 2-2. Table 2.2 points out in vivid terms the inflated and unrealistic nature of the forecasts on which NRC's decision to foreclose the "no action" alternative were based.

We have no figures, obviously, for total energy consumption in 1980. We do have first quarter figures. They show consumption down almost one full quad from the first quarter of 1979.

Using 1979 figures, then, we can compare them to the projections for 1980 contained in Table 2.2.

	1979 Actual (EIA)	1980 Projected (Table 2.2)
Total energy use (quads)	78.787	87.140
Nuclear power production (quads)	2.748	5.2

If the figures in this table are this far off for 1980, of what possible use can the 1985 and 2000 figures be? These data are simply unrealistic; history is rapidly proving them to be grossly inflated. They are more likely to mislead the reader than be of benefit.

The projection that over 46 quads of nuclear energy--more than half of all energy the U.S. will consume in 1980 and well over 15 times the amount of nuclear energy now available--will be available in 2000 is simply fantastic.

A coherent, reasoned discussion of alternative national energy future needs and deserves a more sober and realistic appraisal.

4. Page 2-3. This discussion would be more helpful and precise if it included:

(a) a discussion of the "recent drops in the demand for electricity" referred to, in quantitative terms. See 10 C.F.R. § 51.71(d). What has been demand growth for each year since 1970 in percent? This information should be presented.

(b) a discussion of the technological and other limits on increasing available nuclear fuel supplies by changing enrichment tails assay. How far can existing uranium supplies be "stretched" in this manner" How would this affect projected demands for yellowcake?

(c) changes in reactor types to more fuel-efficient designs. What is the potential for development and use of more fuel-efficient reactors? Can reactors be developed which use lower-enrichment (or no-enrichment) fuel? How would these developments impact uranium demand?

In short, we believe that NRC should not take current enrichment processes and reactor designs as a given. The adverse effects of uranium mining and milling (including the Bison Basin Project) can possibly be minimized by alternatives not here discussed.

The alternatives of varying enrichment tails assay and developing a new fuel-efficient reactor design should be discussed and explored in this EIS.

5. Page 2-3. Much is made of the Bison Basin project's alleged potential for reducing our future oil demands and lessening dependence on foreign energy sources. Yet:

(a) nuclear power does not produce oil. It uses oil, in uranium mining, ore transport, milling, yellowcake transport, construction of mills, mines, and reactors, and in other ways. Does the nuclear fuel cycle in fact displace more oil than it consumes? This is a key question; NRC could do a real service by addressing it. The results should be quantified, as required by 10 C.F.R. § 51.71(d).

(b) a major reason that the U.S. is importing more uranium

than it exports is that foreign producers have richer deposits which can be produced at less economic cost. There is simply no way that American producers can produce uranium from ores in the 0.01 to 0.05% U_3O_8 range for prices competitive with foreign producers extracting uranium from ore in the 0.1% to 0.5% (or higher) range. Promoting rapid, wide-scale production from relatively marginal deposits such as this one will simply hasten the day when the U.S. is as dependent on foreign uranium as it now is on foreign oil.

6. Page 2-6. The "estimates" referred to in section 2.2.2 are simply wrong. Solar energy is now and always has been the largest single source of supply in the American energy economy.

Solar energy converted by photosynthesis into food and fiber contributes many times the total energy output of all operating nuclear plants each year.

The statistics cited therefore lack meaning. If solar energy is used to produce cotton fiber for clothing, that energy input is simply not counted. Yet petroleum used to produce synthetic fibers for clothing is counted. The natural gas or electricity which dries those clothes after they are washed is counted; the energy which dries clothes on the clothesline is not. Other examples are legion.

Solar heat provides much of the heating load of virtually every building. Yet this energy input is not counted. It appears that the only solar energy which is counted is solar heat collected by sophisticated active heating systems.

The EIS should:

(a) point out that the figures used are generated by a counting system which apparently excludes--on rather arbitrary grounds--most of the energy used each year; and

(b) explicitly state what forms of energy use are and are not included in this counting system.

7. Page 2-7. Again, in tables 2.4 and 2.6 we see projections which experience has shown to be wrong.

Table 2.4 shows, for example, 8 new generating units coming on line in 1979. The year 1979 is over; during that year no new reactors went on line. There were, as note b to the table indicates, 71 units "listed" at the end of 1978. There were also 71 units "listed" at the end of 1979.

The 1980 projection of 10 new units may well also be wrong. There has been one new startup in the first half of the year.

Given how wrong the 1979 figures are, and the serious questions about the 1980 figures, we cannot but challenge the validity of the figures for later years.

Since Table 2.6 is based on Table 2.4, it, too, must fall.

We do not view our extended discussion of the various figures and projections made in the draft EIS as a sterile or academic exercise. NEPA requires that the environmental impact statement process be integrated into the decision-making process, and that the statement be used as a fundamental source of information for decision-making. See, e.g., the Commission's rule at 10 C.F.R. § 51.94.

If NRC truly does regard the EIS process as an integral part of its decision-making process--rather than merely a pile of routine paperwork, to be rushed through with the minimum acceptable effort--then NRC should be as concerned as we are at the use of outdated, inaccurate, or meaningless information in this EIS.

8. Page 2-8. The conclusion that "conservation will not materially change the need for increased dependence on coal and uranium... during the next decade" begs the question: how much more uranium will be needed? Will demand for uranium double? Treble? Remain constant? Total energy use in the U.S. increased less than 6% over the six years 1973-1979: an increase of less than 1% per year.

Energy use, including electricity sales, were down in early 1980 from corresponding periods of 1979.

The possibility that electrical demand--and the demand for uranium--may grow very slowly over the next two decades should not be so lightly dismissed.

9. The draft EIS identifies many major needs for energy in the production of nuclear fuel from this project. Other sources, widely available, give other information on energy balances. We see no attempt to collect and discuss information on energy balances.

Specifically, energy is required:

(a) in construction of the mining facility;

(b) in pumping and other operations at the facility;

(c) in removing U_3O_8 from solution;

(d) in transporting yellowcake to conversion plants;

(e) in construction of conversion, enrichment, and fabrication facilities and reactors;

(f) in operation of conversion, enrichment, and fabrication plants and reactors; and

(g) in other uses associated with the fuel cycle.

Our question is this: what is the net energy balance of this process, taken as a whole?

Clearly, there will be a major net input of energy occurring for quite some time before net output of energy occurs. How long will it be until net output is achieved?

Finally, what is the net petroleum balance of this process? How much petroleum (a) is consumed, (b) is displaced, (c) on what time schedule?

It is hard to judge whether or not this project is in the public interest without such information.

10. Page 2-18. Of the many characteristics listed as relevant to selecting and evaluating mill sites, none relates explicitly to the resistance to leaching of soils and rock underlying the tailings disposal area. We believe this to be among the most important factors in site selection, and are surprised to see discussion of this subject omitted.

11. Page 2-23. The EIS should discuss the effects which would occur if hydraulic fracturing as described in section 2.3.10.1 took place. We are unaware of what NRC means by assuring "that this minimum value is not greatly exceeded during production". Is there a specific limit on pressure? Who determines whether a given pressure "greatly exceeds" the stated limit, NRC or the applicant?

12. Page 2-26. It is not clear how much work was done to assure that the two sandy intervals underlying the ore-body sands are in fact "laterally discontinuous". If they are in fact old stream beds, it would be surprising if they were discontinuous in all directions.

It is also not clear what NRC means by the "impermeable characteristics" of the underlying lithology. The final EIS should quantify the permeability of both the mudstone and the "sandy intervals". See 10 C.F.R. § 51.71(d).

13. Page 2-28. Since "electric utility service is not currently available" electrical requirements will be met by "onsite diesel power generators".

This is undesireable for a number of reasons: (a) it is consumptive of petroleum resources and increases dependence on foreign oil; (b) it creates air and noise pollution.

The final EIS should thoroughly discuss and explore:

(a) the amount of petroleum which would be used by the project over its lifetime, and

(b) the petroleum savings and environmental benefits which

could be realized by use of wind electric generation, direct use of wind mechanical power, or photovoltaic electric generation, either alone or with diesel backup. Such systems, in addition to petroleum savings and environmental benefits, may also offer cost advantages in such remote applications. It can hardly be said that use of wind to drive pumps--a technology thousands of years old--is not an available alternative.

14. Page 2-34. It appears that NRC is concentrating on liner technology rather than site selection for mitigation of possible seepage from evaporation ponds. What groundwater exists in the pond area which might be contaminated? What is the expected direction and velocity of seepage if it should occur?

Most importantly, are there other sites in the area with less permeability and less potential hazard to groundwater?

NRC should identify alternative pond locations and state which if any such locations offer less potential for groundwater contamination. There will be some seepage with any liner system. If things don't go right, there could be considerable seepage. NRC is not justified in failing to discuss siting alternatives for these ponds.

15. Pages 2-36,2-37. There is no analysis given in support of the conclusion that "backfilling and reclamation of the mud pits containing these wastes will ensure safe disposal". NRC should at a minimum disclose the calculations or quantitative analysis supporting the conclusion that such disposal is "safe".

In fact, the contrast between the cavalier treatment given these wastes and the more careful treatment given the precipitated solids in the evaporation ponds is fairly startling. Nor would NRC allow shallow burial of ore at an ore storage pad at a mill.

By NRC's own estimate, $3272m^3$ x .025, or about 82 m^3 of ore zone material will be produced. Mixed with mud and other debris, placed in mud pits of unspecified size, and buried by unspecified techniques to an unspecified depth, it is not clear that this ore will be isolated from the environment to any significant degree. Indeed, mud pit burials can often result in erosion or other undesireable effects which would spread this material in the environment. See Bureau of Land Management, Kemmerer Resource Area Oil and Gas Leasing Record, III-23 through III-35 (1979).

Allowing over $80m^3$ of uranium ore, mixed with mud, to be "buried" in such a manner is not consistent with the ALARA principle NRC generally espouses.

There are alternatives available. Only a small part of the hole penetrates the ore zone. The part of the hole which penetrates the ore zone is drilled separately and at a different time from the main body of the well. (See p. 2-27.)

The amount of material from the hole extension is only a small fraction of the material removed from the hole. This material could easily be removed separately and placed in the evaporation ponds, where it could be dealt with together with other low-level radioactive wastes.

If there were 300 m^3 of such material it should cost the applicant something on the order of a few hundred dollars ($0.98/$m^3$ for moving overburden--p. 2-16) to contain it in such a manner. This is hardly an outrageous expenditure. This alternative and other potential alternatives to mud pit burial should be evaluated thoroughly.

16. Pages 2-36, 2-37. It is not clear what the extent of the jurisdiction of the State of Wyoming over this project is. Nor are the state standards mentioned here identified. The question of relative state and federal responsibilities should be clarified.

17. Page 2-37. We support the NRC staff determination to require removal of radioactive wastes to a suitable depository. The applicant's proposal does not appear to be sound.

18. Page 2-38. There is a reference here to the fencing of the project site. Will fences be designed with adequate "kick space" to prevent unnecessary mortality to deer?

19. Page 2-38. What is "an acceptable mix of plant species"? Who is to decide what is "acceptable"? Plant species should be selected for forage and cover value to wildlife. There is no way to determine the appropriateness of revegetation plans if species are not identified. Species should be identified in the final ES and their properties (erosion prevention, domestic animal forage, wildlife forage, and wildlife cover, etc.) should explicitly be addressed.

20. Page 2-38. As explained above, there may or may not be a need for increased uranium production. Section 2.2, based on inaccurate information and inflated projections, does not provide any answer to this question.

21. Page 3-1. Wind conditons appear favorable for wind generation of electricity, or direct application of wind power for pumping. This should be evaluated. See comment 13 above.

22. Pages 3-2, 3-4. Air quality data seem to be sketchy at best, and almost entirely from distant locations. "There is no air quality monitoring at the project site."

We question whether NRC should allow licensing to go forward without any directly applicable baseline data. Is this consistent with pronouncements in NRC's Regulatory Guides on the subject?

23. Page 3-6. Road kills of animals, disturbance to wildlife, particulate concentrations in air, hydrocarbon emissions, and petroleum use would all be reduced by busing employees from a central point to the project site. Has this been considered?

24. Page 3-5. We are very pleased and encouraged to see Fig. 3.2, showing other uranium-related activity in the region, included in this draft EIS. We encourage NRC to continue and expand presentation of this type of information in future environmental documents.

25. Pages 3-10, 3-11. Again, we believe that the kind of information presented in the discussion of "mining" on page 3-10, and in Table 3.1 on page 3-11 are extremely useful. Information on size of these facilities, such as ore production from the referenced mines, and mill capacities should be included in the final EIS to make the document more informative.

26. Page 3-14. The information on electrical and gas utilities is useful. It should be augmented: what are the load growth rates of these utilities? What are they having to do to meet load requirements? Is there available excess capacity to serve growth?

27. Page 3-15. It is not stated whether the project site is on public or private land.

28. Page 3-16. The site is apparently not screened from view by any major topographic features. Visual impacts could be mitigated by using nonreflective materials and natural colors in project facilities.

29. Page 3-22. It appears clear from the discussion in section 3.6.2.3 and Appendix B that no tests were conducted to determine whether well operations in the ore zone had any influence on water in formations underlying the ore zone. It is rather surprising to find that NRC is so confident of the impermeability of the underlying layers (despite the "sandy intervals underlying the ore body sands" referred to at 3-22 and 2-26) that:

(1) no testing is required; and

(2) no monitoring will be required (2-26).

We would think that if NRC has this much confidence in the impermeability of the underlying formations, that that confidence could only be based on very extensive drilling and testing. It would seem that at least one of these boreholes could be kept open for use as a monitor well. At a minimum, the extensive drilling program which led NRC to the conclusion that (1) the "sandy intervals" are discontinuous in all directions at all points in the project area, and (2) that the mudstone is impermeable

at all locations should be disclosed. In short, the EIS should disclose and discuss:

(1) the nature, extent, and value of the physical evidence upon which the conclusion that underlying formations are impermeable was reached; and

(2) the reason(s) why NRC has so much confidence in this data that neither testing nor monitoring will be required in the underlying zone.

30. Page 3-22. It is stated that the staff expects there to be no hydraulic communication in subsequent mine units, based on the fact that no connection was found in the first unit. On what data is this belief based?

31. Page 3-24. Will the investigation of the "hydrologic influence of faults and leakage through confining layers" include investigation of possible leakage into lower aquifers below the "D" sands? If not, why does NRC believe this to be unnecessary? Can't vertical migration down a fault occur?

32. Page 3-35. We question the propriety of referring to various target restoration values in Table 3.22 as "baseline". In fact, what NRC apparently means by the word "baseline" is that the average value for all wells after mining will not be worse than the highest value observed before mining. Whatever the merits of this approach, it is completely misleading to call such a target "baseline". This is inconsistent with NRC's own definition on page E-3.

33. Page 3-35. For the water quality parameters (U, Zn, Ba, etc.) which will not be restored to "baseline", we are not told why baseline restoration was not adopted. How hard would it be (how many additional pore volumes would have to be passed) to restore these parameters?

34. Page 3-36. It is stated that the abandoned exploratory oil wells "have been sealed in accordance with State and Federal standards".

(a) specifically, what does such sealing entail? How were those wells sealed?

(b) is this statement based on direct physical observation or testing of the seals? If not, how was sealing verified?

35. Page 3-42. Very little information is given on the mechanical or hydraulic properties, uniformity, or other characteristics of the "olive gray, good sorting, hard" mudstone on which so much reliance is placed for prevention of downward migration of leach solution. Such information should be provided.

36. Page 4-7. The staff "recommended" operational monitoring of site air quality. If no preoperational monitoring is done, what will such data be compared to? Will operational monitoring

be a requirement, or merely a suggestion?

37. Page 4-7. As noted below, there is no basis for the conclusion that effects on wildlife will be few and temporary. Operational monitoring should be required.

38. Page 4-7. We question NRC's limitation of "significant releases" to spills of 5000 gallons or more. This is in effect ignoring the potential effects of a number of smaller spills.

What evidence is there that the area can successfully be decontaminated after a spill, as suggested in section 4.4.2.1?

39. Page 4-7. Again, in 4.4.2.2, the staff is "recommending" monitoring. Will there or will there not be monitoring?

40. Page 4-8. Radon releases may vary significantly from hour to hour or day to day. A monitoring requirement of 48 hours per quarter seems hardly adequate. Who will determine which 48 hours must be monitored?

41. Page 4-9. In section 4.4.2.4 it is said that the radiological program "may be modified by the staff". The final EIS should be specific as to what will be required.

42. Page 4-10. It is stated that "there is no underlying aquifer closer than 91m (300 ft.) to the production zone".

On page 2-26 it is stated that "it has been determined that no aquifer exists for at least 79m (260 ft.) below the ore zone".

On page 3-42 we are told that 30m (85 ft.) of "mudstone, olive gray, good sorting, hard" underlies the ore zone. Under this is the Battle Springs formation, with the statement that "only partial sections of this formation have been penetrated in exploratory holes..." We are not told whether the Battle Springs formation is water bearing.

We are told about the "sandy intervals underlying the ore-body sands". Page 2-26. We are also told about faults in the area. Page 3-22.

What we aren't told is why this information appears to be contradictory, or how much work has been done to determine that downward migration through faulted areas or through underlying formations, or other migration--such as through the "sandy intervals"--is as unlikely as NRC suggests.

No testing of potential communication with underlying aquifers was done. No monitoring will be done.

Yet we are not told how much effort was devoted to determining that such problems were so unlikely that no monitoring or testing was necessary, or that the "sandy intervals" are "laterally discontinuous".

Full information should be supplied on the characteristics of the Battle Springs formation. If leach solution reaches it, how porous will it prove to be? How much water is in the formation? What is under it?

43. Page 4-11. If the applicant can "propose a postrestoration monitoring program prior to the beginning of restoration", the applicant could make that same proposal now, before operations begin, and while the public has an opportunity to comment.

44. Page 4-12. Background concentration should be based upon data from this site, rather than from Rock Springs and Patrick Draw.

This is particularly important in view of the projected violations of air quality standards.

45. Page 4-12. What is the "solution mining equipment" which will contribute to the expected NO_2 violations? Would use of non-polluting generation equipment such as photovoltaics or wind machines lower NO_2 levels?

Will a "mitigation plan" for NO_2 similar to the TSP "mitigation plan" referred to at 4-13 be required?

What regulatory action will be taken if NO_2 standards are in fact violated?

46. Page 4-12. Busing employees from a central location such as Sweetwater Station would reduce TSP. It would also result in less mortality to wildlife, and less wildlife disturbances.

47. Page 4-13. Is the statement that fencing "is unlikely to impede movement of migratory antelope" based upon thorough study or consultation with biologists familiar with antelope, or is it simply an expression of NRC's or the applicant's hopes?

Even if the fencing will not pose a physical barrier to wildlife movement, human activity, noise, and disturbance at the site will very likely cause disruption in migratory patterns. Further, BLM plans extensive fencing in the area. What will be the cumulative effects of BLM's fence and the project fence? This should be evaluated thoroughly.

What is the period during which migratory antelope pass through this area?

NRC should require the applicant to propose a plan pursuant to which major construction, land disturbance, use of heavy equipment and other activities which may disrupt migration will be avoided during critical periods if necessary to avoid disturbance. This plan should be designed and approved by competent professionals with detailed knowledge of antelope behavior and habitat requirements.

Further, as to other species, habitat disturbance will be much greater than the project site itself. Noise and human activity

will almost certainly make a much wider area unsuitable for habitat.

These effects cannot simply be ignored. The ES is seriously inadequate in its treatment of wildlife impacts.

48. Page 4-14. The project should be designed, to the maximum feasible extent, so that water releases from surge tank or storage tank failures or pipeline failures would naturally flow into evaporation ponds. This is consistent with NRC's requirements for conventional mill design and should be required here.

49. Page 4-14. What monitoring systems are in place to insure early detection and shutdown on development of pipeline or tank leaks? Under normal operating procedures, how long could a leak go undetected in worst-case conditions?

50. Page 4-14. The biggest concern seems to be evaporation pond failure. What would be the cost of a secondary catchment dam below the evaporation pond adequate to impound most or all escaping liquid in case of such a failure? If failure were not instantaneous, liquid could be removed from the evaporation pond into such emergency impoundments to reduce likelihood and consequences of dam failure.

51. Page 4-16. We are somewhat startled by the lack of information about dam construction techniques and design criteria. Will the dam be constructed all at once or in successive lifts? If the latter, what method will be used--upstream, downstream, or centerline" Will the guidelines in NRC Regulatory Guides applicable to mill tailings impoundments be followed?

What will the height of the dams be? Of what will they be constructed?

52. Page 4-17. It is extremely difficult to comment on the potential significance of the "old exploration holes" without knowing their number and locations. This information should be provided.

53. Page 4-17. Others besides the applicant may have drilled exploratory wells in the area. Some of these may be deep wells drilled in connection with exploration for the sizeable local petroleum reserves. How confident is NRC that locations and characteristics of all such holes are known?

54. Page 4-17. NRC states that the old exploration holes "were left full of bentonitic mud when they were abandoned". Is this statement based upon actual observation of these procedures? If not, on what information is this statement based and what degree of confidence does NRC have in its accuracy?

55. Page 4-17. Exploration holes may penetrate lower levels,

below the ore zone, as well as levels above the ore zone. They may extend hundreds or thousands of feet below the ore zone. If leach solution moves down such holes into lower levels, how will detection and restoration be achieved?

56. Page 4-17. Bentonitic mud is not a stable or long-lasting plug. Its properties as a plug, for example, provide much less long-term stability than cement, which is widely used in plugs. What data does NRC have relating to the short-term or long-term stability of bentonitic mud plugs? Surely the conclusion that "the mud column is an effective seal against fluid interchange" must be supported both by general research results and site-specific data and engineering calculations. All of this data should be disclosed.

57. Page 4-17. Many exploration holes, in our experience, are plugged for only part of their depth. What evidence is there that these holes were plugged for their full depth?

58. Page 4-17. What physical evidence is there of "rapid swelling and bridging of the isolated shales"? Is this a presumption, or is it supported by empirical observation?

59. Page 4-17. The FES should state how many exploration holes exist in the area and who they were drilled by, as well as their depths.

Particular attention should be paid to discussing and describing holes drilled by parties other than the applicant, and any evidence that holes drilled by such third parties were properly plugged.

60. Page 4-17. More than 22.8 hectares of antelope browsing area will be lost, since noise and human activity will almost certainly preclude use of a much larger area surrounding the project site.

61. Page 4-17. During hours of restricted visibility, such as at night or during storms, "undissected terrain" may not prevent wildlife mortality from collisions. If NRC is going to assert that wildlife loss "is likely to be slight", NRC should state the basis for this conclusion. Studies of this subject have been done and should be located and referenced before such broad conclusions are drawn. Busing employees to the site is an alternative which should be considered to minimize this problem and TSP loading.

62. Pgge 4-17. We disagree with the conclusion that "wildlife losses should be few and temporary". The project sits on an antelope migration route. Human activity and noise will impact antelope outside of the fenced project area. There is no evidence whatsoever that migration will not be disrupted, or that it will be reestablished on reclamation of the project site.

63. Page 4-17. Construction activity, noise, and human disturbance may preclude use of nearby water sources by antelope.

We would be in a position to speak in much more detail on this subject if NRC had provided more detail: (1) How large is the migratory herd? (2) Where does it migrate from and to? (3) During what periods does it pass through the project site?

If what NRC is saying is that because there is enough room for the antelope to pass around project fences there will be no impact on migration, this is a position with no basis in wildlife biology.

It may be that adverse effects could be avoided by scheduling major disruptive activities at times other than the times antelope are in the area. Such techniques have been used in other area projects. The applicant should be required to submit a plan for mitigation of wildlife disturbance and loss, and to identify the periods when activity which could disrupt the antelope migration should be avoided.

64. Page 4-18. It is not clear from the discussion here, nor is it clear from 3-46 which of the washes and streams in the area are ephemeral and which are intermittent. This is a critical distinction in terms of the biological communities which may exist in the area.

65. Page 4-19. The model of pathways does not include a pathway from water to animals to man. Either this omission should be defended by quantitative analysis or that pathway should be included.

66. Page 4-21. NRC does not indicate the technique by which it equates the hazards of radiation from this project (primarily internal alpha radiation) to external doses from medical and dental x-rays. What factors does NRC use to attempt to equate these very dissimilar hazards?

67. Page 4-21. There is no discussion here of exposure to people living on-site. On 2-29 there is a clearly defined "crew's quarters" at the facility.

(a) shouldn't this "crew's quarters" be treated as the "nearest residence"? If not, why not?

(b) what will the combined dose from occupational exposure plus exposure during off-duty hours to the people living on-site be?

68. Page 4-22. What levels of radon concentrations "may occur in the well-field pump buildings?

69. Page 4-22. Some animals may live on or very close to the site. Their exposure will thus be higher than the "nearest resident".

Further, they may eat local insects or otherwise be exposed to sources of radiation other than those man would be exposed to.

The conclusion in 4.5.7.7 is therefore unwarranted.

70. Page 4-24. Busing employees [illegible] the project site should be considered.

71. Page 4-24. NRC should not dismiss the subject of noise in such a cavalier manner. There will be occupational effects of noise on employees. There will also be potentially severe effects on wildlife, who may be driven from a large area by project noise. Noise may also degrade the recreational experience available to the public, including hunters, on surrounding lands.

It is impossible to determine whether these effects will exist, or how serious they will be until NRC attempts to quantify the noise this project will produce.

72. Page 4-25. What is a "significant release" as that term is used in the third paragraph of 4-25?

73. Page 4-25. Will flow rates be monitored continually or at intervals? Realistically, how long could a "significant release" go undetected?

Once a leak is detected, what must be done to stop flow? How long will it be between leak detection and cessation of flow?

How could such procedures be improved?

74. Page 4-26. What concentration of contaminants in the "upper crust of salts and sediments" would require corrective action? This should be stated now, in advance, before any failures occur.

75. Page 4-28. Analysis should be made for an accident involving yellow cake slurry. It is simply inadequate to discuss risks from transportation of dry U_3O_8 and conclude, with no supporting analysis, that risks will be less for slurry.

Potential differences include:

(a) the dry yellowcake discussed is in individual drums. The slurry will be bulk loaded. The probability of release of the entire contents, given an accident, is probably therefore higher.

(b) given solid yellowcake, a crack or puncture of a container may not release a significant fraction of the container contents. A crack or puncture in the lower part of a slurry container would be much more likely to result in total release of contents.

At the very least, NRC should explain its reasoning in saying that this method of shipment is safer.

76. Page 4-30. Given the small quantities of radioactive materials described in 4.6.3, could not these materials be shipped to a licensed low-level waste disposal site if no uranium mill owner will accept them? Given the isolation of the applicant's site, any disposal there will make long-term monitoring very difficult.

77. Page 4-30. For the reasons stated above, whether or not uranium production must be expanded, the analysis in Section 2.2.1 does not support the conclusion in 4.6.4.

78. Page 4-30. Please state the source of the "national policy" to "replace oil by increasing the use of energy from uranium...". We are unaware of any recent pronouncements that this is national policy.

79. Page 4-31. We disagree with the statement in 4.7 that "no direct or indirect conservation potential exists for the project". As stated above, this project will use oil to produce uranium. While in principle the amount of uranium produced could replace a significant amount of oil, we are unaware of any analysis indicating that such actually would be the case. Particularly if other oil inputs into power plant construction, transportation of yellowcake, fuel enrichment and fabrication, etc. are allocated proportionately to this project and included in the analysis, it is not at all clear that there will be a net saving of oil.

Conservation potential at this project includes:

(1) use of solar heat for project buildings, as will apparently be the case for the Ticaboo subdivision described in Appendix C of NRC's final EIS on the Shootering Canyon Uranium Project (NUREG-0583);

(2) busing commuting workers from a central site to the project site and back;

(3) use of photovoltaics or wind energy systems for onsite power generation; and

(4) direct use of wind power for mechanical energy to drive pumps.

These conservation opportunities should be explored and discussed.

80. Page 4-31. NRC states earlier in this draft EIS that TSP standards and NO_2 standards will probably be exceeded by this project. The conclusion that "[t]he unavoidable impacts...

upon the air quality in the area will be minimal" is therefore incorrect.

ADDITIONAL COMMENTS

81. We find no discussion of measures which will be taken to prevent wildlife or domestic animals from drinking from mud pits. This has been a source of animal mortality in New Mexico.

82. What is the expected life of the plugs which will be used to seal the solution mining and other wells after completion of the project? We believe that none of the techniques in common use will form a permanent seal. The long-term effects as plug failure occurs should be discussed.

83. While there are admitted to be sage grouse in the area, the location of the nesting and strutting complexes and the effects of the project on these important elements of habitat are not discussed.

84. While the question was clearly raised in scoping, these issues are simply not addressed:

(a) what will prevent wildlife from using the evaporation pond as a water source?

(b) will wildlife be harmed if they do use the evaporation pond as a water source?

(c) will waterfowl be injured if they alight on the evaporation pond?

We appreciate the opportunity to comment on this draft EIS.

Very truly yours,

Luke J. Danielson, Counsel